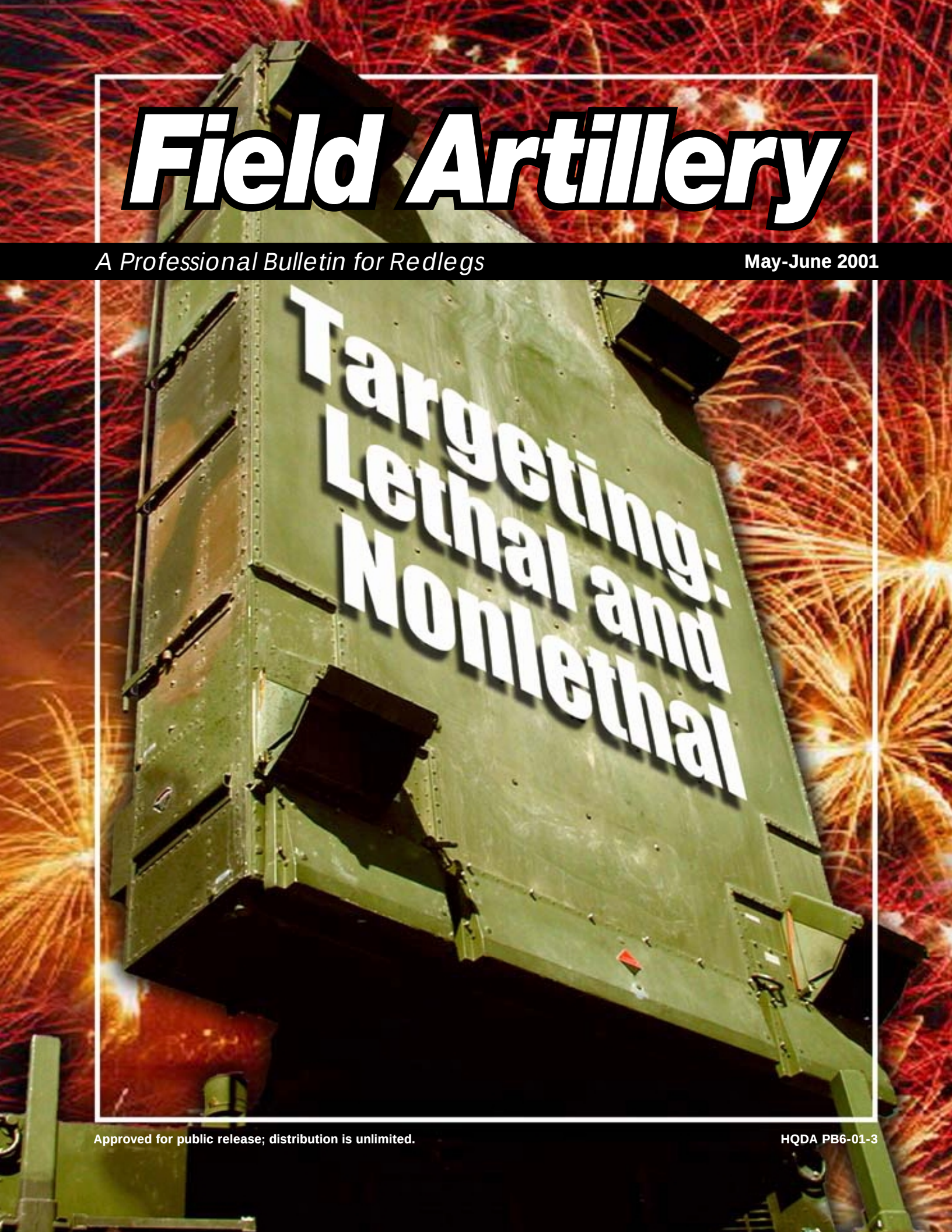
Field Artillery

A Professional Bulletin for Redlegs

May-June 2001



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HQDA PB6-01-3

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INTERVIEW

ARTICLES: Targeting

DEPARTMENTS

PURPOSE: (as stated in the first ***Field Artillery Journal*** in 1911): *To publish a journal for disseminating professional knowledge and furnishing information as to the Field Artillery's progress, development and best use in campaign; to cultivate, with the other arms, a common understanding of the power and limitations of each; to foster a feeling of interdependence among the different arms and of hearty cooperation by all; and to promote understanding between the regular and militia forces by a closer bond; all of which objects are worthy and contribute to the good of our country.*

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SUBMISSIONS: Mail to Editor, ***Field Artillery***, P.O. Box 33311, Fort Sill, OK 73503-0311. Telephone numbers are DSN 639-5121/6806 or commercial (580) 442-5121/6806 or FAX 7773 with DSN or commercial prefixes. Email is famag@sill.army.mil. Material is subject to edit by the ***Field Artillery*** staff; footnotes and bibliographies may be deleted due to space.

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ADDRESS CHANGES: ***Field Artillery*** (ISSN 0899-2525) (USPS 309-010) is published bimonthly. Periodicals postage is paid by the Department of the Army at Lawton, OK 73501 and an additional mailing post office. POSTMASTER: send address changes to ***Field Artillery***, P.O. Box 33311, Fort Sill, OK 73503-0311.

Redleg Hotline
(Organization, Materiel, Doctrine and Training)
DSN 639-4020 or (580) 442-4020 (24-Hours)

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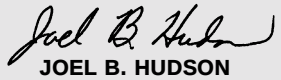

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The Senior Fire Support Conference and Responsive, Accurate Fires

Last month, Fort Sill hosted its Senior Fire Support Conference, "The FA in Transformation." Many senior leaders, including the Chief of Staff of the Army, shared their insights and dialogued about the challenges we face. Active, reserve and retired provided thoughtful input and gained a better appreciation for the monumental transformation effort in which the Army and FA are engaged—thanks to conference chairman Colonel Ted Janosko and his hard-working team.

Transformation. Although the Army still has long-term decisions to make about the Objective Force, the FA's vision is on track with the Army's transformation. We remain poised to provide maneuver commanders the same devastating fires that have been our hallmark since the birth of the nation.

One highlight of the conference was the dedication of Snow Hall's auditorium to General (Retired) Walter T. "Dutch" Kerwin, Jr., former Vice Chief of Staff of the Army and Field Artilleryman extraordinaire. During the dedication, General Kerwin commented that the FA's last major transformation was when we went from mule-drawn to mechanized and truck-towed artillery—a significant emotional event for some. However, the result was a more effective fighting capability. While our 21st century transformation may still concern some, it likely will have the same result: a more effective FA as an integral part of the combined arms team.

Responsive, Accurate Fires. As I reported in my first "From the Firebase" column in 1999, the branch has a long-standing problem of timeliness and accuracy of fires. Recently in the November-December 2000 Red Book, I laid out our top priority: changing the perception that our fires are unresponsive. Since then, an article has been published in the April edition of *Army*: "Classical Fire Support vs Parallel Fires" by Lieutenant Colonel Robert R. Leonhard, Infantry. Although I strongly disagree with some of the author's points, he correctly says that task force and company commanders no longer enjoy the immediately responsive, dedicated artillery support necessary in close combat.

As part of the FA School's ongoing efforts to improve our close support fires, we have determined several means to meet the challenge. First, we must streamline calls-for-fire. Since the tactical fire direction system (TACFIRE), our digital architecture has routed calls-for-fire through the company, task force and brigade fire support elements (FSEs) sequentially before they reach the delivery units. In theory, a call-for-fire should pass through at the speed of electricity…but it does *not*.

Today's advanced FA tactical data system (AFATDS) has the same archaic digital architecture, which we are changing rapidly to route calls-for-fire to the delivery unit *first*. AFATDS will determine whether the target meets the maneuver commander's intent and coordinate to clear fires while simultaneously accomplishing technical and tactical fire direction.

Secondly, we will adapt our equipment to "stream" sensor information to the fire direction center (FDC). If the decision is to engage the sensor-acquired target, the target's location will be updated constantly from a named area of interest (NAI) to a target area of interest (TAI), streaming the updated location digitally through the FDC nonstop to the firing platform, creating a real-time sensor-to-shooter link.

Thirdly, we must allow the direct support (DS) battalions to take advantage of force FA allocation rules. These battalions have become utility infielders at our Combat Training Centers (CTCs), attempting to provide concurrent counterfire, close supporting FA fires, suppression of enemy air defenses (SEAD) and other tasks, such as delivering family of scatterable mines (FASCAM), while focusing on targets deep in the brigade area.

Our CTCs do not allow us to replicate the range and utility of two FA brigades supporting each committed division. This results in reinforcing battalion or division artillery (with some FA brigade assets) tasks being thrust upon the DS battalions. This is unrealistic. We are working to resolve this issue within the Training and Doctrine Command.

Finally, once these and other corrections are in place, we must ensure FA effects have a realistic impact on the fights at the CTCs by removing the artificial constraints in simulating the FA's lethality. It does not take 54 rounds of dual-purpose improved conventional munitions (DPICM) to kill a single tank—we have the live-fire data to support that. And a battery-one with an accurate target location should be more than "suppressive."

The FA must become a more effective killer at our CTCs; I accept that challenge. However, once we improve our timeliness and accuracy, we must get the lethality credit that live artillery brings to the fight. That might mean there's no close, direct fire laser fight some days--so be it.The combined arms must fight as an integrated team, and we must grow maneuver commanders who truly understand what the FA can do for them.

Thanks for Your Service. As Command Sergeant Major (CSM) Anthony J. Williams departs Fort Sill to become the CSM of the Sergeants Major Academy, I thank him sincerely for his tireless efforts on behalf of branch NCOs and enlisted soldiers and for enhancing the quality of the relationship between components. I welcome our skilled new leader, CSM Rodney L. Beck, the new CSM of the FA, who joins us from Fort Drum where he was the CSM of the 10th Mountain Division Artillery.

Also, thanks to all who have invested time and talents to help transform the FA and provide input on improving the effectiveness of our fires. These are challenging times, but as always, Field Artillerymen are up to the challenges.

General Tommy R. Franks, Commander-in-Chief of US Central Command
MacDill Air Force Base, Florida

CENTCOM:
Targeting in a Unified Command

Interview by Patrecia Slayden Hollis, Editor

The US Central Command (USCENTCOM), headquartered at MacDill AFB, Florida, has an area of responsibility (AOR) encompassing 25 countries in Southwest Asia—an area that is about twice the size of the continental United States. The region extends from Egypt and Jordan to the Horn of Africa, the Arabian Peninsula, Pakistan in South Asia, and the Central Asian states as far north as Kazakhstan. The sources for potential conflict in this dynamic region are many and varied and could call for operations that cover the entire spectrum of conflict.

CENTCOM maintains a robust presence in the region. On a given day, US forces range from 18,000 to 25,000 soldiers, sailors, airman, Marines and Coast Guardsmen; between 175 and 200 aircraft; and some 30 naval vessels.

Q CENTCOM has had a lot of targeting experience in Iraq since Operation Desert Storm. What are the procedures to develop targeting details for effective strike operations?

A To understand the targeting process in CENTCOM, you first must understand our day-to-day operations. Our Coalition/Joint Task Force-Southwest Asia [CJTF-SWA], headquartered in Saudi Arabia, enforces the southern no-fly zone in Iraq in support of Operation Southern Watch. And everyday, if CENTCOM aircraft are engaged or threatened by the Iraqis, the pilots can attack targets on the ground immediately in self defense. The commander of CJTF-SWA "makes the call" as to whether or not to attack other targets and which targets to attack. If a pilot is being threatened by a target he cannot attack—for example, one that has civilians around the attacking asset—then, with commander of the CJTF-SWA approval, he can move laterally to a set of other targets on the CENTCOM target list. Such targets include assets in the integrated air defense system or a firing unit—perhaps command and control assets or a radar. This process happens everyday.

CENTCOM establishes that list of targets and updates it every 24 hours. For example, for our ground element target set, we use national and theater intelligence surveillance and reconnaissance (ISR) to detect Iraqi assets that could threaten coalition states. We maintain the locations and configurations of those targets down to their DMPI. [DMPI is the desired mean point of impact, an exact point on the target for maximum destruction.]

So, now that you understand how we operate, I can get to the question—which is how we conduct targeting for strike operations.

CENTCOM has a Coalition Coordination Board (CCB), headed by the DCINC [deputy commander-in-chief], which is similar in construct to the combined targeting coordination board [CTCB] found in other commands. The difference is the CTCB focuses on just targets and our CCB focuses on theater-wide operations—logistics, civil affairs, exchange of information with our coalition partners, etc.—as well as the coordination of targets.

Like other commands, CENTCOM's targeting is based on the joint force commander's guidance. I establish and disseminate the guidance and provide the priority for the target sets, and the targets are built from there 365 days a year.

We conduct the CCB by video teleconference with four of our components [see the section "I Peacetime Title 10 Command" in the figure]. ARCENT [US Army Forces Central Command], which for our purposes would be the land component command, is the Third US Army, headquartered at Fort McPherson, Georgia. CENTAF [US Air Forces Central Command], the air component command, is the Ninth Air Force headquartered at Shaw Air Force Base, South Carolina. Our NAVCENT [US Naval Forces Central Command], the maritime component command, is the Fifth Fleet located in Bahrain, and SOCCENT [US Special Operations Component Central Command] is the Special Operations Command here at MacDill.

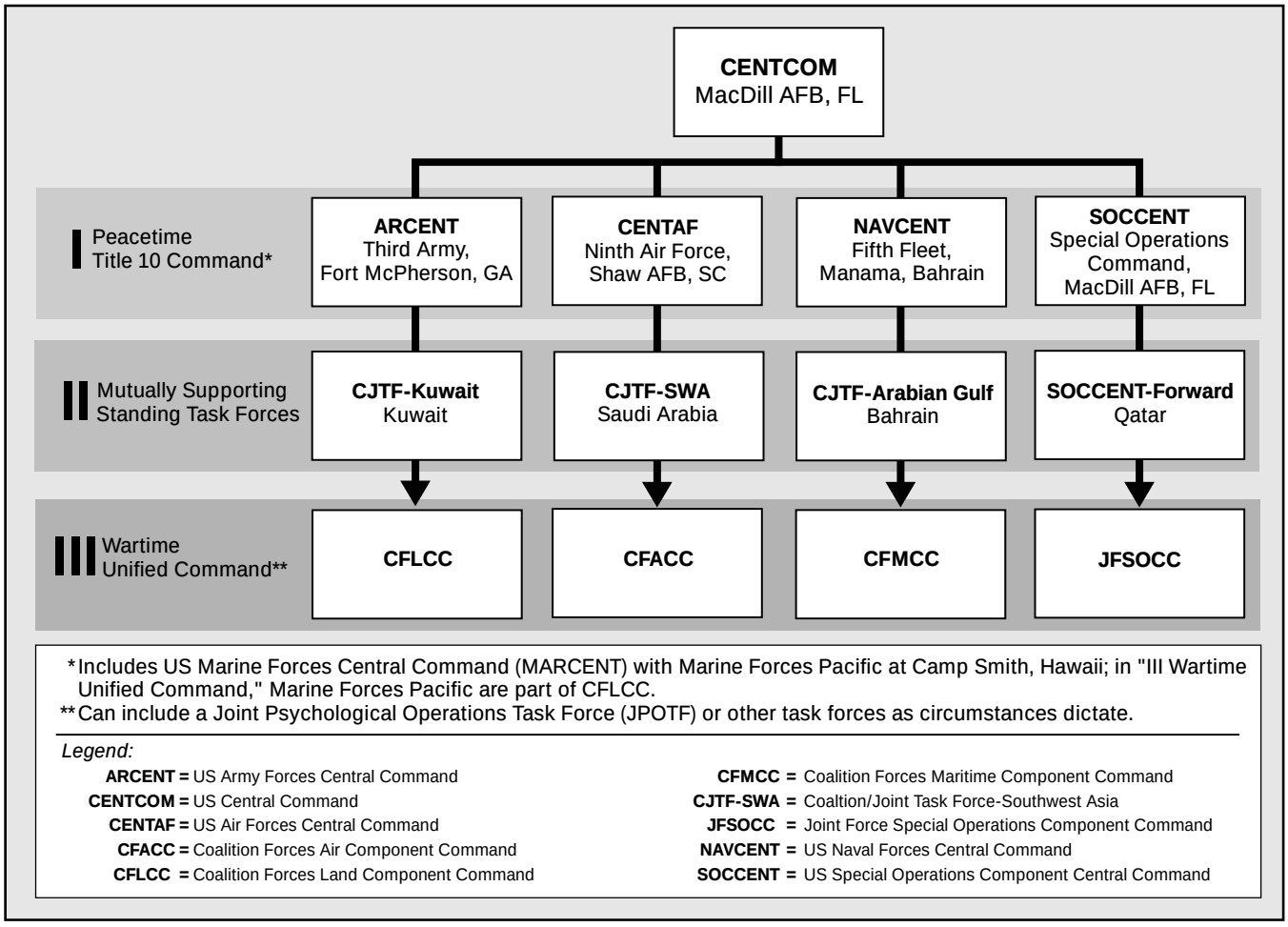
The components bring different targeting perspectives and sensing capabilities. For example, the land component processes targeting information by accessing certain sensors while the air component accesses different sensors. CENTCOM has a complete sensor suite involved in everyday operations, and not all the components have access to every sensor in that suite all the time.

During the Coalition Coordination Board meeting, we also get targeting input from other coalition forces involved.

So that's how we conduct targeting in CENTCOM and not just for contingency operations, but routinely.

Q *How do you, the joint force commander, command and control operations in a region some 7,000 miles away, and what happens when the CENTCOM's AOR gets "hot"?*

A Because of CENTCOM's unique organization, we can very rapidly transition from out peacetime Title 10 structure to our wartime unified configuration. We have four "intermediate" or "lilly pad" task forces already in the AOR that can absorb staff from ARCENT at Fort McPherson to become the coalition force land component command (CFLCC), absorb CENTAF staff from Shaw AFB to be-



CENTCOM has a unique command and control structure, allowing it to transition rapidly from peacetime to wartime unified operations. It maintains four standing "intermediate" task forces in its area of responsibility (AOR) to facilitate the transition.

come the coalition force air component command (CFACC) and so on. [See "II Mutual Supporting Standing Task Forces" and "III Wartime Unified Command" in the figure.]

For example, the CJTF-SWA in Saudi Arabia I mentioned is the "pre-CFACC" in the CENTCOM AOR. It is a fully manned task force responsible for developing and executing the ATO [air tasking order] for Southern Watch and uses naval, marine and air force aircraft from the US, United Kingdom and other countries in the region. In the event that things get really hot in the AOR, CJTF-SWA would become the core of the CFACC organization with staff added from Shaw Air Force Base until it is a fully functional air component command.

Another example is the pre-CFLCC organization, called CJTF-Kuwait. It operates daily in Kuwait, with representatives from the United Kingdom, Australia, New Zealand and variety of Gulf states.

CJTF-Arabian Gulf in Bahrain, is the pre-CFMCC [coalition force maritime component command] for the Fifth Fleet. CJTF-Arabian Gulf conducts maritime intercept operations against Iraq as Iraq tries to smuggle illicit oil out of the Shatt al Arab (to put unaccounted for money in Sadam Hussein's hands) plus supports Operation Southern Watch. CJTF-Arabian Gulf daily has varying numbers of coalition partners involved in its operations.

The fourth standing task force is SOCCENT-Forward headquartered in Qatar. This is the pre-JFSOCC [joint force special operations component command] in the AOR.

So, to expand the understanding of CENTCOM targeting in peacetime, we not only get targeting input from ARCENT, CENTAF, NAVCENT and SOCCENT, we also get input from the four standing intermediate CJTFs as well—CJTF-SWA, CJTF-Kuwait, CJTF-Arabian Gulf and SOCCENT-Forward.

The command and control architecture for CENTCOM is unique. No other command uses lilly pad task forces to go from peacetime to wartime unified operations.

Q *How do you envision CENTCOM employing ATACMS [Army tactical missile system] in your AOR? What are the procedures for getting ATACMS or Army aviation onto the ATO rapidly and flexibly enough to facilitate the CFLCC's shaping his battlespace?*

A Our battlespace will have certain characteristics. The operating area will have left, right, rear and forward boundaries for each echelon of command. Behind the forward boundary will be a fire support coordination line [FSCL]. We use *Joint Pub 3-09* [*Doctrine for Joint Fire Support*] to define the characteristics of our battlespace.

General Franks —CINCCENT—is surrounded by a sea of faces from the *USS Dextrous* and *USS Ardent*.

The CFLCC is the uncontested owner of the "real estate" short of the forward boundary, and the FSCL is permissive. So when the land component commander needs to protect his forces from enemy fires, he simply fires ATACMS at the enemy beyond the FSCL and *notifies* the air operations center [AOC] for the purposes of deconflicting the airspace. It is the AOC's responsibility to publish a notice to airmen of the counterfire. Then, with the help of AWACS [airborne warning and control system], the aircraft are responsible for getting out of ATACMS' airspace.

I put preplanned ATACMS and Army aviation on the ATO. Now, some may quarrel with me for putting Army organic assets on the ATO, but here's why I do that.

As we preplan operations for tomorrow, the next day and the day after, all systems that need airspace deconflicted must be identified and coordinated via one means—the ATO. The unified command strives to achieve the joint force commander's objectives as a team effort.

If you consider the time it takes to control the geographical dimensions of our battlespace, you will understand why we employ mostly aviation assets: B1s, B52s, F117 Stealths, F16 Falcons, F15 Strike Eagles, EA-6B Prowlers, F-18 Hornets—and the list goes on from the Navy, Air Force, Marines and coalition forces. When the master air attack plan is executed at the designated time, all components know aircraft are attacking certain targets.

As the joint force commander, I have to ask myself, "What happens to the overall plan to achieve my objectives if I allow the master attack plan to be stopped, say, to provide JSEAD [joint suppression of enemy air defenses] in support of attack helicopter operations that weren't factored into the master air attack plan and put on the ATO?"

Now, does that mean we can't respond to emerging targets? Absolutely *not*. But to violate the master attack plan construct requires the land component commander to determine that, although previously unforeseen, he needs to employ attack helicopters at a lucrative target beyond the FSCL. He then submits that requirement to the AOC's Current Operations to deconflict the airspace—that's the purpose of Current Operations.

General Franks meets Italian tankers during a combined training exercise.

Current Operations works with two categories of targets: time-sensitive and time-critical. Time-sensitive targets call for speed but allow enough time to coordinate to clear the airspace. Time-critical targets are like the Scud missiles during the Gulf War and call for a notice to airmen: "Clear the airspace. We are engaging the target *now*."

Q *The Army's future concepts emphasize fighting on a nonlinear, noncontiguous battlefield against an adaptive threat. How does that translate in your theater?*

A The CENTCOM AOR may be the last bastion of hope for another "Kursk-style" linear battlefield where miles of tanks line up side by side for a frontal attack. The fact is that in certain parts of Central Command's AOR, I would anticipate a linear confrontation simply because of the geography of the battlespace.

But also, interestingly enough, in other parts of our AOR, I envision mass and economy of force being applied in a disjointed battlespace with pockets of extreme violence at some points and relative calm at others.

Battlefields of the future easily can have combinations of all of the above. For example, we could be involved in stopping asymmetrical threats to our airfields and seaports while we are trying to receive, stage and move our forces on to integrate them into the theater. Simultaneously a few miles away, we could be fighting what the Marines call the "three-block war" in small pockets of grueling building-to-building urban combat. Just a few miles outside the city, we could be attacking the enemy in a linear assault—tanks in the sand. Simultaneously, we could be conducting special operations in other venues aimed at countering the enemy's terrorist threat. It is possible to have all these forms of combat going on in a major theater of war at the same time.

In my mind, Central Command's AOR is the only AOR where one can see the full spectrum of operations. At any time, Central Command can be engaged in operations at the low end of the spectrum in shaping the security environment, such as training coalition forces, humanitarian operations or peacekeeping. That same day, we can be engaged in a small-scale contingency in another part of our AOR. And the potential is there to move to the high end of the spectrum of conflict to fight a major theater war as we did in Desert Storm.

So the question is, "Will the Army's transformation into the lighter, more mobile, yet more lethal and survivable objective force be effective in CENTCOM?" And my response is, "Transformation is right *on*." When the objective force is fully fielded, it will be equally capable at any point on the operating continuum. Daily, CENTCOM can employ elements of such a force in operations ranging from shaping the security environment all the way to conducting high-end warfighting.

Q What *message would you like to send Army and Marine Field Artillerymen stationed around the world?*

A The Field Artilleryman is the key to the maneuver commander's success on the battlefield. His job is part technical, part tactical and part human relations. He brings a wonderful mixture of art and science to the combined arms force.

And if the division or corps has a tough problem to solve—any type of problem—you can just bet an artilleryman will be associated with finding the solution. The Field Artilleryman is the problem solver because of the breadth of knowledge he must have to do his job: understand fires and maneuver in the tactical or operational fight.

As a CINC, I need fire supporters who fully understand the capabilities and limitations of Army, joint and coalition assets and know how to employ them to influence the battlespace using any one of a lot of different approaches. That's my challenge: develop fire supporters who are absolutely conversant with all means available to a coalition/joint force to kill a target or modify behavior and who can pair the right weapon (lethal or nonlethal) with the right target.

As Field Artillerymen, we have a lot to be proud of and a lot of work to do.

General Tommy R. Franks has been the Commander-in-Chief of US Central Command, MacDill Air Force Base, Florida, since July 2000. In his previous assignment, he commanded the Third US Army at Fort McPherson, Georgia. He also commanded the 2d Infantry Division and served as the G3 of the Combined/Joint Forces Command, both in Korea. At Fort Monroe, Virginia, he was the first Director of the Louisiana Maneuvers Task Force as part of the Office of the Chief of Staff of the Army. During Operations Desert Shield and Storm in the Persian Gulf, he was the Assistant Division Commander for Maneuver of the 1st Cavalry Division, the same division in which he served as Chief of Staff and, before that, commanded the Division Artillery at Fort Hood, Texas. General Franks also served as the Assistant Commandant of the Field Artillery School, Fort Sill, Oklahoma. In Germany, he commanded the 2d Battalion, 78th Field Artillery, 1st Armored Division; and Howitzer Battery, 1st Squadron, and the 84th Engineer Company, both in the 2d Armored Cavalry Regiment.

Nonlethal Targeting Revisited

The Kosovo Experience

By Chief Warrant Officer Two Richard L. Gonzales
and Major (Retired) Marc J. Romanych, AD

In 1998, 1st Armored Division planners discovered that the process described in *FM 6-20-10 Tactics Techniques, and Procedures for the Targeting Process* could be used to integrate information operations (IO) into tactical operations. (See the article "Integrating Targeting and Information Operations in Bosnia" by Lieutenant Colonel Steven Curtis, Captain Robert A. B. Curris and Major Romanych, July-August 1998.) With continuous refinement, the targeting process has progressed to another plateau three years later.

During operations in Kosovo, field support teams from the US Army Land Information Activity (LIWA) in conjunction with the fire support element (FSE) from the 1st Brigade, 1st Armored Division, refined the process. The team expanded targeting to merge IO not only to synchronize lethal and IO engagement assets, but also to focus all the command's nonlethal engagement assets into a single, integrated operation.

This article explains how Task Force (TF) Falcon (1st Armored Division) employed the targeting process during Operation Joint Guardian in Kosovo from April to December 2000 to plan and execute nonlethal maneuver, civil-military operations (CMO) and IO engagements. These engagements shaped the environment for future TF operations.

Operational Framework. TF Falcon's primary mission was to maintain a safe, secure environment for the local populous, international community and TF Falcon soldiers. To do this, the TF planned and executed tactical operations within an operational framework of maneuver, CMO and IO. Within these three elements of "combat" power are various nonlethal operations, such as troop presence activities, FA illumination missions, humanitarian assistance, medical civilian assistance program (MEDCAP), psychological operations (PSYOP) and public affairs.

The major challenge of targeting for peace support operations is to shape the operational environment using nonlethal assets and means. In conventional conflict, enemy formations and functions are targeted and the battlefield is cleanly divided into deep, close and rear operations; in peace support operations, "adversary" target sets are the populace's societal institutions and the "battlefield" is a nonlinear maneuver space defined in terms of time and events rather than geographic locations.

To shape this ambiguous environment, TF Falcon employed PSYOP teams, a public affairs detachment, civil affairs tactical support teams, combat camera teams, medical treatment teams, unit commanders and unit patrols. These dissimilar nonlethal assets used equally disparate means, such as PSYOP loudspeaker operations and handbills, radio broadcasts, press releases and media events, medical assistance programs, reconstruction and short-term employment projects, face-to-face meetings and force presence.

