THE AIR LAND SEA BULLETIN

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Through the use of multi-Service tactics, techniques, and procedures publications, US forces were able to work together to strike targets such as this Iraqi security facility. (Photo courtesy of Defenselink)

OPERATION IRAQI FREEDOM, Observations and Lessons Learned

Lt Col Mark D. DeLong, USAF
ALSA Action Officer

For months, military planners crafted an operational war plan to liberate Iraq and remove the threat of the regime's weapons of mass destruction. As the potential for hostilities grew near, it was time to fill in the operational and tactical details of a plan that brought together the combined forces and agencies of several countries. Air Land Sea Application (ALSA) Center publications were designed to be one those tools to fill in those details for the operational and tactical warfighter.

In the September 2002 issue of this publication, Lt Col Paul Moscarelli, ALSA Action Officer, wrote, "The purpose of

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Submissions: We solicit articles and reader's comments. Contributions of 1500 words or less are ideal. Submit contributions, double-spaced in MS Word. Include name, title, complete unit address, telephone numbers, and e-mail address. Graphics can appear in article, but you must also provide a separate computer file for each graphic. Send E-mail submissions to **alsaeditor@langley.af.mil**. ALSA Center reserves the right to edit content to meet space limitations and conform to *The ALSB's* style and format. **Next issue: October 2003; Submission DEADLINE: close of business, September 1, 2003.**

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DIRECTOR'S COMMENTS - TIME TO LOOK AT LESSONS LEARNED, TIME TO SAY GOOD-BYE

The US military has been working at a very fevered pace for the last three years, but when President George W. Bush announced the end of major combat operations in Iraq, the Air Land Sea Application Center started putting events into perspective. The War on Terror and OPERATION IRAQI FREEDOM have brought about many lessons learned that we can incorporate into our Multi-Service Tactics, Techniques, and Procedures publications.

Our very own Lt Col Mark DeLong was deployed to the combined air operations center to support OPERATION IRAQI FREEDOM. DeLong compiled his observations into our cover article, Lessons Learned – ALSA's Contribution to OIF.

Every day, from training to combat, errors are costly, as Navy Lt. Chris Hill, a TOPGUN instructor at the Naval Strike and Warfare Center, points out in his article addressing multi-Service Brevity code changes. "What would happen if there was just one piece of confusion on the radio because Air Force and Navy aircrew insisted on training to different standards of communication," wrote Hill after attending an ALSA joint working group in January, which focused on updating the current multi-Service Brevity codes. Air Force Lt. Col. Pete "Toes" Bartos, one of the Action Officers who helped publish the revised BREVITY publication worked with hill to bring together all the ides behind our second article. The Multi-Service Brevity Code publication is currently available on the ALSA web page at https://lad.dtic.mil/alsa/brevity.html.

In our third article, a team of staff officers from the Joint Forces Staff College delve into the "ultimate cost of joint interoperability failure" in their fratricide article. They do not argue that the elimination of fratricide is difficult, in their article they even allow that some have called it "an impossible task," but they assert that if the Services take a truly "joint" approach to alleviating these causalities they can be overcome.

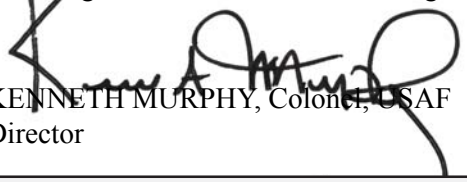
Our final article in this issue deals with the "Joint Explosive Ordnance Disposal Task Force Concept. Army LTC Dick A. Larry takes three vignettes from the Countermine/Counter Booby Trap Center UXO OPERATION DESERT SHIELD and OPERATION DESERT STORM Lessons Learn Handbook to explain the appropriate organization to handle problems identified.

This is my last contribution to the ALSB as the ALSA Director. I am moving on to command the 53rd Training and Evaluation Group at Nellis Air Force Base, Nevada. It has been an honor and priviledge to work with all of the great professionals of the joint doctrine community. It is unlikely that I will ever again be associated with so many exceptional individuals from all our Services. You make me proud to wear this uniform -- and prouder still to be an American.

ALSA is in great hands as COL Laverm "Bullet" Young, USA, takes the reigns as Director. This battle-hardened warrior has vast experience on the Joint Staff and few can match his tactical level of experience. Best of luck to Bullet and all of you in the future.

Young has served as the ALSA deputy director since June of 2002. Before this post, he was a student at the Air War College, and served on the Joint Staff J3 in Washington, D.C.

Air Force Lt. Col. David Petersen is the new ALSA deputy director and is currently attending the Joint Forces Staff College.



KENNETH MURPHY, Colonel, USAF
Director

The value of this publication is directly related to the quality of input received from our audience. If you don't see the topic that you need, *tell* us. Better yet, send the editor an article on a joint warfighting topic for publication in the bulletin. Some possible ***HOT*** topics are—*homeland security, Operation Enduring Freedom, new operational capabilities, and new challenges and solutions for close air support.*

This post strike image represents exactly what MTTPs help accomplish. Lt Col DeLong was a CENTAF-PSAB Combat Operations Interdiction Duty Officer during Operation Iraq Freedom.

multi-Service tactics, techniques, and procedures (MTTP) can be summed up in one word – interoperability. MTTP facilitate joint information exchange and operational solutions to enhance the ability of each Service to operate effectively together with elements of other Services. MTTP fills the need for detailed guidance that is left open by joint tactics, techniques, and procedures (JTTP)." Less than one year later, in the form of planning and executing Operation Iraqi Freedom (OIF), interoperability was put to the test.

I would like to take Moscarelli's statement one step farther in the comparison of JTTP and MTTP. JTTP requires consensus, MTTP does not. This is an outright strength of MTTP.

An ALSA publication can say, "The Army does it this way, and the Marines do it this way." The cross-pollinating created by these separate TTPs usually result in the Services finding a common solution. It was the knowledge of each others TTP that helped them down that road to jointness.

Many ALSA MTTP start out with separate Service chapters. Similar TTP amongst the Services are gathered into a joint chapter. Within about two revisions, the Services chapters literally disappear, and what remains is the "joint" way. An example of this can be seen in joint suppression of enemy air defense (J-SEAD) operations. In the first edition of the ALSA MTTP J-SEAD in 1992, the SEAD mission was accomplished in distinctly different ways. The latest revision only has joint procedures. The only separation of the Services is in the platforms they use.

The following is a review of some of the ALSA publications that I personally saw in action during OIF. The common string throughout my observations was that MTTP was used as a baseline, or a starting point. Instead of starting with a blank page, planners and warfighters were able to start with a generic approved solution. This allowed the planners to then put their efforts into modifying that solution to fit the exact needs and requirements of the joint force commander and all of the coalition forces. Morever, MTTP accomplished its mission of filling in the interoperability gaps between the Services. Our joint force has an outstanding joint doctrine hierarchy. The Services follow with outstanding operational and tactical level doctrine. As the joint force moves from

simply deconflicting from each other to true integration, TTP will always be needed to tie it all together. ALSA, as well as other organizations who create MTTP, will be there to meet the immediate needs of the warfighter.

Army and Marine Corps Integration in Jont Operations (AMCI) - The Battlefield Coordination Detachment (BCD) at the CAOC used this publication extensively in the later stages of planning of OIF as it became obvious that I MEF and V Corps would be operating side by side in Southern Iraq. The plans called for integration of fires based on the time frame the forces expected to complete the objectives. There were three particular instances where the procedures in AMCI provided the baseline for integrated Army and Marine operations. First was cross-boundary fires. This mainly came in the form of Army long range artillery, primarily the Army Tactical Missile System (ATACMS), used in support of Marine objectives. The second was the back and forth sharing of air assets for close air support. The Army's air support operations center (ASOC) and the Marine's direct air support center (DASC) continually traded air back and forth to meet any immediate and lasting needs in each other's are of operation (AO). The third was direct fire integration seen in the early hours of the battle for Baghdad. Marines used artillery to support fires required by the Army in their sector.

Antiradiation Missle Employment in a Joint Environment (ARM-J) - Antiradiation missiles (ARMs) have an unparalleled ability to home in on enemy emitters and disrupt or destroy the elements of an integrated air defense system (IADS). However, they are not classic precision-guided weapons, such as laser-guided munitions. On the contrary, ARMs cannot be steered and under certain conditions may not guide on the target that they were originally fired. Also, they do not have the ability to discern friend from foe. Therefore, the precision detection capability of the launching platform and its human operator in the loop are key elements ensuring weapon effectiveness and the prevention of fratricide. As ground forces rolled into the are of responsibility (AOR), the BCD, Electronic Warfare Cell, and Suppression of Enemy Air Defenses (SEAD) Cell used this publication to set up the process of how to get the types and locations of friendly emitters to the mission planning cells of the SEAD aircraft.

Rules of engagement (ROE) compensate for some of the above problems. Restricting weapons firing until specific conditions are met reduces potential fratricide as well as avoids inefficient weapons employment. However, ROE must be optimized for all platforms in theater and take into account each system's capabilities and limitations. ARM-J was the primary source in developing the ROE for SEAD operations short of the FCSL.

Multi-Service Brevity Codes (Brevity) - This publication standardizes air-to-air, air-to-surface, surface-to-air, and surface-to-surface brevity code words. The scope is limited to those brevity codes used in multi-Service operations and does not include words unique to single Service operations. This publication was referenced in several sources as the definitive source for "approved" brevity words. While this MTTP is not authoritative in nature, the combined force air component commander (CFACC) placed the brevity publication in the OIF special instructions (SPINS) which directed their use.

Multi-Service Procedures for Integrated Combat Airsace Comand and Control (ICAC2) - This publication provides the methodology for planning, implementing, and executing a threat-integrated airspace control function in combat. The CFACC was tasked to create and implement an airspace plan that deconflicted over 1,800 fixed-wing aircraft, as well as considerable helicopter, Tomahawk Land Attack Missile (TLAM), and ATACM operations. ICAC2 was the primary source for the development of SPINS and over approximately 1,800 airspace control measures (ACMs). Instead of starting with a blank sheet of paper, planners used ICAC2 which provided and ready-to-use airspace architecture. The resulting plan resulted in a robust , flexible Airspace Control Order (ACO) that was able to rapidly change for commanders across all Services to conduct operations safely and effectively in the air.

Multi-Service Procedures for Joint Air Operations Center and Army Air and Missile Defense Command Coordination (JAOC/AAMDC) – The Army Air and

The common string throughout my observations was that MTTP was used as a baseline, or a starting point. Instead of starting with a blank page, planners and warfighters were able to start with a generic approved solution.

The purpose of multi-Service tactics, techniques, and procedures (MTTP) can be summed up in one word – interoperability. MTTP facilitate joint information exchange and operational solutions to enhance the ability of each Service to operate effectively together with elements of other Services.

Missile Defense Command (AAMDC) is a fully integrated, multifunctional air and missile defense organization whose primary purpose is to perform theater-level air defense (AD) and joint theater missile defense (JTMD) planning, integration, coordination, and execution. The actual integration of the AAMDC into the CAOC was critical in the successful defense of friendly forces. OIF was the first true application of a co-located AAMDC in the CAOC. The AAMDC's placement into the CAOC allowed incredible integration between Aegis, space, Army, and other national assets. The previous edition of this publication was extensively used to set up the AAMDC in the CAOC in 2001.

Multi-Service Procedures for Joint Application of Firepower (J-FIRE) - Warfigters from all Services clamored for this recently updated MTTP. This pocket-sized reference guide for the joint application of firepower was considered the "gouge" for those in the field. This updated pocket-sized referenced was rushed to the fielded forces as soon as it was published. J-FIRE contains calls for fire, a format for joint air strike requests, a format for briefing pilots who provide close air support (CAS) and close-in fire support (CAS"9-line"), structures of communications nets, and data on a multitude of weapons. The formats and information provided a quick refresh and/or validation of critical integrated operations.

