

# Field Artillery Journal



March-April 1985

**ALL AMERICAN—ALL FOR ONE**

# Field Artillery Journal



Volume 53

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Number 2

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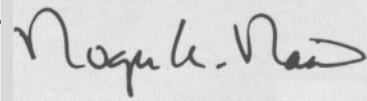
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When GEN John A. Wickham, Jr., the Chief of Staff of the US Army, observed, "If we are going to war, we are going joint," he articulated a truism that all too frequently eludes today's soldiers, airmen, and sailors as they go about their parochial day-to-day lives. This issue of the *Journal* attempts to correct that narrowness of vision by providing a series of articles and features to broaden our knowledge of joint operations in general and of fire support in joint operations in particular.

MAJ Scott R. McMichael's "Urgent Fury: Looking Back and Looking Forward" introduces this eye-opening series by delving into the complexities, successes, and failures of the Fire Support Community during the recent joint operation in Grenada. His penetrating analysis suggests that members of the joint operations team need to learn more about each other as well as to develop and practice well-conceived joint doctrine. Articles by GEN John R. Galvin, CPT John A. Hucks, MAJ Richard Ross, MAJ Bob Ashey, LT Jeff Kline, Mr. Del Malkie, LTC Michael E. Devlin and MAJ Theodore M. Shadid, and the entire staff of the AirLand Force's Application Agency help us acquire that knowledge and learn how others have trained to be expert practitioners of joint operations.

Two other authors remind us that analysis of the past as well as consideration of the present can open our eyes to the complexities of joint operations. CPT John Gordon and Mr. Reed C. Hildreth reflect on joint operations and functions in the past.

This issue is an eye opener. It expands our vision so that in the battlefields of the future we can be "All American-All for One."



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# On the Move

MG JOHN S. CROSBY

Times are changing and the Field Artillery must change with them. The early 1980s saw the formation of light infantry division structures; the fielding of the Bradley Fighting Vehicle, the Abrams tank, new tactical data systems, and smart munitions; and the formulation of AirLand Battle doctrine. Each change had a substantial impact on close support. Field commanders responded to these changes by voicing concerns regarding the adequacy and synchronization of fire support in combat operations, the manning levels of fire support sections, and the overall responsiveness of fire support.

To address these issues, the United States Field Artillery School (USAFAS) convened Close Support Study Group III. Its mission was to determine the optimum procedures, organizational structures, and equipment of fire support agencies during the 1985-1992 time frame for the total force.

As a combined arms effort, the Study Group included representatives from the Infantry, Armor, Aviation, Signal Schools; the US Army Reserve; the Combined Arms Center; and the Headquarters, Training and Doctrine Command. They assisted USAFAS members of the Study Group in scrutinizing the entire fire support system—its force structure, training, equipment, and doctrine from platoon through brigade. Together this combined arms effort sought to determine how the system could best meet projected support requirements as specified by the maneuver arms' statements of need. Here's what they concluded.

## Company and Platoon Fire Support

The "FIST concept" remains valid, but several changes in terminology and functional description may clarify the FIST's role. Specifically, the Study Group recommended that:

- The title "company fire support officer" (Company FSO) should replace the current title "company fire support team chief" (Company FIST Chief).
- The term "fire support vehicle" (FSV) should replace the current term "FIST vehicle" (FISTV).

In order to facilitate the coordination and integration of fires, the Company FSO should normally accompany the supported company commander in the latter's command vehicle. This collocation will

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alleviate the problem of the Company FSO being "saddled" to the FSV. Of course, the FSO will require a work station that includes a secure radio in the commander's vehicle. Both the Armor and Infantry Centers are taking steps to accommodate the Company FSO riding with the commander through experimental modifications to tanks, fighting vehicles, and personnel carriers. The company FSO will continue to function as a shooter, planner, and executor for the company commander.

The Study Group also recommended that the mechanized infantry platoon forward observer party be reduced to one man. This proposal recognizes the team's limited effectiveness when mounted but retains the tangible benefits of platoon-level forward observers while operating dismounted. This recommendation will also free personnel in the force structure to form additional Combat Observation Lasing Teams (COLT).

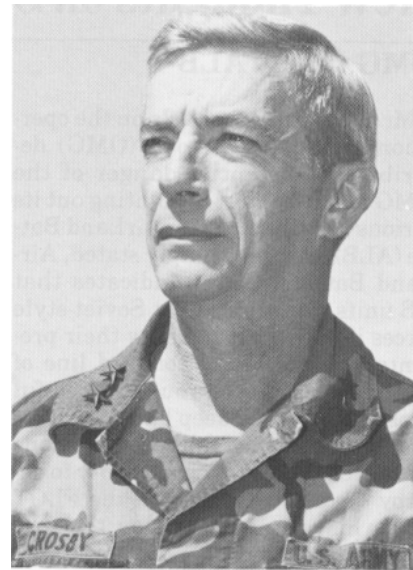
## Combat Observation/Lasing Teams

The Study Group concluded that COLTs provide a significantly increased fire support capability. It recommended distribution of six COLTs to each maneuver brigade in heavy divisions. These teams would be organic to the direct support field artillery battalions and habitually attached to maneuver brigades for training and operations. COLTs are further attached down to maneuver task forces for employment based on the factors of METT-T (mission, enemy, terrain, troops available, and time).

## Fire Support in Battalion and Brigade Operations

The Study Group agreed with field commanders that battalion and brigade FSSs are currently undermanned. It recommended that one field artillery lieutenant be added to the battalion FSS to facilitate the integration of fires when the FSO is forward with the maneuver commander and to provide the depth needed for 24-hour operations.

The Group determined that there is also a need for an assistant FSO at the brigade level. It recommended that due to constrained personnel ceilings, the direct



support unit's targeting officer be habitually located at the brigade TOC to provide the required expertise and backup thereby eliminating an additional augmentation requirement.

## Heavy Fire Support Vehicle

The CSSG III participants also recommended that the FSV organic to heavy forces be modeled after the type of vehicles found in the supported force. Specifically, the Company FISTs and COLTs operating with Bradley or Abramsequipped forces should have a FSV derived from the Bradley. The fire support vehicle in M113 and M60 equipped forces should remain the M981 vehicle.

## Conclusion

CSSG III focused on the total fire support system in combined arms operations. It studied that system from platoon through brigade task force levels, and it delivered an excellent product. Its recommendations provide a structured, evolutionary approach by which field artillerymen can continue to improve the responsiveness of fire support to maneuver arms.

The Study Group's report will now go forward to the Department of the Army for final approval and implementation. The Field Artillery School will keep you posted on the outcome of this process.