Military Police wait for the order to deploy in response to a civil disturbance in Kosovo.

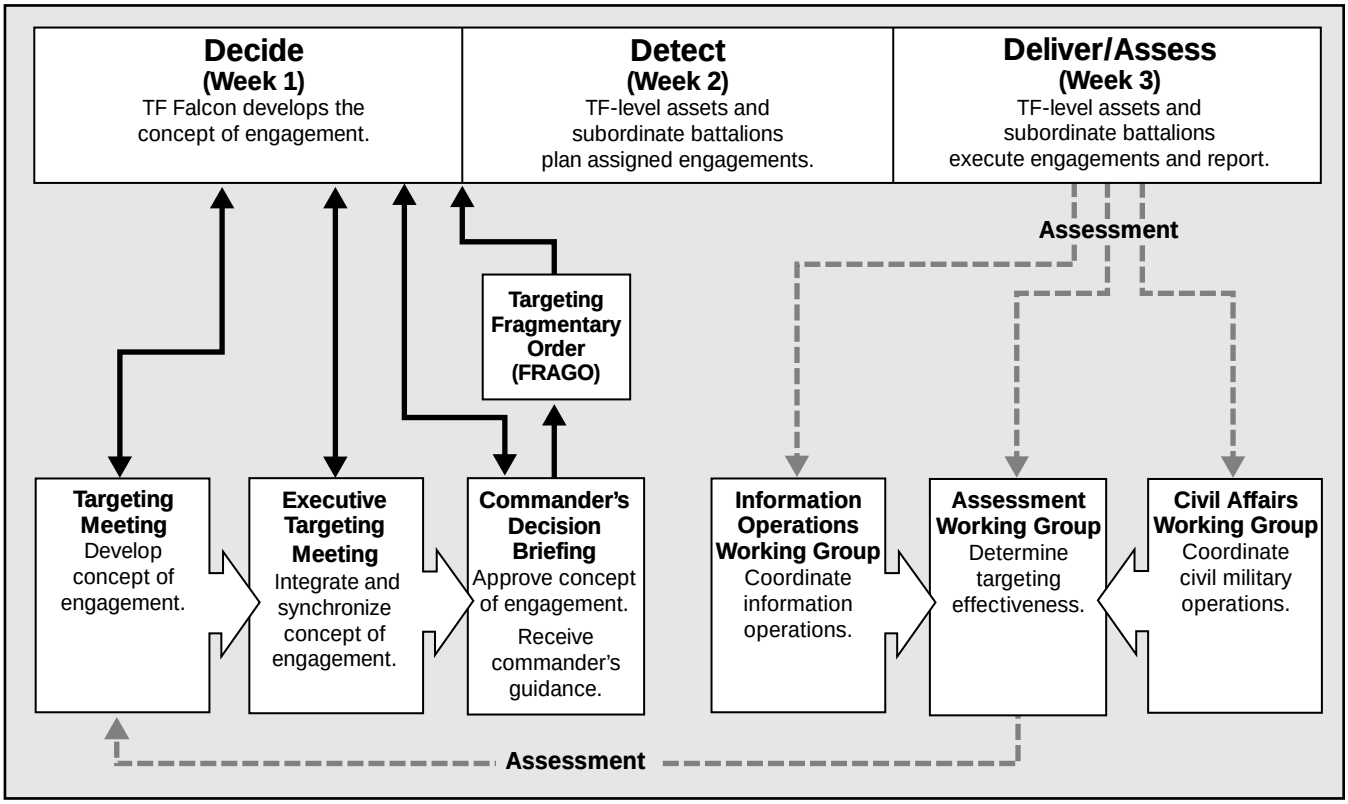


Figure 1: TF Falcon Targeting Cycle

The key to integrating nonlethal assets is a concept of "fires" (called "engagement") that focuses available means on those selected leaders and populace groups that influence the attitudes and behavior of the general populace. Procedurally, the development of a nonlethal concept of engagement is the same as traditional targeting methodology. The difference is in the desired targeting effects (e.g., influence, warn, co-opt rather than destroy, damage, etc.) and the types of targets, whose most important characteristic is their ability to influence the populace.

TF Falcon's analysis and control element (ACE) produced two products for nonlethal targeting: a 30-day intelligence estimate and a high-value target list (HVTL). These products were used to develop the concept of engagement and the high-payoff target list (HPTL).

The 30-day intelligence estimate described TF Falcon's future operating environment. The ACE accomplished this by identifying changes in the environment that could affect friendly operations and predicting courses of action (COAs), or at least the intentions, of individuals, organizations and populace groups that could negatively impact the TF's mission.

Threats to the mission included ethnic and political violence, obstructionist interference or insurgent and criminal activities. The HVTL listed those individuals and groups in the area of responsibility (AOR) that controlled or influenced the populace who had been identified as threats to the TF mission. Typical HVTs were political, civil and religious leaders and discrete populace groups, such as internally displaced persons, residents of specific villages or criminal groups.

The Targeting Cycle. The targeting cycle drove the *decide, detect, deliver* and *assess* (D^3A) targeting functions (see Figure 1). TF Falcon adopted a three-week targeting cycle divided into one-week segments. In each week, a D^3A function(s) was performed. Thus, the *decide* function was accomplished in the first week, *detect* in the second, and *deliver* and *assess* functions concurrently during the third week.

The *decide* function began each Wednesday with the development of a concept of engagement and culminated on Sunday with the publication of a targeting fragmentary order (FRAGO). The engagement concept consisted of TF-level nonlethal engagements, maneuver collection requirements, MEDCAPs, directed CMO and supporting battalion IO tasks. The concept of engagement was planned for a one-week targeting period, two weeks in advance of current operations. Planned activities and engagements were reviewed and adjusted the week before their execution to reflect changes in the AOR.

After the FRAGO was issued, the *detect* function provided TF-level assets (e.g., PSYOP, civil affair and public affairs) and subordinate battalions time to plan assigned engagements and targeting tasks. Units had one week to develop a plan to execute the engagements assigned by the targeting FRAGO.

The *deliver* and *assess* functions occurred concurrently as assigned engagements and targeting tasks were executed, reported and assessed. Generally, unless otherwise required, tasked units reported the status of engagements and targeting tasks to TF Falcon once each week.

Meetings and Work Groups. The *decide* function was composed of three meetings and three special working groups. The meetings (an initial Targeting Meeting, Executive Targeting Meeting and the Commander's Decision Briefing) were the mechanisms by which the concept of engagement was developed, coordinated, integrated and approved. Three working groups provided analytical information to support the development of the concept of engagement: the IO, civil affairs and assessment working groups.

The targeting cycle started with an initial Targeting Meeting. The purpose of the meeting was to produce a concept of engagement for the planned targeting period. The concept was developed by defining the operational environment, reviewing the mission statement and commander's guidance, and outlining planned TF operations for the proposed targeting period. This information then served as the basis for developing targeting objectives, tasks, targets and priorities for TF-level and subordinate battalion engagements. The targeting team then developed CMO and MEDCAP activities.

In the Executive Targeting Meeting, the TF chief of staff reviewed the proposed concept of engagement and supporting maneuver, CMO and IO with the primary staff. The purpose of the meeting was to ensure staff integration and unity of effort commensurate with the commander's guidance.

The meeting's analytical summary included the status of the previous week's intelligence, maneuver, CMO and IO; reviewed the upcoming week's targeting plan; and discussed the proposed concept of engagement. The TF chief of staff directed changes to the proposed concept of engagement before the concept was briefed to the commander.

The Commanding General's Decision Briefing was the forum for the TF commander to approve or revise the concept of engagement and provide guidance for future targeting. At the end of the meeting, the targeting team wrote and issued the weekly targeting FRAGO.

The Assessment Working Group assessed the effectiveness of the previous week's engagements. The group determined targeting effectiveness by assessing information and intelligence from unit operations and intelligence reports as well as input from the IO Working Group (IOWG) and Civil Affairs Working Group (CAWG). The assessment group developed measures of effectiveness to quantify the extent to which the targets were serviced. This information then was checked against the current targeting objectives to determine whether the desired targeting effects were being achieved.

The IOWG was the IO section's forum to coordinate TF IO, including IO targeting tasks. The CAWG was the G5's forum for coordinating CMO with other TF operations.

The Targeting Team. The targeting team planned, coordinated, integrated and directed the TF's targeting effort. The core targeting team consisted of the FSE targeting officer; IO analyst; and G2, G3, and G5 representatives. These members represented TF Falcon's three elements of combat power (maneuver, CMO and IO) and linked targeting meetings and working groups with other staff functions that interfaced with the targeting process. Other staff representatives, such as from PSYOP, public affairs and medical planners, helped the targeting team, as needed.

The FSE targeting officer headed the targeting team and orchestrated the targeting cycle. The targeting officer also chaired the Targeting Meeting and produced the weekly targeting FRAGO.

The IO analyst developed and provided IO input to the targeting process. Because IO is a major component of nonlethal engagements, the IO analyst led the development of the nonlethal concept of engagement and produced the target synchronization matrix (TSM) and the IO execution matrix for the weekly targeting FRAGO.

The G2 representative produced and updated the 30-day assessment and HVTL for the planned targeting period and interfaced with the ACE to develop and assess the collection effort. The G3 representative established targeting priorities and synchronized the targeting effort with maneuver operations. The G3 representative also planned, coordinated and assessed the maneuver component of the nonlethal concept of engagement.

The civil affairs rep planned and assessed the CMO component of the nonlethal concept of engagement. The PSYOP rep planned supporting PSYOP activities and assessed populace attitudes. The medical rep planned and coordinated MEDCAPs and other medical activities to support the targeting objectives.

Targeting Products. The targeting team used standard fire support products (e.g., the HPTL and TSM) to develop, coordinate and integrate the concept of engagement for TF assets and subordinate maneuver battalions.

HPTL. TF Falcon used a modified HPTL (see Figure 2). HPTs were selected from the G2's HVTL, based on whether or not engaging the target would produce the desired effect (i.e., payoff in support of planned operations). HPTs were selected if critical to both the adversary's needs and the friendly concept of the operation as expressed by the targeting objectives.

Target Category	Target Set	Municipality X	Municipality Y	Municipality Z	High-Payoff Targets
Political Parties	Party A	X	X	X	Party A President
		X			Party A Vice President
	Party B	X	X		Party B President
		X	X		Party B Executive Secretary
			X		Party B Vice President
	Party C	X	X		Party C Leader
Civil Government	Municipality X	X			Municipal President
					Municipal Vice President
					Council President
					Council Member
	Municipality Y	X			Municipal President
		X	X		Council President
		X			Council Member
	Municipality Z		X		Council President
			X		Village Mayor
			X		Council Member
Religious Organizations	Church Council	X	X	X	Council Leader
		X	X		Religious Leader
				X	Council Member

Figure 2: High-Payoff Target List (HPTL)

Targeting Objectives: 1. Reduce obstructionist leaders' influence on the local populace. 2. Reduce populace acceptance of ethnically motivated violence.						
Decide		**Detect & Deliver**				**Assess**
Target Set	**Target(s)**	**Asset**	**How**	**When**	**Effects**	**Purpose/Assessment**
Political Leaders	Party A President	TF 1-1 IN	Messages 1-6	NLT 02 Nov	Warn	Purpose: Reduce interference. Assessment: Response to messages.
	Party A Vice President	TF 1-1 IN	Messages 1-6	NLT 02 Nov	Warn	Purpose: Reduce interference. Assessment: Response to messages.
	Party C President	TF 2-3 AR	Messages 1-6	NLT 02 Nov	Influence	Purpose: Increase cooperation. Assessment: Response to messages.
Civil Leaders	Municipal Council Leader	TF 1-1 IN 211 CA	Messages 7-9	06 Nov	Inform	Purpose: Maintain support. Assessment: None.
	City Mayor	TF 2-3 AR	Messages 10-12	06 Nov	Warn	Purpose: Reduce interference. Response: Response to messages.
Populous Groups	Populace Town X	TF 1-1IN 405 PSYOP	Messages 13-16	NLT 06 Nov	Influence	Response: Reduce violent behavior. Response: Attitudes toward other ethnic group.
	Populace Town Y	TF 1-1 IN 405 PSYOP	Messages 13-16	NLT 06 Nov	Influence	Purpose: Reduce violent behavior. Response: Attitudes toward other ethnic group.

Effects:

Inform—Provide information (to counter misinformation).
Influence—Curtail or cause a specific action.
Warn—Provide notice of intent (to prevent a specific action).
Co-Opt—Gain cooperation.
Disorganize—Reduce effectiveness or ability.
Isolate—Minimize power or influence.
Deny—Render ineffective by physically denying (e.g., confiscate equipment, detain personnel, occupy terrain, etc.).

Figure 3: Target Synchronization Matrix (TSM) for Information Operations Targets. Task Force Falcon messages in the "How" column were "Do not interfere in KFOR [Kosovo Force] operations," "Cooperate with the KFOR," "Violence does not solve anything," and others.

Targeting objectives focused TF assets on leaders and population groups to produce a desired effect that contributed to accomplishing the mission. Unlike a conventional HPTL that contains only adversary targets, the HPTL for a peace support operation also includes "friendly" leaders and populace groups that support TF operations.

Target sets and individual targets were rank-ordered on the HPTL by their relative importance to the populace and their geographic area of influence. The rank-order, or priority, sometimes changed, depending on the TF's focus and concentration of effort.

On the TF Falcon HPTL, the influence of a person or group was recorded in columns that indicated areas within the AOR where the leaders were influential, typically in unit sectors. This distinction significantly helped the targeting team select HPTs, develop engagement criteria and assign delivery assets.

Once constructed, the HPTL was reviewed and adjusted each week during the Targeting Meeting. The nature of the targets and nonlethal engagements made dynamic revisions to the HPTL unnecessary. Unlike combat operations where targets are attacked according to the priorities of the HPTL, in peace support operations, HPTs are engaged by priority, but nonlethal targets rarely are removed from the HPTL. In TF Falcon, targets remained on the HPTL but were re-prioritized and re-engaged, as needed.

TSM. The TSM is a tool used to establish the targeting objectives and synchronize the D^3A engagements for the targeting period. The targeting team produced the TSM for the TF staff and units to use to plan and execute engagements and was included in the weekly targeting FRAGO. (See the modified TSM in Figure 3.)

The targeting team used targeting objectives—for example, the two shown at the top of Figure 3—to translate the commander's intent, concept of the operation and planning guidance into nonlethal targeting of the populace and their societal institutions. Because traditional targeting objective terms (i.e., limit, disrupt, delay, divert, destroy and damage) did not always describe the desired effects, the targeting team had to use other terms. TF Falcon used the terms "reduce," "minimize" and "increase" in the targeting objectives to describe the desired nonlethal effects.

Like other TSMs, the modified matrix used in TF Falcon assigned specific *decide*, *detect*, *deliver* and *assess* responsibilities for every planned HPT. However, there were differences in the information entered into the matrix, most notably engagement means, and the use of non-standard terms to describe nonlethal attack effects.

The primary means of engaging key leaders was verbal messages delivered during face-to-face meetings. The messages were a set of five to seven talking points used by the person conducting the meeting to guide the conversation. Specific messages were developed for each target set and, on occasion, for individual targets. Messages were matched to targets in the TSM's deliver column and attached to the TSM.

TF Falcon used non-standard attack (engagement) effects for nonlethal engagements. To avoid confusion, the effects were explained in detail at the bottom of the TSM (Figure 3).

Targeting FRAGO. The targeting FRAGO directed the execution of the targeting concept of engagement. The FRAGO was issued each week on Sunday night for execution by subordinate elements one week later. In addition to

US troops from the 1st Infantry Division in Kosovo conduct cordon and search operations. Timely, specific intelligence is required to engage the correct target.

the TSM, the FRAGO included the commander's guidance, priority intelligence requirements (PIRs), maneuver collection tasks, an IO execution matrix, TF-level directed civil affairs activities and MEDCAPs, and engagement re-tasking.

Maneuver collection tasks included increased or re-directed presence patrols in a specific area, mobile tactical checkpoints or increased monitoring and reporting of certain activities. These tasks were in named areas of interest (NAIs) and assigned to the maneuver battalions for execution. Maneuver intelligence collection tasks were linked to collection requirements (e.g., PIRs), but also to specific tasks from the IO execution matrix.

Engagement re-tasking involved adjusting the previous week's targeting FRAGO and directing re-engagements of previously engaged targets. The FRAGO also addressed re-tasking for maneuver and (or) IO resulting from changes in the operational environment.

Assessment. Lacking quantifiable physical evidence, nonlethal targeting effects are necessarily subtle. Engagement effects may be a target's response or non-response or changes in efforts and techniques. Targeting effects may be manifested as trends, activities and patterns in the operational environment. Effects also can be as simple as the absence of activity.

To assess the status of the targeting effort, the TF Falcon targeting team reviewed unit intelligence and operations reports for information that indicated whether the targeting effort was achieving its objectives. Two types of information were gathered.

The first was incident data, which was a record of key incidents that occurred during a targeting period. These incidents were evaluated and categorized as being either negative (counter to a safe, secure environment) or positive (inter-ethnic cooperation or observance of the rule of law) in relation to the TF's mission. Examples of negative incidents tracked by TF Falcon included acts of ethnic violence, civil disobedience and anti-Kosovo Force (KFOR) rhetoric. Positive incidents included peaceful demonstrations and refugee returns.

The tracked incidents must be defined in sufficient detail to ensure continuity of categorization from one targeting period to the next. The recorded incidents then can be analyzed to determine trends over time (weekly and monthly) and across the AOR by unit sector.

The second type of collected information was an indicator. These were significant events that provided an indication of change in the operational environment. TF Falcon examples of such events included an attack on an important political faction leader, anti-KFOR graffiti in several villages within the same municipality or a series of violent demonstrations. To properly assess and analyze this type of information, the targeting team had to have knowledge of the AOR, operational environment, populace culture and other factors to determine the relevance of the event to targeting effectiveness.

Conclusion. The greatest value of employing the targeting process for peace support operations is its ability to direct disparate assets and means into a single, focused operation. First Brigade's experience in Kosovo not only reaffirmed the use of the D^3A process as an integration tool for IO, but also proved the process can synchronize nonlethal maneuver, CMO and IO engagements.

But work still remains. Peace support operation planners must define targeting objectives and attack effects to reflect the focus of their nonlethal targeting plus develop a methodology to assess the effects of nonlethal engagements.

D^3A has been proven as an effective methodology to synchronize maneuver, CMO and IO both in Bosnia and Kosovo. In Kosovo, nonlethal engagements were credited with successfully shaping the environment for day-to-day operations and diffusing several potentially volatile situations, as well as setting the conditions for significant events, such as the Kosovo municipal elections.

Further innovations are required if the targeting process is to realize its full potential in peace support operations.

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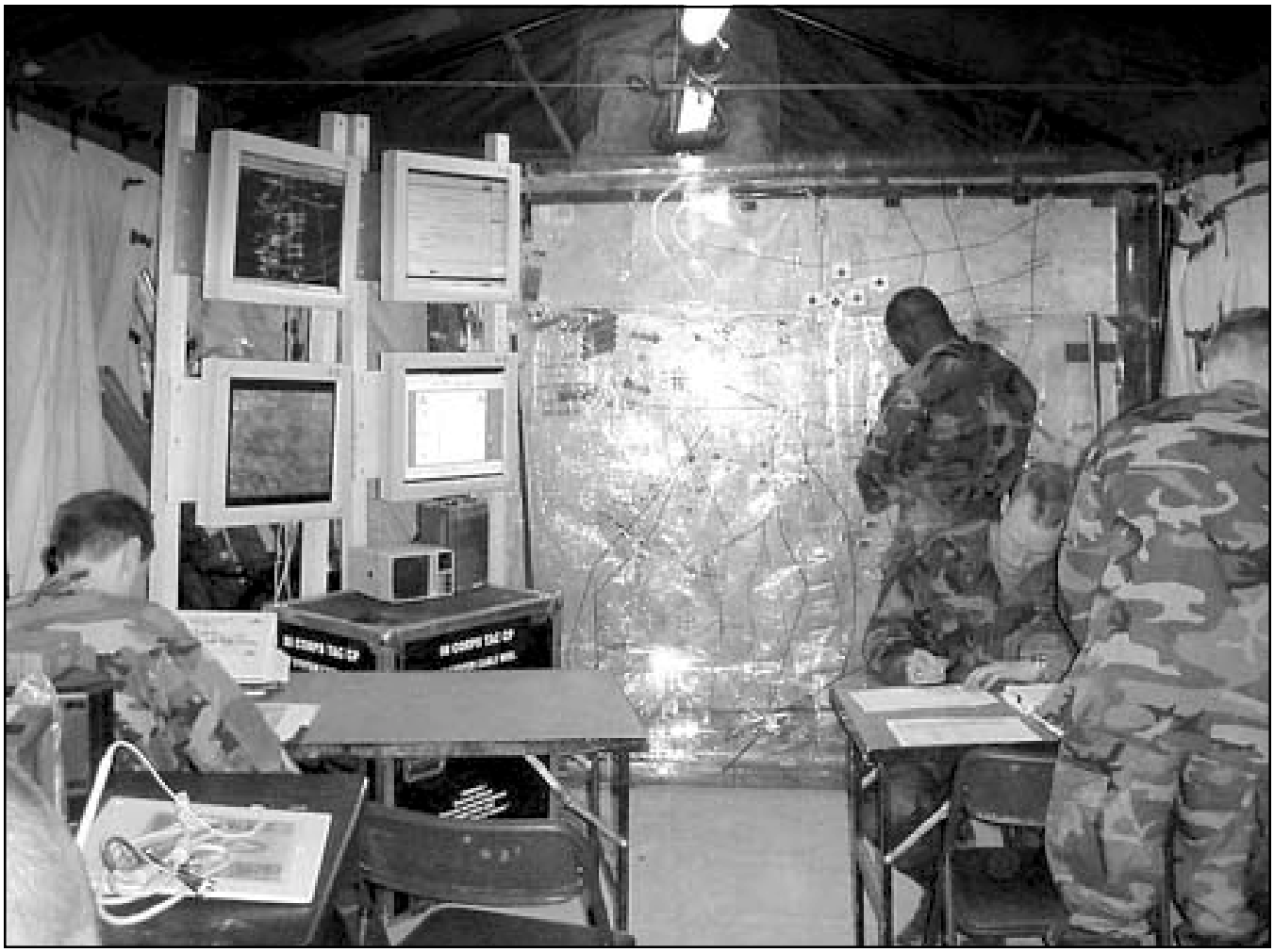


DOCC

Sustaining Corps Deep Operations Proficiency

By Lieutenant General Leon J. LaPorte,
Brigadier General Guy M. Bourn, Colonel James C. Boozer, Sr.,
and Lieutenant Colonel David A. Schneider

The corps deep fight is the corps commander's primary fight. His ability to shape the enemy before the enemy enters the divisional areas of operations (AOs) depends on his staff's ability to plan, coordinate, synchronize, execute and assess deep operations. The high rate of personnel turnover combined with ever-improving technologies in the various battlefield operating systems (BOS) on an uncertain battlefield demands rigorous, sustained training for all members of the corps deep operations coordination cell (DOCC).

This article focuses on how III Corps determined the corps battle rhythm for deep operations; the organization and tactics, techniques and procedures (TTP) of Team DOCC; and the automation and technology the DOCC needed to be most effective. III Corps refined and tested its tactical standing operating procedures (TACSOP) for deep operations and trained Team DOCC during three major exercises in a five-month period.

According to draft *FM 100-15 Corps Operations*, the DOCC is not an organization. Rather, it is a cell that brings elements of the corps staff together to exchange ever-changing, pertinent information that enables the corps commander to focus his assets to accomplish his purpose for deep operations. A disciplined battle rhythm; proficient, cohesive staff members; and an organization with effective information management systems are critical.

III Corps has unique challenges. Its headquarters is at Fort Hood, Texas; its aviation brigade is in Korea; and its corps artillery is at Fort Sill, Oklahoma. This distance between key elements, combined with high personnel turnover, intensifies the need for detailed, up-to-date TACSOPs as well as rigorous training during the few times it is able to bring the entire Team DOCC together.

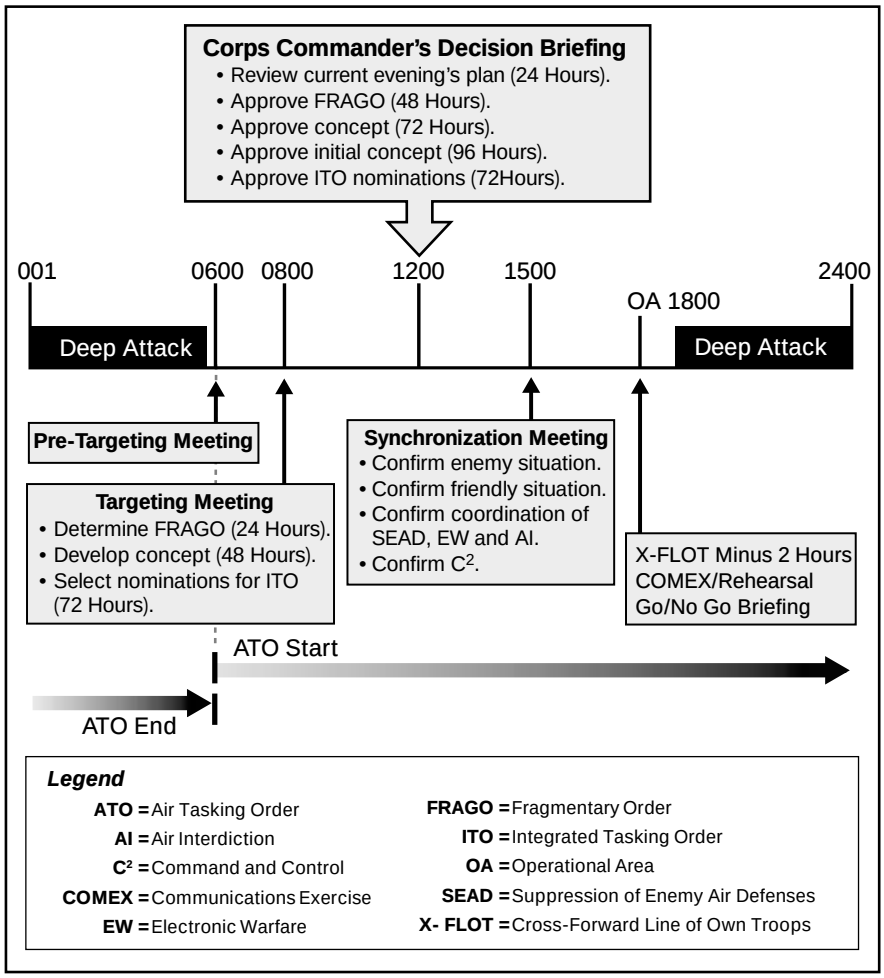


Figure 1: III Armored Corps Deep Operations Battle Rhythm

III Corps' participation in Ulchi Focus Lens (UFL), an exercise in Korea last December; Phantom Destroyer, a corps exercise in preparation for the 4th Infantry Division's Battle Command Training Program (BCTP) Warfighter exercise; and, finally, Phantom Fighter, the 4th Division Warfighter provided opportunities to train deep operations and build on our existing TACSOPs.

III Corps Battle Rhythm. The corps deep operations battle rhythm is the centerpiece of deep operations. The battle rhythm is linked to the air tasking order (ATO) planning cycle and divisional battle rhythms. (See Figure 1.) It allows the divisions limited although adequate time to provide their input and gives the corps predictable gates for the planning and execution of phases.

Figure 2 lists the principal members of Team DOCC. Each staff element is involved in the corps' military decision-making process (MDMP), so all members understand the operational plan and generally understand how the corps commander intends to use deep operations to influence his fight.

Team DOCC's mission is to develop and synchronize the detailed plans required to execute the deep fight, using its deep operations MDMP. This begins with the Pre-Targeting Meeting.

Pre-Targeting Meeting. This meeting at 0600 is chaired by the corps artillery deputy commanding officer (DCO). He serves as the DOCC chief throughout the planning phase.

During the Pre-Targeting Meeting, the corps staff begins its intelligence preparation of the battlefield (IPB) as applied to four separate map sets: 0 to 24 hours, 24 to 48 hours, 48 to 72 hours and 72 to 96 hours. The staff first assesses the enemy capabilities that can affect the corps and divisional areas of operations (AOs) during the current deep fight (0 to 24 hours) as well as in the next 48, 72 and 96 hours.