Suppression of Enemy Air Defenses (JSEAD) - This publication was relatively unknown amongst the J-SEAD planners and operators. However, there was a greater use and awareness of the related ARM-J publication mentioned earlier. One of the reasons this publication was not referenced in the planning of the JSEAD campaign is the OIF campaign evolved from the already well known OPERATION Southern Watch (OSW) and OPERATION Northern Watch (ONW) operations. Most SEAD players are fully aware of joint capabilities of SEAD. They have been operating consistently for 12 years and are very aware of joint capabilities around them. For the better part of the operations, SEAD operators conducted lane SEAD for several packages going into threat concentrated areas. SEAD was still incorporated into large packages and all operations were in accordance with the JSEAD publication as written three years ago. I feel the incorporation of J-SEAD and ARM-J in the next revision of JSEAD will be exactly the information the warfighters need to have. This is due to the inclusion of evolved TTP developed from Operation ALLIED FORCE (OAF) and lesson learned from OIF.

Multi-Service Procedures for Joint Theater Missile Target Development (JTMTD) - This publication, combined with the rescinded ALSA Targeting MTTP was part of the early planning for counter theater ballistic missile operations. JTMTD is the synergistic outcome of allocating, integrating and synchronizing resources in order to identify and nominate selected targets in the TM target system for timely attack. The concepts put forth in this publication were combined with time sensitive targeting TTP derived from Operations Allied Force and Enduring Freedom, as well as Central Command Air Force's (CENTAF) Internal Look. What transpired was a TST cell that could strike a target in minutes, vice hours or even in a different Air Tasking Order (ATO) day.

BREVITY CODE CHANGES - ELIMINATING COMMUNICATION CONFUSION IN THE SKY

LT Chris Hill
Naval Strike and
Air Warfare Center

One of the goals of a tactician is to anticipate, plan, and train for the worst possible scenario and then teach the operator how to execute. Imagine an enemy capable of launching hordes of aircraft in one desperate attempt to overwhelm and cripple our air defenses. It is not that hard to imagine. Consider what would happen if there was just one piece of confusion on the radio because Air Force and Navy aircrew insisted on training to different standards of comm. (Was it the trail group or the far group? Why did he call it a range problem when it was a perfect echelon?) As we have witnessed in training, one element of communication confusion can result in the kill removal of blue air, rather than red air. In combat, it could mean the loss of an entire ship. This is simply unacceptable.

Despite any feelings we may have about becoming "joint", joint communication standardization is both required and inevitable because joint operations are our reality right here, right now. There should never be a time when a Navy fighter is confused by AWACS control. Likewise, an F-15 pilot should not be confused by E-2 control.

Unfortunately, we have very few real-word examples in which confusion has resulted from separate communication standards, primarily because we train as individual services for most of our work-ups, and the preponderance of real-world intercepts have been conducted by the Air Force. After two conferences involving the Naval Strike and Air Warfare Center (NSAWC) and the Air Force Weapons School, it became apparent that there is confusion imbedded in our communications. This should not be a surprise. The services are left with only two options: Teach two ways of doing business or develop a joint standard that applies to all.

The recommendations in this article come as a result of the multi-Service Air, Land, Sea Application Center (ALSA) brevity conference conducted at NSAWC in January 2003 and follow-on testing by the staff at TOPGUN. As with any change, we expect growing pains. The good news is that integration of these changes has not been as difficult as we had assumed.

A brevity code is a code which provides no

Figure 1 "Ghost, two groups, GROUP depot 090, 10, 15,000, track south, hostile. GROUP depot 360, 10, 15,000, track west, bogey spades."

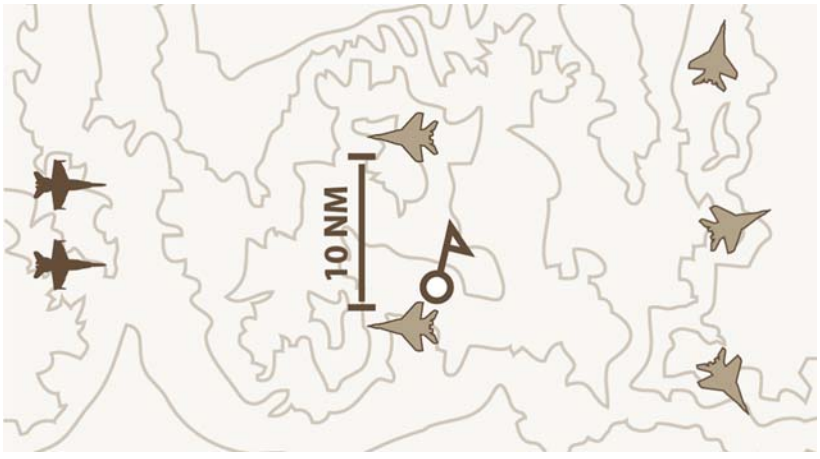


Figure 2 "Ghost, five groups, two groups, azimuth 10, south group at depot 25,000, hot, hostile. North group 25,000, hot, hostile."

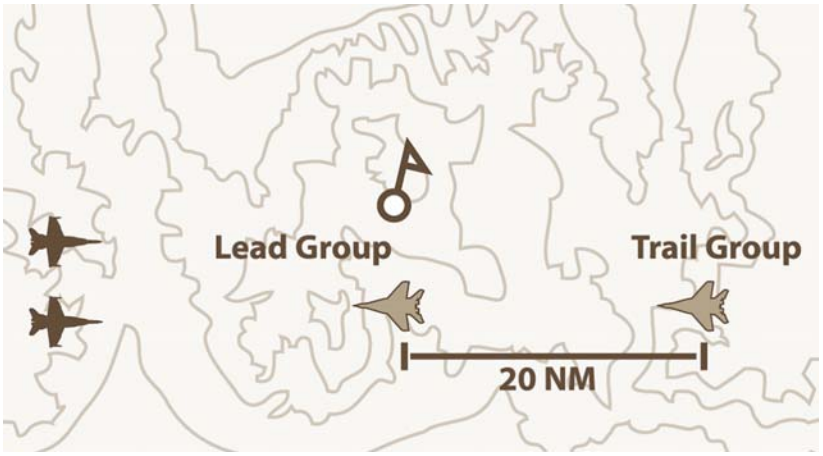


Figure 3 "Ghost, two groups, range 20. LEAD GROUP depot 180, 10, 15,000, hot, hostile. TRAIL GROUP 25,000, hot, hostile."

security but which has as its sole purpose the shortening of messages rather than the concealment of their content (Joint Publication 1-02).

This article addresses the results of the ALSA Brevity Conference by addressing what has changed, why the change occurred, and how to avoid confusion[1].

Several brevity terms have been removed from the ALSA Manual. In many cases, the terms were redundant or considered potentially confusing with other terms[2]. New terms and terminology changes include air-to-surface, electronic warfare, and other intercept terms such as speeds and altitudes, which are more aligned with aircraft, intercept considerations.

Altitude Terminology Changes. The definitions of LOW, MEDIUM, and HIGH have never and may never coincide with the altitudes referenced in Navy fighter timelines. They are typically used to provide some altitude awareness from a platform such as the E-2, which has poor height-finding capability. An E-2 that has off-board information regarding a more precise contact altitude (i.e., originating from AWACS or AEGIS) should call the altitude in thousands of feet. Time permitting, fighters should make HITS calls on primary, which can assist in geometry and timeline adherence.

Changes to Intercept Control

The ALSA conference attendees recognized the effect of communication on tactics and they acknowledged that Navy, Marine Corps and Air Force aircraft employment are different. In cases where a change to communication standards would adversely affect the ability of fighters to execute, it was decided that everyone should be familiar with both standards.

For example, the Air Force convention for picture labeling considers fighters on multiple axis/lanes and provides information on the portion of the air picture that is currently a factor, with a term called bounding range. Navy and Marine Corps air-to-air assets require the ability to make decisions based on groups that may not be a factor now, but could be in time or could effect follow-on flow decisions.

Because the mindset and employment of the services are driven by different platform capabilities, the Navy and Air Force will continue to use different criteria for picture labeling. Fighters must be especially familiar with both.

Pre-commit Considerations and Core Information. Group numbering is no longer an option pre-commit. Instead, all services will use core information to describe the location of groups. The first group described should be the highest priority group to the fighters. Also, AIC should limit transmissions to two or three groups (Figure 1).

Figure 1 "Ghost, two groups, GROUP depot 090, 10, 15,000, track south, hostile. GROUP depot 360, 10, 15,000, track west,

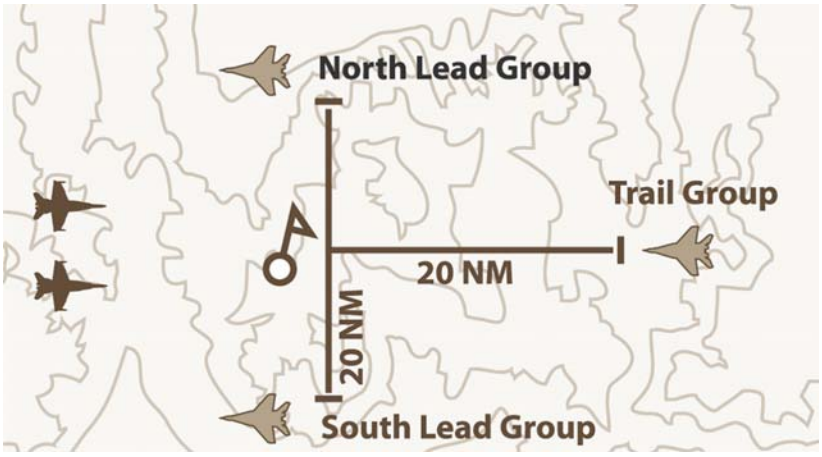


Figure 4 "Ghost, three groups, champagne. 20 wide, 20 deep. NORTH LEAD GROUP depot 360, 10, 15,000, hot, hostile. SOUTH LEAD GROUP 25,000, hot, bogey spades." (break transmission) "Ghost, TRAIL GROUP 35,000, hot, hostile."

bogey spades."

If fighters require specific information on a group, they may request a PICTURE or STATUS of a specific group based on previous location. As a technique, fighters may be more inclined to write down the bull's-eye location of groups as calls are made so that a STATUS can be requested rather than asking for the entire picture.

When to Label a Picture — Artistic differences exist between Navy, Marine Corps and Air Force picture labeling. The Air Force criteria for labeling can be considered more restrictive. From *Air Force Tactics, Techniques, and Procedures* 3-1: "The four criteria to be used to label a picture are as follows:

1. Fighters have committed/pushed, and
2. Bogies/bandits/hostiles are on a steady heading (>12AA, or flank/hot), and
3. Formation is determinable and labeling a picture will help build SA, and
4. Groups are within bounding range."

TOPGUN recommends the following for applying a picture label:

Fighters communicate "COMMIT" or "Go TACTICAL."

Or

A group meets no-later-than commit criteria.

And

The picture fits a convenient tactical label.

Both services agree that AIC may use tactical group numbering as a last resort if a tactical label is inappropriate. It is extremely important that names be applied to all factor groups during an intercept. If a label has been assigned and the fighters do not desire one, they may direct AIC to "Go BROADCAST."

There are times when there are multiple groups but only a few are factor groups. If these factor groups create a discernible picture label, then AIC can make the call. For example, "Ghost, nine groups, two groups, azimuth 10, south group…" If the other groups are not a factor, then AIC should not call them. If one or more of the groups becomes a factor, they can be referred to as additional group or first additional group, second additional group, etc. (Figure 2).