# Incoming

LETTERS TO THE EDITOR

## New Thoughts on Surviving the Threat

### OMG versus ALB

Mr. Bert Brown's article on the operational maneuver group (OMG) describes the potential danger of the OMG but falls short of pointing out its serious ramifications on AirLand Battle (ALB) doctrine. Simply stated, AirLand Battle doctrine indicates that US units can win against Soviet-style forces if we are able to slow their presentation rate at the forward line of own troops (FLOT) through successful prosecution of the deep battle; i.e., degrade and interdict follow-on echelons to create windows of opportunity to destroy the enemy's forces at the FLOT and in his rear areas. The key to this is the successful engagement of the enemy's follow-on forces, and this is where the OMG will have the greatest impact on friendly forces.

The only way we will be able to prosecute the deep battle, with both present and future weapon systems, is to capitalize on our intelligence system. We must, in peacetime, conduct intelligence preparation of the battlefield (IPB) in order to focus our collection effort, identify target areas of interest (TAI), and—in conjunction with the use of target value analysis (TVA)—identify the high-payoff targets and plan their destruction. The

challenge here is the fact that we must be able to identify the enemy's forces once the battle begins. The impact of the operational maneuver group is that a failure to recognize this force for what it is may cause us to expend effort against it, thinking it to be the second echelon. The second-echelon forces will then be able to arrive at the FLOT without having been interdicted, according to the plans of the enemy commander and overwhelm our forces. If we ignore the OMG and attack the second echelon, we will win the battle at the FLOT but lose the rear battle when this large force exploits a gap in our lines to strike into our rear areas.

What we must include in our plans is an anticipation of encountering both second-echelon forces and operational maneuver groups. We must plan to fight both, because a failure to engage either will spell our doom. Accomplishment of this task will be very difficult. It will require the complete coordination of all branches and arms in the battle. Prior to the battle, we must identify and prioritize target arrays and identify the means of attacking them. We must optimize the effectiveness of weapon systems. Each branch and arm must attack targets which it

can most affect; no one takes upon himself the sole responsibility of winning the war. Experience from the Middle East has shown that conventional Soviet-style offensives can be defeated through the well-thought-out application of force and use of current weapon systems. When one adds the improvements possible through the use of newer systems to the correct application of AirLand Battle doctrine and these earlier lessons, he may properly conclude that victory is definitely possible.

We must ensure that our efforts are completely integrated, coordinated, and planned in light of Soviet tactics and doctrine. We must demand that our training exercises be staged against forces which are as capable as the most advanced Soviet units. We cannot allow ourselves to be deluded by playing wargames against enemies that continually make some fatal mistake which makes it possible for us to win. If we do not push ourselves now to develop the best possible plans, we cannot win in a future conflict.

George T. Norris  
CPT, FA  
Fort Sill, OK

### More Scuttlebutt

Captain Scott R. Gourley's article "SCUD, SCALEBOARD, and Scuttlebutt" (January-February 1985 *Field Artillery Journal*) provides valuable insight into the history and use of the SCUD and SCALEBOARD missile systems. Here is some additional information that may interest *Journal* readers:

- Exported versions of the SCUD do not have the specialized fire control system used by the Soviet forces, but instead they are deployed with a less accurate manual command and control interface system.

- The time required for fueling the missile with the liquid propellant does not provide for a very responsive capability.

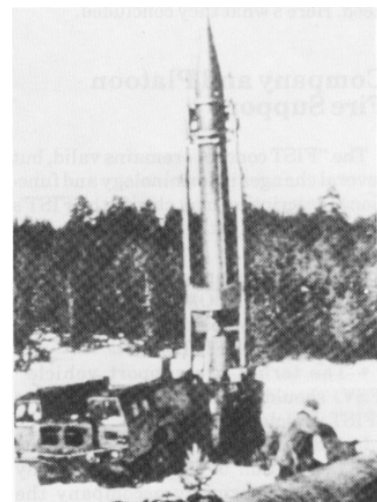
- Recent Iraqi firings of SCUD-B missiles at the Iranian facilities on

Kharg Island were at the maximum range of the system, but the attack achieved little success.

- Artillerymen should also be cognizant of the fairly high dud rate for the SCUD system.

- With the replacement of the SCUD and SCALEBOARD by the SS-23 and SS-22 in the Soviet forces, the probability of further export of the older systems to additional countries is dramatically increased. As exports become more widespread, our forces are more likely to encounter the SCUD and SCALEBOARD in future conflicts in third world countries.

Michael C. Windham  
CPT, FA  
Fort Sill, OK



SCUD-B.

## Worth Every Penny

As described in "A Small Price for Survival" (January-February 1985 *Field Artillery Journal*), Captain Thomas E. Hill has developed and tested a successful method for radio communications consistent with current Army electronic warfare (EW) counter-countermeasures doctrine. Captain Hill obviously understands that success on the modern battlefield depends on motivated and trained soldiers, good leaders, accurate intelligence, firepower, and mobility. Furthermore, he realizes that the key to unleashing this combat power with the maximum intensity and at the precise moment is the communications system.

In the past, we have recognized two dimensions of the battlefield—width and depth. The advent of aircraft forced the recognition of airspace as a third dimension. Today, another dimension of the battlefield must be considered—the electromagnetic component. It is the dimension in which radios, radars, and lasers operate; and it pervades the other three dimensions of the battlefield. The electromagnetic dimension is limited only by the frequency spectrum and is measurable in terms of electronic emitters. Captain Hill focuses our attention on the fourth dimension of the battlefield. The signatures emitted by our radio communications are an important source of battlefield intelligence for the enemy. Increases and decreases in radio traffic suggest to threat forces many of our intended actions. Similarly, the amount of signal-emitting equipment concentrated in a given location provides much information pertinent to the size and function of friendly units. For these reasons, the "price of survival" requires that signal emitters be remoted from operational control centers.

Captain Hill discussed the effects of time and training on his method. Time is a precious commodity on the modern battlefield, but time saving procedures must be carefully weighed against their impact on mission effectiveness and survivability. Wire, while more secure than the signal-emitting radio, requires lengthy installation time. If mission permits, installation of wire is advocated by doctrine. Captain Hill reports that the results of REFORGER indicate that the time required to install the six-pair wire cable for his remoted systems was worth the effort and risk. This raises a larger question: If time permits installation of

wire, why not parallel all radio links instead with wire circuits through switchboards and multichannel systems and eliminate FM radio signals entirely?

Captain Hill trained two special teams to handle the remote communications mission. The first team composed of personnel from the operations section operated the remote radios and ancillary equipment. Shouldn't all members of the division artillery operations section be equally capable of operating the remoted equipment? Specific individuals could then be tasked to perform this function regularly, and other section personnel could assume these duties if any member of the special team become a casualty.