The Pre-Targeting Meeting begins with the G2 targeting officer's assessment of the enemy situation. He includes unit locations and strengths, using predictive and confirmed battle damage assessment (BDA) and enemy courses of action (COAs). This *assess* phase of the continuous *decide, detect, deliver* and *assess* (D^3A) targeting methodology is the first critical step in the next round of deep operations planning.

Additionally, Team DOCC wargames enemy COAs. It also updates the corps high-payoff target list (HPTL), the collection focus and the tasks and purposes for the current night's fight—as well as 48, 72 and 96 hours out.

The Targeting Meeting. The meeting is at 0800 and also is chaired by the corps artillery DCO. Team DOCC reviews the updated HPTL and current ATO. The ATO tells the team which deep targets were approved for attack by USAF assets, lists the approved air routes, allocates close air support (CAS) assets and lists the approved pre-planned Army tactical missile system (ATACMS) targets. This helps the team develop and wargame possible COAs and determine which HPTs they will recommend for attack, using the remaining corps assets, such as attack aviation and the multiple-launch rocket system (MLRS) with its extended-range munitions.

Each division liaison officer's (LNO's) ability to articulate his division's deep operations plan is critical as the corps staff attempts to maximize the combined and often supporting effects of both the corps' aviation brigade and division deep attacks. The assignment and timing of targets and supporting assets, as well as airspace deconfliction, are essential elements of the corps' deep operations plan.

The collection manager then refines the current collection plans and develops plans to support future target acquisition and tracking requirements. Through this process, targets are selected and detection assets are allocated and employed. The DOCC is responsible for confirming and validating the collection manager's plan to detect the various HPTs.

During the Targeting Meeting, Team DOCC develops its staff recommendations on what targets to detect and how to attack those in line with the commander's guidance and intent. The team then validates and, if necessary, refines recommendations for the current deep fight; finalizes recommendations for the next 48 hours; refines its concept for 72 hours out; and develops an initial concept for deep operations 96 hours out. This results in the deep operations decision briefing.

The Corps Commander's Decision Briefing is at 1200 and the next step in

the deep operations battle rhythm. Team DOCC, led by the corps artillery commander and DCO, briefs the corps commander to review that night's deep operations and get his approval of the next 48-hour deep operations plan, the 72-hour refined concept and the 96-hour initial concept.

Team DOCC briefs weather, projected enemy and friendly situations, most significant threats, the HPTL, tasks and purposes of deep operations and the collection focus for each ATO (24, 48, 72 and 96 hours). Additionally, the team briefs specific attack plans for the first three ATOs—air interdiction (AI), CAS, artillery or attack aviation—plus electronic warfare (EW), information operations (IO) and psychological operations. The 72-hour concept approval is critical as it enables Team DOCC to formally submit its ATO nominations for incorporation into the integrated tasking order (ITO), which is determined 72 hours before execution.

Synchronization Meeting. The corps artillery chief of staff chairs the Synchronization Meeting at 1500 and serves as the DOCC chief throughout the synchronization and execution phases of deep operations (*detect* and *deliver* functions of D^3A). During the Synchronization Meeting, Team DOCC uses the relevant map boards at the decision briefing to conduct a detailed map rehearsal of the current and next day's deep operations. Each team member briefs his portion of deep operations and makes final adjustments to the deep operations synchronization matrix.

The meeting begins with the deep operations planner briefing that night's deep operations. The corps aviation brigade LNO and division LNOs then brief their deep operations and are followed by each Team DOCC member briefing how his staff element is supporting those operations.

A critical piece of this is airspace deconfliction. Corps and division air routes and deep operations are posted and briefed. The aviation brigade and division LNOs, in concert with the corps Army airspace command and control (A^2C^2) manager, verify the corps aviation brigade and division air routes and the times the units will use the routes. Additionally, they identify potential conflicts in those cases where routes intersect. This is critical as attack times often change during execution.

If and when the deep attack times change, the DOCC coordinates the requirements for those attacks before they begin. The LNOs pass the requirements to their units, and the DOCC continues to monitor the deep operations execution to affect other coordination, as necessary.

Additionally, the EW officer (EWO) and aviation brigade LNO verify the times and locations of lethal and nonlethal suppression of enemy air defense (SEAD) support.

The collection manager discusses which collection assets will be focused on which targets and how unmanned aerial vehicles (UAVs) will support the aviation brigade route and target area reconnaissance. It is imperative that the collection manager understand the DOCC's information requirements and that the G2 targeting officer and FA intelligence officer (FAIO) can pass the information to the DOCC in real time to support the attack of designated targets.

Corps CG
Corps Artillery CG
Corps Artillery DCO, CofS, G2, G3
Deep Ops Planners (Corps G2, G3)
A^2C^2
EWO
AFSCOORD
Air Force LNO
Corps Aviation
Corps ACE Chief
- Collection Manager
- Targeting Officer

Corps Chemical Officer
Corps Engineer Officer
Corps G3 (Information Officer)
Staff Weather Officer
SOCCE
Corps Air Defense Officer
Corps Aviation Brigade Planner
LRS Company Commander
Corps SJA
MSC and Flank Unit LNOs

Legend:
A^2C^2 = Army Airspace Command and Control
AFSCOORD = Assistant Fire Support Coordinator
CofS = Chief of Staff
DCO = Deputy Commanding Officer
EWO = Electronic Warfare Officer
LNO = Liaison Officer
LRS = Long-Range Surveillance
SJA = Staff Judge Advocate
SOCCE = Special Operations Command and Control Element
MSC = Major Subordinate Commands

Figure 2: Team Deep Operations Coordination Cell (DOCC)

After the Synchronization Meeting, the staff and major subordinate commands (MSCs) coordinate with their respective sections for the current deep operations plans while the executing units complete their rehearsals. The analysis and control element (ACE) is focused on producing the targeting information to support the decision to execute deep operations (target identification and UAV route reconnaissance for attack aviation units).

Once those critical information requirements (CIRs) are satisfied, the aviation brigade commander conducts a Go/No Go briefing with the corps commander or, if he is unavailable, the corps executive agent for deep operations, the corps artillery commander. There are many different formats for the Go/No Go briefing. III Corps' format focuses on identifying enemy air defenses along routes and the target area, the availability of lethal and nonlethal SEAD, target fidelity, combat power and weather limitations.

Once the corps commander approves the deep attack by corps attack aviation, the DOCC execution van is manned and prepared to monitor the execution of the deep attacks. Figure 3 on Page 14 depicts III Corps' DOCC set-up during the execution phase of deep operations.

Key Lessons Learned. During the three exercises, the III Corps DOCC learned a lot about designing information products, taking advantage of technology to upgrade automation systems and devising TTP to more responsively meet the needs of the corps commander and his staff in deep operations.

• *Information Products.* In the first exercise, the DOCC modified existing status boards, coordination and execution matrices and reference cards. These tools are a product of operational experience, and there is no "right" solution. Different commanders and staffs prefer different formats and have unique information requirements. The key is that new teams inevitably will go through this process; tackling the design of information products early will enable the team to get on with refining or developing deep operations TTP.

For example, our DOCC status board included a map depicting the deep attack targets on the current ITO, a list of fire support coordinating measures (FSCM); the deep attack schedule (cross-forward line of own troops, or

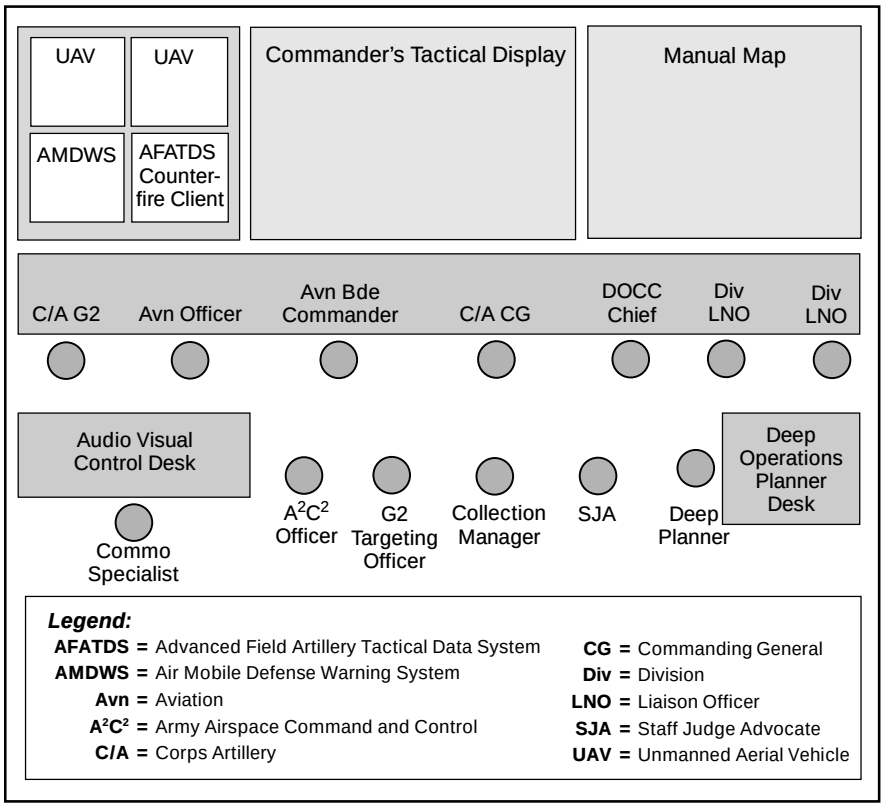


Figure 3: DOCC Execution Van. This is the DOCC set up during the execution phase of deep operations.

XFLOT, and who, what, Go/NoGo in time sequence); corps artillery status of ATACMS and extended-range MLRS shot and on hand; FA organization for combat; the corps HPTL; the corps commander's CIRs; battle rhythm time lines for Fort Hood and Korea; and the intelligence synchronization matrix.

• *Automation Tools.* This was another area the DOCC assessed and updated. This ranged from upgrading newer, more powerful computers and color printers to adding an all-source analysis system (ASAS) feed to give the DOCC the same operational picture the corps commander sees in his tactical command post (TAC CP).

• *Maximizing Technology.* Team DOCC found manually updating four sets of maps a monumental task. While maintaining the manual maps is a necessity in the event of a catastrophic power outage, the process cannot keep pace with systems such as ASAS—giving the corps commander a slightly different picture than through the DOCC.

III Corps Artillery purchased a digital projector and 100-inch screen to project the ASAS picture in the DOCC during the execution phase. This significantly improved the DOCC's ability to portray a rapidly changing battlefield in real time.

Because the corps TAC was in Korea and the corps main CP at Fort Hood, we conducted our briefings to the corps commander via secure video teleconferencing (VTC). Additionally, we passed information tools, such as the products listed for the DOCC status board, over the tactical local area network (TACLAN) by posting them to the DOCC web site. The TAC printed the information products and passed them to the corps commander at the start of each briefing.

VTC proved to be invaluable as it allowed planners to brief and answer the corps commander's questions from any location while getting his immediate guidance and decisions. Simultaneously, the corps aviation brigade and division staffs could view the decision briefing, thereby enhancing information flow throughout the corps.

• *Detecting and Tracking Targets.* Although not a fielded Army system, the automated deep operations coordination system (ADOCS) software was great for locating artillery formations, which were often the number one HPT. ADOCS provided the counterfire officer a picture of where enemy artillery fires were coming from by depicting rays from their points of origin to their points of impact. This enabled the counterfire officer and corps artillery G2 to provide the DOCC and aviation brigade higher quality target locations and descriptions (based on ranges and locations).

The DOCC often was able to direct UAVs over the known artillery locations to verify the type of artillery formations and pass the targeting information to the aviation brigade commander for deep attack. When attack aviation assets were not available, the DOCC was, in some cases, able to divert AI to those targets.

Team DOCC refined its TTP for detecting and tracking other deep targets as well, based on the nesting of all target collection systems. These include Q-37 Firefinder radar, UAV, the joint surveillance and target attack radar system (JSTARS), airborne reconnaissance low (ARL), long-range surveillance teams (LRSTs) and special operations forces (SOF). The result was more lethal effects in the deep fight.

• *Jump-DOCC Operations.* For the second exercise, Team DOCC had to conduct jump-DOCC operations at the TAC CP while the corps main moved. This training forced all team members to relook their bulky, heavy equipment and assess the best time to jump the DOCC without interrupting the corps' battle rhythm. (See Figure 4.)

Again, improved technology provided lighter flat-screen monitors, laptop computers and a compact, portable color printer. These tools enabled the jump DOCC to quickly set up and begin operations out of two standard integrated command post systems (SICPS) collocated with the TAC CP.

The jump DOCC was highly mobile and required only a couple of hours to set up and break down. The jump DOCC used many of the staff officers already located in the TAC CP to perform the duties of their counterparts in the corps main throughout the planning and execution phases. The personnel who had to move from the main CP to the TAC CP during jump operations are listed in Figure 4.

Team DOCC also determined that the best time to conduct battle handover between the DOCC and jump DOCC was immediately after the Commander's Decision Briefing or just before the next Pre-Targeting meeting. This enabled one of the shifts to set up and prepare to assume control of deep operations while the current shift sustained the corps battle rhythm. The pri-

mary consideration in determining DOCC hand-over time was battle rhythm rather than main CP movement time, providing a seamless transition.

• *Briefing and Rehearsing Off Manual Maps.* Using a manual map does not ensure automated systems, such as the airmobile defense warning system (AMDWS) and the advanced FA tactical data system (AFATDS), have the same information. When the DOCC conducted its pre-combat checks before execution, it sometimes found air routes and FSCM absent from those databases or final refinements not yet posted.

To minimize this problem, the DOCC connected its various feeds to its monitors during the planning and synchronization meetings, thereby enabling the staff officers to display and verify the information was entered correctly before and during the synchronization meeting and Go/No Go briefings. This greatly reduced the number of instances where the staff had to enter the information at the last minute before execution.

• *DOCC's ASAS Feed.* The ASAS feed was a shared feed from the G3 current operations section. While this provided a better real-time picture of the battlefield, the DOCC was unable to customize the shared feed with detailed deep operations graphics it needed. Thus, the DOCC obtained its own ASAS program.

• *LNOs Checklist.* During the second exercise, Team DOCC developed a better checklist of information requirements from the division LNOs—especially to cover divisional changes during execution, such as a division failing to cross the FLOT at the expected time. As with corps operations, division operations often change as commanders fight the enemy, not the plan. The DOCC added periodic plan verifications to the checklist, causing the divisional LNOs to contact the divisional DOCCs to verify time lines, engagement areas and units.

• *Robust A^2C^2.* Changes to the plan during execution also highlighted the need for a robust A^2C^2 cell, not only during planning and synchronization, but during execution as well. While having an aviation officer in the DOCC during execution helps, the DOCC needs a 24-hour-capable A^2C^2 cell that is fully staffed to coordinate and disseminate changes to airspace management.

• *Corps Artillery G2 in the DOCC.* The corps artillery G2 was in the DOCC throughout execution. This improved Team DOCC's ability to assess effects on deep targets. He managed the UAV, JSTARS and ADOCS feeds to help locate and assess targets. He was also the DOCC's executive agent for BDA and provided the DOCC chief periodical updates on target strengths. This enabled the team to re-direct attack assets against targets requiring further attrition and also let the DOCC know when it could stop servicing various targets, thereby enabling it to direct attack assets against other HPTs.

The DOCC chief worked with the ACE to develop cumulative BDA and passed that information to the planners for their use in refining the next day's deep attack plans during the Pre-Targeting Meeting. This helped close the loop in the D^3A targeting methodology.

• *DOCC-ACE Intelligence Focus Disconnects*. Occasionally, in the first two exercises, the DOCC and ACE lost their combined focus during execution for a couple of reasons. As the corps met its objectives for various targets (destroy, neutralize or suppress), the DOCC did not always focus the ACE on the next target set. The ACE continued to focus valuable collection resources on the serviced target rather than on the next target. In other cases, the ACE diverted collection assets to another area of the battlefield without notifying the DOCC. The diversion was to develop intelligence on other target indicators detected during the battle. This hindered the DOCC's ability to determine whether or not to attack some of the scheduled deep targets.

During the last exercise, the DOCC designed procedures to prevent this disconnect. The corps artillery G2 reviewed his BDA with the ACE chief once he believed the corps met its objective for each deep target. Together they recom-

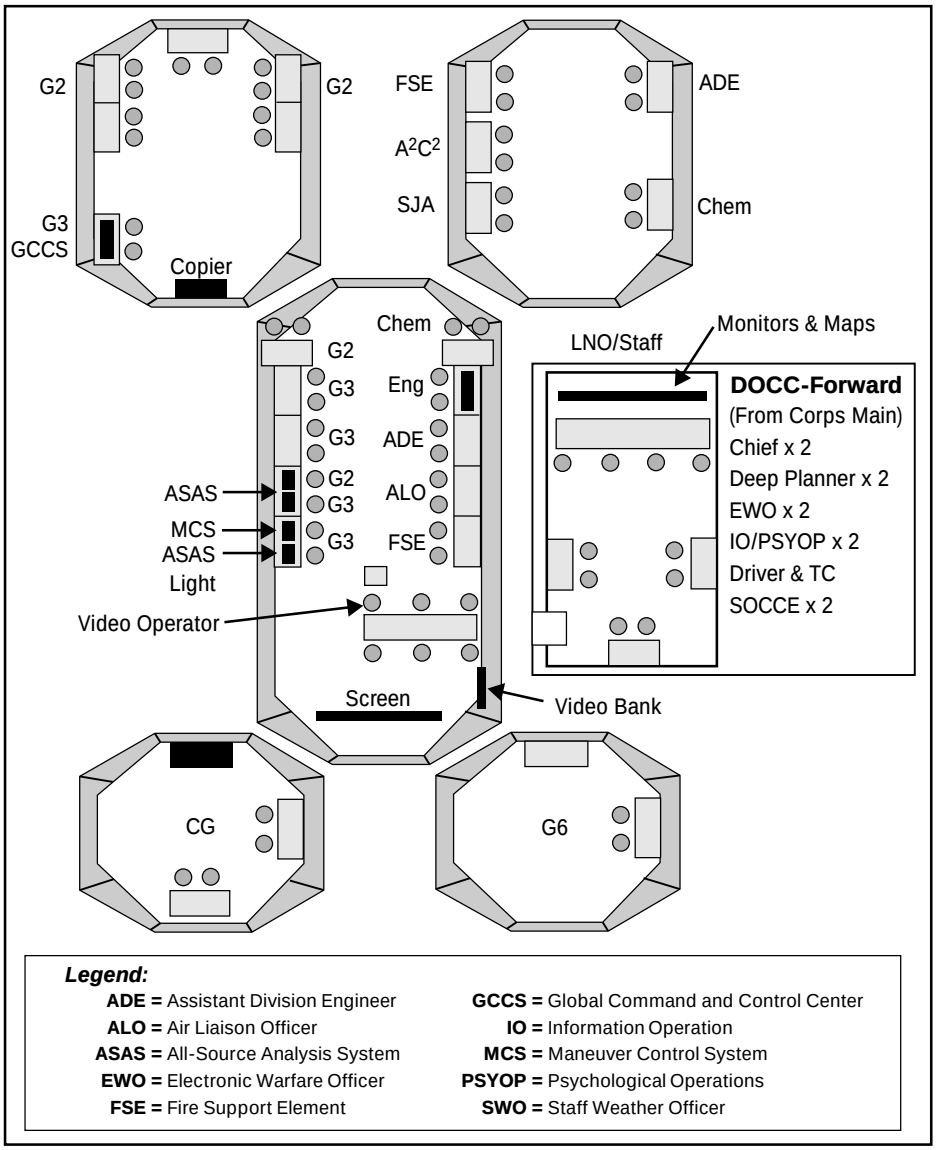


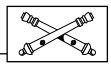
Figure 4: Jump-DOCC Layout

mended to the DOCC chief whether or not to continue servicing that target and which target the corps should focus on next. In turn the DOCC chief passed his recommendations to the corps artillery commander who made the final determination with the G2 targeting officer and (or) the ACE chief present. This ensured the conscious and seamless transition of the corps' intelligence focus throughout the corps' deep fight.

Additionally, the G2 targeting officer and (or) the ACE chief briefed the DOCC chief on the current collection focus and his assessment of the enemy's capabilities once an hour. The DOCC chief confirmed or denied whether or not the DOCC and ACE were in synch and made adjustments at that time. This TTP proved to be extremely effective in ensuring the DOCC and ACE sustained their collective focus throughout the final exercise.

Conclusion. While the purpose of deep operations remains constant, technological improvements throughout the corps often affect the manner in which the DOCC can plan, coordinate, synchronize, execute and assess the deep fight. The speed and quantity of information can quickly overload the commander and staff unless information management systems are developed and implemented in concert with the improvements to technology.

Just as our TACSOPs will provide the framework for conducting deep operations, exercises allow the DOCC to use newer technologies to develop new information management TTP. As a result, current and future teams will be better able to preserve peace by being prepared for war.



Lieutenant General Leon J. LaPorte has been the Commanding General of the IIId Armored Corps at Fort Hood, Texas, since August 1998. In his previous assignment, he served as an Assistant Deputy Chief of Staff for Operations and Plans at the Pentagon. He commanded the 1st Cavalry Division, also at Fort Hood, and, previously, served as the division's G3 during Operations Desert Shield and Storm in the Gulf and as the Commander of the division's 3d *Greywolf* Brigade at Fort Hood.

Brigadier General Guy M. Bourn has commanded the IIId Armored Corps Artillery at Fort Sill, Oklahoma, since March 2000. Previously, he served as a Special Assistant to the Chairman of the Joint Chiefs of Staff on the Joint Staff at the Pentagon. He commanded the 17th Field Artillery Brigade, part of the IIId Armored Corps Artillery, and served as the Fort Sill Chief of Staff. He also commanded the 3d Battalion, 29th Field Artillery, part of the 4th Infantry Division (Mechanized) at Fort Hood.

Colonel James C. Boozer, Sr., is the Deputy Commanding Officer of the IIId Armored Corps Artillery, Fort Sill. He commanded the 1st Battalion, 77th Field Artillery (Multiple-Launch Rocket System, or MLRS), part of the 75th Field Artillery Brigade, IIId Armored Corps Artillery, and served as S3 of the 3d Infantry Division (Mechanized) Artillery, Germany. Colonel Boozer is scheduled to assume command of the 214th Field Artillery Brigade, IIId Armored Corps Artillery, at Fort Sill in August.

Lieutenant Colonel (Promotable) David A. (Al) Schneider is the Chief of Staff of the IIId Armored Corps Artillery at Fort Sill. He recently commanded the 2d Battalion, 18th Field Artillery (MLRS), part of the 212th Field Artillery Brigade, also in the IIId Armored Corps Artillery. He was the Brigade S3 and S3 of the 5th Battalion, 18th Field Artillery, both in the 75th Field Artillery Brigade. Among other assignments, he served as a Staff Officer in the Office of the Chief of Staff of the Army at the Pentagon.

Joint Targeting School

Targeting is not just an Army concept. Each service has developed its own doctrine and targeting methodologies. With the revision of *FM 6-20-10 Tactics, Techniques and Procedures for the Targeting Process,* the Army and Marine Corps use the *decide, detect, deliver* and *assess* (D^3A) targeting methodology. However, the Air Force and Navy targeting methodologies evolved from the Air Force's air tasking order (ATO) cycle. And as the services try to conduct joint operations, targeting problems occur at the operational and strategic levels of war.

The Joint Targeting School in Virginia Beach, Virginia, addresses joint targeting problems and provides joint targeting training. The school offers three courses in the theory and application of the joint targeting process. The instruction is for intelligence, operations and planning officers, warrant officers (WOs) and NCOs who are involved in targeting on combatant command or joint task force (JTF) staffs. For Field Artillerymen, the school's curriculum applies to fire supporters in corps and division fire support elements (FSEs), deep operations coordination cells (DOCCs), battlefield coordination elements (BCEs) and those on joint staffs in the J2, J3 and J5 sections.

Historically, the Army has had the fewest attendees among the three services. Most of our Army graduates have been WOs and intelligence officers. The Joint Targeting School offers the following courses.

Joint Targeting Staff Course (JTSC). The JTSC is a three-week course on the application of the six-step joint targeting cycle: determine objectives and guidance, develop targets, conduct weaponeering, apply weapon-target match to the force, execute the plan and assess the effects.

Joint Targeting Application Course (JTAC). JTAC is a two-week study of the weaponeering step of the joint targeting cycle. Students receive training on the air-to-surface and surface-to-surface methodologies necessary to match weapons to targets.

Joint Battle Damage Assessment (JBDA). The JBDA course is one week and focuses on the last step of the joint targeting cycle: combat assessment. JBDA examines the concepts and theory associated with combat assessment and the functions of a BDA cell at the operational or JTF level.

Mobile Training Teams (MTT): Between sessions of the in-residence courses, the school offers a one-week version of the JTSC and a slightly modified JBDA course to provide introductory training on the joint targeting process to unified commands and eligible JTF staffs.

To request a seat for one of the courses or coordinate for a MTT, call the school Quota Control Coordinator at DSN 492-0276/0277 or commercial at (757) 492-0276/0277. The fax is DSN 492-0280 or commercial (757) 492-0280. For more information, view the Joint Targeting School web site at www.jts.damneck.navy.smil.mil.

Major Gregory P. Fenton, FA
Joint Targeting School, Virginia Beach, VA

Artillerizing PIRs

By Major Johnny Cook, MI, and
Captain Kirk D. Steege, MI

Artillery units can develop better priority intelligence requirements (PIRs) to help commanders execute their FA support plans (FASPs). As indicated by the observation of units rotating though the National Training Center (NTC) at Fort Irwin, California, the PIRs generally do not consider the impact of the threat's capabilities and his courses-of-action (COAs) on unit missions or force protection.

As Mao Tse-Tung said, "War is hard thinking." This article discusses tactics, techniques and procedures (TTP) for the FA battalion battle staff to "artillerize" PIRs, especially force-protection PIRs, and do the "hard thinking" up front.

The Problems. NTC FA Tactical Operations Center (TOC) Trainers have observed two trends in developing PIRs. First, some artillery units integrate the PIRs from their supported brigade's operations order (OPORD) without modifying or tailoring them for their units. Some PIRs are linked to the brigade's artillery unit's essential fire support tasks (EFST)—for example, "What is the location of the 168th Motorized Rifle Regiment's (MRR's) regimental artillery group (RAG)?" Such PIRs have targeting implications that are critical to the brigade and must be incorporated into the FA battalion's PIRs. However, other brigade PIRs do not apply and shouldn't be included in the FA PIRs.

FM 3-09.21 (6-20-1) TTP for the Field Artillery Battalion reminds us that "the S2 also further develops the FA battalion's PIRs and begins incorporating them into reconnaissance and surveillance (R & S) plans, the PIRs the maneuver/higher FA headquarters tasked the battalion to answer." Additionally, the battle staff must develop PIRs specifically for the FA battalion.

The second trend is that too many FA units use a standard list of PIRs for offensive and defensive missions. Sometimes these "boiler plate" PIRs are even included in the unit's tactical standing operating procedures (TACSOP). When the unit plans for a mission, it selects PIRs from this list. *FM 34-8-2 Intelligence Officer's Handbook* cautions, "There is no set of PIRs that we can present that will be useful for all tactical situations."

Using standard PIRs predisposes units to avoid thinking through the impact of the threat's capabilities and his possible COAs. There is a tendency to try to make the listed PIRs fit the mission, even if they are unsuitable or do not apply.

Tuning In to the Threat. During battles at the NTC, the opposing force (OPFOR) employs predictable forms of contact against FA battalions that result in significant combat power losses. For the OPFOR, FA units are high-payoff targets (HPTs). OPFOR commanders will commit a sizeable force to destroy cannon and rocket units.

The OPFOR consistently destroys artillery units with anti-tank fires from air- and ground-inserted infantry during MRR attacks, even when the Blue Force (Bluefor) has anticipated the points of insertion and the objectives of the infantry. In fact, additional combat power losses have occurred as FA battalion combat and field trains move within range of anti-tank fires from the same infantry forces.

In addition, enemy reconnaissance and unconventional forces have destroyed the brigade's only Q-36 Firefinder radar, command and control centers, and critical signal nodes. The OPFOR also will employ attack helicopters, scatterable mines and chemical munitions to destroy artillery units.

Units generally have indications of these enemy movements and pending attacks, but they fail to respond to preserve their combat power. FA units must evaluate the OPFOR's capabilities and how these capabilities can affect artillery operations. Appropriate, well-thought-out PIRs can help the commander make timely decisions to avoid such losses.