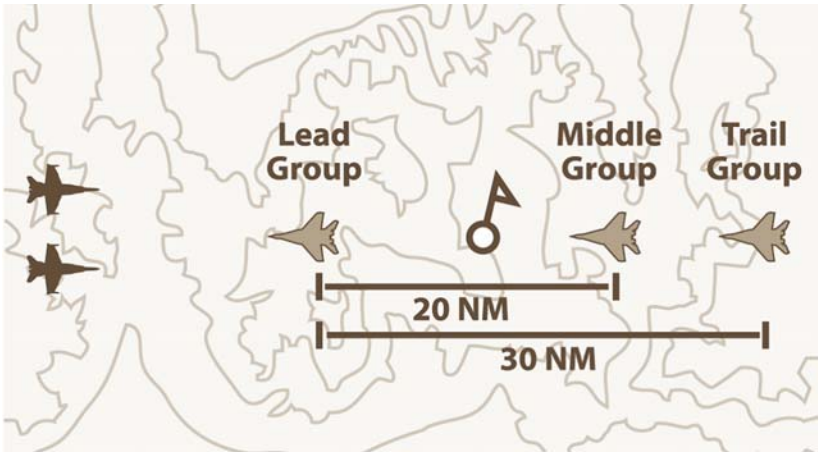


Figure 5 "Ghost, three groups, ladder, 30 deep. LEAD GROUP depot 270, 10, 15,000, hot, hostile. MIDDLE GROUP separation 15, 25,000, hot, bogey spades." (break transmission) "Ghost, TRAIL GROUP, 45,000, hot, hostile."

Figure 2 "Ghost, five groups, two groups, azimuth 10, south group at depot 25,000, hot, hostile. North group 25,000, hot, hostile."

Changes to Picture Labels — The application of labels remains the same. However, take note of how the group names are described. While a name such as NORTH LEAD GROUP may include an extra syllable, it has some inherent benefits. If a fighter has not heard a whole transmission or was off the radio for a period of time (i.e., tanking), he will understand that the NORTH LEAD GROUP is part of a CHAMPAGNE or BOX without having to hear the whole picture. Labels and names for an AZIMUTH and WALL have not changed. The use of WIDE and DEEP has also remained the same.

RANGE. A picture label describing two

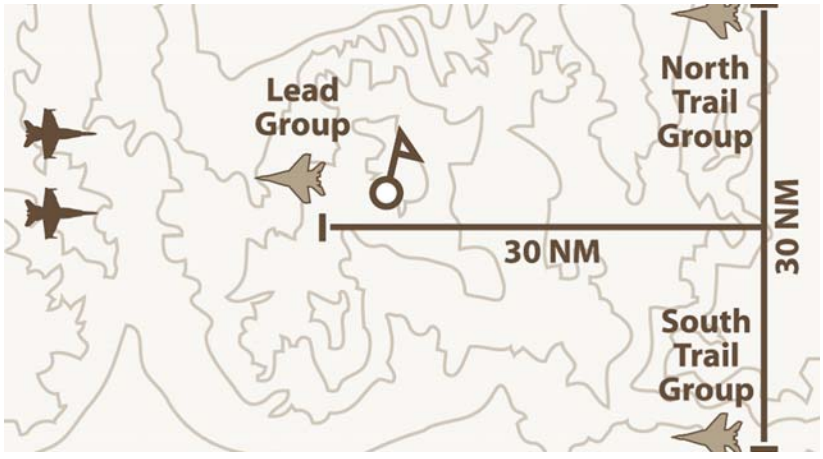


Figure 6 "Ghost, three groups, vic, 30 deep, 30 wide. LEAD GROUP depot 270, 10, 15,000, hot, hostile. NORTH TRAIL GROUP 25,000, hot, bogey spades." (break transmission) "Ghost, SOUTH TRAIL GROUP 35,000, hot, hostile."

Figure 7 "Ghost, two groups, azimuth 10, south group at depot 25,000, hot, hostile. North group, STACK, 10,000 and 20,000, hot, hostile."

GROUPs separated in distance along the same line of bearing. Groups' names will be LEAD GROUP/TRAIL GROUP (Figure 3).

Figure 3 "Ghost, two groups, range 20. LEAD GROUP depot 180, 10, 15,000, hot, hostile. TRAIL GROUP 25,000, hot, hostile."

CHAMPAGNE. A picture label of three distinct groups with two in front and one behind. Group names should be NORTH LEAD GROUP and SOUTH LEAD GROUP or WEST LEAD GROUP and EAST LEAD GROUP and TRAIL GROUP (Figure 4).

Figure 4 "Ghost, three groups, champagne. 20 wide, 20 deep. NORTH LEAD GROUP depot 360, 10, 15,000, hot, hostile. SOUTH LEAD GROUP 25,000, hot, bogey spades." (break transmission) "Ghost, TRAIL GROUP 35,000, hot, hostile."

LADDER. Picture label with three or more groups on the same azimuth but separated by range. Group names should be LEAD GROUP, MIDDLE GROUP, and TRAIL GROUP. (Figure 5).

Figure 5 "Ghost, three groups, ladder, 30 deep. LEAD GROUP depot 270, 10, 15,000, hot, hostile. MIDDLE GROUP separation 15, 25,000, hot, bogey spades." (break transmission) "Ghost, TRAIL GROUP, 45,000, hot, hostile."

VIC. Picture label with three groups with the single closest in range and two groups, azimuth split, in trail. Group names should be LEAD GROUP and NORTH TRAIL GROUP and SOUTH TRAIL GROUP or EAST TRAIL GROUP and WEST TRAIL GROUP. (Figure 6).

Figure 6 "Ghost, three groups, vic, 30 deep, 30 wide. LEAD GROUP depot 270, 10, 15,000, hot, hostile. NORTH TRAIL GROUP 25,000, hot, bogey spades." (break transmission) "Ghost, SOUTH TRAIL GROUP 35,000, hot, hostile."

5. BOX. Picture label with groups in a square or offset square. See CHAMPAGNE and VIC for group names.

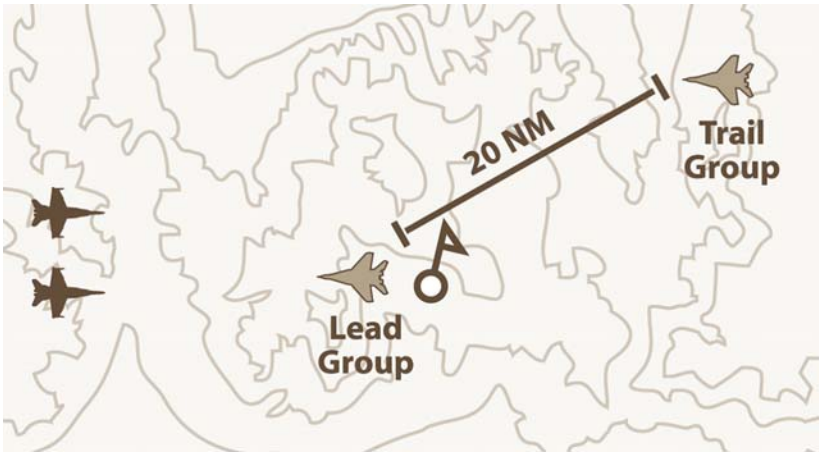
Stacks and Echelons

STACK — Two or more CONTACTs within GROUP criteria with an altitude separation in relation to each other. STACKs exist within individual groups. Expect to hear from AIC, for example, "Ghost, single group STACK, wake 090, 10, 15,000 and 25,000, hot, hostile." Or from a fighter, "Showtime 11, single group, STACK, low contact 10,000." (This may occur if AIC sees a group at 25,000.) The separate stack elements should be referred to as HIGH CONTACT and LOW CONTACT. Therefore, fighters will be targeting CONTACTS vice ARMS. A minimum of ten thousand feet should exist before this term is used (Figure 7).

Figure 7 "Ghost, two groups, azimuth 10, south group at depot 25,000, hot, hostile. North group, STACK, 10,000 and 20,000, hot, hostile."

ECHELONS (sub-cardinal direction). Picture label describing GROUPs aligned behind and to the side of the closest GROUP.

Figure 8 "Ghost, two groups, range 20, ECHELON northeast, LEAD GROUP…"



Instead of being used as a picture label, ECHELON will now serve as a fill-in to a RANGE, AZIMUTH, WALL, or LADDER. Of note, TOPGUN recommends that sub-cardinal, rather than cardinal, directions be used to supplement ECHELONS (i.e., only use northeast, northwest, southwest, and southeast) (Figures 8, 9, and 10).

Figure 8 "Ghost, two groups, range 20, ECHELON northeast, LEAD GROUP…"

Figure 9 "Ghost, two groups, azimuth 20, ECHELON northeast, SOUTH GROUP…"

Figure 10 "Ghost, three groups, ladder, 20 deep, ECHELON northeast…"

Fighters and controllers should conduct a thorough review of the latest ALSA multi-Service Brevity manual. A copy can be found at https://lad.dtic.mil/alsa/. Using the phone directory at the back of the NSAWC Journal, you may contact members of the NSAWC staff if you have any questions about the recommendations discussed in this article, or any questions regarding the complete version of this article in the NSAWC Journal. Providing us with potential snags and lessons learned will help us conduct a smooth transition to the new communications.

We all know that change is typically disconcerting for the warfighter, but adaptation, flexibility, and perseverance are the requirements for a modern warfighter. The successful consolidation of two communication standards will open up the battlespace to fighters and controllers from all services.

Based on warfighter requests, ALSA initiated an early revision to the Feb 2002 multi-Service Brevity Codes (Brevity) publication. The January 2003 Brevity Joint Working Group at NAS Fallon was empowered by the Services and by the NSAWC and AWFC Commanders to ensure a common language for joint operations. Superb cooperation and teamwork among the Service experts resulted compromises by all sides to reach the goal of a single, common language. A total of 8 terms were deleted, 96 new terms were added, and 63 terms were modified in the latest version of Brevity, which is due for signature in Jun 2003. A Brevity revision is planned every two years due to the fielding of new equipment and the dynamic nature of tactics.

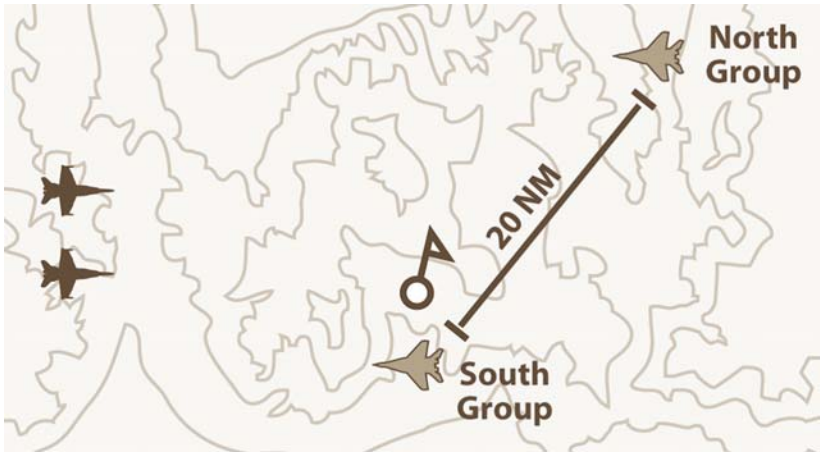


Figure 9 "Ghost, two groups, azimuth 20, ECHELON northeast, SOUTH GROUP…"

[1] LT Hill's article in the *NSAWC Journal* (Spring 2003, pages 6-11) provides in-depth explanations of new brevity code changes, includes amplifying information, and examples of tactical usage.

[2] Sections of Lt Hill's article have been omitted as *Brevity* now has a "restricted distribution" classification. For a complete list of deleted, changed and new brevity terms, refer to the ALSA *Brevity* publication (FM 3-54.10, MCRP 3-25B, NTTP 6-02.01, AFTTP(I) 3-2.5).