The second team, comprised of wire section personnel, installed and recovered the six-pair wire cable. It is surprising that the wire mission of a division artillery headquarters would allow the formation of a special wire team. Doctrine requires the senior unit such as the division artillery to establish communications with each of its subordinate units. Doctrine also requires that wire communications be paralleled with, and thus be used in lieu of, radio communications whenever possible. These procedures minimize electromagnetic emissions and vulnerability to enemy radio direction finding (RDF) efforts. Unfortunately, these doctrinal requirements place a heavy burden in terms of time and personnel upon wire teams. Captain Hill's procedures add the extra burden of installing and retrieving the six-pair cable. Would it not be more practical to use operations section personnel to install and recover the six-pair cable as a function of internal tactical operations center setup and teardown activities, and thereby reserve the division artillery wire team personnel for external communications requirements?

Threat forces realize the US Army's dependence on its electronics system for command, control, fire direction, and other battlefield essentials. Captain Hill has taken two prime actions to limit the enemy's radio signal interception and location efforts: remoting the transmitters with antennas and relocating the remote site frequently. Several additional actions may prove helpful.

- First, disperse transmitters and antennas rather than concentrate them in a group. Transmitters and antennas grouped in one area indicate to the enemy the

relative size and value of the headquarters. Obviously, a battery would have fewer radios than the division artillery; therefore, Captain Hill's six radios grouped together would become the higher priority target.

- Second, construct and use directional antennas whenever possible. The new OE-303 half-rhombic antenna soon to be fielded may well serve as an indispensable addition to the unit modified tables of organization and equipment. An antenna multicoupler at the remote site might also assist electronic counter-countermeasure efforts.

- Finally, employ decoy antennas at predictable communications sites which can be observed by enemy surveillance. Erroneous radio direction finding data used in conjunction with observation data may prompt the targeting of a decoy site instead of the actual transmitter site. This ploy also depends on good camouflage at the actual site.

Captain Hill's report of REFORGER success with his remoted systems did not address the results of opposing forces' airstrikes against his remote sites in terms of personnel or equipment losses. If a remote site is targeted and struck, what provisions had been made for replacement of destroyed or damaged radios or an alternate means of communications?

Tactical force commanders in the next war must rely on their communications systems more than ever before. To win the battle, our commanders must be able to command and control battlefield operations better than their enemy counterparts. Threat forces also recognize that the key to success in combat is an effective communications system. Our ability to counter the enemy's EW efforts may mean the difference between success and defeat. Captain Hill has pioneered and tested an effective means of signal-emitter displacement in compliance with EW counter-countermeasure guidelines. His initiative is laudable. With minor modifications, his method can significantly enhance a commander's communications for command, control, and fire support. It is only "a small price for survival," and it is well worth every penny.

Karen D. Christie  
CPT, SC  
Fort Sill, OK

## Two Out of Three

The January-February 1985 issue of the *Field Artillery Journal* was full of thought-provoking ideas. In fact, I was provoked to respond to several articles.

- I especially enjoyed Sergeant First Class Sharp's article, "Survivability for Sophomores: A Short Course in Staying Alive," because I think the historical approach to artillery survivability is valid and very worthwhile for artillery tacticians. However, I do question Sergeant Sharp's assertion that the Soviets were the source of survivability techniques for the Germans. The lessons that the author states the Germans learned from the Soviets are in fact documented in a 1939 edition of the German version of FM 6-20, *Führung der Artillerie*, translated by Major R. C. Partridge, a field artilleryman who was with the military attache's office in Berlin and attended the *Kriegsakademie*. There are also references to the techniques in even earlier translations of German artillery doctrine. I suspect that just the opposite is true; the Soviets learned survivability from the Germans.

- I compared Major Thomas S. Grodecki's proposed survivability tactics in "Dummy Doctrine" with the six general principles in a coordinating draft of Field Circular 6-50-4, *Field Artillery Survivability*.

—Good estimates, reconnaissance, choice of firing position, improvement

of position, artillery tactics, and leadership by artillery commanders and NCOs improve survivability.

—Every artillery leader must war-game the situation in advance and try to avoid being surprised. He must always be ready with a practical solution.

—Artillery should fire solely to support the mission of friendly maneuver forces. It's wrong for artillery to limit fires because of enemy fire or the possibility of being detected.

—If necessary to support the maneuver force, artillery units should go into the nearest feasible position and seek a better, more survivable position later on.

—Artillery leaders should avoid establishing patterns.

—The field artillery leader must outthink the enemy. He must assess situations faster, react faster, and return threat with counter-threat. He must detect the enemy's patterns, and then force his opponent to worry about survivability.

Major Grodecki's tactics agree well with these principles. The one weakness I find in his proposal is the violation of the principle—avoid patterns. His deception scheme sets up a new complex pattern. Eventually the enemy will figure out the pattern and begin to neutralize it. Major Grodecki's proposed tactics need more variation. With that exception, I think his views agree closely with the features of AirLand Battle doctrine. They're sound,

and they'd work in some situations. I'd try them.

- "Hide, Harden, and Hustle," by Captain Robert D. Lewis provides an example of the defensive mind-set that is so common in the field artillery today. While he says our primary mission is to provide fire support, Captain Lewis advises battery commanders to tailor their batteries "to the threat and terrain in order to counter nuclear, biological, and chemical (NBC); counterfire; and air attacks." It should be mission first. What about returning fire, and deception?

I really don't buy the resupply of firing units during movements. I was always taught that a battery is most vulnerable during moves: Resupplying during moves makes them longer, hence more dangerous. Not only that, but batteries don't support maneuver while they move, so why prolong the time a battery cannot support the maneuver forces? I think it's going to be tough enough, keeping up with some of the forces we support.

The new action officer for the development of FC 6-50-4 will be Major Ken Hendrick, of the Field Artillery School's Tactics and Combined Arms Department. I know he would enjoy hearing from other Redlegs who, like the authors who presented their thoughts in the recent *Journal* have ideas on "Surviving the Threat."

Christopher A. Cortez  
MAJ, FA  
Fort Sill, OK

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## I Think, Therefore I Survive

Colonel Robert B. Adair's article "I Think, Therefore I Survive" (January-February 1985 *Field Artillery Journal*) surfaces one of the most critical issues in the field artillery today: the ability to survive on the battlefield and still provide effective fire support. Actually, the 17th FA Brigade has specialized in solving problems with survivability since the late 1970s. It is good to know that the 17th FA Brigade, under Colonel Adair's command, is continuing this effort. One area in which the brigade conducted a considerable amount of experimentation involved separating the brigade and battalion tactical operations centers (TOC) from their electronic signatures. I would be interested in what the 17th FA Brigade is doing to

counter enemy direction-finding capabilities.

There is one question, however, that comes to mind from this article. In the list of assumptions, presented at the beginning of the article, the author assumes that batteries will be detected and targeted within six hours of occupation. In the conclusion, the author states that the optimum amount of movement for a firing element is two or three times daily. Is there an incongruity here? At any rate, Colonel Adair's article is thought-provoking and most timely. I look forward to reading more about the 17th FA Brigade's work with survivability issues.