Defining PIRs. Several manuals define PIRs, but the best definition with examples of "good" PIRs is in FM 34-8-2. It states, "PIR are intelligence requirements associated with a decision that will affect the overall success of the command's mission."

According to FM 34-8-2, good PIRs do the following: "Ask only one question; focus on a specific fact, event, or activity; provide the intelligence required to support a single decision; are tied to key decisions that the commander has to make; and give a latest time of information of value (LTIOV)."

Typically, PIRs for artillery units fall into two categories: those that support EFSTs, which come from the brigade fire support element (FSE), and those that are force-protection oriented. When the unit receives PIRs from the brigade, it must incorporate the applicable ones into the battalion PIRs. The unit then analyzes the threats to its force, based on the enemy's capabilities and COAs. Next, based on the friendly scheme of maneuver, the FA unit develops its PIRs to recommend to the brigade commander.

The S3 selects the PIRs from the IRs developed during mission analysis and validated as PIRs during wargaming.

#	Priority Information Requirement	Decision	Latest Time Information of Value	NAI
1.	Has the enemy air assaulted infantry vicinity NV490070?	Occupy alternate position areas for artillery. Reroute A and B Batteries to avoid air-inserted infantry observation and contact. Engage enemy infantry with indirect fires.	NLT 30 minutes after the enemy air assaults into his LZ.	1
2.	Has the enemy employed special munitions along Route Adams?	Alter movement route of C Battery from Route Adams to Route Madison.	The forward detachments reaches the H-1.30 TPL, allowing C Battery at least 90 minutes to be in position ready to fire the FASCAM.	3
3.	Is the RAG within acquisition range of the Q-36 radar and within range of 2-5 FA firing batteries?	Reposition the Q-36 from RPA 1 to RPA 2. Request Q-37 coverage from Div Arty to cover the Q-36 move. Direct 2-5 FA to reposition to the west. Refine radar zones.	MRR's first-echelon main body crosses TPL H-1.	9, 10
4.	What is the location of the ARC-1 radar?	If the ARC-1 is located, engage with direct or indirect fire. If ARC-1 is destroyed, change survivability movement criteria from 6 volleys or every 10 minutes to 10 volleys or every 40 minutes.	Firing batteries in place ready to fire in support of the main battle area defense and identification of the enemy's point of penetration NLT when first-echelon forces reach TPL H-1.	8
5.	Where will the enemy establish a point of penetration?	Displace firing batteries to PAA 3A, PAA 2B, and PAA 3C. Displace Q-36 to RPA 3; displace the TOC to NV575112.	Enemy penetrates PL Blue with two or more motorized rifle platoons.	2, 4, 5

Legend:
Div Arty = Division Artillery
FASCAM = Family of Scatterable Mines
LZ = Landing Zone
MRR = Motorized Rifle Regiment
PAA = Position Area for Artillery
PL = Phase Line
RAG = Regimental Artillery Group
RPA = Radar Position Area
TOC = Tactical Operations Center
TPL = Time Phase Line

FA Battalion Battle Staff Force-Protection PIRs

The PIRs are linked to decisions the commander must make and reflect the latest time the commander requires the information to make that decision.

At the NTC, units are generally successful at addressing PIRs related to EFSTs in the "method" portion of their essential FA tasks (EFATs)—particularly as PIRs relate to triggers for executing the EFSTs. (The EFATs are the specific FA tasks derived from the EFSTs.) Units are less successful in identifying force-protection related PIRs.

Force-Protection PIRs for Defensive Operations. The following scenario illustrates the process for determining force-protection PIRs based on the enemy's capabilities and COAs.

PIR 1. An enemy MRR will conduct a deliberate attack against a US brigade combat team (BCT). A RAG and divisional artillery group (DAG) will support the MRR attack.

During the intelligence preparation of the battlefield (IPB), the battalion S2 decided the enemy's most likely COA was to attack through the northern task force to penetrate the brigade's defense. The S2 believes the MRR would attack with its light infantry the night before the main attack to help shape the battlefield.

The next day at first light, an enemy regimental forward detachment attacked in the north to create an initial point of penetration. Simultaneously, an envelopment detachment attacked in the south to fix the brigade forces and prevent them from repositioning to reinforce the task force in the north. At the same time, a flank security detachment attacked south of the envelopment detachment to protect the MRR's southern flank.

After these three elements made contact, the enemy fired a persistent chemical agent to further isolate the task force in the north. The enemy positioned his radar forward to support his counterbattery operations. He revealed his RAG, which he had purposely masked, to initiate fires to destroy and suppress brigade units at the point of penetration.

The forward detachment culminated its attack after creating a point of penetration. The first-echelon motorized rifle battalion (MRB) attacked to exploit the point of penetration and culminated its attack within the BCT's sector. The second-echelon MRB attacked along the same avenue as the first-echelon MRB to seize the MRR objective.

If the envelopment detachment and flank security detachment are successful, the MRBs will continue to attack toward the MRR objective to create multiple points of penetration, causing the BCT to fight in multiple directions. This would prevent the BCT from massing its combat power.

The FA battalion S2 templated the enemy infantry that would be air assaulted into the vicinity of NV490070 and estimated the infantry would take approximately 30 minutes to consolidate forces on the landing zone before moving to the objective.

The S3 noted that if the enemy inserts into that location, A and B Batteries would be within enemy observation and anti-tank weapons range. The S2 and the S3 developed PIR 1 listed in the figure. The PIR is based on the enemy's COA to air-insert infantry. (The figure is a modification of the "Enemy Critical Events Matrix," Figure 4-5 on an Event Template found in FM 3-09, Page 4-33.)

PIR 2. During the mission analysis process, the battalion fire direction officer (FDO) identified one of the EFATs is to emplace a family of scatterable mines (FASCAM) minefield in the vicinity of NV345165 in Brown Pass. The task and purpose of the FASCAM is to delay the first-echelon MRB west of Brown Pass for 15 minutes to isolate the regimental forward detachment east of the pass. The brigade fire support officer (FSO) established a trigger for firing FASCAM as the forward detachment is identified east of Brown Pass.

The FDO determined that C Battery will be the primary FASCAM shooter and B Battery the alternate shooter. To

range the pass, C Battery will move from one position area to another along Route Adams, the fastest route over even terrain. The battle captain determined it would take C Battery 40 minutes to move during limited visibility.

During the wargame, the S2 templated two possible persistent chemical strikes within a three-kilometer diameter. One chemical strike was templated at NV4614 near Route Adams with the purpose of isolating the northern task force, thus facilitating the penetration of first-echelon forces. The other templated chemical strike was at NV5110, which is over the BCT's tank company reserve.

If the enemy emplaced the persistent chemical in the vicinity of NV4614, it would affect both B and C Batteries. The S3's reaction to this possibility was to establish an alternate route for C Battery, Route Madison, which traverses rough and broken terrain. The battle captain determined C Battery would need 90 minutes for this more difficult move. Based on this wargame, the S2 and S3 established PIR 2 listed in the figure.

PIR 3. As the wargame progressed, the S2 asserted the enemy will support his maneuver plan with indirect fires by positioning his RAG near target areas of interests (TAIs) 9 and 10. Additionally, the division artillery established a common sensor boundary to the west of TAIs 9 and 10.

During the wargame, one of the enemy's regimental reconnaissance teams called for indirect fire against B Battery, destroying two howitzers and one ammunition resupply vehicle. Neither the Q-36 nor the Q-37 Firefinder radar acquired the enemy artillery. The S3 conducted an analysis and determined that the TAIs and artillery were outside the Q-36's range of 24 kilometers and short of division artillery's common sensory boundary.

Based on this assessment, the S3 decided to reposition the Q-36 farther to the west to acquire the RAG. He also determined the latest time he would need to know if the RAG can acquire the Q-36 and artillery firing units occurs when the MRR's first-echelon main body crosses Time Phase Line (TPL) H-1. This would trigger the repositioning of the friendly radar and artillery to the west. Based on this interaction, the staff compiled PIR 3 listed in the figure.

PIR 4. As the wargame continued, the S2 positioned the enemy's ARC-1 counterbattery radar to acquire both the direct support and reinforcing battalions. As Bluefor artillery supported the BCT commander's scheme of maneuver with fires, the ARC-1 acquired Bluefor artillery and returned counterfire, destroying two howitzers and several wheeled vehicles. Based on this enemy action, the battalion S3 would counter by changing the survivability movement criteria for his firing batteries and directing battery commanders to increase dispersion between howitzer sections.

The S2 glanced at the BCT's HPT list. He identified the ARC-1 as a HPT when the RAG is set and ready to support the MRR's commitment of the first echelon into the BCT's main defensive area.

Examining the BCT's scheme of fires, the S3 noted one of the BCT's EFSTs is to mass indirect fires when the enemy enters task force engagement areas, the decisive point of the battle. During this phase of the battle, the battalion will execute its highest volume of fire and will be more susceptible to enemy acquisitions and counterfire.

The S2 and S3 agreed the location of the ARC-1 needed to be determined before this decisive point. Based on this discussion, the battle staff produced PIR 4 listed in the figure.

PIR 5. The staff continued wargaming and determined it is possible the enemy could penetrate the brigade's defense. The S2's assessment was that if the enemy penetrated the brigade's defense, it would be in the northern task force sector initially, followed by further penetrations in the south as the defense collapsed.

If penetrations occurred, the FA battalion would have to reposition its firing batteries, Q-36 radar and TOC to avoid contact with enemy armored formations. The staff developed PIR 5 listed in the figure to address this enemy action.

The previous discussion details possible PIRs for a BCT defensive mission and, by no means, are all-inclusive.

Force-Protection PIRs for Offensive Operations. Here are some possible force-protection PIRs for an offensive mission. If one of the enemy's COAs is to employ a raiding detachment, the staff can establish a PIR with a decision point to reposition batteries, the Q-36 radar, logistics sites and command, control and communications nodes away from the enemy's avenue of approach.

Another enemy option may be to employ an artillery raid. In this instance, the battle staff can produce a PIR with a decision point to reposition the Q-36 and a firing battery to deliver counterfire. If the enemy has enough time to prepare a detailed obstacle plan, the staff can develop a PIR related to identifying minefields and obstacles tied to a decision point to travel along alternate routes.

One of the most intellectually challenging aspects of the military decision-making process is wargaming. As part of wargaming, the battle staff produces several products, including a decision support template (DST) that details PIRs to support key commander and staff decision points. These PIRs help the commander by filling in intelligence gaps and allowing him to make timely decisions.

As Mao would echo, the creation of a detailed DST and associated PIRs requires "hard thinking." The difference between thinking hard up front or waiting until after the battle begins could be the success of the unit and the lives of its soldiers.

Major Johnny Cook, Military Intelligence (MI), is the Reinforcing Artillery Battalion Intelligence Trainer on the Werewolf Team (Fire Support Task Force Trainers) at the National Training Center (NTC), Fort Irwin, California. He also has held positions at the NTC as Senior Training Analyst and Intelligence Trainer on the Tarantula Team (Light Infantry Task Force Trainers), G2 Plans Officer and G2 of the 52d Infantry Division on the Lizard Team. Major Cook commanded an MI company in the XVIII Airborne Corps at Fort Bragg, North Carolina. His other assignments include serving as Assistant S3 of the 519th MI Battalion and S2 of the 2d Battalion, 503d Infantry, both in the 2d Infantry Division in Korea.

Captain Kirk D. Steege, MI, is the Direct Support Artillery Battalion Intelligence Trainer on the Werewolf Team at the NTC. He also served as the G2 Plans Officer on the Lizard Team. Among other assignments, he was the S2 of the 34th Support Group and Commander of an MI company in the 501st Military Intelligence Brigade in the Eighth Army, Korea. He also served as the Battalion S2, Battalion Targeting Officer, Battalion Ammunition Officer and Recon Survey Officer in the 1st Battalion, 5th Field Artillery, part of the 1st Infantry Division (Mechanized) at Fort Riley, Kansas.

Air Support Functionality in AFATDS

By Major Alford J. Williams

The fire support coordination process is a flexible process that must be kept as simple as possible to produce the desired results. The Joint Force Commander and component commanders synchronize joint fire support operations to place the right attack means on the correct target at the precise time. To achieve synchronization, commanders and staffs must have a thorough knowledge of each service's doctrine, major systems, significant capabilities and limitations and often their TTP [tactics, techniques and procedures].

Joint Pub 3-09 Doctrine for Joint Fire Support

Efficient planning, coordination and execution of air support for US Army forces (ARFOR) ground operations are essential to the success of the ARFOR mission. The battlefield coordination detachment (BCD) is the ARFOR commander's link between the ARFOR ground operations and the joint force air component commander's (JFACC's) joint air operations center (JAOC). The Army's BCD in the JAOC processes Army requests for tactical air support, monitors and interprets the land battle situation for the JAOC and provides the interface for the exchange of current intelligence and operational data.

The BCD synchronizes air and ground operations for the following seven air missions: air interdiction (AI); air reconnaissance; close air support (CAS); electronic warfare (EW); theater airlift; reconnaissance, intelligence, surveillance and target acquisition (RISTA); Army airspace command and control (A^2C^2); and air and missile defense. The BCD achieves this synchronization by integrating Army operational requirements into the ATO development process by way of the advanced Field Artillery tactical data system (AFATDS). AFATDS is fielded from echelons above corps (EAC) down to the firing platoon level.

Internally, the Marine Corps has the same requirement to synchronize air and ground operations. This coordination and synchronization is conducted at the tactical air control center (TACC) at the marine expeditionary force (MEF) level. When the Marine Corps cannot service air support with internal assets, it coordinates support with the JFACC through the Marine air liaison officer (MARLO). Even though the TACC has AFATDS, the link between the TACC and the MARLO is voice, not digital.

This article discusses how AFATDS processes pre-planned and immediate requests for air support for both the Army and Marine Corps. These capabilities are part of AFATDS' Version A98 software currently fielded.

AFATDS Interface. During the past year, great advances have been made in the interoperability between AFATDS and the Air Force's theater battle management system (TBMCS), significantly improving our ability to plan and coordinate air support. AFATDS provides important capabilities to coordinate and synchronize air and ground operations.

AFATDS has an air support list (ASL) used to manage the commander's air support requests (ASRs). (See Figure 1.) An ASL is simply a list of ASRs for a unit for a given day that corresponds to a specific ATO. The ASL manages a unit's air requests throughout the ATO development and execution cycle from the time the requirement for air support is identified to the approved missions being flown the current air day.

The ASL supports the seven air missions synchronized by the BCD in addition to medical evacuation (MEDEVAC) and air assault missions. Currently, TBMCS supports the automated processing of AI missions and preplanned ASRs at the JAOC and CAS mission requests at the air support operations center (ASOC).

Pre-Planned Requests. Planning begins with the military-decision making process (MDMP) and higher headquarters planning guidance, which designates the priority of effort for air support. Higher headquarters also provide the unit a maximum number of ASRs it can submit (normally by mission type).

The pre-planned ASR functions in AFATDS allow each unit to develop ASRs and construct an ASL for a specific air day. The ASL is then forwarded to the next higher headquarters in the request chain for fire support processing. The higher headquarters analyzes the subordinate's ASL, conducts fire support processing, resolves conflicts and checks for duplications. Approved subordinate ASLs then are merged for submission to the next higher headquarters. This process is repeated at each echelon until the ASLs reach the ARFOR's BCD.

The request process may begin as low as the maneuver battalion task force, but the consolidation process begins at the maneuver brigade. This processing plan facilitates the submission of pre-planned ASRs via the ASL from battalion to brigade to division to corps to the ARFOR.

Once higher headquarters has merged its subordinates' ASLs into it's ASL, it then reviews the consolidated ASL for correctness and compliance with the higher commander's intent. During the review, the higher headquarters uses the AFATDS sorting function, which helps "stack" (group) similar ASRs together in the ASL. This allows the headquarters to determine which air missions to forward and which, if any, to deny.

The headquarters also uses AFATDS to check for duplications and violations of fire support coordinating measures (FSCM). In the duplication check, AFATDS lists the target numbers (ASR numbers) that are duplicates, based on target locations and the unit's AFATDS "Duplication Guidance." The FSCM check compares each ASR target size and location to the FSCM that will be in effect during the execution of that ASR, as modified by that unit's "Fire Support Buffer Distance Guidance" in AFATDS.

At the BCD, the process is performed one last time on the ASL before being sent to TBMCS for processing and ATO development.

Processing pre-planned ASRs is similar for the Marine Corps. (See Figure 2 on Page 22.) The fire support coordination center (FSCC) in the maneuver battalion forwards the ASRs digitally to the regimental FSCC for review and deconfliction with its ASL. The consolidated ASL is then forwarded to the division FSCC and then Marine expeditionary force (MEF) for review and approval before the MEF's consolidated ASL is sent digitally to the TACC. The TACC processes ASRs for all air mission categories and only forwards those ASRs it can't support with Marine assets to the AOC. The TACC interfaces with the MARLO by voice to access support from the AOC.

When the AOC publishes the ATO, AFATDS receives and processes the ATO via its interface with TBMCS at the BCD. AFATDS matches the ASL with the same time window as the ATO and automatically updates the ASRs on its ASL (based on the ASR numbers). After AFATDS at the BCD updates the

ASL Lists in Current Phase 1

File Target View

List: ASL EXAMPLE Plan: Current Phase: 1

Absolute Start: 201200ZDEC00

D-Day End: 211200ZDEC00

- Current
- SOP Phase 1
- DIV OPORD DEFEND Phase 1
- DIV OPORD DEFEND Phase 2
- 3BDE STRESS PLAN Phase 1

	ASR No	Tgt No	Target Type	Ver 1	Ver 2	Start Time	Air Stat
1	AAA0000	AA0000	Defile			011200ZDEC01	
2	AAA0002					011400ZDEC01	
3	AAA0005					011456ZDEC01	
4	AAA0001	AA0001	Hill			011300ZDEC01	
5	AAA0003					011500ZDEC01	
6	AAA0006					011344ZDEC01	
7	AAA0004					011545ZDEC01	

Legend: **DIV =** Division **3BDE =** 3d Brigade **OPORD =** Operations Order **SOP =** Standing Operating Procedures

Figure 1: Air Support List (ASL) in the Advanced FA Tactical Data System (AFATDS)

ASL, AFATDS automatically sends this revised ASL to all the subordinate units whose ASRs were merged into that ASL. The process is the same for changes from the top-down. AFATDS automatically updates any ATO changes to the ASL published by the AOC and disseminates the revised ASL digitally.

After developing the ASL, some of the target data may change, for example when a target's location changes. AFATDS allows the operator to update the target data for pre-planned ASRs. The update occurs on individual ASRs, and each is forwarded for processing.

AFATDS provides other functionality to help the user manage his approved ASRs. For example, the operator can set two alarm clock-type alerts to notify him when higher headquarters requires verification of each mission's validity.

Additionally, when a mission has been flown and TBMCS sends the BCD's AFATDS a mission report (MISREP), AFATDS changes the status of the mission to "Completed" and annotates the results indicated on the ASL. These and other functions help the AFATDS operator track the status of the pre-planned air missions from initial submission through completion.

The operator also can select an approved ASR on an ASL and "Execute" or "Divert" that mission. Either of these actions causes an immediate ASR to be generated and sent to the unit in the immediate ASR routing guidance (using the number of the selected ASR).

Immediate Requests. AFATDS allows each echelon to develop immediate ASRs and send them up the chain for approval. (See Figure 3.) The processing for immediate ASRs is different from the process for pre-planned ASRs.

Each unit in the air mission chain monitors the current ASL. As the pre-planned ASL becomes effective, the unit uses AFATDS to manage its immediate missions. There should never be two ASLs with overlapping times.

For immediate ASRs, CAS requests are routed digitally to the ASOC while all other requests are sent to the AOC. Each AFATDS unit establishes a routing path up its chain of command for immediate air requests. This allows the unit to send two copies of the immediate request—one copy destined for the ASOC or AOC and one to remain as an info copy for the higher headquarters as the request rapidly passes through that headquarters to the next higher headquarters.

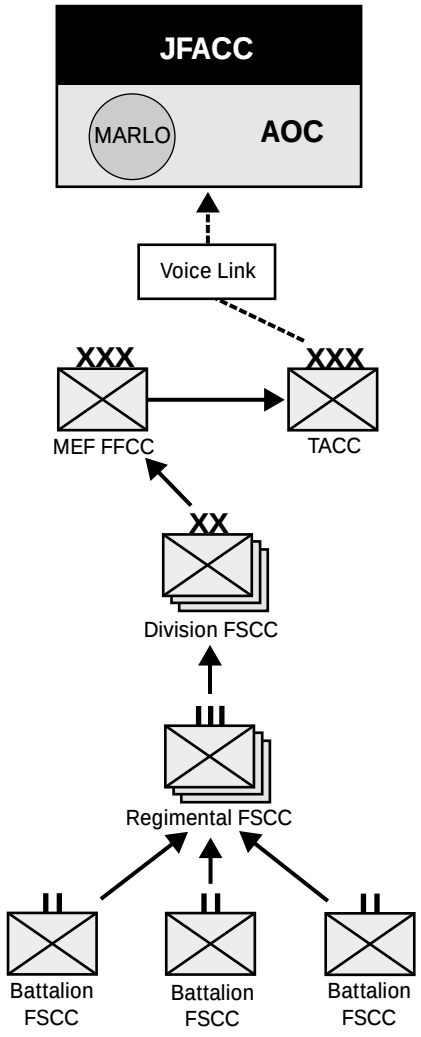


Figure 2: USMC Pre-Planned Air Support Request (ASR) Mission Flow. The battalion FSCCs create and send their ASRs for the air support list (ASL) to regiment, which merges all requests and sends them to higher headquarters, etc. For those air missions that cannot be serviced by Marine Air, the TACC coordinates for air support via a voice link with the MARLO at the JFACC's AOC.

Each higher headquarters receives and reviews its info copy of the ASR as the immediate ASR continues up the chain. If the headquarters finds no problems with the request, then it takes no action, allowing the mission request to proceed. On the other hand, if a higher headquarters finds a problem with the mission, it can send "Denied." The deny message automatically goes back via the chain of command to the originating unit and forward to the ASOC or AOC.

If a unit receives an immediate request for CAS or AI, AFATDS checks the current ASL to verify if the unit has an approved pre-planned CAS or AI mission with the same ASR number as the immediate request. If there is a match, AFATDS changes the state of the mission to "Execute" and sends the ASR to the AOC or ASOC.

If AFATDS can't match an ASR number with the request, AFATDS looks at approved pre-planned on-call and scheduled missions the unit created. If possible (based on a match of the target type and the "No Earlier Than/No Later Than" time of execution), AFATDS recommends a request to divert one of these missions to service the immediate ASR. When this happens and the operator approves the recommendation, AFATDS changes the mission state of the pre-planned mission to "Divert," associates the new target number and location with the immediate ASR and sends the request to the ASOC.

Again, the process is similar for the Marine Corps, except it sends all immediate requests up the chain (with info copies at each higher headquarters) to the division air support center (DASC) for processing. If the DASC cannot support the immediate ASR, it returns the request to the division for submission to the MEF. At this point, the request follows the route for pre-planned ASRs.

Air Mission Improvements. The Training and Doctrine Command System Manager (TSM) Field Artillery Tactical Data Systems (FATDS) at the Field Artillery School, Fort Sill, Oklahoma, and the Program Manager for FATDS (PM FATDS), are working to improve the air functionality in AFATDS. The goal is to minimize the number of keystrokes required to create or initiate an ASR and make AFATDS windows "look and feel" like the commercial software applications used by soldiers and Marines daily. The following air mission processing improvements are being incorporated into either A99-Plus software scheduled for fielding in June 2002 or Version 7 to be fielded in April 2003.

Reduce the Number of Windows. Currently when an AFATDS operator wants

to create an ASR, he must enter data on two or more windows and use a "Next" button to navigate from window to window. This format will change to one window with tabs. All the mandatory information will be located on the initial window, or tab, so it will take only one window to create an ASR. Any other information (not mandatory) may be entered on the additional tab(s).

One Set of Start and Stop Times. AFATDS' mission start and stop times established in the ASL will be the same mission start and stop times for the ASR. The operator, however, will be able to change these times if he wants time for target execution.

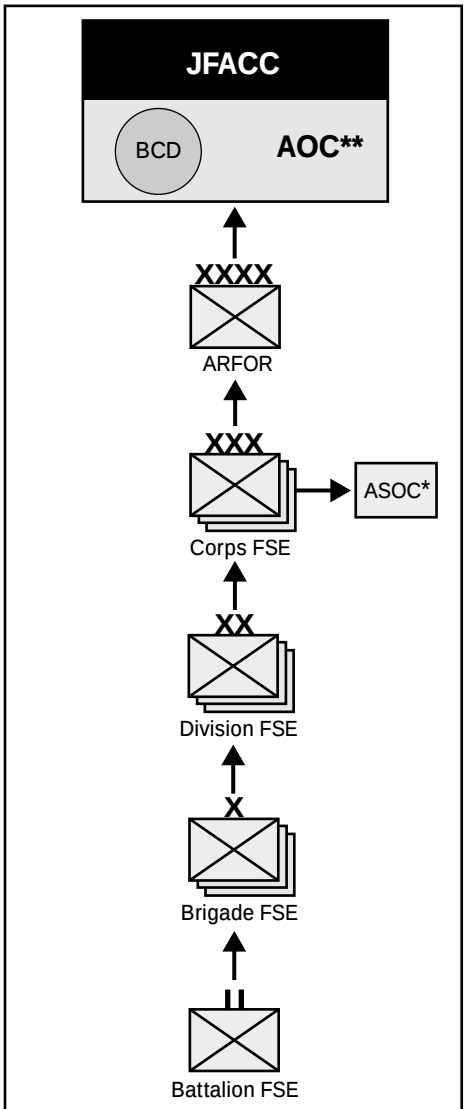
Updating Data Fields. AFATDS will have expanded capabilities for ASR data fields. After receiving an ATO, fields of the corresponding ASR automatically will be updated and (or) filled in with the information contained in the ATO. This information will be passed to all units in the air request chain. Additionally, a medium-level alert will be posted to notify the operator he has received an updated ASL as the result of an ATO update.

Tracking Multiple Missions. For the first time, AFATDS will be able to track multiple Air Force missions assigned to a single ASR. For example, currently, if an ASR requires 10 missions, AFATDS does not show a mission completed until all 10 missions are flown. The new software will track each mission flown on an ASR.

Improved Printing. The operator will be able to print the "Desired Effects" and " Rationale" fields plus the ASL with latitude-longitude grid coordinates instead of Universal Transverse Mercator (UTM).

Enhancing ASR Numbering. Currently, AFATDS uses three alpha characters and four numbers to define the ASR number. Based on input from the field, this format will change to allow up to five alphanumeric characters and three numbers per ASR.

An AFATDS operator will be able to enter any ASR number he desires as long as it meets the new eight-character format; he also will be able to allow the system to auto-generate an ASR number from the ASR numbering block. The operator will be able to establish the auto-generation ASR numbering to assign a prefix to each ASR by mission type or ATO designation based on his commander's guidance. The operator will be able to edit the ASR number.



* Immediate ASRs for close air support (CAS) missions.

** Immediate ASRs for all other missions: air interdiction, reconnaissance, electronic warfare, air lift/drop, assault support and medical evacuations.

Legend:

AOC = Air Operations Center
ARFOR = Army Force
ASOC = Air Support Operations Center
BCD = Battlefield Coordination Detachment
FSE = Fire Support Element
JFACC = Joint Force Air Component Commander

Figure 3: Army Immediate Air Support Request (ASR) Mission Flow. The battalion FSE passes an immediate ASR through the brigade FSE (with an info copy for the brigade FSE), which passes it through to the division (with an info copy to the division), etc. ASRs for CAS missions stop at the ASOC, and ASRs for all other missions go to the BCD.

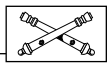
With the implementation of the enhanced numbering system, some unit standing operating procedures (SOPs) will change, but AFATDS won't lose any interoperability with older systems.

Ideas and Questions On Line. The geneses of these improvements were comments from users in the field. If you have ideas for improvements, email them to me and include a point of contact with a telephone number and email address: williamsa5@sill.army.mil. My Fax is 580-442-2915 (DSN 639).

You also can share your ideas with other soldiers and Marines via the Army Knowledge Online (AKO) website at www.us.army.mil. You log in as a new user. After registering with AKO, visit the TSM-FATDS discussion forum at www.workplace.us.army.mil using your new password. We have set up a discussion forum for everyone interested in sharing ideas or getting questions answered about AFATDS and fire support command and control.

Today, AFATDS software interfaces with the TBMCS to process ASRs for the ATO. With the planned improvements, the software will be even better in the near future.