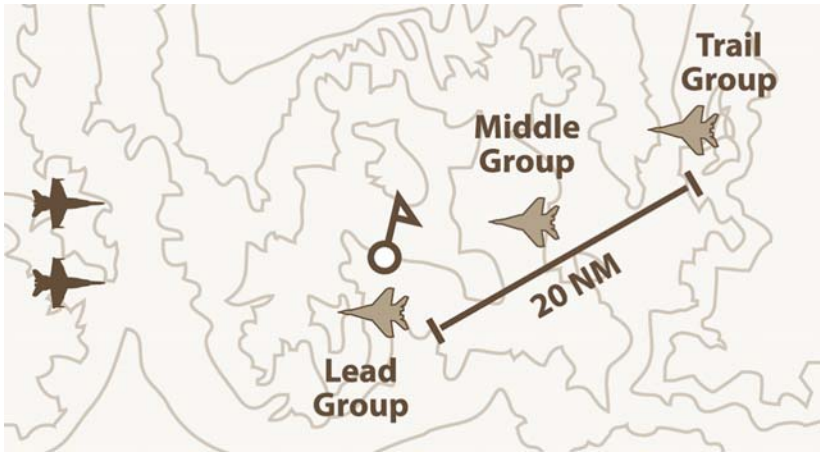


Figure 10 "Ghost, three groups, ladder, 20 deep, ECHELON northeast…"

FRATRICIDE - THE ULTIMATE COST OF JOINT INTEROPERABILITY FAILURE

A blast erupts from a 155mm, high explosive round fired from a M109A6, medium self propelled howitzer during Operation Iraqi Freedom (OFI). Friendly fire fatalities in the World Wars were largely due to indirect fires. Of the five million French casualties in World War I, artillery caused two-thirds. French General Alexandre Percin believed that French artillery fire caused one million, or 20 percent of French casualties.

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FORWARD MARINE BASE, Afghanistan, Dec. 5, 2001 — Three US Special Forces soldiers were killed and 20 injured in Afghanistan today when a 2,000-pound "smart bomb" missed its Taliban target north of Kandahar and exploded within 100 yards of the American forces and a group of opposition fighters. The Pentagon offered no immediate explanation for the deadliest "friendly fire" incident of the war…. [O]ne theory gaining attention is that the coordinates of the Special Forces troops who called in the airstrike were mistakenly loaded into the satellite-guided bomb, instead of the coordinates for the Taliban forces they were attacking (Morello&Loeb:A1).

INTRODUCTION

Elimination of fratricide in war is arguably an impossible task, but the Services have yet to support a true "joint" approach to alleviating friendly fire casualties. Currently, there is no universal system for either target identification or identification of friendly forces. The problem is largely due to insufficient training, inadequate integration of Service systems, and outdated tactics and doctrine. "The problem (is one) that falls between the services – in this case, primarily Army ground troops and Air Force and Navy fliers – and therefore a matter that is not the immediate responsibility and priority of any single service bureaucracy" (Wood:18). In the absence of a strong proponent for fratricide prevention, each Service expects the others to take the lead in resolving acknowledged shortfalls in adapting training, doctrine, and acquisition strategy to protect ground forces from friendly fire. Only a true "joint" approach to the problem can overcome Service reluctance to change. To initiate close air support (CAS) interoperability reform in an age of increasingly high-technology weaponry, the military must establish a single entity as the principal agent for fratricide prevention. The Secretary of Defense should charge U.S. Joint Forces Command (USJFCOM) with the responsibility to refine joint CAS doctrine, improve joint CAS training, and develop a common positional picture to reduce fratricide.

Fratricide and the Technology Revolution

Fratricide is not a new phenomenon, but as modern media brings play-by-play coverage of warfare to America's living rooms, reducing its likelihood takes on new importance. Loss of American life, and worse, the failure of the armed Services to safeguard their forces, poses a significant threat to what may well be the United States' most important center of gravity, the nation's will to fight. A brief summary of fratricide in the twentieth century illustrates that increased reliance on technology has inadvertently increased the relative significance of fratricide, if not the actual percentage of self-inflicted casualties.

Twentieth-Century American Fratricide

Friendly fire fatalities in the World Wars were largely due to indirect fires, the inadvertent result of artillery shelling friend and foe alike, and of bombers loosing their ordnance on locations held by friendly forces.

Of the five million French casualties in World War I, artillery caused two-thirds, regardless of friend or foe. French General Alexandre Percin believed that French artillery fire caused one million, or 20 percent of French casualties. During the breakout

from Normandy in the Second World War, British aircraft inadvertently bombed the 30th Division for over two days, killing, among others, American Lt. Gen. Leslie J. McNair. At the Battle of the Bulge, the First Infantry Division became the target of heavy "friendly" bombing. In St. Lo, over 750 casualties occurred as a result of U.S. bombers attacking American ground forces (Doton:3).

American forces fighting in both Korea and Vietnam suffered friendly indirect fires from new ordnance. American deaths due to napalm dropped by American planes in both theaters received prominent media attention and helped fuel the antiwar movement.

Though casualties were low in both Grenada and Panama, incidents of fratricide represented between 10 and 15 percent of all American casualties. In Grenada, four Navy A-7 Corsair aircraft strafed a U.S. Army command post, inflicting 17 American casualties (Doton:3). That tragedy highlighted the Services' failure to establish a common positional picture. Each Service brought its own maps and map systems to the fight. The ground forces were unable to accurately describe a point on the ground to the supporting pilots. Air, ground, and sea Services planned and operated using separate maps referenced to three distinctly different coordinate systems. Accustomed to large-scale maps depicting terrain in familiar grids, Army units deploying from Fort Bragg used maps constructed by the Army's 100th Engineer Company (Cartographic), from a tourist map with an arbitrary grid overlay. Despite pictures of palm trees in the margins, the map was excellent. Constructed by British military engineers, the base map included highly accurate survey data replete with topographic contours. The American Army engineers merely added black grid lines for ground troops to use as a grid reference system.

While this worked well for the Army, coordinates from the gridded overlay were useless to any combatant without a copy of the modified tourist map. Some historians link the strafing of the U.S. Army command post to this lack of a common positional picture. "Ground units experienced difficulty in orienting themselves and in directing supporting gunfire and airstrikes. [This] inadvertent airstrike…has been blamed partly on this chart confusion problem" (Rivard:24). The failure to create a common reference for planning highlighted the Services' utter lack of attention to planning the joint fight. The "tourist map" debacle merited considerable media attention, providing further grist for 1986 Goldwater-Nichols Act proponents. After Grenada, Congress tasked the Services to improve interoperability for the next war. This "next war" promised to test both the Services' ability to fight jointly and their ability to integrate rapidly evolving high-technology weaponry.

Fratricide in the Age of Technology

The first "high-technology war," Operation DESERT STORM, proved to be a showcase for the weapons designed and built during the Reagan years. Experts lauded the performance of the high-technology systems used during the conflict. Confident in the superiority of American weapons systems, the American public watched in satisfaction as precision-guided munitions flew through the streets of Baghdad to impact their targets. However, the deadly precision of high-technology weaponry had an unexpected side effect: the fratricide rate for the Gulf War exceeded that of all previous conflicts in this century (Doton:4). Combat forces used reconnaissance technology capable of detecting targets at previously unattainable ranges. Beyond visual range technology recognized the existence of potential targets significantly smaller than one pixel on sensor displays, thereby making positive identification of the nature of the target nearly impossible (Doton:7). "Differentiation between friend or enemy leapt beyond the capability of the 'sensor-aided eyeball'" (Demonte:35). The American public, well versed in the superiority of American weapon systems, demanded an explanation for the friendly fire deaths – and a solution. Though national will to support the fight in the Gulf War never wavered, politicians and military leaders got the message that friendly fire deaths must be reduced in future conflicts.

The Army and the Air Force launched significant campaigns to identify the causes of fratricide and to leverage American technology to reduce its likelihood and effects. While the U.S. technology sector evolved dramatically successful methods for acquiring targets at long distances, the newest initiatives to aid shooters in positive combat identification

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lagged behind. The Services pursued new identification of friend or foe (IFF) technology separately, relying on communications systems that did not always interface well with those of other Services (Doton:13). In addition, IFF implementation proved to be extremely expensive. Current Army initiatives in millimeter wave technology promise solid solutions in the near future, but come with a staggering price tag. At $1000 per application, completely outfitting a division will cost approximately $250 million (Doton:12).

Despite significant efforts resulting in multiple-Service initiatives to improve the situation, recent events in Afghanistan imply that the Services have yet to reduce the likelihood of friendly fire casualties. Nearly a decade after the Gulf War, the rapid evolution of weapons technology continues to outpace the U.S. military's capability to positively differentiate between friend and foe, and to accurately identify the precise location of desired targets to the weapons systems that deliver modern munitions.

The U.S. military has made significant improvements to munitions in the past ten years, and has changed its delivery strategy.

For all the breathless headlines at the time, precision weapons during the Gulf War were still a niche specialty. Only about 10 percent of the bombs dropped in the Gulf War were precision-guided, meaning they could sense and hit a target dot from a laser beam, or could pick up signals from a global positioning system (GPS) satellite. By contrast, 90 percent of the bombs dropped in Afghanistan have been precision munitions (Ricks:A1).

In the first six months of the Global War on Terrorism, the U.S. military rained ordnance upon the Afghanistan battlespace, hitting intended targets with unprecedented precision. From aging bomber aircraft flying extremely long ranges, satellite-guided bombs carried the war on terrorism to Al Qaeda forces hiding in caves and mountain fortresses. For the first time, American pilots were dropping the majority of their ordnance "on coordinate" without obtaining "eyes on target" combat identification. This increased reliance on the accuracy of target information increases our reliance upon the human-technology interface.

This newest version of American combat uses the 1950s-era, eight-engine B-52 Stratofortress bomber as a precision weapons system. The high-cost, laser-guided munitions covered extensively by CNN during the Gulf War have evolved into lower-cost weaponry guided to target by the GPS satellite constellation. "In Afghanistan, the centerpiece of the air campaign is the Joint Direct Attack Munition (JDAM), a kit that makes dumb bombs smart by attaching a GPS system and tail fins that can guide a bomb 10 miles from aircraft to target" (Ricks:A1). In the view of Air Force Lieutenant General Charles F. Wald, the commander of early air operations in Afghanistan, the high-technology weaponry was largely responsible for clearing the way for the Northern Alliance's success in the vicinity of Mazar-e-Sharif in November 2001 (Ricks:A1).

Despite the apparent success of JDAM, increased reliance on bomb-on-coordinate weaponry raised concerns about fratricide that were justified on 26 November 2001, when a U.S. Navy F/A-18 Hornet strike fighter dropped a satellite-guided 500-pound bomb in the vicinity of Mazar-e-Sharif from 15,000 feet, wounding five American troops on the ground. The tragedy of fratricide was repeated less than two weeks later when a B-52 dropped a 2,000-pound "smart bomb" that exploded within 100 yards of American and Northern Alliance forces on 5 December 2001. The cost this time was three American and 23 Northern Alliance fatalities, and about 50 injuries (PPT:8).

The shift to bombing on coordinates as a primary means of CAS delivery was not formally adopted by the Services prior to use in Afghanistan. The process was largely untested by joint forces before combat began. Lack of joint tactics, techniques, and procedures (JTTP), interoperability issues, and communications problems plagued air-to-ground coordination until field expedient measures were designed and adopted by Service members forced into joint operations with little training.

USCENTCOM asked the U.S. Army Safety Center to conduct an investigation into the causes of the 5 December 2001 fratricide incident. The Safety Center concluded that the tactical air control party supporting the ground operations, unfamiliar with the operation of a laser range finder, mistakenly

transmitted his own coordinates as the target coordinates (PPT:61). The Army Safety Board identified several action items and requested increased Air Force efforts to resolve shortfalls in adapting training, doctrine, and acquisition strategy (PPT:61-73). The report does not mention the failure of the U.S. military to integrate Service systems. In effect, the U.S. Army Safety Center does not "action" any requirement to redress that part of the fratricide problem that "falls between the Services." Thus, the potential for recurrence of fratricide in Afghanistan remains high. Even worse, should the U.S. military engage in combat operations against an enemy that has the capacity to mount a credible air threat against U.S. assets, the resulting "fog of war" will dramatically increase the potential for high numbers of American casualties attributable to fratricide.