Bill Rittenhouse  
Fort Sill, OK

## Bear Facts

Captain George Norris's article on Soviet acquisition systems, "The Bear Facts: Someone is Watching," (January-February 1985 *Field Artillery Journal*) is right on the money; the Soviets do not regard reconnaissance or target acquisition information as belonging to any one combat arm. They believe that intelligence, naval and air reconnaissance, electronic reconnaissance and intelligence, long-range patrols, and troop and combat reconnaissance are complementary and interlocking methods of providing tactical information to Soviet commanders at all levels. Together, these different means of collection can, in theory, provide accurate and timely information. Moreover, the use of complementary and overlapping reconnaissance systems

reduces the possibility of enemy deception. The Soviet realization of the importance of aggressive reconnaissance can be seen in the following statement by Colonel M. Trushchenko, "At the present time, each unit commander is obliged always to have at his disposal complete and reliable data on the enemy, with such data being obtained not only from higher headquarters, but through the use of his own resources."

Bert L. Brown  
Fort Sill, OK

### Missing the Mark

In his letter to the editor ("Local protection," January-February 1985

*Field Artillery Journal*), Major Larry A. Altersitz expresses concern over the ability of a small unit to delay an attack long enough to allow a unit to displace on the mid- to high-intensity battlefield. I believe that Major Altersitz has missed the mark. Field artillery units are not designed to gain ground, nor are they designed to hold ground. The field artillery relies on adequate advance warning through a network of fire support personnel and listening or observation posts in order to give the battery or platoon enough time to displace. Prompt reporting of combat information through fire support channels as well as the monitoring of

target locations by the fire direction officer should allow the commander to follow the battle and give sufficient warning to subordinate units to displace. This combined with adequately sited listening or observation posts armed with antitank weapons—both light antitank weapons and Dragons as appropriate—will be enough to allow for unit displacement. Timely displacement of field artillery units out of the path of oncoming threat units is the key to their survival.

Paul O. Staller  
CPT, FA Fort  
Sill, OK

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## Past and Future Forces

### Preparing to Meet the Threat

In a recent letter to the editor, Brigadier General (Retired) Roland P. Shugg encouraged the Field Artillery Community to "concentrate on the present." He implied that little effort is currently underway to provide for an "improved conventional component" by "immediately initiating a program of guided missiles"; develop a "modern" field piece for our light forces and marines, such as the Soviet 122-mm self-propelled howitzer, or the ASU-57 or ASU-85 airborne assault guns; exploit the "multispectral field of sensors"; acquire submunitions; and reconstitute a viable corps headquarters capable of integrating missile employment with the Air Force.

Here are some of the major programs and initiatives in which the Field Artillery School is currently involved:

- With regard to initiating a program of guided missiles, the US Army Training and Doctrine Command System Manager's Office for joint tactical missile systems (JTACMS) (formerly CSWS) has been in existence for some time and is in the process of evaluating a number of candidate systems.

- Our HELP and HIP 155-mm howitzer programs will provide us with much improved rates of fire, autonomous positioning, and on-board fire control in addition to other system improvements. For the light divisions, a decision was recently made to procure the British L119 light gun pending significant advances in recoil systems technology, advanced composite materials, and new propellant technologies that will permit the development of a new light howitzer capable of the support required in a variety of potential scenarios. Unfortunately, with limited airlift capability, deployability has

come to mean much more than simply being "airdroppable."

- In the field of sensors, the elevated target acquisition system (ETAS), Aquila remotely piloted vehicle, and joint surveillance and target acquisition system (JSTARS), along with the fielded Firefinder radars and fire support team's ground/vehicular laser locator designator, will allow 24-hour surveillance and target location using a variety of sensor technologies. With terminal homing munitions such as the multiple launch rocket system (MLRS) terminal guidance warhead (TGW), the laser-guided MLRS, the 8-inch and 155-mm sense and destroy ammunition, the fire-and-forget Copperhead II, and the Fiber Optic Guided Missile (FOG-M), the division commander will soon have the capability to locate and destroy hard, point targets throughout his area of influence.

- Recently, the Department of the Army authorized and resourced the corps artillery headquarters and headquarters battery and the corps target acquisition battalion, which will be the first steps toward giving the corps commander the operational capability he will require under the Army 21 concept. Furthermore, the joint effort with the Air Force to establish a battlefield coordination element (BCE) will greatly enhance our ability to perform battlefield air interdiction and close air support.

In summary, I think it is safe to say that the Field Artillery School is "concentrating on the present"; but perhaps more important, we are preparing for the future in order to meet a future threat.

Stephen W. Lattimore  
MAJ, FA  
Fort Sill, OK

### Missing the Point

In his rebuttal of my letter published in "Incoming" (November-December 1984 *Field Artillery Journal*) the editor missed the basic thought projected.

He falsely titled the epistle "A new name for field artillery," instead of "A new role for artillery." Nomenclature was only an addendum, an afterthought in my letter.

The basic mission—"support of maneuver arms"—was never challenged as implied. To characterize counterbattery and counterair defense as "subfunctions" is absurd. To say "no one of them will ever be the primary mission" is equally laughable. They just happen to be two important targets in executing our primary mission. *Subfunctions* is not in the artillery dictionary. The new role which technology has given us is not a mere extension of the battlefield as the editor envisions. It is the area beyond the battle area—30 to 150 kilometers in rear of the frontline—the area containing the support infrastructure, airfields, supply depots, support troops, and bottleneck bridges. It cannot be reached by cannon artillery but can be reached by rockets and missiles. The Soviets have developed a whole series of rockets to cover such an area, and they have already been deployed. While *the US Army Field Artillery Center is only still studying this problem*, the Soviets have solved it as indicated by the title "Commanders of Rocket Troops and Artillery."

R. P. Shugg  
BG(Ret) USA  
Oakland, CA

# Target Acquisition

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## Cueing the Firefinder

The article on cueing Firefinder radars by Captains John House and James Hogue has a good initial discussion of the radars' capabilities; however, there are some problems with the recommended cueing methods. Effective cueing is vital for the Firefinder radars to accomplish their mission and survive.

Instruction given to field artillery officer basic and advance course students concerning Firefinder radars stresses the importance of cueing. There are four basic sources of cueing:

- Forward observers or fire support teams (FIST).
- Sound ranging.

- Intelligence (S2 and targeting elements).

- Scheduling.

The first three sources are preferred because the radar is either being cued on an actual battlefield occurrence or a suspected enemy artillery position. Scheduling is least preferred because it has three major problems. First, the radar is not being oriented and cued on an enemy activity; it is just being randomly operated. Second, during the random operation, the radar is emitting electronic energy that makes it susceptible to enemy ground and airborne direction-finding equipment. Third, scheduling is not sensitive to the

commander's guidance because the radars are not being cued with the appearance of certain artillery targets the commander has prioritized.