AFATDS is the fire supporters' digital command and control system for fire mission processing, helping the commander "synchronize joint fire support operations to place the right attack means on the correct target at the precise time" (JP 3-09).



Major Alford J. (A.J.) Williams is the Assistant Training and Doctrine Command (TRADOC) Systems Manager for Field Artillery Tactical Data Systems (TSM-FATDS), part of the Field Artillery School at Fort Sill, Oklahoma. In TSM-FATDS, he is responsible for determining software requirements of the Advanced FA Tactical Data System (AFATDS) and ensures the interoperability of Air Force and Navy command and controls systems with AFATDS. Prior to this assignment, he participated in Training with Industry at Raytheon Systems Company, at Fort Wayne, Indiana; Raytheon designs AFATDS software. Among other assignments, he was the Targeting Officer and Assistant G3 Plans for the XVIII Airborne Corps Artillery, Fort Bragg, North Carolina. He also was the Division Artillery Counterfire Officer and then Company Fire Support Officer and Assistant S3 for 3d Battalion, 1st Field Artillery, all in the 3d Infantry Division (Mechanized), Germany. He commanded Service Battery of the 3d Battalion, 321st Field Artillery in the 18th Field Artillery Brigade at Fort Bragg.

Reactive Targeting
Firefinder and AFATDS in the Digitized Division

By Chief Warrant Officer Two Eric J. Moran and
Lieutenant Colonel Dominic D. Swayne

New capabilities in the Field Artillery's advanced FA tactical data system (AFATDS) and Firefinder radars mandate a shift in traditional reactive targeting tactics, techniques and procedures (TTP). While the fundamental doctrine of the *decide, detect, deliver* and *assess* (D^3A) targeting methodology established by *FM 6-20-10 TTP for the Targeting Process* remains sound, hardware and software fielding have added new dimensions.

With the AFATDS' new capabilities come additional responsibilities for the fire support elements (FSEs) and fire control elements (FCEs) to articulate and design the guidance and geometry to prioritize missions to meet the commander's intent. The targeting officer, counterfire officer and radar section must be able to support rapid reactive targeting by simplifying radar zone management.

This article discusses how the radar system works, how changes in technology are affecting radar zone management and the TTP adopted to maximize the counterfire system of systems in the 4th Infantry Division (Mechanized), Fort Hood, Texas.

Firefinder Primer. First, we need a common understanding of how Firefinder works and interacts with different fire control computers. Firefinder acquires incoming projectiles, determines their origin, extrapolates the point of impact and reports these acquisitions to the operator *whether or not they violate a zone*. If the acquisition violates an established zone, the radar sends a fire mission to the supported FCE using an FM;CFF (fire mission; call-for-fire) message format. If the acquisition does not violate an established zone, the radar generates an intelligence report using the ATI;CDR (artillery targeting intelligence; coordinates report) format.

Location Averaging. The Firefinder is limited to 99 acquisitions in the buffer, and there was early concern that it literally could be overwhelmed with acquisitions. Based on this, Firefinder includes a location-averaging function that can be activated by the radar operator.

With location averaging enabled, the Firefinder computer averages all detections from a 238-meter radius and converts that into a single average grid in the center (see Figure 1). The 238-meter criterion is a standard that can't be adjusted by the operator. With location

SGT Daniel Ledesman, 161st Target Acquisition Battery, Kansas Army National Guard, operates a Q-36 Firefinder radar in Bosnia.

averaging, Firefinder can "generate" a target that is more than 200 meters away from the actual acquisition.

Auto-Censoring. Firefinder also has an auto-censoring function that allows the operator to screen acquisitions from a particular area once the threshold is set and reached. Auto censoring prevents tracking the same weapon numerous times. When the function is enabled, the radar ignores acquisitions that originate from the same location (500 meters) after the designated number of tracks are detected (two to 16).

Once the number of tracks are detected, all subsequent acquisitions from the designated area are ignored. The auto-censoring function can lead to a "blind-spot" because the radar will ignore any additional targets that originate from that area.

Both these methods significantly reduce the volume of missions generated by Firefinder and decrease target location accuracy and situational awareness.

Four Zones to Prioritize Acquisitions. The Firefinder uses four zones and can handle a maximum of nine active zones at any time. Traditionally, the counterfire officer establishes multiple zones to prioritize calls-for-fire for legacy systems. These four zones were designed to prioritize acquisitions sent to legacy systems; specifically the tactical fire direction system (TACFIRE) that is no longer in the force, ballistic computer system (BCS), fire direction system (FDS) and initial fire support automated system (IFSAS). The four zones are as follows.

1. Critical Friendly Zone (CFZ). When the radar's computer predicts an enemy round will impact in a CFZ, the computer reports the location of the weapon that fired in precedence ahead of all other detections. Because the legacy fire control systems prioritized missions based on message format, any location of a weapon firing into a CFZ would result in a priority "immediate" call-for-fire (FM;CFF).

2. Call-for-Fire Zone (CFFZ). In legacy systems, a target identified in a CFFZ generates a FM;CFF Priority 2 message.

3. Artillery Target Intelligence Zone (ATIZ). Any weapons acquired in this zone are reported to legacy systems ahead of all target detections, except CFZ and CFFZ; the detections only result in a target report (ATI;CDR).

The ATI;CDR message also is the default format for Firefinder. Any acquisition that does not violate a zone is reported to the supported artillery unit in this format. The message provides the counterfire officer or the intelligence officer (S2) intelligence on the enemy artillery's location and activities.

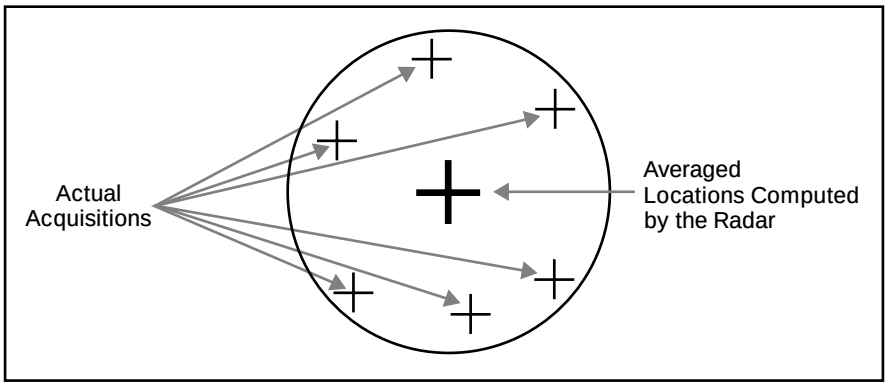


Figure 1: Location Averaging in Firefinder. When location averaging is turned on, the radar averages all detections from the same 238-meter radius into one single grid location. This prevents overloading the radar's storage queue with acquisitions from the same location but can "generate" a target more than 200 meters away from the actual acquisition.

4. Censor Zone (CZ). A CZ prevents the radar computer from generating acquisition solutions.

AFATDS Primer. Prioritization based on multiple zones was a technique well suited for legacy digital systems, but it is not ideal for managing reactive counterfire with AFATDS. The important distinction between AFATDS and IFSAS is that AFATDS prioritizes targets based on *mission value* while legacy systems, such as IFSAS, use a *message-based* priority system. Using IFSAS, an FM;CFF message has priority over an ATI; CDR. AFATDS does not recognize the character in the message header that distinguishes the ATI;CDR message from the FM; CFF message as IFSAS does. AFATDS uses the target information contained in each message to calculate a mission value, which becomes the basis for multiple automated processes and, ultimately, prioritization.

As division and brigade planners develop courses-of-action (COAs), AFATDS determines the components of mission value and other criteria for mission processing and automated decision making, using the commander's guidance, the high-payoff target list (HPTL), priority of fires and location of the target (AFATDS uses target area of interest, or TAI). These are all products of the military decision-making process (MDMP) and D^3A methodology. These traditional *decide* targeting products provide the data the AFATDS operator needs to generate the desired mission-value prioritization.

Each target type, subtype and category on the HPTL receives a unique value and enables AFATDS to calculate the mission value. While the entries in AFATDS are pretty straight forward, AFATDS employs a substantial amount of analysis and "art" to establish the mission values to ensure the recommended solutions meet the commander's intent. During mission processing, AFATDS derives mission values from the entries shown in Figure 2.

- **Target Type Value.** This value is based on the target value in the target management matrix (TMM) for non-high-payoff targets (non-HPTs) on the high-value target (HVT) list.
- **Associated Target Area of Interest (TAI) Value**. The TAI value is based on the TAI, if any, that encloses the target. If the target is in multiple TAIs, the TAI with the highest ranked value in the mission-prioritized guidance is used.
- **Associated Priority-of-Fires (POF) Value.** This is based on the observer's identification, the observer's supported unit identification or the unit that sent the mission to the local operational facility (OPFAC). If more than one of these units are in the POF guidance, then the unit with the highest ranked POF is used in the calculation.
- **On-Call Value.** This value is based on whether or not the mission was initiated off the on-call target list.

Figure 2: AFATDS Database Settings for Mission Analysis. Each category of the database is weighted and factored into an AFATDS formula that determines the target value.

AFATDS has additional features that streamline the counterfire process. AFATDS can degrade targets over time. This target decay time helps manage any backlog in processing.

Much like a shot clock, a unique time setting can be established for each target type so missions against highly mobile targets will "time-out" if they aren't processed quickly enough to have a high probability of effects. The decay time is determined for each target type during the MDMP and is a component of the digital attack guidance matrix (DAGM). An example of a DAGM is shown in Figure 3.

AFATDS also can employ fire support rules that further refine the tactical fire control solution. These rules can be used to designate targets located in defined areas (TAIs) or target types for attack by specific fire units.

Unit leaders and the counterfire team now can develop TTP that capitalize on the software and user interface advances in AFATDS, as well as improvements in the Firefinder software.

Reactive Targeting TTP. As we developed our TTP, we based them on four considerations. First, the value of the target, not the value of the message format, is the basis for target priority Second, managing multiple small zones is inefficient; it can interrupt acquisition processing. Third, we want to kill all enemy artillery capable of influencing our area of operations. Last, we want to automate as many of the decisions as possible using AFATDS.

Additionally, we considered the enemy has spread out his artillery, so we planned to fire at individual pieces. Our multiple-launch rocket system (MLRS) and cannons, to some extent, can fire accurately at several discrete locations simultaneously. If we set the standard fire orders and mission value criteria correctly, we can rapidly engage multiple targets and allow AFATDS to automatically process acquisitions according to the criteria.

One Large Zone. With these considerations in mind, we established one ATIZ. (Because the default in the radar is ATIZ, this is the equivalent of having no zone.) The ATIZ covers the entire battlespace forward of the coordinated fire line (CFL) within the supported headquarters boundaries. (See Figure 4.) Previously, multiple CFFZs were established over suspected enemy locations and manipulated during the fight to maintain the proper message-based priority. Now, all acquisitions are processed as ATI;CDR messages and sent to AFATDS.

	IHF (OPLAN 01-02) Security Zone		AFATDS TMM Data	Attack System Preference (Shooter Unit) AFATDS FA Attack Preference						TSS Max TLE (M)	TSS Max Report Age (Min)	Min #	Activity	Remarks IEW, Coordination Required, Exclusion, TBA, etc
	High-Payoff Target Descriptions	AFATDS Target Type		DS/R	GS	ATACMS	Atk Hel	CAS	EW					
ADA	ADA (AFATDS HVTL Data: D/A/100)													
	SA-11 (FireDome, Snow Drift, Tube Arm)	ADA,Missile	A/D/100/Y	3	1	2				50	20	3	Stationary	ADA and associated radars protecting fire direction artillery/ maneuver ASAS target; type is: ADAMSL, RDRAS, ADAL, RDRFC, RDRGDN, SAM
	SA-8 (Land Roll, Flat Face)	ADA,Missile	A/D/98/Y	3	1	2				50	20	3	Stationary	
	SA-13 (Hot Box)	ADA,Missile	A/D/96/Y	2	1					50	20	3	Stationary	
	Crotale	ADA,Missile	A/D/99/Y	3	1	2				50	20	3	Stationary	
	Rolland (Thompson-CSF)	ADA, Light	A/D/95/Y	3	1	2				50	20	1	Stationary	
	Rapier (Marconi)	ADA, Missile	A/D/97/Y	3	1	2				50	20	3	Stationary	
Fire Support	Fire Support (AFATDS HVTL Data: D/A/96)													
	WM-80 (273-mm)	Missile, Hvy	A/D/100/Y	5	1	4	3	2		50	15	1	Stationary	
	9A52 (300-mm)	Missile, Hvy	A/D/99/Y	5	1	4	3	2		50	15	1	Stationary	
	Arty UNK	Arty, UNK	A/D/98/Y	2	1	5	4	3		50	15	3	Stationary	
	Mortar UNK	Mortar UNK	A/D/97/Y	1	2		4	3		50	15	3	Stationary	
	2S7 (203)	Arty, Hvy SP	A/D/96/Y	4	1		3	2		50	15	5	Stationary	
	BM-11, -21 (122-mm)	Missile Med	A/D/95/Y	4	1		3	2		50	15	2	Stationary	
	G-5 (155-mm)	Arty, Towed	A/D/94/Y	4	1		3	2		50	15	10	Stationary	
	G-6 (155-mm)	Arty, Med SP	A/D/93/Y	4	1		3	2		50	15	2	Stationary	
	GCT/AU-F1 (155-mm)	Arty, Med SP	A/D/92/Y	4	1		4	2		50	15	2	Stationary	
	BL904 (Type 704)	Counterbattery Radar	A/D/91/Y	4	1	3	5	2		100	30	1	Stationary	
Engineer	Engineer (AFATDS HVTL Data: D/A/86)													
	GMZ Mineclearer	Armor, Light	A/D/100/Y	3	1			2		50	60	30	Stationary	
	UMZ Minelayer	Armor, Light	A/D/99/Y	3	1			2		50	60	30	Stationary	
	PMR-3 Trailer Minelayer	Armor, Light	A/D/98/Y	3	1			2		50	60	30	Stationary	
	BAT M Dozer	Armor, Light	A/D/97/Y	3	1			2		50	60	30	Stationary	
	BTM Dozer	Armor, Light	A/D/95/Y	3	1			2		50	60	30	Stationary	
	MDK-2 Tank Ditcher	Armor, Light	A/D/96/Y	3	1			2		50	60	30	Stationary	

Legend:

ADA = Air Defense Artillery
AFATDS = Advanced FA Tactical Data System
AGM = Attack Guidance Matrix
ASAS = All-Source Analysis System
ATACMS = Army Tactical Missile System
CAS = Close Air Support
DS/R = Direct Support/Reinforcing
EW = Electronic Warfare
GS = General Support
HPT = High-Payoff Target
HVTL = High-Value Target List
IEW = Intelligence and Electronic Warfare
IHF = Ironhorse Fighter
SP = Self Propelled
TLE = Target Location Error
TMM = Target Management Matrix
TSS = Target Selection Standards
UN = Unknown

Figure 3: Appendix 5 (Digital HPT/AGM) to Annex D (Fire Support) to OPLAN 01-01 (Ironhorse Destroyer). The HPTs are rank ordered by category based on the AFATDS HVTL data; the categories include ADA; Fire Support; Engineer; Maneuver; Command and Control; Nuclear, Biological and Chemical (NBC); Reconnaissance, Surveillance and Target Acquisition (RSTA); and Combat Service Support (CSS).

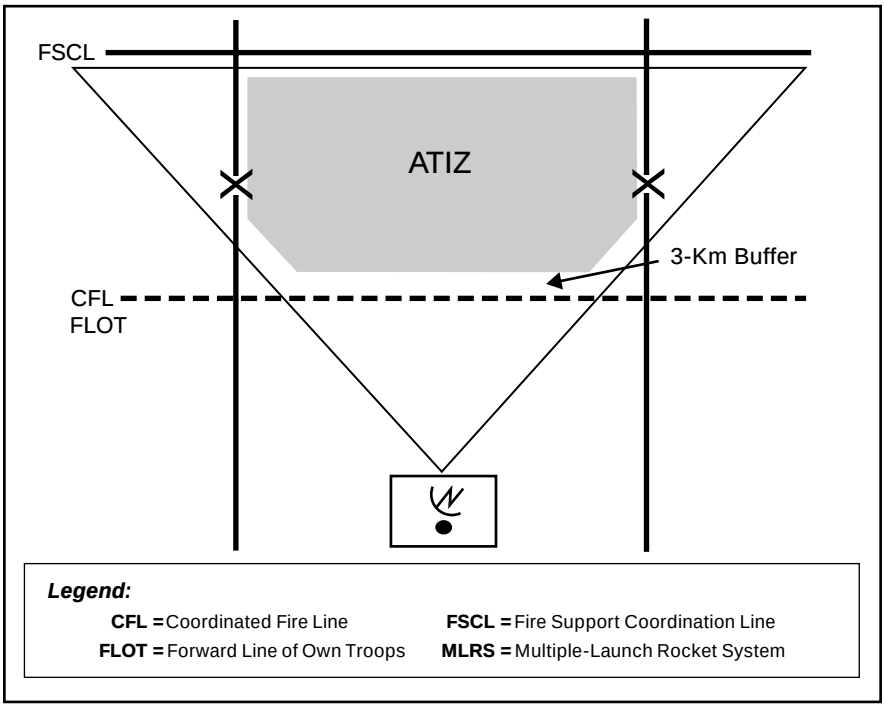


Figure 4: One Large Artillery Target Intelligence Zone (ATIZ). The three-kilometer buffer zone facilitates clearance of fires. MLRS has a two-kilometer surface danger zone, and the three-kilometer buffer ensures all acquisitions will be clear of the CFL.

AFATDS checks the acquisitions against the fire support coordination measures (FSCM) and uses its DAGM to determine the correct method of attack. If the target description is loaded in AFATDS as a HPTL, AFATDS generates a target and sends the fire mission directly to the firing unit without user intervention. The clearance of fires and focus of fires decisions are made in advance. One major advantage of the ATI;CDR format is it indicates the points of origin and impact of enemy fires, enabling AFATDS to generate red vectors on its battlefield displays showing the enemy shooters' locations and his targets.

Recognizing the need to focus friendly fires when the enemy concentrates his resources, we can build TAIs in AFATDS to generate mission values and prioritize the missions in the ATIZ much the same way as for CFFZs. The key is that we maximize AFATDS by using its digital analysis of target data to determine mission values rather than using the priority value of the message format to generate calls-for-fire.

There are several benefits to using one large ATIZ. Foremost, the AFATDS screen displaying the ATIZ points of origin and impact of enemy fires allows the fire support coordinator (FSCOORD) to show the maneuver commander precisely where the enemy is focusing fires, thereby telegraphing his intent. Further, one zone simplifies zone management for the counterfire officer, brigade targeting officer and radar section. It maximizes AFATDS digital mission prioritization and saves time, allowing the targeting officer more time to perform other duties, such as targeting with the unmanned aerial vehicle (UAV) or tracking the battle with the joint surveillance and target attack radar system (JSTARS).

As we fight the counterfire battle, we use our counterfire acquisitions to cue other sensors, such as the UAV. The battalion or division artillery S2 receives a "copy" of acquisitions from AFATDS on his all-source analysis system (ASAS) in an ATI;ATR (artillery target intelligence; artillery target report) format. Using the newest version of the Army tactical command and control system (ATCCS), Version 6.2x, the S2 refines templated artillery groups and develops a counterfire overlay that is "shared out" to other ATCCS systems across the division.

The brigade targeting officer and the division FA intelligence officer (FAIO) use the counterfire overlay to orient sensors to look for artillery groups acquired by Firefinder radars. Sensors, such as the UAV, can assess battle damage and conduct proactive targeting.

Conclusion. As the Army moves toward full digitization, we must carefully assess our technology-based TTP and ensure they keep pace with the advantages of new capabilities.

The radar's mission to acquire hostile artillery systems hasn't changed; our ability to process its acquisitions has become more efficient by relying on AFATDS. By using one large ATIZ and maximizing the automated features of AFATDS, we can streamline the counterfire process. These TTP give our targeting officers the opportunity to aggressively cross-cue detection systems as well as manage simplified zones.

By integrating reactive and proactive fires, we maintain constant pressure on the enemy and our situational dominance, taking the fight to the enemy and making the 4th Infantry Division more efficient and lethal.

Chief Warrant Officer Two Eric J. Moran is the Field Artillery Intelligence Officer (FAIO) for the 4th Infantry Division (Mechanized) at Fort Hood, Texas. In this capacity, Chief Moran developed the tactics, techniques and procedures in this article and tested them during the 4th Division's Digitized Division Capstone Exercise in April at the National Training Center, Fort Irwin, California. In his previous job, he was a Brigade Targeting Officer with 3d Battalion, 16th Field Artillery and Q-36 Radar Section Chief with C Battery, 2d Battalion, 20th Field Artillery, the latter the divisional Multiple-Launch Rocket System (MLRS) battalion, both also with the 4th Infantry Division. Among other jobs, he served as a Paladin Section Chief in 2d Battalion, 17th Field Artillery, 212th Field Artillery Brigade, III Corps Artillery, Fort Sill, Oklahoma. He holds an Associate's Degree in General Studies from Pikes Peak College, Colorado Springs, Colorado.

Lieutenant Colonel Dominic D. (Nick) Swayne is the Deputy Fire Support Coordinator (DFSCOORD) for the 4th Infantry Division at Fort Hood. Previously, he served as the 4th Division Artillery Executive Officer and S3 of the 2d Battalion, 20th Field Artillery, the divisional composite Multiple-Launch Rocket System (MLRS) battalion, also in the 4th Division. He commanded two batteries: Headquarters and Headquarters Battery of the 212th Field Artillery Brigade, III Corps Artillery, and A Battery, 1st Battalion, 19th Field Artillery, Field Artillery Training Center, both at Fort Sill. He also served as the Division Artillery Fire Direction Officer for the 3d Armored Division in Germany. Lieutenant Colonel Swayne is a graduate of the Command and General Staff College, Fort Leavenworth, Kansas, and holds a Master of Public Administration from Northeastern University, Boston, Massachusetts.

Joint Targeting for Time-Sensitive Targets

To Boldly Go Where No Army Has Gone Before

By Lieutenant Colonel (Retired) Bernd L. Ingram

> When you see a rattlesnake poised to strike, you do not wait until he has struck before you crush him.
>
> Franklin D. Roosevelt, 11 September 1941
> *Joint Pub 3-60 Joint Doctrine for Targeting* (Draft), Page IV-1

Time-sensitive targets (TSTs)—ever heard of the term? TSTs are hot topics among the services in the joint targeting arena.

With improving technology and our enemies sharing lessons among themselves (as the Serbs did with a few unfriendly Middle Eastern countries after our Balkan campaigns), there is a surge in enemy efforts to make our targeting more difficult. Potential enemies are making their most critical targets more mobile and harder to track—therefore, more survivable and threatening. Increasingly, every commander-in-chief (CINC) faces new challenges targeting TSTs.

This article examines ongoing efforts to deal with this challenge and outlines some considerations for targeting officers working the problem at joint headquarters. Those who recently have worked with targeting and fires in Kosovo or Bosnia and those who man the outposts in Southwest Asia and Korea know the challenges well.

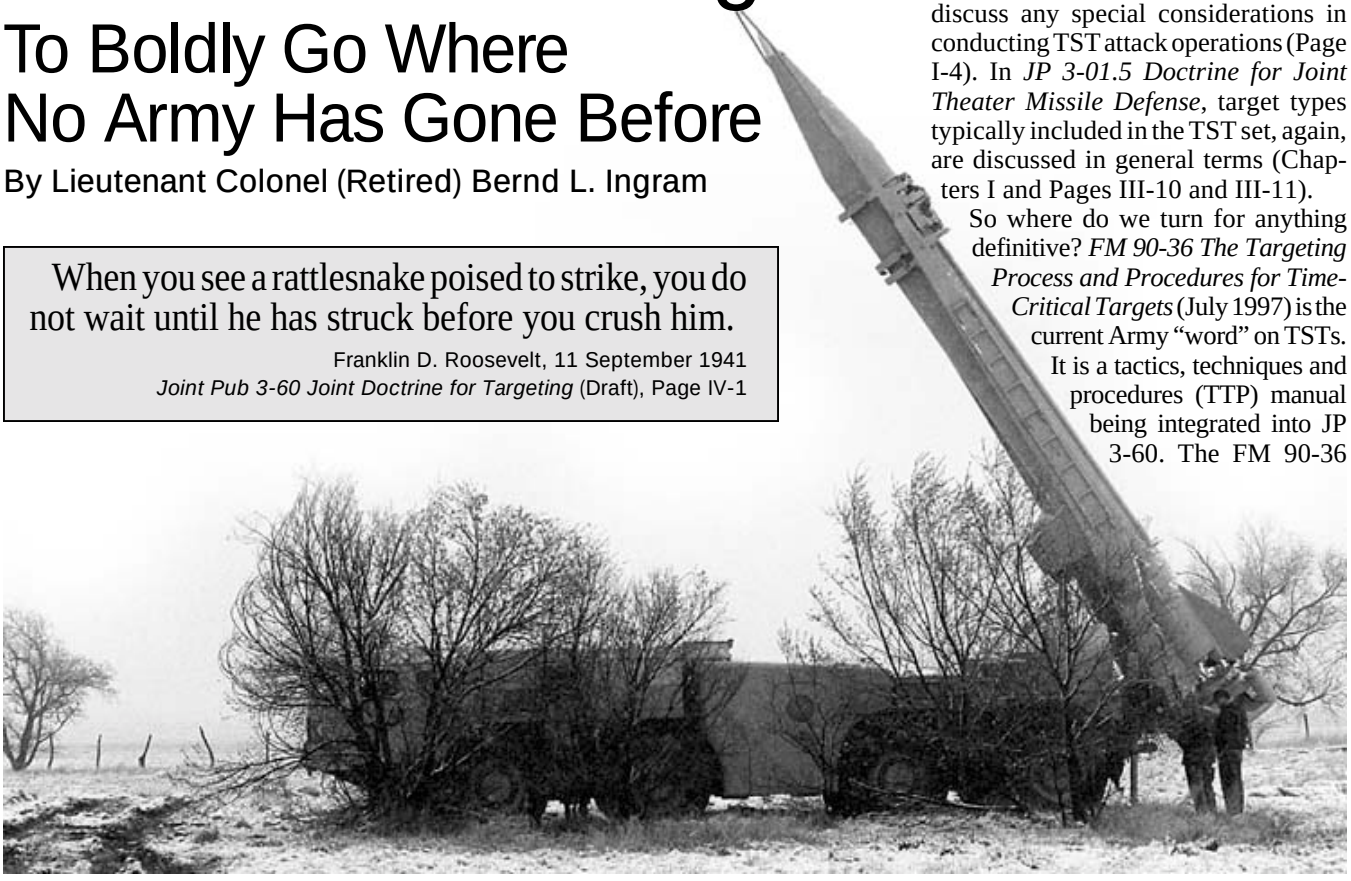
TSTs Defined. *Joint Pub (JP) 3-60 Joint Doctrine for Targeting* (Final Coordination Draft, 5 April 2001) defines TSTs as "air-land- or sea-based targets of such high priority to the friendly force that the JFC [joint force commander] designates them as requiring immediate response because they pose (or will pose) a danger to friendly forces or because they are highly lucrative, fleeting targets of opportunity. TSTs, such as airborne aircraft and missiles and submerged submarines, may be handled by separate components while others, including those on the surface of the earth, may require detailed inter-Service and/or functional component planning and coordination" (Page B-1).

TSTs are high-payoff targets (HPTs) identified by a JFC or joint task force (JTF) staff. They can be anticipated targets and planned for on the joint integrated priority target list (JIPTL) or managed on a separate TST list, depending on procedures in the theater. They also can be unanticipated targets, needing immediate responses. They all have limited engagement windows, usually due to short dwell times or limited acquisition or tracking times.

There has been confusion in the field about TST terms. Previous manuals and drafts used the additional terms of time-sensitive surface targets (TSSTs) and time-critical targets (TCTs) as subsets of the TSTs. The distinction was that TSSTs are targets on the surface only, vice airborne or submarines. TCTs are those TSTs that have even shorter windows of engagement. JP 3-60 uses one term to define all time-sensitive targets (surface, air or sea-based): TSTs. The focus of this article is surface-based TSTs with very short presentations times.