RECOMMENDED CHANGES

Current joint doctrine, JTTP, and training strategies do not adequately address the increased joint fire support complexity brought about by technological advances in weaponry. The Services do not share a common positional picture, but rather use Service-specific methods to identify both friendly and target combat positions. Finally, no agency has been singled out as the joint proponent for tying these elements together. Therefore, the Secretary of Defense should task USJFCOM to take the lead in resolving these shortfalls.

Establish Joint Doctrine, JTTP, and Realistic Training

Joint doctrine at present fails to treat fratricide directly. References to it are sprinkled throughout many documents, usually as reinforcement for a different point or issue. Joint Publication (JP) 3-09, *Doctrine for Joint Fire Support*, lists the causes of fratricide as "target misidentification, target location errors, target locations incorrectly transmitted or received, and loss of situational awareness by controllers or aircrew or requestor" (JP 3-09:IV-13). This list appears almost verbatim in JP 3-09.3, the JTTP for CAS, with the added requirement to make every effort possible at correct identification of friendly and enemy forces (JP 3-09.3:I-2). In past instances of eyes-on-target CAS, this made sense, and was often aided by target marking techniques. However, with CAS conducted from distances and altitudes that preclude visual target identification and confirmation by supporting aircrews, accurate target coordinates and their positional relation to friendly forces are now center stage.

The Joint Warfighting Center conducted an assessment of JP 3-09.3 in September 2000. They found in a report dated 01 December 1995 that JP 3-09.3 was in need of revision to accurately portray the current philosophy, terminology, capabilities and JTTP as they apply to CAS. The Joint Staff J-3 directorate was assigned as the Joint Staff doctrine sponsor with the U.S. Marine Corps as the lead agent for revision of JP 3-09.3 (MSG: 1). That revision continues, and a revised second draft dated 25 February 2002 is currently in circulation for review. This draft discusses GPS-guided weapons and their potential dangers to friendly forces more fully, yet does not call for a universal system of defining geographic positions or methods of communicating them from the requestor to the shooter. Instead, the requirement remains for CAS delivery platforms to use the systems and communications nets of the CAS requestor.

The two multiservice tactics, techniques, and procedures (MTTP) developed by the Air Land Sea Applications Center, *Joint Fire* and *Theater Air Ground System*, are useful and informative, yet they too suffer from failing to keep up with technological change. These MTTP, coordinated at Service level, are hierarchically lower than JTTP and require less scrutiny and review prior to publication. The most recent of these is now almost four years old, and contains no reference to GPS-aided weapons.

JTTP must often be developed by the warfighters "on the fly," without adequate doctrine, especially joint Service doctrine that aids warfighters seeking to overcome Service interoperability conflicts. Sufficient joint training is rarely accomplished to test new JTTP prior to real world deployment.

While the use of precision-guided munitions is increasing, problems in close air support persist. Experienced pilots and ground controllers say this is largely due to insufficient training, inadequate communications and night vision gear, and outdated tactics and doctrine…. In an interim report in October 2000, the Joint Close Air Support Study reported that in 22 exercise battles

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USJFCOM must take the lead in encouraging the Services to commit to the establishment of a common positional picture to ensure that warfighters in the air and warfighters on the ground can communicate target information rapidly and accurately.

involving 218 close air support missions, there were major problems in planning, coordination, training, and equipment…. Fewer than half of all ground-control teams conducted realistic training with ground troops present (Wood:18-19).

Joint training receives low priority, as Services tend to prefer training that emphasizes their core capabilities successfully. Thus, when bombs fall at the National Training Center, communications and other interoperability shortfalls have been resolved long before the pilots engage targets. This is not so in combat.

Establish a Common Positional Picture

Differing geographic coordinate datums, formats, and the transformations and conversions required to ensure that the shooter has the correct data are the primary contributors to the degradation of the accuracy of target-friendly positional picture. Each Service has acquired multiple systems for aiding the warfighter in describing and communicating geodetic positions, and interoperability of these systems is often lacking. USJFCOM must take the lead in encouraging the Services to commit to the establishment of a common positional picture to ensure that warfighters in the air and warfighters on the ground can communicate target information rapidly and accurately. To achieve maximum accuracy, the Services must review both acquisition strategies and interoperability issues with a goal of establishing standard, National Imagery and Mapping Agency (NIMA) approved datum, coordinate format, and transformation algorithms.

The CJCS addressed the datum issue with CJCSI 3900.01A, Position Reference Procedures, specifying the World Geodetic System 1984 (WGS-84) as the standard for joint operations. However, this policy gives CINCs the flexibility to authorize use of other datums as circumstances dictate, as long as map users record and transmit the source datum for all coordinates (CJCSI 3900.1A:1-2). One reason for preserving the CINC's option to use nonstandard datums is that local maps are often the best available. Conversion of these maps to WGS-84 is costly and time consuming. In addition, multinational operation partners often are familiar with the local maps, and training in combat becomes a new issue (JP 2-03:II-3). The Secretary of Defense should task USJFCOM to identify potential interoperability issues now, and take the lead in resolving inter-Service issues.

Different Services, and even different weapons platforms within the same Service, use a variety of coordinate formats. A working knowledge of different formats is often lacking between Services, which may induce error and/or delays to mission accomplishment. Ground forces are most familiar with the Universal Transverse Mercator (UTM) projection as operationalized in the Military Grid Reference System (MGRS). Naval and air forces use geographic coordinates in latitude-longitude format. There is a wide difference in format between these systems (Table 1). A number of computer applications can convert between formats accurately. GPS receivers can also convert from one format to another, though most users do not train for such tasks and may be unaware of that capability (JP 3-09.3:IV-6).

Coordinate Type	Format
UTM/MGRS	11T AA12345678
Geographic	DD-MM-SS (degrees-minutes-seconds)
	DD-MM.DM (decimal seconds to 2 or 3 digits
	DD-DDD (decimal minutes to 2 or 3 digits

JP 3-09.3 states, "[W]hen supplied with GPS coordinates by terminal controllers, computed deliveries can be extremely accurate" (JP 3-09-3:IV-8). This implies that GPS coordinates can always be trusted as accurate, which is not the case. There is no requirement stated in the doctrine for NIMA-approved conversion algorithms. Many units have acquired commercial off-the-shelf GPS receivers that have not been tested by NIMA for accuracy and, in fact, accuracies of commercial systems vary widely. Different weapons systems employ different transformation algorithms, which can induce degradation of accuracy due to rounding and approximations. Without standardization and a lead agent, America's warriors are not fighting with a common positional picture, despite technological advances.

The addition of new, high-technological systems in series also increases the potential for error. The primary means in use for determining CAS target location is the combination of a GPS receiver and a range

finder (usually laser). The laser range finder determines azimuth, range and elevation of the target referenced to the viewer's position. That data is then fed into the GPS, which computes the target coordinates. Primary sources of error are obscurants (dust, smoke) between viewer and target, which spoof the range component, and azimuth errors produced by magnetic anomaly effects on the range finder's compass. While users can compensate for these errors to some degree, positional accuracy of both target and friendly forces cannot be guaranteed.

Some method of crosschecking the data should exist to compensate for questionable accuracy. Logically, crosschecking requires either a human or machine comparison of computed target coordinates to friendly coordinates. In this area, joint doctrine is silent. Existing formats for requesting CAS such as the CAS "nine line" request, the abbreviated nine line request, and the Joint Target Airstrike Request provide fields for target coordinates, but no field for own/friendly coordinates (ALSA:17, JP 3-09.3:C-1). USJFCOM should restudy these issues and establish such a requirement.

The introduction of armed unmanned aerial vehicles (UAV) during Operation ENDURING FREEDOM further exacerbates an already dangerous CAS climate. Future technological developments will most certainly lead to increased use of UAV in an offensive role in those situations where the risk of losing aircrew and expensive combat aircraft assets is great. The USAF is currently evaluating such technologies as three-dimensional imaging flash radar seekers, IFF algorithms, new and improved types of warheads, and mid-course guidance packages that integrate a GPS receiver with an inertial navigation system for use on armed unmanned combat vehicles (JIDR:6). In these CAS systems of the future, CAS developers must adapt current and future technologies so that friendly force position is determined accurately and transmitted real-time to the shooter. This becomes even more relevant without a human in the cockpit to add that all-important and final sanity check as to friendly positions on the ground before weapons are launched.

The USMC is planning to acquire another system that could prove to be an additional part of the answer in aiding the elimination of fratricide, the Combat Situational Awareness System (CSAS). CSAS uses radio frequencies, laser, ultra-wideband and digital Internet technologies to achieve battlefield situational awareness with global reach via satellite and ground communications (Tiron:27). The USAF Modeling and Instrumentation Agency is conducting a separate research and development project to validate the compatibility of CSAS with airborne, ground vehicle, and dismounted soldier positioning systems currently in use.

Establish Responsibility

USJFCOM's mission statement asserts that the organization is the chief advocate for "jointness" and that, as such, USJFCOM maximizes the nation's future and present military capabilities through joint concept development and experimentation, recommending joint requirements, advancing interoperability, and conducting joint training. As the U.S. military's designated joint force trainer, it is imperative that it take the lead in all aspects of joint CAS, in order to adapt to ever-increasing technological advances while protecting friendly forces on the ground. Once the revision to JP 3-09.3 is published, USJFCOM should immediately take steps to implement these changes across all Service lines. Service parochialisms, which may have in the past exacerbated the confusion inherent in the chaos of CAS, must be eliminated so that a true joint CAS doctrine can be implemented.

CONCLUSION

USJFCOM should expand joint doctrine and JTTP to include more indepth coverage of fratricide-producing pitfalls. It should also restudy JP 3-09 to address the subject at a general level, directing readers to JP 3-09.1 and JP 3-09.3 for the indepth discussion. USJFCOM should implement modification of CAS request forms to standardize a target coordinate reporting format, include coordinate datum, and friendly location coordinates. Finally, USJFCOM should devise joint training that requires the Services to operate as they do in war.

The men and women on the ground who require CAS are owed every possible consideration for their survival, safety and peace of mind. CAS, by the very nature of the operations involved, will always subject friendly

As the U.S. military's designated joint force trainer, it is imperative that [USJFCOM] take the lead in all aspects of joint CAS, in order to adapt to ever-increasing technological advances while protecting friendly forces on the ground.

forces on the ground to some degree of risk. The management of that risk is the most important aspect that must be considered in all occasions in which a joint force commander chooses to employ CAS as an option.

All CAS participants must train under the same exacting guidelines to add the level of protection required for ground forces. Participants must know procedures cold…on that there can be no compromise. Precise determination of target location and friendly force positions is essential; there can be no doubt as to their validity prior to weapons release. USJFCOM must test, evaluate, and share new technologies across Service lines to ensure that CAS works to the fullest extent possible. Even one more friendly fire casualty due to faulty targeting is too high a price to pay when the solution to the problem appears to be readily at hand.

President Bush has repeatedly warned the American public that the war on terrorism has human costs. His steely visage and patriotic words televised during the State of the Union address encouraged Americans to bravely bear the small number of casualties experienced in Afghanistan to date. Undoubtedly, public support for the President remains high, which seems to indicate that the number of casualties is still bearable. Should the U.S. military continue to prosecute the Global War on Terrorism with existing CAS doctrine and JTTP, additional fratricide will have a negative impact on the American will to fight. To reduce that potential, USJFCOM must take action by expanding joint doctrine and JTTP.