The authors' discussion on how FIST and sound-ranging personnel will be too busy or limited to cue is partially true. It will take a combination of the FIST, sound-ranging, and intelligence community to cue the Firefinder radars. Scheduling must remain least preferred because the radar is simply emitting with the hope of finding a target.

Richard M. Thurlow  
CPT, FA  
Fort Sill, OK

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## Firefinder Misused

It has been almost two years since the Firefinder radar systems were fielded in US Army, Europe (USAREUR). In the years that preceded the fielding, interest in a new system that could add a state-of-the-art radar to the growing sophistication of the Field Artillery Community was high. There were discussions concerning the new doctrine necessary to ensure maximum effectiveness, deployment, mission on the modern battlefield, and the role in the AirLand Battle 2000. What happened to all this interest?

For the past 18 months, the Firefinder systems in USAREUR have received less importance and understanding than the basic digital message device (DMD). In fact, some radars in USAREUR interface with the tactical fire direction system (TACFIRE) utilizing a DMD because some battalion fire

direction officers and S3s have put the built-in interface capability in the "too hard to handle category." They complain that they cannot handle the volume of messages that the radar generates, but the Target Acquisition Community brags about the number of target locations the radar is able to detect.

Granted, the primary mission of the system is to locate hostile artillery, but it also has a friendly fire—register-adjust—mission that is badly misused. In USAREUR, the battalion S3 requesting radar support usually does not have innovative team-structured training in mind. His primary concern is the range regulations that require a radar to "spot" the rounds fired during periods of limited visibility. We have become the watchdog of the impact area—the all-weather observer rather than an asset to be used to resolve gunnery problems that

plague every artillery battalion.

The time has come for division artillery commanders to encourage battalions to cultivate their relationships with their direct support radar sections. The radar needs to become an integral part of battle plans and training of the unit it supports. Serious consideration should be given to positioning, logistical support, and target processing for each individual system in the division artillery. We are fortunate to realize our dreams in that we do have the best, most deadly accurate artillery and counterfire delivery systems in the world. Now we need to learn how to integrate them.

Tom Curran  
CWO, USA  
APO NY

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# Airspace Management

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## Growing Understanding

I am in complete accord with Colonel Dennis S. Greene's sentiments on airspace management (November-December 1984 *Field Artillery Journal*).

For us to operate an effective airspace management system, we must first understand its components. Staff officers, commanders, and fire support coordinators do not fully comprehend airspace management and their part in the system. We must learn how to use and control all available fire support means while

providing a measure of safety. Only when we educate our officers can we gain the confidence so necessary for the system to work.

The National Training Center provides a good starting point for such an education. There, our officers use Army and Air Force aircraft and indirect fire at the same time in their live-fire exercises.

In the meantime, the Field Artillery School is continuing the educational

effort. It has contributed information for Field Circular 100-1-103, *Airspace Management and Army Air Traffic in a Combat Zone*, which will familiarize commanders and staff officers with the procedures and information requirements for implementing and supervising an airspace management system within Army controlled areas.

Vincent R. Bielinski  
Fort Sill, OK



## Working it Out — — Together

This letter was prompted by the article, "A Fly Paper," by Captain John L. Hensley, USAF, in the May-June 1984 *Field Artillery Journal*. Although never cited specifically in the article, Captain Hensley's discussion concerned an important aspect of procedures called *airspace management*.

During the mid-1970s, the Tactical Air Command and the Training and Doctrine Command formed several joint working groups designed to enhance the interaction between tactical air and ground combat operations. Airspace management, which recognized the competing interests of air defense, tactical air, Army aviation, field artillery, and aerial reconnaissance for the same block of airspace, was the subject of one joint working group.

For several years prior to that time, the Air Staff had been charged with developing joint doctrine for "control of the airspace over an area of operations." The popular wisdom of the period held that the Air Staff considered all airspace above the parapet of a foxhole as "controlled" by the Air Force. Any other service desiring to use the airspace (to include passing artillery projectiles and rockets through it) could do so only with the permission of the Air Force. At the same time, one Army Chief of Staff had gone on record as stating that the ground (Army) commander required full "control" of all airspace up to 50,000 feet over the area of operations. Needless to say, there was somewhat of an impasse between the Army and the Air Force staffs on this heavy doctrinal issue, and the needs of joint and unified commanders were being effectively ignored.

In the early 1970s, the two service Chiefs of Staff bucked the issue (with a sense of urgency) down to the Tactical Air Command and the Training and Doctrine Command—jointly. It was a clear ploy to get the issue out of the service staff environment where any erosion of a service's authority was perceived as tantamount to a sure funding cut during the next budget cycle.

During the Vietnam conflict, that aspect of airspace management which Captain Hensley refers to as "safe separation" between aircraft and artillery had been attempted (vice accomplished) by a variety of *ad hoc* schemes. One favorite, if notorious, technique was the simple expedient of shutting off all artillery fires when any aircraft entered a designated area. These *ad hoc* schemes were usually very restrictive and very resource-intensive. Something better was clearly needed.

The airspace management joint working group (my predecessor and I, both field artillerymen on the faculty of the Command and General Staff College, acted as the co-chairman for the Training and Doctrine Command, while our counterparts came from the doctrine shop at Headquarters, Tactical Air Command) set about to develop, as FM 100-42, *US Army/US Airspace Management in an Area of Operations*, states, "procedures . . . designed as guidance for Air Force and Army forces engaged in planning for and conducting contingency and combat operations." "Procedures" and "guidance" were key words since we wanted to keep restrictions to a minimum, wanted to avoid any implication that we were creating rigid "doctrine," and knew that we could not divine all the answers for every possible situation.

The procedures developed by the joint working group were staffed with various Air Force and Army commands. The procedures were also tested during several joint exercises. The result of the joint working group's efforts was a draft AFM 2-14/FM 100-42. The provisions of the manual were widely briefed (including the Chairman of the Joint Chiefs of Staff and the Secretary of Defense).

The draft manual was subsequently forwarded to the respective Chiefs of Staff by the commanders of the Tactical Air Command and the Training and Doctrine Command. The joint letter forwarding the draft manual enjoined the two chiefs not to staff the manual but just approve and publish it. Apparently, there was some staffing since the approved manual was somewhat more restrictive than the joint working group had intended. Nevertheless, the manual retained one critical feature: It provided a mandate for Air Force and Army personnel in the field to develop, jointly and without interference of service parochialism, local procedures and solutions to airspace management problems.

Therefore, the important thing is that Captain Hensley and his Army counterparts did exactly what the authors of the manual intended. They accepted the mandate and built on the general guidance provided by the manual to develop workable joint techniques which were germane to their particular situation.