Joint Doctrine. Except for *JP 1-02 Department of Defense Dictionary of Military and Associated Terms* (23 March 1994, Page 364), few doctrinal references tell us much about TSTs and attack operations against this critical target set. *JP 3-03 Doctrine for Joint Interdiction Operations* (10 April 1997) and *JP 3-09 Doctrine for Joint Fire Support* (12 May 1998) do not mention TST attack operations. *JP 3-01 Joint Doctrine for Countering Air and Missile Threat* (19 October 1999) talks to TST-type targets in a general discussion of the changing threat but does not discuss any special considerations in conducting TST attack operations (Page I-4). In *JP 3-01.5 Doctrine for Joint Theater Missile Defense*, target types typically included in the TST set, again, are discussed in general terms (Chapters I and Pages III-10 and III-11).

So where do we turn for anything definitive? *FM 90-36 The Targeting Process and Procedures for Time-Critical Targets* (July 1997) is the current Army "word" on TSTs. It is a tactics, techniques and procedures (TTP) manual being integrated into JP 3-60. The FM 90-36



SCUD Missile Site

version contains the heart of the TST attack operations process, which needs to be amplified and integrated into the targeting effort outlined in Appendix B of draft JP 3-60.

TST Targeting. Regardless of the actual individual target type, operations against these targets cross the boundaries of many of the other target categories we are so familiar with. A proactive targeting process in a theater will identify the proposed TST targets in the enemy order of battle and examine each in relation to the proposed enemy courses-of-action (COAs) or campaign goals and objectives.

For example, if an enemy's doctrine espouses first use of tactical chemical weapons to enable tactical and operational successes, then it is a pretty good bet that chemical munitions development, production, transport, storage, delivery and any other system that enables the use of chemical weapons goes on a target list. Based on chemical weapons tactical and operational effects as well as their strategic impact, many of these targets would be added to the TST target set for the campaign.

The most important action taken will be the JFC's approval of the TSTs recommended by his staff based on his campaign and the impact the TSTs may have on it. The JFC must not only agree to the targets, but also concur with his staff's proposals for conducting streamlined operations to attack the TSTs—from acquisition, to immediate engagement, to allocation of resources and other considerations, such as rules of engagement (ROE) and collateral damage.

A key issue related to these targets is they must be located precisely, tracked, attacked and assessed in a joint environment using a multitude of joint assets. These assets have varying capabilities, and the JFC requires support from component commanders and national assets to conduct attack operations. He also needs a detailed concept of operations for accessing, tasking and deconflicting the assets involved.

TST TTP. A prudent targeting effort begins with planned targets against which both intelligence collection and delivery assets can be allocated and, second, a deliberate process that acquires, tracks, targets and assesses damage on TSTs.

TST attack operations also must take into account special procedures to allow the rapid, effective attack of unplanned and unanticipated TSTs. The most critical aspect of these targets is they are *fleeting* and, therefore, of limited dwell or presentation time. They do not give the joint force enough time to react upon discovery by traditional means—find them, task attack assets and move the assets into attack range, all with assets already occupied in other parts of the battle or otherwise not being used. The joint force requires some established system of attack that can minimize command and control requirements and the time needed to engage the TSTs.

Appendix B of JP 3-60 offers a number of options to improve the rapid attack of TSTs. They include methods for referencing planned joint targets and options for establishing real-time links for command and control, streamlining organizations and pre-positioning acquisition and strike assets.

The following is a sample scenario for TST attack operations. During an examination of the enemy order of battle and operating procedures, the joint force identified the strong likelihood that enemy long-range tactical missiles that can deliver chemical munitions would be in one area. Without specific point targeting data, multiple intelligence assets still have

- The JFC sets TSTs as priorities in his objectives, guidance and intent and identifies specific TSTs for immediate response. The JFC's objectives and guidance set the procedural framework for components to expedite targeting TSTs. The JFC's guidance must allow the components flexibility in selecting attack options for the TSTs.
- Based on the commander's guidance and target details, the JFC must determine how he will task subordinate units to attack the TSTs and execute the plan. For example, will he retain authority for the TSTs or delegate some or all of the target set to one or more components? Command and control for attacking TSTs must be streamlined to meet time constraints.
- Components execute attack operations after conducting *technical* fire control. The JFC staff (most likely the joint fires element, or JFE) exercises *tactical* fire control of TST attack operations.
- The JFC still must plan for and conduct combat assessment.
- Once TSTs are detected, responsiveness is critical to take advantage of brief windows of target opportunities.
- No single weapon system/capability is the best to deal with every TST encountered by a joint force. The JFC has several options for attacking TSTs, each with varying degrees of effectiveness, responsiveness, range, accuracy and effects. The JFC staff must devise a system for considering and optimizing all attack assets and recommended attack solutions.
- The nature of the threat, avoidance of collateral damage and rules of engagement (ROE) may limit or severely constrain TST attack options.
- Given the capabilities of current and future sensor systems, each component can locate and attack surface TSTs in mutually accessible areas of interest. As such, the JFC must consider how to prevent fratricide or duplication of effort among components and where he is willing to accept risks.
- The length and complexity of planning procedures for attacking surface TSTs determines the probability of the joint force's success. The fleeting nature of surface TSTs are more difficult to execute with traditional mechanisms for planned targets. The joint force must compensate for this by using various fixes, such as having Army tactical missile system (ATACM) fire missions on call, conducting airborne surface TST combat air patrols (CAPs), establishing procedures for diverting attack aircraft assets and other fixes.
- The execution of attacks against immediate surface TSTs requires the JFC to establish procedures for components to carry out attacks. Planned procedures must include, but are not limited to control and coordinating measures, fire support coordinating line (FSCL) procedures and associated attack options, airspace coordination area (ACA) options, and weapon systems procedures.

Considerations for the Joint Force Commander (JFC) or Joint Task Force (JTF) Commander in Attacking Time-SensitiveTargets (TSTs). Doctrinally, very little is written about how to attack surface TSTs with short presentation times. These considerations were taken from a number of sources and constitute an attempt to lay the groundwork to begin developing tactics, techniques and procedures (TTP) for attacking TSTs.

to be assigned a "sector" collection effort and both surface and air attack systems pre-positioned to respond.

One or more dedicated rocket or missile batteries, offshore surface support ships, airborne TST strike aircraft, or all these assets could be ready and waiting to attack the targets once they are identified. The most rapid and effective means of attacking the TSTs would be to maximize sensor-to-shooter links and tie pre-arranged collectors to command and control platforms or nodes that can instantly transmit target locations to dedicated delivery systems.

USAF E-8 Joint Surveillance and Target Attack Radar System (JSTARS). This aircraft is a long-range air-to-ground surveillance platform designed to locate, classify and track ground targets.

These efforts, as well as procedures for various weapon systems and platforms (Army tactical missile system, called ATACMS; fighter/attack assets; C-130 gunships; and attack helicopters) are briefly discussed in JP 3-60, but there is truly little "meat on the bones."

So if one suddenly were assigned to a JFC or JTF targeting cell, what are the key pieces of TST attack operations to know or consider? Including information culled from a number of sources, the figure lists JFC or JTF targeting considerations, a beginning framework for the development of TTP to attack TSTs.

The services must address the issues in the figure on Page 28 and many more to successfully attack this challenging target set. JP 3-60 does not provide TTP or even a working concept for JFCs and JTFs to plan and execute TST attack operations. It also does not address the growing trend to centralize and automate TST attack operations.

Joint Developments. Each of the services is working on this targeting challenge. These efforts hold much promise not only for service-centric approaches to TST targeting, but also to provide venues where joint procedures and interfaces can be explored and developed.

The Navy has been working on attack operations in several of their experiments to examine new procedures, intelligence collection, weapons and capabilities. Among other efforts, the Navy also has been integrating TST attack operations into the development of its concept for future Naval fires, named "Poseidon's Fury." An explanation of this and other related concepts are available on the Navy's Warfare Development Command web site at http://www.nwdc.navy.mil/ProductsEx/ConceptsFr.htm.

The Air Force has been working TST attack operations for some time under various organizations, to include their Aerospace Command and Control, Intelligence, Surveillance and Reconnaissance Center at Langley, Virginia. Among the many efforts are its concepts for "Defeating Theater Time-Critical Targets" as a "Family of Systems Requirements Document" (11 January 2000). The USAF also is conducting joint expeditionary force experiments and developing new automation and tools, such as its Attack Operations Decision Aid (AODA).

The Army is working TST attack operations at both Fort Bliss, Texas, under the umbrella of Theater Missile Defense operations, as well as at Fort Sill, Oklahoma, via the Depth and Simultaneous Attack Battle Lab. The Battle Lab is supporting the Advanced Concept Technology Demonstrations (ACTDs) for the Joint Continuous Strike Environment (JCSE) and for Theater Precision Strike Operations (TPSO).

The JCSE ACTD will improve automated software to facilitate targeting TSTs. The software automatically will prioritize targets, constantly updating the list of emerging targets, and monitor the status of joint force weapons. It will pair the most effective weapon per target, based on the Joint Munitions Effects Manual (JMEM) and status/availability of the weapon. It then will deconflict airspace to engage TSTs immediately. JCSE was briefed and demonstrated at the Battlefield Coordination Detachment-Deep Operations Coordination Cell (BCD-DOCC) Conference hosted by the Battle Lab in April 2000.

The purpose of the TPSO ACTD is to develop and experiment with technological solutions to fully integrate US and coalition force counterfire and strike operations from the forward line of own troops (FLOT) to the forward boundary. To date, the ACTD has developed the automated deep operations coordination system (ADOCS), which some units are experimenting with. The Battle Lab is evaluating and helping to further develop ADOCS to target rapidly, share situational awareness, enhance command and control and decision making, and provide responsive weapons delivery. Targeting nodes at the Army corps and above would use ADOCS with these capabilities.

Army efforts have lagged behind in other areas as TST attack operations have been primarily addressed through the joint force air component commander (JFACC) and, therefore, primarily led by the USAF.

Army targeteers needing to address TST challenges can contact the Battle Lab at DSN 639-4229 or (580)-442-4229 or email me at ingramb@sill.army.mil. We welcome input on procedures and TTP to support manual as well as automated joint attack operations against TSTs at the JFC or JTF staff levels.

Advancing technology in joint intelligence, surveillance and reconnaissance (ISR) systems; weapons; automation; and other areas make efforts to devise a TST attack process with supporting resources difficult. The good news is that it is a top priority for the services to come up with a process to help our joint forces dominate the battlefields of the future.

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Are You on the Train or Still on the Platform?

Command Sergeant Major Thomas J. Donohue
1st Infantry Division (Mechanized) Artillery

As I go around the Division Artillery talking to soldiers and NCOs, I hear a lot of concerns about changes occurring in the Army. I've seen a lot of changes in my 26 years in the Army. I've seen people opposed to change and try to stop it from happening. I've seen the same people stagnate in promotion, be left behind and, eventually, get out of the Army.

Regardless of how much you may oppose change, it's inevitable. So accept it and start preparing for it.

The Army's goal is to transform into a better-equipped, more responsive force with technologically advanced units. The goal is to be ready to go anywhere in the world our National Command Authority may send us to accomplish the mission—be it peacekeeping, peace enforcement or low- or high intensity conflict—and return home safely.

As leaders, we must set the example by embracing the changes that will fulfill the Army's goal. For if we oppose change, our soldiers certainly will oppose it; a unit takes on the personality and attitudes of its leaders. Each of us must keep an open mind and maintain a positive attitude.

Training to Standard. To implement the transformation, we must establish a good plan to train soldiers, NCOs and officers. This starts at the training meetings. We must schedule relevant NCO and officer professional development classes.

We must train soldiers using hands-on repetitive, realistic training until they meet the standard. Leaders must use their leader's books to track subordinates' proficiency in the tasks being trained and take advantage of every opportunity to reinforce training while waiting for the next event to happen. The better we are trained and familiarized with the new equipment and its maintenance or the more informed we are about the changes in tactics and procedures, the less stressful and more effective the change process will be. We all have to be proactive in staying abreast of the changes.

Staying with the Times. The computer age is here. If you haven't learned how to use computers, you have missed the train and it is speeding away, leaving you standing on the depot platform. You must know computers and ensure your soldiers get the computer training they need to stay competitive—that means computer training during duty hours or in civilian classes after duty, whatever is necessary.

Distance learning is here to stay. Regardless of how you feel about long-distance instruction, accept it. It's your job to get soldiers enrolled in the courses they need for their professional development and to be competitive for promotions.

Once you have soldiers enrolled in the proper courses, you have to set them up for success by ensuring they have the time and resources to complete the courses. You must ensure each has a schedule to complete his work and assign him a sponsor to help when he has trouble and keep him on track.

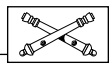
The changes I hear the most about are the changes in promotions. Because of shortages of sergeants, the Army has been pushing promotions for specialists—notably for the FA to fill the shortages of 13B sergeants. That does not mean we have to promote every specialist in the Army. But it does mean we must do our best to prepare every specialist to assume responsibilities as a sergeant.

If a specialist is fully eligible for promotion but won't be recommended for promotion, then you must counsel him on why he won't receive the recommendation. First-line leaders must counsel soldiers monthly and explain to them their promotion status, what the requirements are for promotions, their strengths and weaknesses, and exactly what they need to do to be recommended for promotion. Two tools leaders can use are career maps for that soldier's military occupational specialty (MOS) and the Army web page at www.counseling.army.mil.

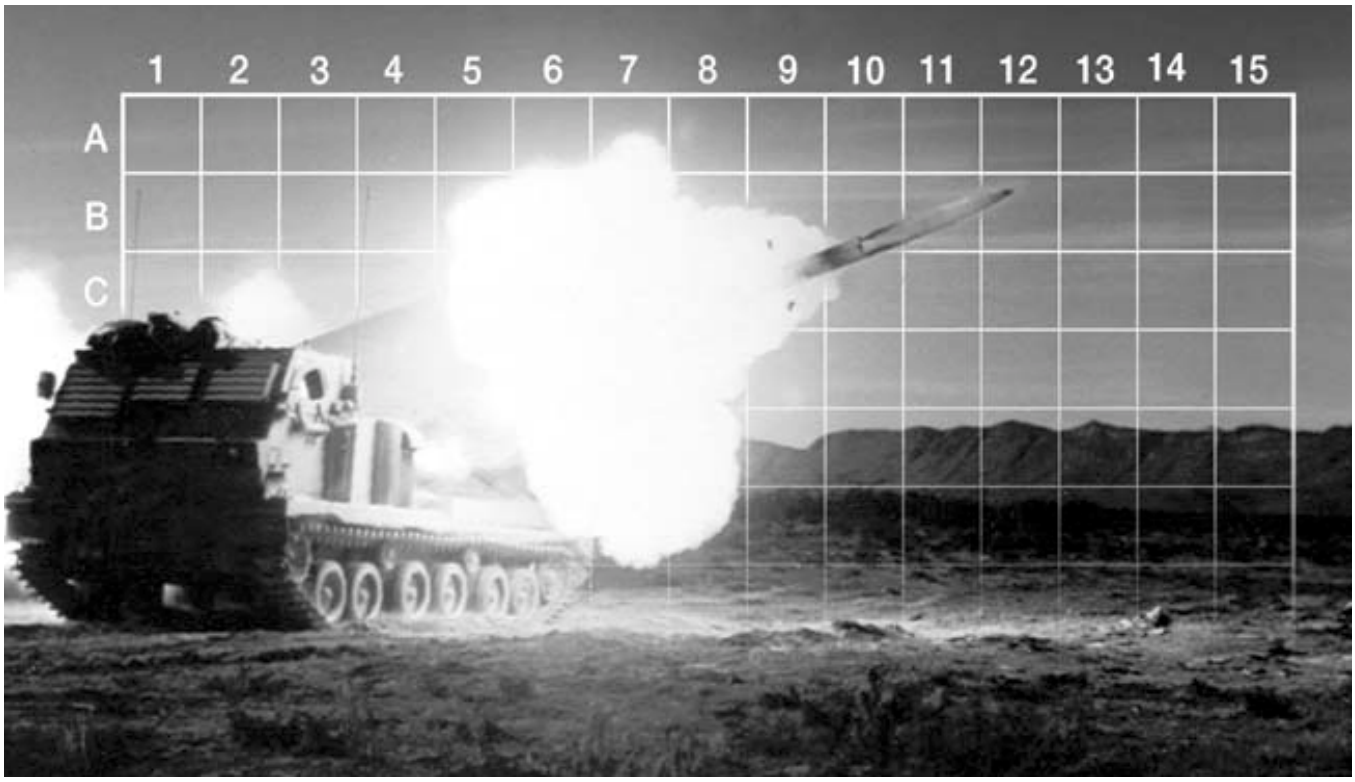
Too often I hear the statement that soldiers are just not ready for promotion, yet when I ask the leader why, the leader can't explain. Those same leaders fail to remember that we recommend soldiers for promotions based on their demonstrated *potential*. No one expects a soldier to know everything there is to know for his new rank before he is promoted. He is expected to read his MOS FMs and TMs, gain proficiency in his new job and have a self-development program. And his supervisor is expected to coach, train and mentor him through this process.

The Army is changing—with or without us. We must train our subordinates to be adaptive, flexible leaders to help implement the force of the future. That means we must train soldiers to fight today or tomorrow and develop them to make them proficient and promotable.

You can be proactive and help the Army speed forward or you can stand on the platform and complain. Which will it be?



Command Sergeant Major (CSM) Thomas J. Donohue is the CSM of the 1st Infantry Division (Mechanized) Artillery in Germany. In his previous assignment, he served as CSM of the 4th Battalion, 1st Field Artillery, part of the 1st Armored Division at Fort Riley, Kansas. Among other assignments, he served as the Operations Sergeant Major for the 3d Infantry Division (Mechanized) Artillery in Germany. He has held every key position from Section Chief, to Platoon Sergeant, to Intelligence Sergeant, to First Sergeant, the latter in three headquarters units. He also served as a Drill Sergeant in A Battery, 1st Cannon Training Battalion (One-Station Unit Training) in the Field Artillery Training Center, Fort Sill, Oklahoma. He holds a bachelor's degree in General Business from the University of the State of New York.



JTRGS:

Common Reference System for Coordinating and Synchronizing Joint Fires

By Major Adam J. Legg

Recently, the V Corps Fires and Effects Coordination Cell (FECC) staff, Schwetzingen, Germany, helped develop the US Army Europe/US Air Force Europe (USAREUR/USAFE) joint tactics, techniques and procedures (JTTP) for command and control of joint fires. From this effort grew the Joint Target Reference Grid System (JTRGS). JTRGS was tested initially in Urgent Victory, a corps Battle Command Training Program (BCTP) Warfighter exercise, and refined later by the USAREUR and USAFE staffs.

The JTTP currently consist of 10 TTP areas, but this article focuses on JTRGS to coordinate and synchronize the corps resources and its supporting joint fires assets.

Common Reference System. The common reference system or "Kill Box," as it is sometimes called, is simply a grid overlay established by the joint force commander (JFC) or his representative. It normally is based on a grid work of lines superimposed on map latitude and longitude lines covering the entire joint area of operations (AOR).

To command and control joint fires, the grid system must be developed in coordination with higher, lower and adjacent as well as supporting command headquarters. Its size must take into account the capabilities and coordination requirements of all joint weapons that will use the reference system. The joint force must understand and be able to display the common reference system, at a minimum as acetate overlays for battle tracking maps. Preferably, the Army battle command systems (ABCS) and other components' automated systems (i.e., the Air Force's automated theater battle management core system, or TBMCS) would be able to manage the reference system.

Joint Publication (JP) 3-60 Joint Doctrine for Targeting (Final Coordination Draft, 5 April 2001) as well as *FM 90-36 (FM 3-60.1) Targeting*: *The Joint Targeting Process and Procedures for Targeting Time-Critical Targets* (July 1997) state the purpose of a reference system is to provide a common frame of reference and common situational awareness to facilitate joint attack coordination, deconfliction and synchronization. This is important because different components refer to target locations and areas by different means as well as graphics.

For example, the Air Force uses latitude and longitude in geographic reference, and the Army uses the military grid reference system. In addition, these two components most certainly will use a different set of control measures when referring to vertical and horizontal battlespace.

The bottom line is that a joint reference system allows multiple components to "see" the battlespace from a common frame of reference and quickly orient and direct the effects of their combined forces within it.

During our development of JTRGS, we found the term "kill box" was confusing. Kill box implies the systems using it only attack whatever is in the grid box. For example, an Army or Marine unit could use the common reference system to designate named areas of interests (NAIs) during the intelligence preparation of the battlefield (IPB). In this case, designating "kill box" 7A as an NAI to observe could cause other components to think the forces in the box are to be attacked instead of just observed.

The JTRGS Reference System. The JTRGS grid boxes cover the joint AOR. (See Figure 1.) Each grid box is 30-by-30 minutes in latitude and longitude, but the size may be modified by the JFC when necessary. The JTRGS may be used to establish any type of airspace control measures (ACM), fire support coordination measures (FSCM) and (or) to designate a kill box.

JTRGS allows component battle management staffs maximum flexibility to coordinate user requirements for joint operations during planning and for synchronizing execution in real time. For example, the following Army messages would be clear to all components: "Destroy MRL [multiple rocket launcher] targets in the following JTRGS boxes: in priority, 7K1, 7M1 and 7N1." Another example: "Disrupt the 9th Tank Regiment as it moves through 8K1, 8K2 or 8K5."

The JTRGS grids can be communicated over nonsecure channels (voice or data) without risk of compromise as long as the origin's coordinates are not associated with them. The initial reference coordinates are published in classified orders and instructions. The JTRGS is disseminated to each component and its command and control and attack assets as a portion of the airspace control order (ACO) or in the special instructions (SPINS) portions of the air tasking order (ATO).

Employing JTRGS. The following are examples of key procedures where the JTRGS enhanced V Corps' ability to rapidly synchronize and coordinate joint fires and effects: describing the priorities, effects and timing of air support; establishing FSCM and ACM; rapidly establishing NAIs or target areas of interest (TAIs) to focus intelligence collection; pre-clearing areas for procedural control of close air support (CAS) without endangering friendly forces; facilitating the targeting of moving enemy forces; and rapidly deconflicting

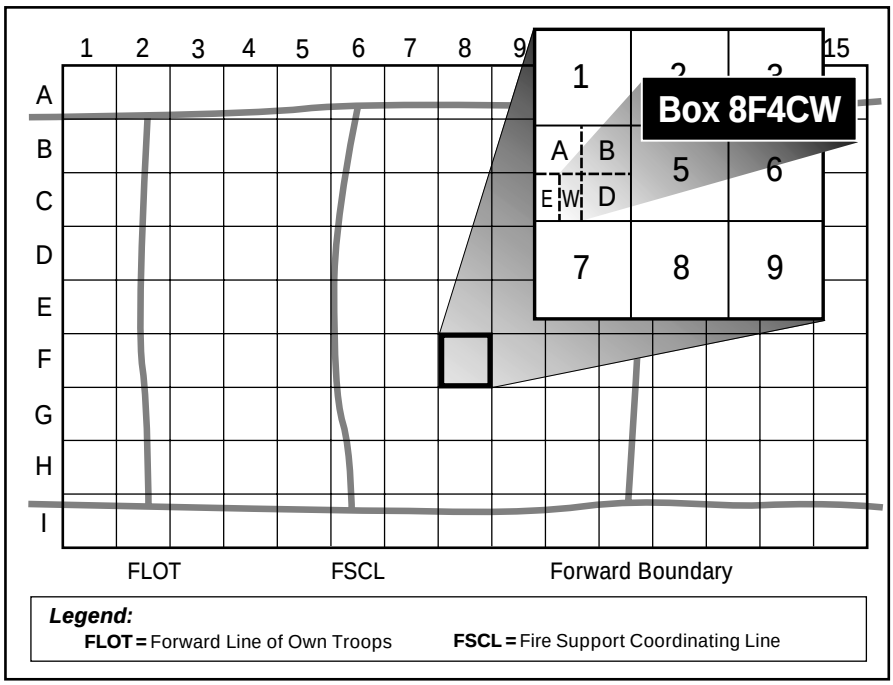


Figure 1: Joint Target Reference Grid System (JTRGS). The JTRGS grid boxes cover the joint area of responsibility. Each grid box is 30-by-30 minutes in latitude and longitude and identified by a number (west/east) and letter (north/south). Each box is divided into nine sectors, measuring 10 minutes by 10 minutes. Each sector is further divided into four subsectors, five minutes by five minutes, that are labeled "A," "B," "C" and "D." Each sub-sector then can be divided in half vertically, forming east (E) and west (W) halves.

airspace for the Army tactical missile system (ATACMS).

FSCM and ACM Coordination. You are a member of a hastily assembled targeting team to take advantage of the unanticipated detection of a second-echelon enemy mechanized regiment delayed by a minefield in JTRGS Box 4C. (See Figure 2.) The original plan called for the regiment to be attacked near JTRGS Box 4B.

Using JTRGS, the team planners could rapidly re-target the enemy formation for a cross-forward line of own troops (FLOT) attack by the original AH-64 squadron, assuming the squadron's

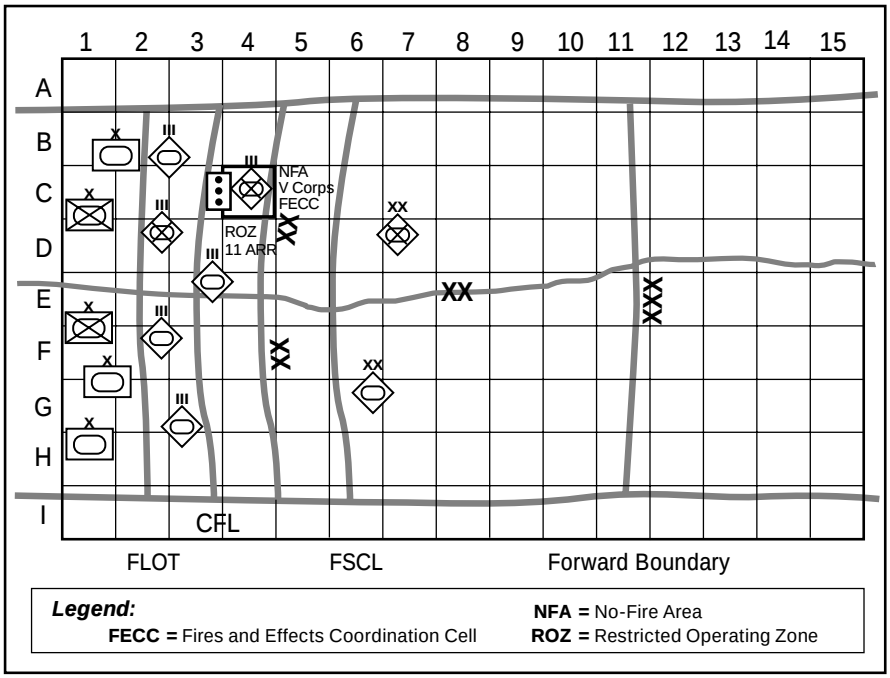


Figure 2: Fire Support Coordination Measures (FSCM) and Air Control Measures (ACM)

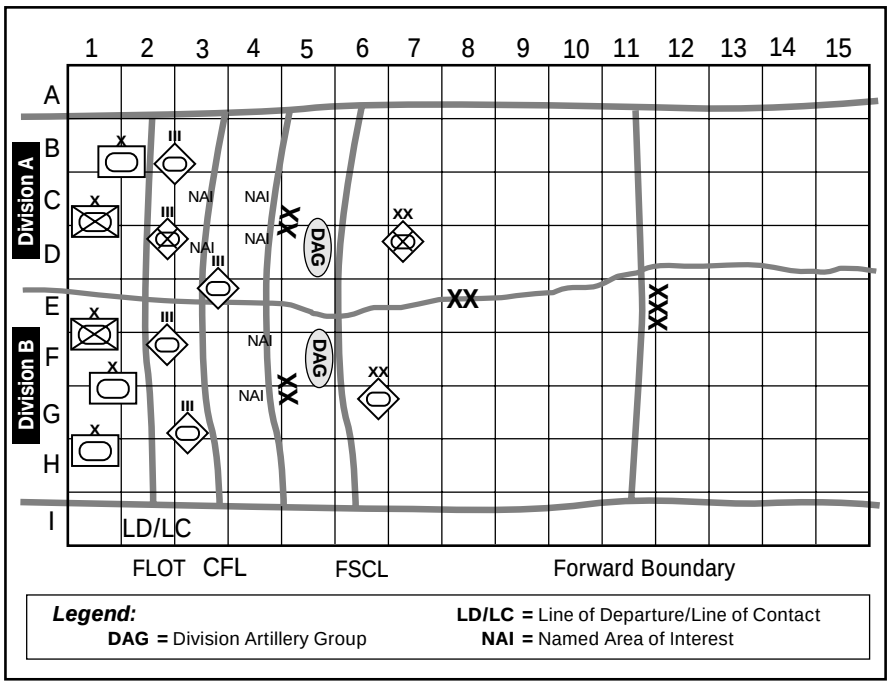


Figure 3: Air Support Requirements for Designating NAIs and Focusing Unmanned Aerial Vehicles (UAVs)

planned ingress and egress routes only needed minor modification. In this case, the team could rapidly designate Box 4C as a no-fire area (NFA) to prohibit the divisions from firing into the squadron's engagement area (EA) and attack-by-fire positions.