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EXPLOSIVE ORDNANCE DISPOSAL - THE JOINT EOD TASK FORCE CONCEPT

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The following three vignettes are taken from the Countermine/Counter Booby Trap center UXO Operation Desert Shield and Operation desert Storm Lessons Learned Handbook. They illustrate the need for not only cooperation between EOD and Engineers but also a joint focus on responsibilities and handling of UXOs on the battlefield. This article will try to explain the appropriate terms and definitions associated with unexploded ordnance and booby traps and suggest an equally appropriate organization to handle the problems identified.

Unexploded Ordnance (UXO)

OBSERVATION: The large amount of UXO found in Iraq and Kuwait caught Allied forces by surprise. Combat engineers with limited training were tasked to clear large areas of UXO. Lessons from past conflicts were not learned leading to unacceptable casualties among our soldiers, allies, and civilians.

DISCUSSION: UXO are military munitions, such as tank and artillery rounds, bombs or bomblets, submunitions, missiles, and rockets, that have failed to detonate by malfunction or design (commonly called duds). The following tasks must be performed when a potential for UXO exists: prediction, identification, marking, reporting, and removal.

Most of the UXO found during Operation Desert Storm were either Cluster Bomb Unit (CBU) submunitions dropped by Air Force bombers or Field Artillery Dual-Purpose Improved Conventional Munition (DPICM). Both of these munitions had dud rates ranging from 2 to 10 percent (4 to 6 percent was deemed acceptable during development of the munitions). UXO "footprints" (areas of possible UXO concentration) were not tracked and therefore were not available to mobility planners. UXO concentration information was only available when reconnaissance units came upon CBUs and DPICMs. The need to gather UXO information was not specified in maneuver unit reconnaissance collection efforts.

Adequate training in the identification of UXO was not conducted before the ground assault. Training aids, such as inert devices, booklets, and posters, were not available until after the cease-fire. Some soldiers picked up and moved UXO, which caused casualties. Vehicle operators drove into UXO areas, not knowing UXO was scattered on the ground.

There were no standard marking systems in place before the start of the ground war. Once UXO areas were identified, marking normally consisted of tape and U-shaped pickets around the area. Some individual munitions were also

Soldiers from the 707th EOD Co policed up or blew-in-place approximately 25, 122mm and 125mm tank rounds, an assortment of RPG-7 rockets, and also numerous 23mm rounds. (Army photo by Sgt. Jeremiah Lancaster)

Soldiers from the 535th Engineer Company, out of Grafenwoher, Germany, walk through an empty lot to locate UXO's in As Salam, a suburb of Baghdad on May 21, 2003. (Army photo by Sgt. Jeremiah Lancaster)

marked with tape. Current minefield-marking systems were inadequate or not available, forcing units to use field expedients. Marking was critical due to shifting sands covering and uncovering the UXO areas. Not all UXO concentrations were marked by US forces before departing Iraq and Kuwait, leaving dangerous areas for the civilian populace.

Confusion existed as to the reporting procedures for UXO through higher headquarters (HQ) to explosive ordnance disposal (EOD) teams. Some units reported UXO using the scatterable mine reporting formats, others created their own. Some areas were cleared or marked but not reported. Some were reported but not marked or cleared.

The amount of UXO overwhelmed EOD assets. EOD teams were not available in adequate numbers to clear large areas of UXO, causing maneuver units to task supporting combat engineers to mark and clear large areas of UXO under the technical guidance of EOD. Engineers cleared areas using manual techniques, such as demolition "pop and drop." This technique uses a block of explosive primed with a nonelectric igniting system. The fuze lighter was pulled or "popped" and the explosive dropped near the UXO, causing a detonation. Mechanical memis, such as the M9 ACE, were used to push soil-containing UXO out of the way. Some engineers were killed when they failed to use common sense or ask for or follow EOD guidance.

RECOMMENDATION: The magnitude of UXO on the modern battlefield must be considered in planning maneuver operations. The UXO problem is not just an engineer or ordnance problem. It is an Army, Joint, and Allied problem. Army doctrine calls for maneuver forces to attack through areas contaminated with duds left over from aircraft and artillery preparatory fires. This means that we will continue to face UXO as we maneuver and sustain our forces on future battlefields.

Deficient Engineer Training in UXO and Mine Neutralization

OBSERVATION: Engineers appeared lacking in proper methods to be used for large scale mine clearing or unexploded ordnance (UXO) handling.

DISCUSSION: Incorrect or incomplete training in mine neutralization techniques and the handling of UXOs will place engineer soldiers at great risk of injury and death. U.S. Army engineers are trained to neutralize mines by placing explosives within six inches of the mine body. Detailed procedures are not normally taught, especially for handling scatterable or foreign mines. Additionally, the field manuals in use do not contain up-to-date recognition guides or reflect techniques for handling state-of-the-art mines. Explosive ordnance disposal (EOD) personnel are given much more thorough training and are normally given the primary mission of clearing UXOs. Within a combat area of operations, insufficient EOD personnel may be available to handle all UXOs, thus requiring engineers to perform some mine clearing. During Operation DESERT STORM, engineers became casualties as a result of using incorrect procedures to clear U.S. unexploded scatterable mines.

Mines and Unexploded Ordnance (UXO)

Unexploded Ordnance (UXO).

Discussion. : UXO from Air Force and artillery munitions proved to be a major hazard on the battlefield, particularly for Ml13s and wheeled vehicles. For example, at the end of the 89-hour war for 1st Armored Division we had approximately two KIA and 34 WIA. 24 hours later, we had another 1 KIA and 30 WIA from UXO, mainly from artillery Dual Purpose Improved Conventional Munitions (DPICM). By way of example, there are 644 sub-munitions in one Multiple Launched Rocket System (MLRS) DPICM round. The dud rate was estimated to be between four to nine percent, possibly due to extremely high winds (often in excess of 40 knots) and the sandy soft ground surface. In the last battle at objective Denver (against the Madinah Division of the Republican Guards Forces Division) there were

about 1000 rounds of MLRS DPICM fired (not counting 8inch and 155mm DPICM artillery rounds). Thus there were possibly between 26,000 and 57,000 UXO (from MLRS alone) on the objective, explaining the high casualty rate from UXO. The division moved one day later and the casualty rate immediately plummeted.

Recommendation: The dud rate for DPICM has implications for doctrine in terms of marking areas in which missions have been fired. There is also an issue in doctrine for who has responsibility for destroying these types of UXO on the battlefield. Explosive Ordinance Demolition (EOD) Teams do not exist in sufficient quantities in the division area to handle the problem themselves. Engineers will need to become involved in UXO destruction on the battlefield in many instances. Delineation of responsibilities in calibers, fuses, and munitions type and areas need to be resolved. EOD and Engineers must work together to decide doctrine for UXO on the modern battlefield.

Transition to Today.

One of the central themes discussed in the vignettes state "there are not enough EOD to handle the problems the battlefield." This was not true then and it is certainly not true now. The problem is there is no focus or unity of effort of available EOD assets. All services EOD attend the same training and have the same basic mission regardless of service specific duties. During Operations Desert Shield and Desert Storm AF and Marine EOD performed operations to assist both Army and Marine units. However these joint EOD operations were done a low levels and there was no higher organization to focus, oversee and de-conflict missions.

Events during Desert Storm and Afghanistan in the area of unexploded ordnance, booby traps, improvised explosive devices and captured enemy ammunition have blurred lines of responsibilities between the Engineers and EOD. UXOs, booby traps and how to handle them and appropriate training is still a subject of much debate still. Troops in Afghanistan are still encountering the same issues and problems stated and observed during Operations Desert Shield and Desert Storm.

First understand that EOD is not a Combat Service Support (CSS) force. EOD is a maneuver/combat support force that happens to be in the Ordnance Corps, which are traditionally CSS organizations. Having cleared that up, the next step is definitions and standardization of terms.

There is a misuse of terms and proper use is required to ensure all parties understand the various roles between Army Engineers and EOD. All definitions in this document are from the above-mentioned publications or DOD Dictionary of Military and Associated Terms.

The below following terms are provided for standardization and understanding of roles, responsibilities and definitions. The below terms are from Multi-Service Procedures for Unexploded Explosive Ordnance Operations (UXO), (FM 3-100.38, MCRP 3-17.2B, NTTP 3-02.41 (Rev A) AFTTP (I) 3-2.12) dated August 2001.

EOD Mission: The U.S. Army EOD mission is to support the JFC by providing the capability to neutralize hazards from conventional UXO, NBC, and associated materials, and IED (both explosive and NBC), that present a threat to operations, installations, personnel and/or materiel. Army EOD forces can also dispose of hazardous foreign or U.S. ammunition, UXO, individual mines, booby-trapped mines, and chemical mines. EOD provides the Army with a rapidly deployable support package for the elimination of hazards from UXO in any operational environment. The EOD force neutralizes UXO that is restricting freedom of movement and denying access to supplies, facilities, and other critical assets. Army EOD forces equip, train, and organize to support tactical land forces across the spectrum of operations.

Engineer Mission: The five primary engineer functions are mobility, countermobility, survivability, general engineering, and topographic engineering. The specific engineering missions concerning UXO are breaching, clearing, and proofing minefields. In extreme high-operational tempo or high-intensity combat missions, U.S. Army engineer or other non-EOD units may conduct limited reduction or clearing of non-mine UXO hazards, under the technical guidance of Army EOD forces. During the post-conflict phase, engineers also assist EOD forces in battlefield UXO clean-up operations, as required. JP 3-34, JP 4-04, FM 3-34 (FM 5-100), and FM 3-34.211 (FM 5-116), provide more details on specific engineer units and tasks.

"[T]here are not enough EOD to handle the problems the battlefield." This was not true then and it is certainly not true now. The problem is there is no focus or unity of effort of available EOD assets.

The function of the JEODTF EOD force is to neutralize, defined as performing render-safe procedures and operations, unexploded ordnance (UXO) and improvised explosive devices (IEDs) that threaten operations, facilities, personnel, or material during all Phases of operations.

Minefields and UXO Differentiation. The joint term for UXO includes mines and minefields; however, there are basic differences in how a joint force manages mines and other UXO hazards. This MTTP will differentiate between mine hazards and all other UXO in specific circumstances. This distinction guides the commander's determination of which methods and forces to employ to mitigate the hazards based on the situation. The breaching, reduction, or clearing of land based mine hazards is the responsibility primarily of Army and Marine Corps combat engineer units. The reduction or clearing of all other UXO hazards is the responsibility primarily of EOD units. In rapid operational tempo, high-intensity conflicts, UXO hazards may become mobility obstacles, especially in breaching operations and while establishing critical main supply routes. Combat engineers, or other non-EOD trained personnel, may then be called upon to reduce or clear non-mine UXO hazards, but only on a limited basis and under the direct technical guidance of EOD forces. Because of the greater risks involved when non-EOD trained soldiers are used to reduce UXO hazards, the commander must include—

- Thorough assessments of the risks and control measures available.
- Technical EOD personnel to supervise the execution.
- Detailed pre-execution training on common in-theater UXO hazards and safety procedures.

Joint EOD Task Force (JEODTF). A JEODTF may be formed and jointly staffed as a subordinate JTF controlling (via operational control [OPCON] or tactical control [TACON] of attached units) two or more service component EOD organizations. The JEODTF commander is responsible for making recommendations to the senior JTF (or geographic combatant commander if a senior JTF has not been formed) on the proper employment of EOD and on how to accomplish assigned missions. See FM 4-30.16/MCRP 3-17.2C/NTTP 3-02.5/AFTTP(I) 3-2.32 for additional information on a JEODTF.

During Desert Storm, Operations in Bosnia and Kosovo both AF and Marine EOD worked with their Army EOD counterparts to perform various EOD missions. Informally the JEODTF exists. There is no formal structure for the organization. Below are two concepts for the JOEDTF. One is for joint operations and the other is for Coalition Joint EOD operations.