I do not agree with some of the techniques Captain Hensley described—but that is irrelevant. I enthusiastically commend Captain Hensley and his Army

counterparts for working out techniques to solve some tough problems. Furthermore, I am particularly pleased that he took the trouble and the time to write the article and that the *Journal* published it. I would hope that the article will act as a catalyst for greater interaction between field artillerymen and air liaison officers in tactical units and that it will encourage further discussion in the pages of the *Journal* regarding the incorporation of tactical air resources into fire support planning and operations.

In fact, the only thing that disappointed me about the article was that the author was a member of the US Air Force instead of a field artilleryman!

Griffin N. Dodge  
COL (Ret), FA  
Santa Fe, NM

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### 5th FA Memorabilia

The 1st Battalion, 5th Field Artillery, is seeking historical memorabilia to set up a permanent display in the battalion conference room. Any information, pictures, or material concerning the 5th Artillery Regiment would be appreciated. Anyone who is able to assist, please contact the 1-5th FA by writing (HQ, 1-5th FA, Fort Riley, Kansas, 66442) or by calling (AUTOVON 856-9511; commercial (913) 239-9511).

Kim E. Gorum  
1LT, FA  
Fort Riley, KS

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### Reunion

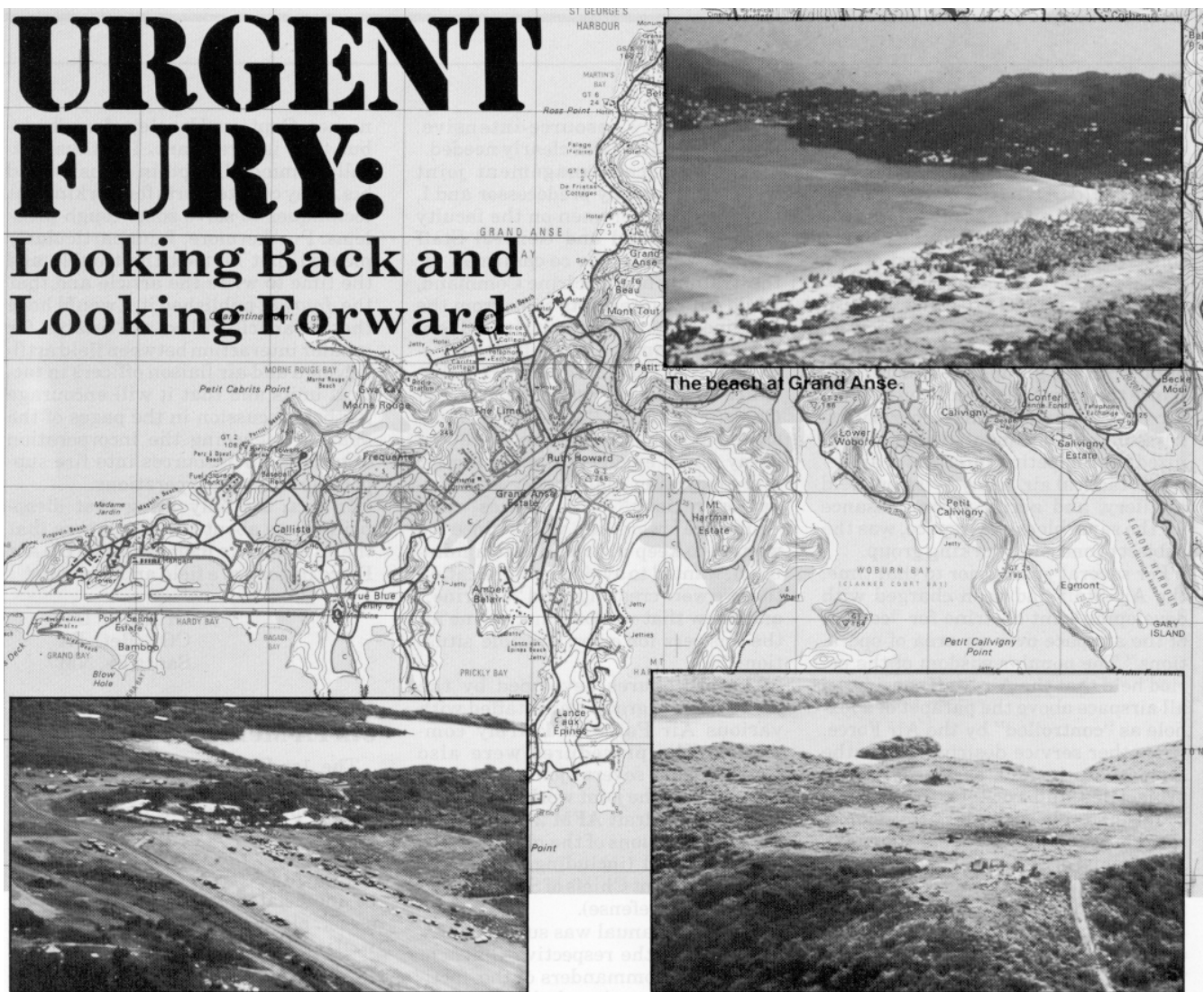
**278th Field Artillery Battalion Association**—1-4 May 1985, Williamsburg, Virginia. Contact William N. Widmer, Lake Shore Drive, Pennsburg, M.R. #1, Pennsylvania 18073.

#### Speak Out

The *Journal* welcomes and encourages letters from our readers. Of particular interest are opinions, ideas, and innovations pertinent to the betterment of the Field Artillery and the total force. Also welcomed are thoughts on how to improve the magazine.—Ed.

# URGENT FURY:

## Looking Back and Looking Forward



The beach at Grand Anse.

The east end of Point Salines runway. The buildings at the end of the runway comprise the True Blue medical campus.

The Egmont plateau where the 2-75 Rangers conducted an airmobile raid on D + 2.

by Major Scott R. McMichael

At 0537 hours on Tuesday, 25 October 1983, the first stick of Rangers from the 1st Battalion, 75th Infantry (Ranger) exited a C-130 and initiated an airborne assault on the Point Salines airfield on the island of Grenada. Thus began the US Army's involvement in Operation URGENT FURY, a strategic "coup de main" designed to halt the transformation of Grenada into a Marxist military stronghold and to rescue American medical students from the dangers of the violent, deteriorating situation on the island. As a military operation, the invasion of Grenada was a unique exercise both in its conception and its execution. Perhaps its most compelling

characteristic was its joint nature. Despite the small size of the island and the relatively limited military objectives to be achieved, Operation URGENT FURY involved forces from all four military services of the US—forces which were organized into a joint task force (JTF) commanded by a vice-admiral of the US Navy. The purpose of this article is to examine the operation from the point of view of joint fire support and to identify problems which demand solutions. This examination will be restricted to US Army operations; it will not discuss fire support provided to the Marines.

In order to accomplish these tasks, it is necessary to organize the article into four sections.