Additionally, the air component's air operations center (AOC) could establish Box 4C as a restricted operating zone (ROZ) to prohibit CAS or air interdiction (AI) aircraft from operating within the EA.

All this coordination could take place in real time with the air and ground components, including subordinate divisions and the attack helicopter regiment in the absence of any planned graphic control measures (FSCM and ACM).

Air Support Requirements for NAIs and Collection Efforts. In continuing the planning, Division A identifies that it needs the weight of its future CAS sorties available from the time the division crosses the line of departure (LD) at 0600Z and for four hours after. (See Figure 3.) Division A established its target priority for CAS as the enemy's division artillery groups (DAGs) located near Boxes 3C, 3D, 4C and 4D. The DAGs consisted of 2S3 and BM-21 artillery systems. These grid boxes were the same boxes designated as NAIs and TAIs during the IPB and targeting process.

The planners determined they needed to destroy enemy air defense systems that could affect the CAS aircraft in the boxes. With the grid boxes identified, the collection manager can build the collection plan to support the operation.

Division A's air support request (ASR) for CAS to refine the corps CAS focus and massing plan would read something like the information in Figure 4.

Using this method of describing the division's air support targeting priorities, attack timings and desired effects in relation to the JTRGS allows the air component planners to more easily understand the division's requirements, visualize where they will provide the required effects and understand how and where the division will enable the operation with suppression of enemy air defenses (SEAD).

Activating Kill Boxes. To continue the previous example, before Division A crosses the LD, the DAGs reposition to gain the advantage. While executing the collection plan, the corps unmanned aerial vehicles (UAVs) detect both artillery groups predominantly in Boxes 4D and 4F. Knowing we had established a permissive air defense environment based on the success of our air defense targeting plan and ability to provide lethal SEAD if required, the corps FECC could designate both 4D and 4F as kill boxes for air support to kill the DAGs.

Because each of the boxes can be defined vertically as well as horizontally in battlespace, planners can easily use the same boxes to define the altitude separation requirements for informal ACAs in the JTRGS boxes, now also designated as kill boxes. This allows the corps to rapidly flow pre-planned massed CAS aircraft into the boxes to destroy the artillery formations, preventing air fratricide as well as facilitating the artillery's ability to fire SEAD under the separation altitude, if required.

We defined the kill box to mean that CAS aircraft in an active or open kill box could operate under procedural control. In managing this process, we found it useful to develop a checklist for activating or opening kill boxes. An example checklist is shown in Figure 5.

Deconflicting ATACMS Airspace. JTRGS can help rapidly deconflict air-

Justification: CAS [close air support] is required to destroy the 23d DAG [division artillery group] vicinity JTRGS 3C, 3D, 4C and 4D to prevent massed fires on the division and allow rapid penetration of first-echelon regiments.

Desired results: Destroy 30 2S3s and 14 BM-21s between LD [line of departure] (0600Z) and plus 4 hours. Expect the DAG to be located NLT LD plus 1 hour. Upon location, the division will establish a kill box with an informal ACA [airspace coordination area] for altitude separation to prevent air fratricide and allow CAS aircraft to operate under procedural control. The ability to mass air support assets on artillery targets during this time is critical to the success of the division's operations and if not provided, could cause the division to lose momentum moving through first-echelon regiments. CAS requirements following this time are minimal and expected to require no more than two sorties per hour to support lead TFs [task forces] between JTRGS 4B, C and D and 5B, C and D.

Comments: The division will conduct opportune SEAD [suppression of enemy air defenses] to destroy acquired air defense systems in JTRGS 3C, 3D, 4C and 4D to help provide a permissive air defense environment NLT the division crossing LD.

Figure 4: Division A's ASR for CAS. This request is based on the scenario in Figure 3 and refines the corps' focus.

- Applicable ground commander initiates a request through the G3/S3 air in the fire support element (FSE) or deep operations coordination cell (DOCC).
- The FSE and Army airspace coordination center (A^2C^2) initiate air control measure (ACMs) and fire support coordination measures (FSCM) for the kill box.
- The G3/S3 air confirms the kill box is clear of friendly troops.
- The S3 passes the request to the division FSE/DOCC for concurrence.
- The division G3 air approves the kill box before passing it forward to the corps A^2C^2.
- The division A^2C^2 enters the request into the automated deep operations coordination system (ADOCS) and forwards it to the G3 air via the A^2C^2 in the corps fires and effects coordination cell (FECC).
- The corps A^2C^2 coordinates with the air support operations center (ASOC) and the corps G3 air before activating the kill box and notifying the battlefield coordination detachment (BCD).
- The corps A^2C^2 notifies the affected division A^2C^2 of the kill box's open status and sends a broadcast message confirming its activation through ADOCS.
- A kill box is not considered open without coordination with the ASOC and corps G3 air in the FECC.
- Reasonable assurance and procedural control is in effect for tactical air (TACAIR) aircraft expending ordnance in an active kill box.

Figure 5: Procedures for Establishing JTRGS Kill Boxes Short of the Fire Support Coordinating Line (FSCL)

space for ATACMS missions. Such missions call for the airspace deconfliction of the ATACMS platoon launch site, missile flight path and target area. The JTRGS allows for using a sector, a smaller subdivision of the 30-by-30 minute grid boxes. (See Figure 6.) We have found it easier to designate a battalion-sized area of one sector (10-by-10 minutes) for the hot firing unit and pre-plan this platoon area hazard (PAH) ROZ with the BCD. After the target is detected, we designate the smaller division of the sector, the five-by-five minute sub-sector, as the target area hazard's (TAH) ROZ because most TAH ROZs fall within that size. Designating the area hazards as a ROZ in relation to the JTRGS allows us to define a vertical volume of airspace. Because most aircraft easily can modify their flight to avoid vertical restrictions, this provides a means to minimize the potential for air fratricide.

Although the advanced FA tactical data system (AFATDS) can compute the exact size of the TAH and PAH ROZs and transmit this information to the BCD for clearance, we found manual deconfliction using JTRGS to be faster. Perhaps, in the future, if AFATDS communicates this information to the TBMCS, it will be more beneficial to process the deconfliction in AFATDS.

Lack of Automation Support. ABCS automated support of common reference system currently does not exist. Automated deep operations coordination software (ADOCS) allows all corps ADOCS users as well as those in the BCD to visualize which kill boxes are active or open. (The software horizontally integrates information from other systems into one fused common operating picture for deep operations.) Additionally, the system tracks cursor movement by JTRGS grid box and automatically produces an overlay of the common reference system for JTRGS, the US Central Command (CENTCOM) Kill Box Reference System, and the Korean Grid System. No current systems can designate or directly link ACMs, FSCM or other control mea-

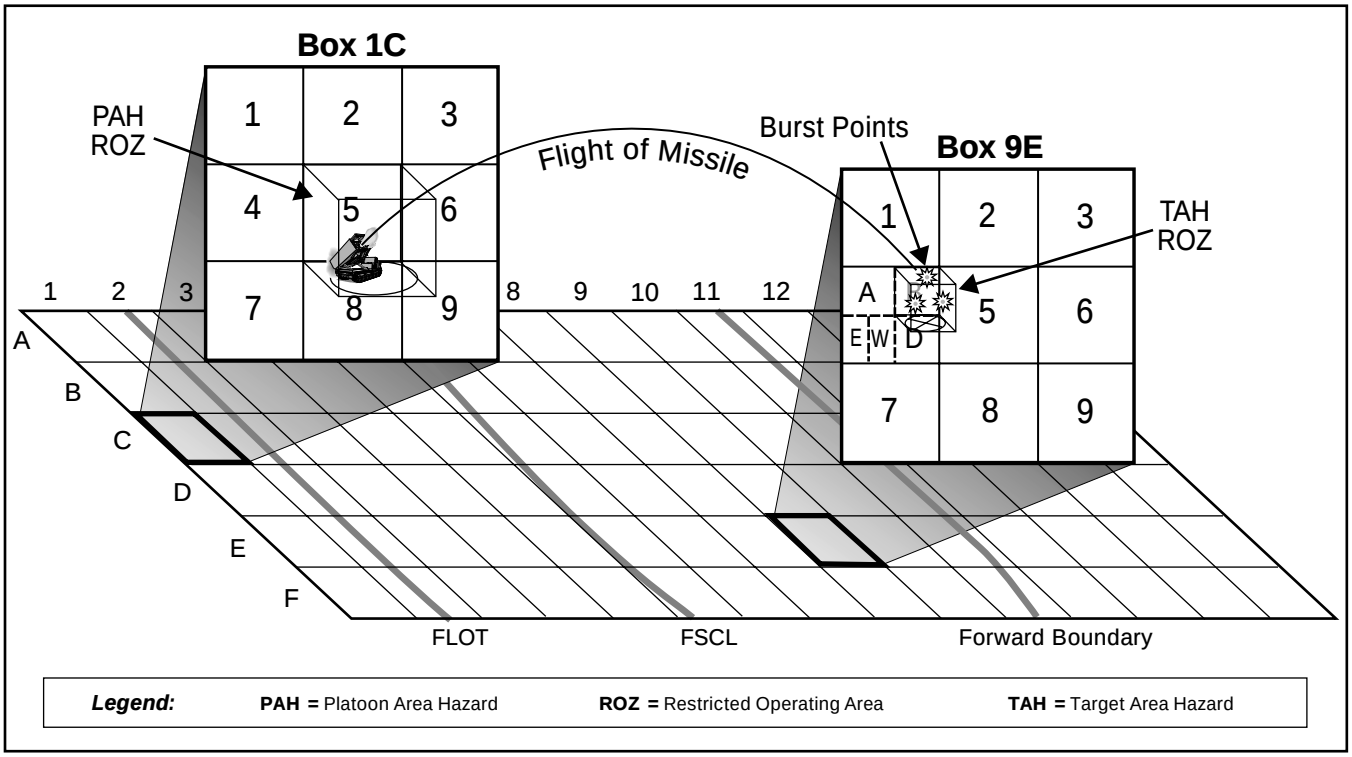


Figure 6: Army Tactical Missile System (ATACMS) Airspace Deconfliction

sures to the common reference system. ABCS systems only allow the operator to manually build an overlay to reference the common reference system.

If we are truly to realize the benefits of the joint common reference system, then ABCS systems will have to acquire tools similar to those provided by ADOCS. Otherwise, the joint force will be restricted to overlays with no ability to automatically update changes across all systems in real time and no ability to quickly link to other functionalities to establish ACMs and FSCMs.

JTRGS Challenges. Unfortunately, the application of the common reference system is different theater by theater, making it hard to define one reference system in joint doctrine. The USAREUR/USAFE JTRGS is different than CENTCOM's kill box reference system and both are different than the Korean theater's system. All these systems are based on joint doctrine found in JP 3-60 (Draft) and the Air Land Sea Application (ALSA) Center's "Multi-service TTP for Targeting." The doctrine allows these differences by stating that the JFC and component commanders each have a role in establishing their systems.

Of the two doctrinal publications, only the ALSA publication is approved doctrine, and it defines the system as the "Grid Box" reference system. Upon approval, JP-3-60 will rename the grid box as the kill box reference system—which we found could be misleading and confusing. For joint doctrine to be effective, it must be designed from all components' perspectives and the components must uniformly understand and accept it.

Major Adam J. (A.J.) Legg until recently was the Deep Fires Coordinator in the Fires and Effects Coordination Cell (FECC) assigned to V Corps Artillery Fire Support Element (FSE) in Germany. Currently, he is the S3 of the 1st Battalion, 27th Field Artillery, 41st Field Artillery Brigade, also in V Corps. He also served as the Targeting Officer in the V Corps Deep Operations Coordination Cell (DOCC) and as Aide-de-Camp to the Commanding General of V Corps Artillery. He commanded a detachment at the Warrior Preparation Center in Germany; and C Battery, 3d Battalion, 321st Field Artillery and Headquarters and Headquarters Battery, 3d Battalion, 8th Field Artillery, both part of the 18th Field Artillery Brigade at Fort Bragg, North Carolina. Major Legg is a graduate of the Command and General Staff College at Fort Leavenworth, Kansas, and holds a Master of Science in Computer Resources and Information Management from Webster University, St. Louis, Missouri.

The author wishes to acknowledge US Army Europe's (USAREUR's) 4th Battlefield Coordination Detachment (BCD) as well as US Air Force Europe's (USAFE's) 32d Air Operations Group and the 4th Air Support Operations Group for invaluable assistance in developing the Joint Target Reference Grid System (JTRGS) and USAREUR/USAFE joint tactics, techniques and procedures for command and control of joint fires.

NTC's First Senior Radar and Targeting NCO

The National Training Center (NTC), Fort Irwin, California, has added a new member to the Fire Support Combat Trainers. In November, Sergeant First Class Robby K. Steadham, Military Occupational Specialist (MOS) 13R40 Firefinder Radar Operator, became the first Senior Radar and Targeting NCO to join the Were Wolves. Since that time, he has been an active coach, mentor and trainer for rotational leaders and soldiers at the NTC.

This new era at the NTC is greatly benefiting the NCOs and soldiers in radar sections who are employing their systems in the country of Mojavia. SFC Steadham's extensive knowledge and background in targeting will help those NCOs transition into their new roles as targeting NCOs at the brigade, division and corps levels.

SFC Steadham is focusing his coaching efforts on radar employment, troop-leading procedures, risk management, pre-combat checks and inspections, employment of security and survivability assets, radar site selection, radar shelter operations, battle tracking and radar zone management. His priority is to ensure radar NCOs become fully integrated into the military decision-making process (MDMP).

If you have questions, contact Chief Warrant Officer Two Timothy D. Lancaster, Combat Radar/Targeting Trainer, or SFC Steadham of the Were Wolf Team at DSN: 470-6962 or by email at Wolf36@irwin.army.mil and Wolf36A@irwin.army.mil, respectively.

LTC Glenn D. Reisweber
Reinforcing TOC Trainer,
NTC, Fort Irwin, CA

Joint Targeting Conference at Fort Sill

The Target Acquisition Division of the Fire Support and Combined Arms Operations Department (FSCAOD), Field Artillery School, Fort Sill, Oklahoma, is hosting a Joint Targeting Conference 1-5 October. The purpose of the conference is to provide information on targeting, TA, new equipment, and current operations and issues as well as exchange tactics, techniques and procedures (TTP). The topics discussed will range from the tactical to strategic levels.

Representatives of several installations and other military services will attend. Everyone who works with or is interested in targeting/TA subjects is invited to attend. All Military Occupational Specialty (MOS) 131A Targeting Technicians are encouraged to attend.

If you would like to present a briefing at the conference, suggest a specific topic to discuss or register for the conference, contact me at DSN 639-5045/4925/2971 or commercial (580) 442-5045/4925. My email is saindonc@sill.army.mil.

CW3 Christopher A. Saindon, Instructor/Writer
Target Acquisition Division, FSCAOD, FA School, Fort Sill, OK

Q-47
Future Firefinder Radar

Artist's Rendition of Q-47

Technology and the full-spectrum nature of today's Army requires a radar system that can provide more accurate targeting data and feed a common operating picture to keep us one step ahead of any adversary. These requirements will be met by the new AN/TPQ-47 Firefinder radar, the next-generation replacement for the Q-37 radar, tentatively scheduled for fielding in FY06.

Overview. The Q-47 is an S-band phased-array system that uses modular technology and computer-controlled signal processing to perform detection, verification, tracking and classification of projectiles, rockets and missiles. The Q-47's modular design will allow technology upgrades to extend the life of the system.

The phased-array antenna will allow the radar to switch beam positions electronically, thus searching for new targets while simultaneously tracking targets already detected. It also will enable the radar to detect and locate weapons firing simultaneously from 25 to 50 different locations at ranges from four to 300 kilometers while operating in one of three modes. The modes are normal, fast scan (increases the number of targets simultaneously tracked close in) and theater ballistic missile (TBM) mode with the TBM data transmitted through the advanced FA tactical data system (AFATDS) as a broadcast message.

The Q-47 will be able to register and adjust friendly indirect fire while simultaneously maintaining hostile surveillance. The detection and location functions of the system are similar to the Q-36 Version 8 and Q-37 radars.

Two Q-47s will replace Q-37s in the Army of Excellence target acquisition batteries (TABs) and the TAB of divisional multiple-launch rocket system (MLRS) battalions on a one-for-one basis. In addition, the Q-47 will be organic to the TA platoon (TAP) in the direct support (DS) artillery battalion of the Interim Brigade Combat Team (IBCT) and the radar platoon of the high-mobility artillery rocket system (HIMARS) battalion in the Interim Division (IDIV). The IBCT will have one Q-47 and the IDIV will have three. Each corps TA detachment (CTAD) will have two Q-47s to support theater ballistic missile and counterfire operations.

Crew and General Components. The Q-47 radar section will require nine personnel, three less than the Q-37 section. The radar will be housed in a modified Q-36 V8 shelter mounted on a high-mobility multipurpose-wheeled vehicle (HMMWV) that will allow the radar to provide data on the move.

The communications equipment will include two single-channel ground and airborne radio system advanced system improvement program (SINCGARS ASIP) radios, an enhanced position location reporting system (EPLRS) and a tactical communications interface module (TCIM). The radar will be able to transmit digital traffic to multiple subscribers simultaneously on two separate digital nets. Digital transmissions will be sent using EPLRS, SINCGARS, mobile subscriber equipment (MSE) or wire (2W/4W). Further, the system will be able to send and receive voice and digital traffic on the move.

The Q-47's power will come from a MEP-816A 60-kilowatt, 400-hertz generator mounted on an M1080 light medium tactical vehicle (LMTV) and a MEP-806 60-kilowatt, 400-hertz generator mounted on a trailer.

Q-47 Capabilities. The Q-47 will significantly upgrade the range, accuracy, classification capabilities, emplacement and displacement times, and transportability of the system as compared to the Q-37.

Range and Accuracy. Like the Q-37, the Q-47 is optimized for rockets and artillery. The probability of locating an enemy system in normal and fast-scan modes will be 83 percent or higher for a specific target category. The Q-47 will locate light and medium mortars at ranges out to 18 kilometers and heavy mortars out to 30 kilometers with the same probability of location. It will locate artillery and light rockets out to 60 kilometers and heavy rockets out to 100 kilometers.

In the TBM mode, the Q-47 will locate missiles and heavy rockets to the same accuracy as normal and fast-scan modes. TBM mode provides an extended range of 300 kilometers for missiles and 140 kilometers for heavy rockets.

Target Classification. The Q-47 will be able to classify weapon-type of mortars, artillery, rockets and missiles and by sub-type of light, medium or heavy with a probability of correct weapon-type classification of 80 percent.

Emplacement/Displacement. The Q-47 will significantly improve emplacement and displacement times: 15 minutes and seven minutes, respectively. (Actual times may vary based on the emplaced configuration.)

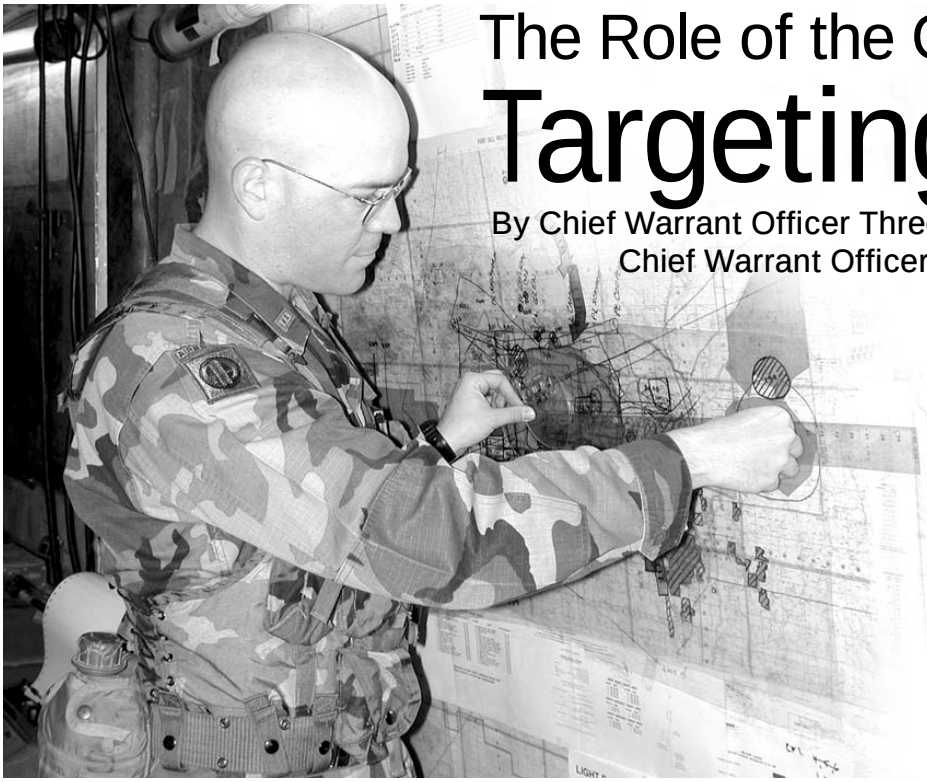
Transportability. The Q-47 will roll-on, roll-off C-130 and larger aircraft without disassembly. One aircraft will be able to transport the Q-47's mission-essential equipment. In tactical moves, a section will require three CH-47 sorties.

The Q-47 is the right radar, at the right time to meet the needs of the transforming Army. The improvements in this radar will enable the Field Artillery to meet the acquisition challenges that are part of the full-spectrum mission.

CW3 Robert A. Nelson, Jr., Targeting Project Officer
Directorate of Combat Developments
Field Artillery School, Fort Sill, OK

The Role of the GS FA Battalion Targeting Officer

By Chief Warrant Officer Three Harold A. Thacker, Jr., and
Chief Warrant Officer Two Robert S. Fortenbaugh



CW3 Sean Fortenbaugh

In the maelstrom of a National Training Center (NTC) force-on-force fight, at Fort Irwin, California, a Q-36 Firefinder radar acquired a battery of 2S1 howitzers firing and violating a call-for-fire zone (CFFZ). The reinforcing (R) FA battalion tactical operations center (TOC) cleared and passed this acquisition to one of its batteries.

Minutes later, multiple-launch rocket system (MLRS) launchers fired, destroying the 2S1s. The R FA battalion executed the brigade combat team's (BCT's) essential fire support task (EFST) of suppressing enemy artillery to protect the force during the BCT' s attack.

Counterfire sounds simple—but it's not. Interestingly enough, there is little doctrine written specifically about the duties and responsibilities of the general support (GS) FA battalion targeting officer who will be involved in the counterfire process. This lack of doctrine is being addressed in the rewrite of *FM 3-09.12 (6-121) Tactics, Techniques and Procedures (TTP) for Field Artillery Target Acquisition*. According to the FM's modified table of organization and equipment (MTOE), the battalion targeting officer, an FA Targeting Technician (warrant officer 131A), is in the battalion intelligence section of the MLRS, Paladin and M198 general support (GS) battalions.

This article describes the GS FA battalion targeting officer's job and briefly outlines his role in the GS mission plus the other three standard tactical missions: direct support (DS), R and general support reinforcing (GSR). It also describes his role in nonstandard tactical missions.

GS Targeting Officer Job Description. The figure outlines the duties of the FA battalion GS targeting officer that help integrate him into the GS FA staff. The targeting officer is assigned to the TOC (MLRS/Paladin/M198). He facilitates the exchange and interpretation of the scheme of fires between the supported unit and the GS FA staff. He is the link between the division artillery and FA brigade counterfire officers, maneuver brigade S2 and fire support officer (FSO), and the brigade and division targeting officers. In this capacity, he helps the staff determine the supported unit's targeting and counterfire focus.

The battalion targeting officer advises the FA battalion S2 on specific requirements for target location accuracy, the systems available to meet the standards and the duration the target may be considered viable for attack. He also helps the S2 and S3 control any weapons-locating radar that may be attached.

There are a few items the battalion targeting officer should know, regardless of his battalion's tactical mission. First, he should be familiar with the operations and capabilities and limitations of the Q-36 and Q-37 Firefinder radars and other friendly sensor systems. Second, he should know the capabilities and limitations of friendly attack systems. Third, he should be knowledgeable of the enemy order of battle, the enemy's disposition and composition, and his attack and sensor systems.

Next, he must know the targeting methodology: decide-detect-deliver-assess (D^3A). He also must understand target selection standards (TSS), the effects requirements of the high-payoff target list (HPTL), attack guidance matrix (AGM), scheme of fires and the essential fire support tasks (EFSTs) of the supported unit. Last, he must be aware of the current ammunition count and FA tasks (EFATs).

The GS targeting officer faces some challenges. The GS FA battalion supports the force as a whole and stays under the immediate control of the force FA headquarters (*FM 6-20-1 TTP for the Field Artillery Cannon Battalion*). While performing the GS tactical mission, the targeting officer should help the battalion's targeting process by implementing the division/corps attack guidance and TSS. He must thoroughly comprehend the intent of the AGM and TSS in order to provide rapid fires to the supported unit. He also may help the FA battalion's S2 compute battle damage assessment (BDA) and conduct predictive analysis.

The nature of GS FA is that it can support anyone in the fight. The targeting officer does not have the benefit of a habitual relationship with the supported unit. He must familiarize himself with all available fire support systems in the Army and prepare to integrate his unit into the supported unit's targeting efforts. Different versions of fire direction software, fire support equipment, communications equipment, and unit tactical standing operating procedures (TACSOPs) can make the integration of the battalion targeting officer difficult.

The GS FA battalion must contribute to the supported unit's targeting and counterfire focus. Often, the battalion is des-

ignated the counterfire headquarters with no additional planned fires, making counterfire its only mission.

The BCT may fail to use the GS FA to augment its fires to accomplish its EFATs. The battalion targeting officer must become part of the BCT's targeting effort and introduce his assets to support all the BCT's fight.

FA targeting technicians are radar system experts first. The GS FA does not have organic radar systems and must rely on outside support from other units for radar coverage. The battalion targeting officer must be ready to receive an attached radar section or one under his unit's operational control (OPCON) and be the primary staff advisor on all things radar-related. His experience will be invaluable when planning for positioning, radar zones, movement and support of the radar sections. He also ensures the radar section leader of the attached/OPCON radar section is integrated into the staff's planning, preparation and execution phases.

DS Mission. An FA battalion DS to a maneuver unit is primarily concerned with the fire support needs of that unit (*FM 6-20-1).* For comparison, GS FA has no organic forward observers (FOs) or fire support elements (FSEs). When a GS FA battalion is given the mission of DS, the GS targeting officer is best used in the BCTs FSE, unless that FSE has its own targeting officer, such as in an armored cavalry regiment.

For whatever reason, if the reinforcing battalion does not have or did not bring its own targeting officer, then the GS FA battalion targeting officer goes to the reinforcing FA battalion to help its staff. When both the brigade FSE and the reinforcing FA battalion have their own targeting officers, the GS FA battalion targeting officer remains with his own staff.

Reinforcing Mission. Reinforcing is a tactical mission that requires one FA battalion to augment the fires of another FA battalion (FM 6-20-1). When the GS FA battalion has a tactical mission of reinforcing, the targeting officer must have a counterfire battle drill and counterfire drill rehearsal. This provides timely counterfire for the BCT.

He must understand the Q-36 or Q-37 radar plan as well as the BCT's zone plan. He participates in the counterfire battle drill rehearsal as well as the brigade fire support rehearsal.

The battalion targeting officer must understand the EFATs thoroughly to achieve the attack guidance and effects. This understanding comes from knowing the priority, coordination needs, special munitions missions, triggers and decision points for EFAT execution. Basically, he coordinates with the DS battalion's S3 and fire direction officer (FDO) to ensure the GS battalion's fires support the EFATs. He also may help the reinforcing FA battalion S2 compute BDA for the counterfire missions.