Proposed JTF-EOD Table of Organization

Line #	*Billet*	*Rank*	*Service*
001	COMMANDER, JTF	O-6	USA EOD
002	DEPUTY CMDR COS	O-5	USMC EOD
003	G1	O-4	USA EOD
004	G2	O-4	USMC
005	G3	O-5	USA EOD
006	G4	O-4	USA EOD
007	G5	O-4	USA CA
008	G6	O-4	USAF
009	RM	O-4	USA EOD
010	NAVY LNO	O-4	USN EOD
011	NCOIC OPS	E-9	USMC EOD
012	NCOIC SUPPORT	E-9	USAF EOD
013	COMBAT ENGR OFF	O-3/4	USA
014	LEGAL COUNSEL	O-3/4	USA
015	FORCE PROTECTION OFFICER	O-3/4	USA
016	OPS NCO	E-6/7	USMC EOD
017	OPS NCO	E-6/7	USA EOD
018	ADMIN CLERK	E-4/5	USA EOD
019	ADMIN CLERK	E-4/5	USMC
020	STANDARD-IZATION OFC	CW2	USMC EOD
021	STANDARD IZATION OFC	CW2	USMC EOD

Proposed CJTF-EOD Table of Organization

Line#	*Billet*	*Rank*	*Service*
001	COMMANDER, JTF	O-6	USA EOD
002	DEPUTY COMDR/COS	O-5	CoalitionEOD
003	G1	O-4	USA EOD
004	G2	O-4	USMC
005	G3	O-5	CoalitionEOD
006	G4	O-4	USA EOD
007	G5	O-4	USA CA
008	G6	O-4	USAF
009	RM	O-4	USA EOD
010	NAVY LNO	O-4	USN EOD
011	NCOIC OPS	E-9	USA EOD
012	NCOIC OPS	E-9	USMC EOD
013	NCOIC SUPPORT	E-9	USAF EOD
014	COMBAT ENGINEER OFFICER	O-3/4	USA

015	LEGAL COUNSEL	O-3/4	USA
016	FORCE PROTOCOL OFFICER	O-3/4	USA
017	OPS NCO	E-6/7	USMC EOD
018	OPS NCO	E-6/7	USA EOD
019	ADMIN CLERK	E-4/5	USA EOD
020	ADMIN CLERK	E-4/5	USMC
021	STANDARD-IZATION OFC	CW2	USMC EOD
022	STANDARD-IZATION OFC	CW2	USMC EOD
023	Ops Officer	0-4	CoalitionEOD
024	Ops Officer	0-4	CoalitionEOD

The function of the JEODTF EOD force is to neutralize, defined as performing render-safe procedures and operations, unexploded ordnance (UXO) and improvised explosive devices (IEDs) that threaten operations, facilities, personnel, or material during all Phases of operations.

Task organization of EOD all Ground EOD forces is crucial to allow for timely and efficient use of a strategic asset in theater. This includes the use of all ground EOD assets (USAF, Marines and coalition) It is necessary to task organize EOD assets under a joint EOD task force to meet the operational needs and ensure unity of effort. The task force coordinates EOD response consistent with the CINCs, ARFOR or Joint Task Force Commander's objective.

The JEODTF is established as the joint EOD task force under the command of Coalition Joint Forces Land Commander. Commander 52d EOD Group can form the nucleus of the JEODTF headquarters. The JEODTF commander has four specified responsibilities: 1) command the 52d Group; 2) perform duties as the EOD Special Staff Officer; 3) on order, establish and assume command of the joint EOD task force (JEODTF); 4) executes EOD operations in a joint environment.

If the JEODTF is not created we will continue to "kick the can down the road" and nothing will change. All efforts to combat UXOs, IEDs, booby traps and other maneuver and force protection challenges will not get resolved timely and efficiently. Just as there exists the need for JTFs for Special Ops and Psychological Operations (JSOTF and JPOTF respectively). The JSOTF and JPOTF handle all aspects of their respective mission and support for a commander. The JEODTF will do the same. There will be one "belly button" to push for all issues previously stated. The JEODTF will eliminate duplicating effort, provide a single POC for all EOD joint operational EOD units making mission decisions and setting priorities that are not currently accomplished at this point. Unless the JEODTF is established all UXOs, IEDs, booby traps and other maneuver and force protection challenges will remain unfocused and fractured. And we will be discussing them again 10 years from now just as we did after Operations Desert Shield and Desert Storm.

References:

Multi-Service Procedures for Unexploded Explosive Ordnance Operations (UXO), (FM 3-100.38, MCRP 3-17.2B, NTTP 3-02.41 (Rev A) AFTTP (I) 3-2.12) dated August 2001.

Multi-Service Procedures for Explosive Ordnance Disposal in Joint Environment, dated February 2001, FM 4-30.16, MCRP 3-17.2C, NTTP 3-02.5, AFTTP (1) 3-2.32.

ALSA PROJECTS UPDATE
CURRENT ALSA PUBLICATIONS

TITLE	DATE	PUB #	DESCRIPTION
AMCI: *Army and Marine Corps Integration in Joint Operations*	NOV 01	FM 3-31.1 (FM 90-31) MCWP 3-36	Describes the capabilities and limitations of selected Army and Marine Corps organizations and provides TTP for the integrated employment of these units in joint operations. The example used is C2 of a notional Army Brigade by a MEF or C2 of a MEB by an Army Corps. **POC: Team F** alsaf@langley.af.mil
ARM-J: *Antiradiation Missile Employment in a Joint Environment* **Classified SECRET**	JUL 02 Will be combined with JSEAD in FY 03 revision; est. APR 03 pub	FM 3-51.2 (FM 90-35) MCWP 3-22.1 NTTP 3-01.41 AFTTP(I) 3-2.11	Describes Service antiradiation missile platform capabilities, employment philosophies, ground/naval emitters, emitter ambiguities, and rules of engagement. Multi-Service procedures for antiradiation missile employment in a joint or multinational environment, with an emphasis on fratricide prevention. Current status: signature draft is approved. It can be found on the SIPRNET at http://wwwacc2.langley.af.smil.mil **POC: Team A**: alsaa@langley.af.mil
AVIATION URBAN OPERATIONS: *Multiservice Procedures For Aviation Urban Operations*	APR 01	FM 3-06.1 (FM 1-130) MCRP 3-35.3A NTTP 3-01.04 AFTTP(I) 3-2.29	MTTP for the tactical-level planning and execution of fixed- and rotary-wing aviation urban operations. **POC: Team E** alsae@langley.af.mil
BMO: *Bomber Maritime Operations* **Classified SECRET**	JUN 00	MCRP 3-23 NTTP 3-03.5 AFTTP(I) 3-2.25	MTTP to inform bomber strike mission participants about typical fleet dispersal, and streamline communications procedures. Conversely, it assists naval strike planners to more efficiently utilize bomber assets and improve joint training opportunities. **Current Status**: Pub will transition to the USN Fall 03. **POC: Team E** alsae@langley.af.mil
BREVITY: *Multiservice Brevity Codes*	JUN 03	FM 3-54.10 (FM 3-97.18) MCRP 3-25B NTTP 6-02.1 AFTTP(I) 3-2.5	A dictionary of multi-Service use brevity codes to augment JP 1-02, *DOD Dictionary of Military and Associated Terms*. This pub standardizes air-to-air, air-to-surface, surface-to-air, and surface-to-surface brevity code words in multi-Service operations. **POC: Team F** alsaf@langley.af.mil
EOD: *Multi-Service Procedures for Explosive Ordnance Disposal in a Joint Environment*	MAR 01	FM 4-30.16 MCRP 3-17.2C NTTP 3-02.5 AFTTP(I) 3-2.32	Provides guidance and procedures for the employment of a joint explosive ordnance disposal (EOD) force. The manual assists commanders and planners in understanding the EOD capabilities of each Service. **POC: Team B** alsab@langley.af.mil
ICAC2: *Multi-Service Procedures for Integrated Combat Airspace Command and Control*	JUN 00 **(Will be reassessed upon publication of JP 3-52)**	FM 3-52.1 (FM 100-103-1) MCRP 3-25D NTTP 3-52.1(Rev A) AFTTP(I) 3-2.16	Provides detailed TTP for airspace C2 to include specialized missions not covered in JP 3-52, *Doctrine for Joint Airspace Control in a Combat Zone.* Includes specific information on interfaces and communications required to support integrated airspace control in a multiservice environment. **Current Status**: Attempting to incorporate information into JP 3-52. Pub will be retained until it is determined information is accepted. **POC: Team D** alsad@langley.af.mil
IDM: *Multi-Service Tactics, Techniques, and Procedures for Improved Data Modem Integration*	MAY 03	FM 6-02.76 MCRP 3-25G NTTP 6-02.3 AFTTP(I) 3-2.38	This publication provides digital connectivity to a variety of attack and reconnaissance aircraft; facilitates exchange of near-real-time targeting data and improves tactical situational awareness by providing a concise picture of the multi-dimensional battlefield. **POC: Team C** alsac@langley.af.mil
IFF: *MTTP for Mk XII IFF Mode 4 Security Issues in a Joint Integrated Air Defense System* **Classified SECRET**	JAN 03	FM 3-01.61 MCWP 3-25.11 NTTP 6-02.4 AFTTP(I) 3-2.39	The publication educates the warfighter to security issues associated with using the Mark XII IFF Mode 4 Combat Identification System in a joint integrated air defense environment. It captures TTP used today by the warfighter that can address those security issues. **POC: Team A** alsaa@langley.af.mil
JAAT: *Multi-Service Procedures for Joint Air Attack Team Operations*	JUN 98 **JWG to revise on Hold pending JP 3-09.3 Tank**	FM 3-09.33 (FM 90-21) MCRP 3-23.A NTTP 3-01.03 AFTTP(I) 3-2.10	Provides tactics for joint operations between attack helicopters and fixed-wing aircraft performing close air support (CAS). **Current Status**: Program Approval Package out for signature. **POC: Team A** alsaa@langley.af.mil
JAOC / AAMDC: *Multi-Service Procedures for Joint Air Operations Center and Army Air and Missile Defense Command Coordination*	JAN 01 **(Under Revision) Est Pub Date: Oct 03**	FM 3-01.20 MCRP 3-25.4A NTTP 3-01.6 AFTTP(I) 3-2.30	Addresses coordination requirements between the Joint Air Operations Center and the Army Air and Missile Defense Command. Assists the JFC, JFACC, and their staffs in developing a coherent approach to planning and execution of AMD operations. **Current Status:** Final Coordination Draft in worldwide review. **POC: Team D** alsad@langley.af.mil