- A brief overview describing the forces involved, their missions, and their operations in Grenada during the combat phase.
- A discussion of pre-deployment fire support planning and preparations.
- A description and analysis of the actual fire support operations which took place in Grenada.
- Some conclusions and recommendations.

Before beginning, however, one caveat is in order. If this article seems unduly negative, the reader should remember that the Grenada operation as a whole was a resounding success.

The enormous difficulty of mounting a complex operation on such short notice also must not be overlooked. Nevertheless, post-operation analyses always take a critical viewpoint with the proper goal of deriving the maximum benefit from one's mistakes. This article is no exception to that rule.

## Overview

The Joint Chiefs of Staff (JCS) tasked the US Atlantic Command (LANTCOM), a unified command headquartered in Norfolk, VA, to plan and conduct URGENT FURY. LANTCOM, in turn, drew up a plan which included forces from all four military services, organized into the JTF illustrated in the accompanying figure.

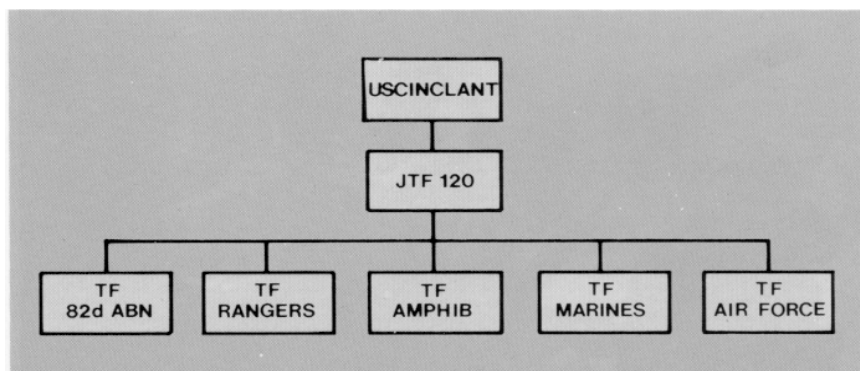
Three separate ground elements were established: the Marines, the Rangers, and the 82d Airborne Division (Abn Div). The Marines and the Rangers made the initial assaults to secure the two airfields in the north and the south. The plan split the island, giving the Marines responsibility for the northern half and TF Rangers the southern half. TF 82d Airborne Division, originally composed of two battalions of the 2d Brigade (Bde), had the responsibility to relieve the Rangers first, then the Marines, and, following the evacuation of the students and neutralization of the enemy, to carry out stabilization and peacekeeping duties.

Fire support assets available to these ground elements included:

- USAF AC-130 gunships (Spectre)
- USN A7 ground-support aircraft from the *USS Independence*
- USN destroyers (naval gunfire)
- Organic mortars
- Organic artillery (82d Airborne Division Artillery)

All significant combat action occurred during the first three days of the operation. Offensive operations began on the morning of 25 October (D-Day) when the Marines seized Pearls Airport in a heliborne assault while the Rangers secured the Point Salines airfield and the True Blue medical campus. TF 82d Airborne Division forces airdropped at Point Salines beginning about 1400 hours on D-Day and slowly massed sufficient force to relieve the two Ranger battalions in place. Because enemy resistance proved greater than had been anticipated (virtually all the resistance was in the southern—Army—half of the island), the 82d Airborne Division Commander, surmising that his two 2d Brigade battalions were insufficient, quickly called for the deployment of his 3d Brigade.

All Army forces deployed in extremely light configurations. Owing to



The Grenada joint task force which included all four military services.

a shortfall in airlift, the two Ranger battalions deployed at half-strength. The capacity of the Point Salines airfield also affected the tailoring of ground forces. Because the airfield could handle only one C-141 an hour, the 82d Airborne Division leaders left most of their vehicles and heavy equipment behind, deciding instead to build up infantry fighting strength as rapidly as possible. They planned to introduce vehicles and equipment in subsequent echelons.

On D + 1, the 2d Battalion, 325 Infantry (Airborne) secured the enemy signal complex at Calliste in a ground attack and the 2d Battalion, 75th Infantry (Ranger), conducted a daylight airmobile assault, using Marine helicopters, at Grand Anse to evacuate American students located there. Meanwhile, the 3d Brigade and supporting elements of both brigades continued airdropping at the airfield.

On D + 2, the 82d moved out on foot to expand its lodgment and the 2-75 Ranger conducted another airmobile raid, this time on an enemy compound at Egmont. This operation became known as the Calivigny Raid; it proved to be the last important military operation by Army forces. From 29 October to 2 November, US forces completed a sweep of the whole island against virtually no resistance. The Ranger battalions redeployed to the US on 29 October, the Marines reembarked to Lebanon on 31 October, and the commander of the JTF (CJTF) declared

hostilities to be at an end on 2 November. This declaration initiated the stabilization phase of the operation.

## Pre-deployment Planning and Preparation

Ranger fire support planning for the operation was rudimentary. The Rangers planned to rely on two assets for fire support during their airborne assault. First, each company planned to jump its organic mortar sections with 20 rounds per tube. Second, the Rangers coordinated for air support from USAF AC-130 Spectre gunships. The US Navy was not represented at any of the Ranger planning sessions so no coordination for destroyer or naval air support was possible.

Within the 82d Airborne Division, fire support planning began shortly after the 2d Brigade was notified of the impending operation. Initially, because the operation was to involve only one brigade, only the 2d Brigade Fire Support Officer (FSO) and the Commander and S3 of the 1st Battalion, 320th Field Artillery (direct support, 2d Brigade) were brought into the planning. (Operations security [OPSEC] considerations caused the exclusion of the division artillery commanders and the division fire support element [FSE] until the 82d was placed on alert on Monday evening, 24 October.) This fire support planning cell discussed the requirements for the operation with the 2d Bde maneuver



An Air Force C-141 takes off from a Grenadan airstrip.



**82d Airborne field artillerymen fire on enemy hill positions.**

commanders, and together they made several important decisions.

The brigade's leadership decided not to deploy with its full complement of organic mortars, relying instead on a tailored package of artillery to provide indirect fires. Several factors influenced this decision, but the primary reason was the necessity to keep the deployed force as lightly configured as possible yet retain maximum effectiveness. Thus, the 2d Brigade carried no 107-mm mortars and only a small number of 81-mm mortars, primarily to conduct illumination missions. This decision had no adverse effects on the operation.

The planners tailored the supporting artillery based on habitual relationships. Batteries B and C, 1-320 Field Artillery (FA) were selected to support the 2-325 and 3-325 Infantry respectively. In order to spread the howitzers out in the airflow while also getting some artillery on the ground early, each battery was organized into two three-gun increments to be deployed separately. The 1-320 FA headquarters also tailored light, but its fire support teams (FIST) deployed "full-up."