- Help the staff plan and supervise radar assets that are attached, organic or under the operational control of (OPCON to) the battalion, i.e., refine and manage the radar zone, produce the radar deployment order (RDO) or radar exception matrix (REM), position the radar and develop the cueing schedule.
- Monitor and ensure the processing (clearing) of counterfire targets in the FA tactical operations center (TOC) in an efficient and timely manner.
- Help the staff develop, refine and execute a counterfire battle drill.
- Help the S2 determine battle damage assessment (BDA) and predictive analysis estimates.
- Perform target value analysis (TVA).
- Develop proactive counterfire targets.
- Monitor the processing of target acquisitions.
- Monitor the development of the enemy order of battle while processing target information and generate FA battalion intelligence requirements.

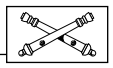
Duties of a General Support (GS) FA Battalion Targeting Officer

GSR Mission. The GSR FA battalion fires for the force as a whole and to reinforce the fires of another FA battalion as a second priority, remaining under the control of the force FA headquarters (FM 6-20-1). The FA battalion targeting officer assumes the same duties and responsibilities described for GS and R as he performs those missions.

The battalion targeting officer must be flexible because he must have knowledge of the GS unit's plan and also the R unit's plan and be able to differentiate between the two.

Nonstandard Tactical Missions. The nonstandard tactical mission is one that adjusts to an unusual tactical situation (FM 6-20-1). An example of a nonstandard tactical mission for a GS FA battalion would be serving in an FA headquarters with a Paladin battery and a Q-37 radar attached in support of a maneuver battalion task force. In this case, the GS FA battalion targeting officer may assume the role of the force FA headquarters counterfire officer and integrate the Q-37 into the task force's overall plan. Integrated into these duties would be those he would perform if the battalion had an R tactical mission.

A well-trained targeting officer can provide effects in support of the unit's EFATs. The GS FA battalion targeting officer position is a stepping stone to becoming a division artillery or FA brigade counterfire officer, division or corps targeting officer, or an FA intelligence officer. Once integrated into the GS FA battalion staff, the targeting officer can contribute significantly to the fight, regardless of the battalion's mission.



Chief Warrant Officer Three Harold A. Thacker, Jr., is an Instructor/Writer for the Warrant Officer Basic Course in the Fire Support and Combined Arms Operations Department at the Field Artillery School, Fort Sill, Oklahoma. In his previous assignments, he served as the Combat Radar/ Targeting Trainer in the Fire Support Division of the National Training Center, Fort Irwin, California, and FA Intelligence Officer for the 1st Infantry Division (Mechanized) in Germany. He was the Brigade Targeting Officer in the 1st Battalion, 6th Field Artillery in support of the 3d Brigade Combat Team, also in the 1st Infantry Division in Germany, where he participated in Operation Joint Guard in Bosnia, and Radar Technician for B Battery, 25th Field Artillery, part of the 3d Infantry Division (Mechanized) in Germany, where he participated in Operation Joint Endeavor, also in Bosnia.

Chief Warrant Officer Two Robert S. (Sean) Fortenbaugh is the Counterfire Officer for the 212th Field Artillery Brigade, III Corps Artillery, Fort Sill. In his previous assignments, he served as the Battalion Targeting Officer for the 6th Battalion, 32d Field Artillery (*Proud Americans*), also in the 212th Field Artillery Brigade, and as a Q-37 Radar Section Leader for the 231st Field Artillery Detachment, III Corps Artillery. He is a graduate of the Warrant Officer Basic Course, Fort Sill, and the Naval Gunfire Course at the Naval Amphibious School, Little Creek, Virginia, in addition to the Opposing Force (OPFOR) Weapons Course at the Military Intelligence School, Fort Huachuca, Arizona.

"Highway of Death" out of Kuwait City during Operation Desert Storm.

The Law of War and Fire Support:

A Primer for Fire Supporters

By Captain Jon D. Holdaway, JA

Since the successes of World War II, the primary feature of the US military has been its ability to mass overwhelming firepower into an area with an amazing amount of accuracy. This has, for the most part, been accomplished by different fire support systems, from FA systems to attack aviation to close air support (CAS) and strategic bombing, sometimes using "smart" bombs. However, because these systems can cause such destruction, their use in combat has been controversial.

Before any organization engages targets, it is imperative for that organization to confirm the legality of its course of action (COA). While it seems a contradiction that the rule of law exists on the battlefield, it nevertheless can be a force multiplier, disarming an enemy's ability to shift attention from his own misconduct on the battlefield and home front as well as helping the combat commander avoid the negative "CNN Moment." The stakes have become even greater with the creation of the International Criminal Court with primary jurisdiction over alleged war crimes.

On top of this is the reality that the Army is entering a state of doctrinal and operational flux. As the Objective Force materializes and doctrinal shifts occur, targeting methodology and the nature of targets will change as well. The most important shift for fire support is the new emphasis on effects and the recognition that there are nontraditional target sets that need to be managed, such as civilians, the media and nongovernmental organizations.[1] Even with these changes, the fundamentals of the Law of War and the conduct of military operations under these principles will still apply.

The purpose of this article is to provide a broad understanding of the Law of War in the context of traditional fire support targeting and a basis for addressing future operations.

Legal Framework. Once a military force engages in operations outside its own borders, the laws that apply increase exponentially. For the US armed forces, these can include international treaties, federal statutes, Supreme Court decisions, Department of Defense (DoD) directives and Department of the Army (DA) regulations. In the joint environment, the regulations of sister services must be considered and the laws and regulations of coalition partners also can affect operations. Applicable laws involve not just military-related issues but can include environmental, civilian-contract employment (e.g., Brown & Root), procurement, fiscal and claims issues.

For fire support operations, however, the critical legal regimes are Customary International Law, The Hague Conventions, The Geneva Conventions of 1949 and the Geneva Convention Protocols I

and II of 1977. Specific treaties and regulations also affect military operations, including conventions on cultural property, biological weapons and conventional weapons. Further, DoD and DA have enacted directives, regulations and field manuals that implement treaties and conventions, explain existing rules or establish further rules for military conduct. These instruments form the "Law of War."[2]

Principles of the Law of War. The Law of War can be narrowed down to four principles: military necessity, humanity (or unnecessary suffering), proportionality and discrimination/ distinction. These principles become a formula or filter by which military operations can be analyzed for compliance with the Law of War.

Military Necessity. This requires military operations be limited to attacking those objectives that make an effective contribution to military action or offer a definite military advantage. As long as the target has something to do with a strategic, operational or tactical objective, it meets this criteria. For example, during the Kosovo campaign, NATO forces attacked a Serbian television station in Belgrade with the justification that the station was broadcasting as an official organ of the Milosevic government to further Serbia military aims.[3]

Humanity. This principle looks to the types of weapons involved in warfare and the manner in which they are employed on specific targets. *FM 27-10 The Law of Land Warfare*, Paragraph 34b, states that injury-causing weapons are not prohibited, but the Law of War bans those weapons that inflame wounds or create an injury not related to a military objective. An example is that lasers are allowed on the battlefield for limited purposes but cannot be used to intentionally blind enemy troops.

Proportionality. This requires a balance between potential military advantage and the loss of life and damage. Whether or not an attack is proportional is based on all the information available to a commander at the time. The requirement is for the commander to make reasonable decisions and reasonably weigh collateral damage against the military advantage.

A good example is where a bridge is identified as a valid military objective, but sources also identify the bridge as a displaced civilian movement route. At any time, there may be 30 to 40 displaced civilians on the bridge. The question for the targeting team and the commander is whether or not the value of the target outweighs the collateral damage that might be caused by the deaths or injuries of the fleeing civilians.

Discrimination and Distinction. This principle requires weapon systems and targeteers distinguish between combatants and non-combatants. For the infantry soldier, this is easily accomplished through rules of engagement (ROE) training. However, for indirect-fire systems, this requires more attention to the target's nature. For instance, most engagement rules limit fire support in built-up areas and require direct, human observation of the target, preventing indiscriminate attacks against improper targets.

Methodology for Applying the Law of War. Military leaders require a methodology for analyzing military operations to determine whether or not they meet Law of War standards. This methodology looks at four areas of military operations: targets, weapons, ordnance and tactics.

*Targets.*Targets fall into three categories: persons, places and property. Applying the principle of military necessity, these categories can be targeted if they make an "effective contribution to military action,"[4] actual or potential.

"Persons" are either combatants or non-combatants (civilians, injured combatants or prisoners of war). Combatants, obviously, are those engaging in military actions. While most are "lawful" combatants, there are individuals on the battlefield who can be considered "unlawful" combatants. Uniformed members of a nation's armed force are lawful combatants, but the Law of War also recognizes members of militias, volunteer forces or organized resistance movements under limited conditions.[5] If a combatant does not fall into this definition, they are "unlawful" combatants, treated as mere criminals under host nation law and afforded only the most basic due process protections of the Law of War.

"Places" are defended or undefended. Obviously, if an enemy chooses to defend a particular place, then that place becomes a lawful target. For example, if the enemy positions an artillery battery in the courtyard of a basilica, the religious site becomes a lawful target.

On the other hand, an undefended place may not be targeted. The test: all combatants and mobile military equipment are removed, no hostile use made of fixed military installations or establishments, no acts of hostilities are committed by the authorities or by the population and no activities in support of military operations are undertaken.[6]

Specific places and " property" are protected under the Law of War. They include hospitals and safety zones established for the protection of sick and wounded and civilians (places that can lose their protection, however, if used in a manner other than for medical purposes); cultural sites identified as "historic monuments, works of art or places of worship which constitute the cultural or spiritual heritage of peoples";[7] "works and installations containing dangerous forces,"[8] such as dams, dikes and nuclear electrical generating stations; and "ob-

The question for the targeting team and the commander is whether or not the value of the target outweighs the collateral damage that might be caused by the deaths or injuries of civilians fleeing across a bridge, such as this bombed bridge in Kosovo.

jects indispensable to the survival of the civilian population,"[9] including agricultural areas, drinking water installations or irrigation works, if targeted for the purpose of denying sustenance to the civilian population.

A good tool for tracking protected places is the advanced FA tactical data system (AFATDS). Using civil affairs and military intelligence assets as resources, it can establish no-fire areas (NFAs) and restricted fire areas (RFAs). AFATDS then can help identify protected areas during the planning process.

Weapons and Ordnance. The Law of War does not necessarily limit prosecuting combat with weapons and ordnance as long as the enemy and their places are properly targeted using weapons and ordnance in their proper manner.[10] Under direction of DoD, all weapon systems and ordnance are reviewed by The Judge Advocate General for legality under the Law of War.[11]

Weapons can be illegal by their own design or by their improper use. This includes exploding small-arms projectiles, hollow-point ammunitions or the use of a properly designed weapon to cause unnecessary suffering. For instance, while there is no Law of War prohibiting guided munitions, there could be a Law of War violation if a commander selects non-guided munitions over guided munitions (assuming they are in the inventory and available) for use in a civilian area with the intent to cause unnecessary suffering.

During a NATO airstrike in 1999, the Chinese embassy in Belgrade was accidently struck by five bombs and heavily damaged.

Land mines, because they are deliverable by fire support assets, are of specific concern, especially in deep operations. Before 1997, the Law of War restricted the use of anti-personnel land mines (APL) in areas of civilian concentration.[12] Remotely delivered mines (such as artillery-delivered) are permissible only if their location can be accurately recorded or if they are self-destructing. Non-remotely delivered mines are allowed in civilian areas only if there is a military objective under the control of an adverse party or measures are in place to protect civilians, such as warning signs.

The international community, including most coalition partners, has moved to ban all APLs. In 1997, the "Convention on the Prohibition of the Use, Stockpiling, Production, and Transfer of Anti-Personnel Mines and on Their Destruction" was drafted and signed. As of April 1999, 133 nations had signed the convention and 67 had ratified it, bringing it into force as international law. Because the international community would not give the US an exception for the use of APLs in Korea and allow the usage of self-destructive mines, the US withdrew from the convention.

The bottom line for APLs is that all mines in a combat unit's inventory must be self-destructive, and those mines must be used carefully so as to avoid collateral damage to civilians.

Incendiaries, which include napalm, flame throwers, tracer rounds and white phosphorus, are not illegal, *per se*, but must be monitored for their use to prevent "unnecessary suffering."[13] For instance, white phosphorus is not banned as a method for marking targets or for igniting flammable targets, but it should not be used as an anti-personnel munition unless other types of conventional anti-personnel ordnance are unavailable.

Air-delivered incendiaries have been banned in areas of civilian concentration under a protocol to the 1980 Conventional, Weapons Treaty,[14] but the US has not ratified this protocol. The US position is that air-delivered incendiaries may be proper against targets in areas of civilian concentration if their usage would reduce civilian deaths, e.g., to destroy a chemical weapons factory in which the incendiary device burns the chemicals rather than disperses them.

Even though chemical weapons have been banned as a matter of international law for decades, [15] they are still in the military stockpiles of a few countries and a factor in certain combat scenarios. The prohibition applies to the use of all lethal, incapacitating and biological agents. The 1993 Chemical Weapons Convention [16] bans the development, production, stockpile, transfer or engagement of chemical weapons and requires the destruction of chemical weapons currently stockpiled.

Biological weapons are banned under their own conventions, as well.[17] Specific treaties do not cover herbicides, such as Agent Orange, but the US has renounced all first use, except for domestic purposes and establishing defensive perimeters.[18] Although no longer delivered by artillery, nuclear weapons are not prohibited by international law.[19]

Tactics. The final area of military operations affected by the Law of War is tactics. The rules for prosecuting war protect all parties. Once the Law of War has been breached, then no party is immune and protection cannot be guaranteed. Fire supporters should be concerned with reprisals, treachery and perfidy.

According to FM 27-10, reprisals are retaliation by a party using a method that violates the Law of War in response to an act by another party that violates the Law of War.[20] For instance, if Blueland Forces killed Redland soldiers held as POWs, Redland then could respond in an act of reprisal that may or may not violate the Law of War. However, the Geneva Protocols have created enough rules limiting reprisals that they are rarely, if ever, allowed.[21] Finally, under US policy, if reprisals are allowed under the Law of War, only the National Command Authority can authorize the reprisals.

Treachery and perfidy are tactics that involve harming an enemy through his adherence to the Law of War.[22] Examples are feigning surrender or feigning death or injury and then using that as a surprise to attack an enemy force. As required by the Law of War, enemies ensure all parties conduct operations in accordance with the Law of War on the good faith that the enemy will not violate the Law of War to gain a military advantage. Once the Law of War is used against an enemy as a tactic, then neither side can be assured that it is protected under the law.

Ruses, on the other hand, are proper. What distinguishes a ruse from perfidy is that a ruse, while deceptive in regards to gaining an advantage, does not rely on an enemy's adherence to the Law of War to establish the deception. Therefore, radar jamming, transmitting false

The destroyed baby milk factory in the Abu Ghraid suburb of Bagahdad. Milk cans and other debris from the attack are left as Baghdad's propaganda display after the coalition force bombing in February 2000.

information to deceive an enemy, establishing false units, using an enemy's signs and passwords and psychological warfare are not Law of War violations.[23]

The Targeting Process and the Law of War. The targeting methodology of *detect, decide, deliver* and *assess* (D^3A) ensures attack of the right target with the right asset at the right time. This includes ensuring the "right target" is a legal target, the "right asset" is a proper weapon or ordnance and the Law of War is followed through the entire process. During the targeting process, the critical Law of War issues arise during the *decide* phase, The *decide* phase is where intelligence collection focuses on targets identified during the *detect* phase and attack planning takes place.[24] The most important functions, from a Law of War perspective, are establishing the high-payoff target list (HPTL), developing the attack guidance matrix (AGM) and determining target selection standards (TSS).

Fire supporters should be asking the following questions. What is the nature of the target? Does it fall into a prohibited person/place/property category? What RFAs or NFAs are in place? What is the potential for collateral damage? Where, if any, are enemy weapons of mass destruction (WMD) sites? Have I cross-checked with the ROE?

The best resource for developing RFAs and NFAs is the civil affairs team that has the best knowledge of where potentially prohibited targets are. The team plans and develops theater RFAs and NFAs and tracks the status of displaced civilians. For example, a COA to deploy a Gator minefield on a particular enemy route may be affected by displaced civilians' flow and potentially cause high collateral damage.

Law of War problems can arise from detailed issues, such as munition effects size and dispersion patterns. When using indirect fire in built-up areas, assuming the ROE allow it, collateral damage can be minimized through high-angle fires and the limited use of dual-purpose improved conventional munitions (DPICM).

Legal issues during the *detect*, *deliver* and *assess* phases decrease if the Law of War is considered during the *decide* phase. These other phases do include Law of War issues, from awareness by intelligence sensors and analysts—including the FA intelligence officer (FAIO) sitting in the analysis and control element (ACE)—to using the *assess* phase to determine Law of War compliance during the fight. The key is fire supporters must anticipate and plan for these issues. Otherwise, as the smoke of battle clears, the potential for the combat commander to be assaulted by the ubiquitous television camera and have a "CNN Moment" increases exponentially.

Conclusion. Of course, any time Law of War questions arise— from planning to execution to after-action reviews (AARs)—the best resource is the commander's legal advisor.[25] Recent changes in doctrine place legal advisors and experts in the Law of War farther forward on the battlefield at the brigade and division tactical command posts.

While it may seem inconsistent, the Law of War provides an important boundary for the conduct of all military operations. The Law of War is not merely a "nice" set of rules but is the foundation for the way the US conducts its operations.

Fire support targeting sits at the crossroads of the Law of War and the conduct of military operations.

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Endnotes:

1. Colonel Jerry C. Hill and Major Carl R. Trout, "Effects-Based Fires—The Future of Fire Support Coordination and Execution," *FA Journal* (November-December 2000), 6.
2. The best resource for understanding Army commitments under the Hague and Geneva Conventions is *FM 27-10 The Law of Land Warfare*, July 1956. FM 27-10 is being updated as a joint Law of War manual. The other primary document for the Law of War is "DA Pamphlet 27-1-1, Protocols to the Geneva Conventions of 12 August 1949," September 1979. The US has not ratified the Geneva Protocols but recognizes many of its provisions.
3. Dana Priest, "More US Troops Head to Albania as NATO Adds Targets; Electric Power Transformers Attacked," *Washington Post* (24 April 1999), A17.
4. Geneva Protocol I, *supra* Note 2 Article 52(2). See also, FM 27-10, *supra* Note 2, Paragraph 40.
5. FM 27-10, *supra* Note 2, Paragraph 61. Under Geneva Protocol I, *supra* Note 2, Article 43, medical personnel and chaplains are not considered combatants.
6. FM 27-10, Change 1, *supra* Note 12, Paragraph 39b. See also, Geneva Protocol I, *supra* Note 2, Article 59, for further rules for occupying undefended areas.
7. Geneva Protocol I, *supra* Note 2, Article 53(a).
8. Ibid., Article 56.
9. Geneva Protocol I, *supra* Note 2, Article 54.
10. FM 27-10, *supra* Note 2, Paragraph 33.
11. Department of Defense (DoD) Directive 5000.2, "Operation of the Defense Acquisition System," Paragraph 4.7.3.1.4. (23 October 2000).
12. "Convention on Prohibitions or Restrictions of the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects" (CWT), October 10, 1980, Protocol II, Articles 4 and 5. Protocol II has not yet been ratified by the US Congress, but the President directed US forces would no longer use non-self-destructing anti-personnel land mines (APL) except on the Korean Peninsula and for training.
13. FM 27-10, *supra* Note 2, Paragraph 36.
14. 1980 CWT, *supra* Note 17, Protocol III.
15. "Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare," 17 June 1925. See discussion in FM 27-10, Change 1, *supra* Note 4, Paragraph. 38.
16. "Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction," 13 January 1993.
17. "Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction," 10 April 1972.
18. Executive Order 11850, 8 April 1975.
19. FM 27-10, *supra* Note 2, Paragraph 35.
20. Ibid., at Paragraph 497.
21. Geneva Protocol I, *supra* Note 2, Articles 51-56.
22. FM 27-10, *supra* Note 2, Paragraph 50.
23. Ibid., at Paragraph 51.
24. Ibid., *FM 60-20-10 Tactics, Techniques and Procedures for the Targeting Process,* 8 May 1996, 2-1.
25. *FM 27-100 Legal Support to Operations*, 30 September 1999.

1/11 Marine Survey Crew at 29 Palms

Expanding Role of Marine Artillery WOs

By Chief Warrant Officer Three Quint D. Avenetti, USMC

The USMC survey officer billet dates back to the early 1960s. The artillery needed technical experts who could dedicate themselves to understanding the complex art of surveying and sounding the atmosphere for meteorological information or coordinating sound and flash ranging teams. Therefore, the Marine artillery warrant officer (WO) billet was established.

But times have changed. Today's artillery warrant officers have better systems and more time to serve the Marine Corps in an expanded capacity, making the most of their considerable expertise.

This article gives a brief history of the Military Occupational Specialty (MOS) 0803 Marine Warrant Officers' role in the Marine Corps, leading to the formulation of a plan to revise the 0803s' billets and professional development progression. It also outlines the plan to migrate the 0803 into the world of targeting and fires tactical systems, starting in late 2001, while not forsaking the 0803's obligation to survey, Met and radar.

History of the Marine Artillery Warrant. The early warrant officer was expected to know how to maintain and fix the equipment, much like today's Army MOS 131A Targeting Technician counterpart does with the radar. Some of the equipment, such as the AN/TPQ-4 countermortar radar and the GMD meteorological system, could consume a great deal of a warrant officer's time just to keep it running.

Vietnam saw survey crews cutting line-of-site with machetes to perform survey. Radar personnel were largely doing sound and flash ranging or extremely risky crater analysis under fire to acquire enemy indirect fire (rating an "automatic" Bronze Star). Meteorological crews sounded the atmosphere with pilot balloons and manual theodolites and then "cut" ballistic winds on a chart to extract zoned atmospheric information to apply to the gunnery solutions.

Some units were starting to see the early stages of solid-state equipment, which made their jobs somewhat easier but required a lot of man-hours to maintain or fix. This was the responsibility of the 0803 Survey/Met Officer.

Operations in Beirut introduced peace keeping into the Marines' warfighting book, and target acquisition continued to play an important role. Marine TA platoons rotated into Beirut in support of the Marine amphibious unit, or MAU (now called a Marine expeditionary unit, or MEU), conducting a peace keeping mission. The 0803 coordinated survey, Met and TA operations, although it was common to have a lieutenant as the TA platoon commander.

Beirut became the test bed for the AN/TPQ-36 Firefinder radar; an Army team from Fort Sill was dispatched to Beirut to reinforce the Marine TA and, eventually, the counterfire effort. CWO3 Richard Ortiz, MOS 0803, was the officer-in-charge (OIC) of the team in Beirut. He and his soldiers were killed in the terrorist bombing of the MAU headquarters on 23 October 1983.

Technological advances delivered the AN/USQ-70 position and azimuth determining system (PADS), AN/TMQ-41 meteorological measuring set (MMS) and AN/TPQ-46A (Army AN/TPQ-36 Version 8) Firefinder radar. These systems were easier to maintain and operate. Digital communications tied them together, and advanced tactical data systems facilitated employing them. This technology allowed the 0803 to focus more on new methods of employing his gear and, consequently, improve operational efficiency.

In 1997, the 0803 community was challenged to identify its future. The reality is that the 0803's history in survey, Met and radar is coming to an end. The 0803 community has had to ask itself if Marine artillery warrant officers could not better serve the artillery in a different role. Thus, the development of a plan to expand the role of the 0803 in the Marine Corps began.

The 0803 Migration Plan. The 0803 community examined the role of the Army 131A. The Army artillery warrants had migrated into targeting billets while maintaining a base as radar technical experts. However, the Marine Corps was not prepared to leave meteorology "unattended."

The 0803 was introduced to the five elements of accurate, predicted fires to achieve first-round fire for effect--the five elements never to be taken for granted. It was important the 0803 community understood that "Artillery is who we are and fire support is what we do."

With personnel drawdowns and increasing demands on the 0802 Marine Artillery Officer, it seemed that once the officer learned his job as a Target Information Officer (TIO), he was transferred to a new billet in the process of grooming him to be an artillery commander. Thus, the Marine artillery warrant will progress to a TIO billet as a CWO3 in the new plan. (See Figure 1.)

The TIO is not only a targeting technician, but also a manager of tactical fire direction data via the advanced FA tactical data system (AFATDS) or initial fire support automated system (IFSAS). The newly trained 0803 will not be a communications officer, rather he will be the resident expert on the connectivity of artillery systems: information flow and tactical as well as technical considerations of employment.

Billet	Location	Status	Rank
Acquisition Officer	Marine Corps Systems Command (MARCORSYSCOM)	Filled	CWO5
Survey/Meteorological Officer	HQ Battery, Artillery Regiment Operations Platoon	Filled, Responsible for Survey/Met	CWO4
Target Information Officer	HQ Battery, Artillery Regiment, Division Fire Support Coordination Center (FSCC)	Authorized 01 October FY02	CWO3
Radar Platoon Commander	HQ Battery, Artillery Regiment Radar Platoon	Filled, Responsible for Radars (Personal and Equipment)	CWO2
Fires Tactical Systems Officer	HQ Battery, Artillery Regiment Operations Section	Authorized 01 October FY02	CWO2
Battalion Target Acquisition Officer*	HQ Battery, Artillery Battalion Operations Platoon	Filled, Responsible for all TA Issues at Battalion	WO1/CWO2

*After the lightweight 155-mm howitzer (LW 155) with towed artillery digitization (TAD) is fielded, the battalion Target Acquisition Officer will transition to the artillery battalion fire support coordination center (FSCC) for duty as a Target Information/Fires Tactical Systems Officer. This move will be at the discretion of the commander.

Figure 1: Typical Marine Artillery Regiment Structure for 803 Artillery Warrant Officers. The structure includes table of organization changes already scheduled for implementation.

The increasing demands placed on the technical proficiency of an officer or enlisted Marine has necessitated the creation of the Fires Tactical Systems Officer (FTSO) billet at the CWO2 level. One advantage the 0803 has is that, as a restricted (warrant) officer, he would never leave the Field Artillery, giving his commander the benefit of his continuity as a subject matter expert.

After deliberation, the 0803 community developed a career progression path similar to the Army's 131As but with a Marine flavor. The new Marine 0803 Target Acquisition Officer would continue in survey with his initial assignment as the Survey Officer of an artillery battalion. Once the lightweight 155-mm (LW 155) with towed artillery digitization (TAD) is fielded, the battalion survey officer will move to the maneuver regiment fire support coordination center (FSCC) as the TIO/FTSO.

WO1 The Basic School/Warrant Officer Basic Course

CWO2 Advanced Geodetic Survey Course

CWO3 Warrant Officer Advanced Course

CWO4 Advanced Targeting Course*

CWO5 Acquisition Courses**

* Exact targeting course to be determined.

** As determined by the Marine Corps Systems Command (MARCORSYSCOM).

Figure 2: Marine Artillery Warrant Officer Career Progression and Schooling Path

Logic called for the CWO2 to progress into the Radar Platoon Commander position where he could train the radar personnel and be responsible for the division's Firefinder assets, which are maintained by the artillery regiment. The senior CWO3 then would go to the division FSCC to serve as the TIO.

To implement the plan, the current table of organization takes the duties of the Regimental Meteorological Officer and places them under the Regimental Survey Officer. The Survey/Met Officer CWO4 will continue to be the senior 0803 in the regiment and provide survey and Met support when and where required. His duties will include oversight of battalion survey sections in the absence of the battalion survey officer. A key issue is that Marine artillery warrants won't divorce themselves from oversight of survey and meteorology—ensuring units meet the five requirements for accurate predicted fires is simply too important to the artillery.

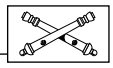
The plan is scheduled to go into effect in October 2001 with the addition of a 0803 TIO in each artillery regiment assigned to the division's FSCC and a 0803 FTSO assigned to the regimental operations section.

The transition of the battalion Target Acquisition Officer is tied to the fielding of TAD and AFATDS. Once fielded, the battalion Target Acquisition Officer will move to the FSCC for duty as the TIO/FTSO. The TIO/FTSO will continue to oversee the training and readiness of the battalion survey section. Figure 2 shows the career progression and schooling path of the Marine 0803 Target Acquisition Officer.

The 0803's future includes the addition of an active duty TIO/FTSO billet in the 14th Marines' Force Artillery Headquarters. The 14th Marines' mission calls for a TIO/FTSO billet to mesh the Total Force with respect to target acquisition.

This major transition of the small community of 0803s in the Marine Corps will have a significant impact on fire support. The 803s will serve the force where it matters the most.

As torchbearers of the five requirements for accurate, predicted fires, the WO 0803 will continue to ensure the Marine artillery is on time and on target.



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