ALSA PROJECTS UPDATE
CURRENT ALSA PUBLICATIONS

TITLE	DATE	PUB #	DESCRIPTION
JATC: *Multi-Service Procedures for Joint Air Traffic Control*	JAN 99 **(Under Revision) Est Pub Date: Jul 03**	FM 3-52.3 (FM 100-104) MCRP 3-25A NTTP 3-56.3 AFTTP(I) 3-2.23	This revision is a ready reference for guidance on air traffic control (ATC) responsibilities, procedures, and employment in a joint environment. It details Service relationships for initial, follow-on, and sustained ATC operations within the theater or AOR. It outlines processes for synchronizing and integrating forces, capabilities, and specialized ATC equipment of the different Services. **Current status**: Signature Draft with Services. **POC: Team F** alsaf@langley.af.mil
J-FIRE: Multiservice Procedures for *Joint Application of Firepower* **Distribution Restricted**	NOV 02	FM 3-09.32 (FM 90-20) MCRP 3-16.6A NTTP 3-09.2 AFTTP(I) 3-2.6	A pocketsize guide of procedures for calls for fire, CAS, and naval gunfire. **POC: Team A** alsaa@langley.af..mil
JIADS: *Multiservice Procedures for Joint Integrated Air Defense System* **Restricted Distribution**	JUN 01	FM 3-01.15 MCRP 3-25E NTTP 3-01.8 AFTTP(I) 3-2.31	This publication provides joint planners with a consolidated reference on Service air defense systems, processes, and structures, to include integration procedures. **POC: Team D** alsad@langley.af.mil
JSEAD: *Suppression of Enemy Air Defenses* **Classified SECRET**	SEP 00 **Under revision est. Pub Apr 04**	FM 3-01.4 MCRP 3-22.2A NTTP 3-01.42 AFTTP(I) 3-2.28	This publication provides detailed, classified tools for air operations planners and SEAD warfighters to aid in the planning and execution of SEAD operations in the joint environment. **Current Status**: Program Approval Package under development. **POC: Team A** alsaa@langley.af.mil
JSTARS: *Multi-Service Tactics, Techniques, and Procedures for the Joint Surveillance Target Attack Radar System* **Distribution Restricted**	MAR 03	FM 3-55.6 (FM 90-37) MCRP 2-1E NTTP 3-55.13 (Rev A) AFTTP(I) 3-2.2	This publication provides procedures for the employment of the Joint Surveillance Target Attack Radar System (JSTARS) in dedicated support to the JFC. Revision will be unclassified. The unclassified revision describes multiservice TTP for consideration and use during planning and employment of the JSTARS. **POC: Team D** alsad@langley.af.mil
JTF IM: *Multiservice Procedures for Joint Task Force Information Management* **Revision is Distribution Restricted**	APR 99 **(Under Revision) Est Pub Date: Jun 03**	FM 6-02.85 (FM 101-4) MCRP 3-40.2A NTTP 3-13.1.16 AFTTP(I) 3-2.22	This publication describes how to manage, control, and protect information in a JTF headquarters conducting continuous operations. **Current status:** Awaiting command approval. **POC: Team G** alsag@langley.af.mil
JTF Liaison Officer Integration: *Multiservice Tactics, Techniques, And Procedures For Joint Task Force (JTF) Liaison Officer Integration*	JAN 03	FM 5-01.12 (FM 90-41) MCRP 5-1.B NTTP 5-02 AFTTP(I) 3-2.21	This publication defines liaison functions and responsibilities associated with standing up a JTF. **POC: Team B** alsab@langley.af.mil
JTMTD: *Multiservice Procedures Joint Theater Missile Target Development*	OCT 99 **(Under Revision) Est Pub Date: Jul 03**	FM 3-01.51 (FM 90-43) MCRP 3-43.3A NTTP 3-01.13 AFTTP(I) 3-2.24	The JTMTD publication documents TTPs for threat missile target development in early entry and mature theater operations. It focused on providing a common understanding of the threat missile target set and information on the component elements involved in attack operations target development. It also focused on IPB methodology as applied to developing the target set, to include sensor employment considerations. **Current Status:** Signature Draft is being staffed for Command Approval. **POC: Team D** alsad@langley.af.mil
NLW: *Tactical Employment of Nonlethal Weapons*	JAN 03	FM 3-22.40 (FM 90-40) MCWP 3-15.8 NTTP 3-07.3.2 AFTTP(I) 3-2.45 USCG Pub 3-07.31	This publication: - Supplements established doctrine and TTP. - Provides a source of reference material to assist commanders and staffs in planning and coordinating tactical operations. - Incorporates the latest lessons learned from real world and training operations, and examples of TTP from various sources. **POC: Team C** alsac@langley.af.mil
REPROGRAMMING: *Multi-Service Tactics, Techniques, and Procedures for Reprogramming of Electronic Warfare and Target Sensing (Distribution Restriction)*	JAN 03	FM 3-51.1 (FM 34-72) MCRP 3-40.5B NTTP 3-13.1.15 AFTTP(I) 3-2.7	This publication supports the JTF staff in the planning, coordinating, and executing of reprogramming of electronic warfare and target sensing systems as part of joint force command and control warfare operations. **Current status**: Approved. Printing complete. **POC: Team G** alsag@langley.af.mil

ALSA PROJECTS UPDATE
CURRENT ALSA PUBLICATIONS

TITLE	DATE	PUB #	DESCRIPTION
RM: *Risk Management*	FEB 01	FM 3-100.12 (FM 5-19.1) MCRP 5-12.1C NTTP 5-03.5 AFTTP(I) 3-2.34	This publication provides a consolidated multi-Service reference, addressing risk management background, principles, and application procedures. To facilitate multi-Service interoperability, this publication identifies and explains the risk management process and its differences and similarities as it is applied by each Service. **POC: Team C** alsac@langley.af.mil
SURVIVAL: *Multiservice Procedures for Survival, Evasion, and Recovery* **Distribution Restricted**	MAR 03	FM 3-50.3 (FM 21-76-1) MCRP 3-02H NTTP 3-50.3 AFTTP(I) 3-2.26	This publication 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. **POC: Team B** alsab@langley.af.mil
TADIL-J: *Introduction to Tactical Digital Information Link J and Quick Reference Guide*	JUN 00	FM 6-24.8 (FM 6-02.241) MCRP 3-25C NTTP 6-02.5 AFTTP(I) 3-2.27	This publication provides a guide for warfighters with limited or no experience or background in TADIL J and needing a quick orientation for supplemental or in-depth information. TADIL J is also known in NATO as Link 16. **POC: Team C** alsac@langley.af.mil
TAGS: *Multiservice Procedures for Theater Air Ground System*	JUL 98 **(Under Revision)** **Est Pub Date: Jul 03**	FM 3-52.2 (FM 100-103-2) MCWP 3-25F NTTP 3-56.2 AFTTP(I) 3-2.17	This publication promotes inter-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 operations. **Current status:** Revised Signature Draft with editor. **POC: Team D** alsad@langley.af.mil
TACTICAL RADIOS: *Multi-Service Communications Procedures for Tactical Radios in a Joint Environment*	JUN 02	FM 6-02.72 (FM 11-1) MCRP 3-40.3A NTTP 6-02.2 AFTTP(I) 3-2.18	This publication standardizes joint operational procedures for Single-Channel Ground and Airborne Radio Systems (SINCGARS) and provides and overview of the multi-Service applications of Enhanced Position Location Reporting System (EPLARS). **POC: Team C** alsac@langley.af.mil
TMD IPB: *Multiservice Procedures for Theater Missile Defense Intelligence Preparation of the Battlespace*	MAR 02	FM 3-01.16 MCRP 2-12.1A NTTP 2.01.2 AFTTP(I) 3-2.36	This publication provides a systematic and common methodology for analyzing the theater adversary missile force in its operating environment. **POC: Team G** alsag@langley.af.mil
UXO: *Multi-Service Procedures for Unexploded Ordnance Operations*	AUG 01	FM 3-100.38 MCRP 3-17.2B NTTP 3-02.4.1 AFTTP(I) 3-2.12	This publication describes hazards of unexploded explosive ordnance (UXO) sub- munitions to land operations, addresses UXO planning considerations, and describes the architecture for reporting and tracking UXO during combat and post conflict. **POC: Team B** alsab@langley.af.mil
RECCE-J: *Multiservice Procedures for Requesting Reconnaissance Information in a Joint Environment.*	JUN 96 JASC decision is to rescind.	FM 3-55.43 (FM 34-43) MCRP 2-2.1 (MCRP 2-1D) NDC TACMEMO 3-55.2 ACCPAM 10-756 PACAFPAM 10-756 USAFEPAM 10-756	This publication explains reconnaissance and the intelligence cycle; describes reconnaissance products; and demonstrates how to use and prepare formats for reconnaissance requests. **NOTE**: Since JP 3-55 will not be published, ALSA is recommending that RECCE-J be rescinded. **POC: Team G** alsag@langley.af.mil

NEW ALSA PROJECTS			
TITLE	**EST PUB DATE**	**PUB #**	**DESCRIPTION AND STATUS**
ADUS: *MTTP for AIR DEFENSE of the United States* **Classified SECRET**	DEC 03	A: TBD N: TBD AF: TBD	This MTTP supports planners, warfighters, and interagency personnel participating in air defense of the US by providing planning, coordination, and execution information. Pub is primarily focused at the tactical level. Includes Operation NOBLE EAGLE, and Clear Skies Exercise, lessons learned. **Current Status:** Editing for World Wide Review. **POC: Team E** alsae@langley.af.mil
COMBAT CAMERA: *MTTP for Joint Combat Camera Operations*	APR 03	FM 3-55.12 MCRP 3-33.7A NTTP 3-13.12 AFTTP(I) 3-2.41	This publication will fill the void that exists regarding combat camera doctrine, and assist JTF commanders in structuring and employing combat camera assets as an effective operational planning tool. **Current Status:** Approved; at printer. **POC: Team G** alsag@langley.af.mil
HF-ALE: *Multi-Service Procedures for High Frequency-Automatic Link Establishment (HF-ALE) Radios*	JUL 03	FM 6-02.74 MCRP 3-40.3E NTTP 6-02.6 AFTTP(I) 3-2.48	This MTTP will standardize high power and low power HF-ALE operations across the Services and enable joint forces to use HF radio as a supplement / alternative to overburdened SATCOM systems for over-the-horizon communications. **Current Status:** Preparing Signature Draft for Command Approval. **POC: Team C** alsac@langley.af.mil
HAVE QUICK	TBD	A: TBD M: TBD N: TBD AF: TBD	MTTP will simplify planning and coordination of HAVE QUICK radio procedures and responds to the lack of HAVE QUICK TTP throughout the Services. Additionally, it will provide operators information on multi-Service HAVE QUICK communication systems while conducting home station training or in preparation for interoperability training. **Current Status**: Preparing Final Coordination Draft for worldwide review. **POC TEAM C** alsac@langley.af.mil
DETAINEE OPERATIONS	TBD	A: TBD M: TBD N: TBD AF: TBD	MTTP regarding "high-risk" detainee operations to include transporting, transferring and holding of the high-risk detainees. **Current Status**: 1st working group scheduled for 5-8 August 2003. **POC TEAM B** alsab@langley.af.mil
NON-JTAC CERTIFIED PERSONNEL PROCEDURES	TBD	A: TBD M: TBD N: TBD AF: TBD	JP 3.09-3 "JTTP for CAS" does not allow non-JTAC controllers to clear/control CAS, it does provide for observers (COLT, FIST, SOF) to pass targets to a JTAC during type 2/3 control. Although JP 3-09.3 says this is allowed, it provides no guidance to develop procedures for non-JTAC certified controllers to clear/control CAS in support of JP 3-09.3 **Current Status**: On hold until JP 3-09.3 is completed. **POC TEAM A** alsaa@langley.af.mil
UHF TACSAT FREQUENCY MANAGEMENT	TBD	A: TBD M: TBD N: TBD AF: TBD	Develop an MTTP for UHF TACSAT Frequency Management Recent operations at JTF level have demonstrated difficulties in managing limited number of UHF TACSAT frequencies. Current methods/procedures require extensive manual tracking and manipulation. **Current Status**: First Joint Working Group scheduled for 29 Jul-1 Aug 03. **POC TEAM C** alsac@langley.af.mil
TST: *Time Sensitive Targeting*	MAR 04	A: TBD M: TBD N: TBD AF: TBD	This publication provides the JFC, the JFC's operational staff, and components unclassified MTTP to coordinate, de-conflict, synchronize, and prosecute TSTs within any AOR. Combines Joint Fires Initiative/TST, Navy and Air Force TST CONOPs, and Specified Targets TST. **Current Status**: Program Approved. First JWG scheduled for 12-15 Aug 03. **POC TEAM F** alsaf@langley.af.mil
PEACE OPS: *MTTP for Peace Operations*	JUL 03	FM 3-07.31 MCWP 3-33.8 AFTTP(I) 3-2.40	This publication provides the tactical level guidance to the warfighter for conducting peace operations. **Current Status**: At editor. Signature Draft due Aug 03. **POC: Team E** alsae@langley.af.mil

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