The planners considered taking target acquisition assets from the 82d Airborne Division target acquisition battery but decided not to, again because of the need to keep the force light. Moreover, the intelligence estimate allowed for an enemy mortar capability but did not assess it as a major threat. In fact, while reports vary, the enemy's use of mortars ranged from total non-use to the firing of just a few rounds.

While key planners in the 2d Brigade were hard at work from 22-24 October, the division G3 and others met at LANTCOM in Norfolk to discuss the operation at the joint level. Unfortunately, these meetings included no representatives from the 82d's fire support

community. This conscious oversight proved to have several ill effects, the most important of which was the failure to obtain critical information on the non-Army fire support assets in the area of operations. Procedures for requesting naval gunfire, communications channels to be used, FSE coordination with the supporting arms coordination center

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**Another problem created at the joint level was the failure to augment the JTF staff with Army personnel familiar with Army procedures and requirements for the employment of indirect fires.**

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(SACC), availability and munitions of air and naval assets are examples of the kinds of issues which were not fully resolved before deployment. These problems and others were dealt with on the ground.

In addition to the lack of critical fire support information, another problem created at the joint level was the failure to augment the JTF staff with Army personnel familiar with Army procedures and requirements for the employment of indirect fires. At no time during the operation did the CJTF have sufficient Army personnel on his staff or in his SACC to advise him on Army matters. The Army augmentation to the JTF staff consisted solely of one general officer and two majors.

Following the division alert, the Division FSE formed an austere three-man element to deploy with the division's assault command post. Because the FSE had been excluded from the planning prior to the alert, it had to rely on the 2d Brigade FSE for most of its fire support information. Once the decision to deploy the 3d Brigade had been made, the 1-319 FA tailored two of its batteries—A and B—to support the 1-505 and 2-505 Infantry respectively. These batteries

were limited to three guns each and integrated into the airflow separately.

In accordance with the Division Readiness SOP, the 2d Air Naval Gunfire Liaison Company (ANGLICO) and 21st Tactical Airlift Squadron (TAS) (located at Camp Lejeune and Shaw Air Force Base) were notified to send ANGLICO teams and tactical air control parties (TACP) to Fort Bragg for the operation. TACPs for the 2-325 and 3-325 Infantry, the initial airlanding elements, did not arrive in time to deploy with the battalions owing to slow issue of some materials, the driving time to Fort Bragg, and the compressed time sequence under which the division was operating. The 2d Brigade and division TACPs deployed with the lead battalions as substitutes until their own arrived.

For similar reasons, the ANGLICO teams arrived late. However, upon deployment of the ANGLICOs, it was discovered that they did not have the necessary communications information—codes, frequencies, call signs, etc.—to communicate with naval elements. ANGLICOs had to coordinate

directly with naval forces in the area of operations in order to solve this problem. In particular, the late deployment of the 2d Brigade and Division ANGLICOs adversely affected the ability of the 82d to coordinate naval gunfire.

In summary, it is clear that the Rangers and the 82d employed sound fire support planning techniques at the *unit* level during the pre-deployment phase. However, significant breakdowns occurred at the joint level because of inadequate planning at LANTCOM, insufficient staffing of the JTF staff, and the late deployment of TACPs and ANGLICOs.

## **Operations**

The Rangers employed organic and nonorganic fire support immediately upon the initiation of their assault on the airfield. An AC-130 attacked and destroyed a number of enemy air defense sites on the high ground overlooking the runway. Beginning with these missions, the Spectre proved to be accurate and effective, two features which led to its frequent use by both the Rangers and the 82d as the fire support system of choice. Ranger mortars

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also began to shoot fire missions promptly in support of the Ranger efforts to clear the airfield area.

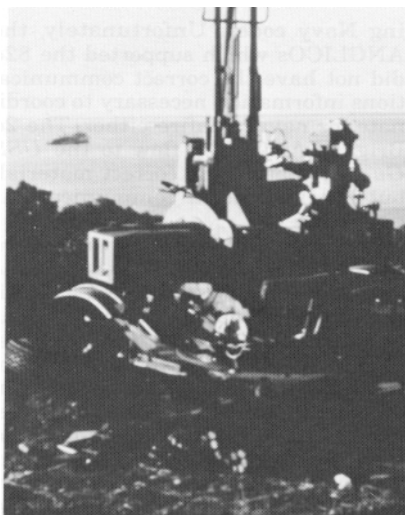
The 82d began arriving on the afternoon of 25 October. By the following morning, two battalions of infantry had arrived as well as a firing battery of the 1-320 FA. The attack of the Calliste compound by 2-325 Infantry at 0630 on the 25th involved the first coordinated fire support by the 82d. The target was initially attacked by the artillery, but the guns ceased fire after only 12 rounds in order to bring in A7s and the AC-130 orbiting on station. This attack succeeded; no problems occurred with fire support.

Later that day, the 2-75 Rangers, now attached to the 82d, were directed by the division commander to conduct an airmobile raid at Grand Anse to rescue American medical students. Although suffering from short planning time, the Ranger FSO coordinated fires from A7s; Battery B, 1-320 FA; organic Ranger mortars; and Marine attack helicopters. The attack was executed flawlessly in 26 minutes time. Seldom has a risky daylight raid succeeded so spectacularly.

More adjust fire missions were requested during operations on Wednesday, 26 October, but none were fired due to the rules of engagement. Established within the 82d to limit collateral damage and civilian casualties, the rules of engagement required positive identification of a hostile enemy force. Indirect fires required approval by the brigade commander for whom the mission was being planned or in whose area of operations (AO) the rounds were landing. The same rules applied for fires by aircraft and naval gunfire. Naturally, these rules severely limited the use of indirect fires.

The remainder of the 82d fire support organizations arrived on Wednesday and Thursday, 26-27 October. Ultimately, the division artillery deployed a total of 17 guns divided among four firing elements from two battalions. The command posts of the 1-320 and 1-319 FA battalions collocated—a logical decision considering the rules of engagement, the small AO, and the advantages of centralization of effort given the austerity of the force.

The last major operation of Army forces in URGENT FURY was the assault on an enemy compound at Egmont on 27 October. The 82d Airborne Division received this mission around noon and was directed to seize the compound by nightfall. As the only uncommitted forces, the 2-75 Rangers were selected to perform this airmobile assault under the overall command of the 3d Brigade. The preparatory fires



**Captured enemy anti-aircraft gun.**

planned to support the Rangers were to be delivered by the two artillery battalions, US Navy aircraft, an AC-130, and a destroyer on station. Although the preparation as a whole was effective, a number of problems occurred

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### **All the problems at the joint level had their sources in the inadequate pre-deployment planning.**

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which caused the artillery and naval gunfire portions of the "prep" to be unsatisfactory. Because the artillery problems revolved around controversial issues totally internal to the 82d, they will not be discussed here. However, the failure of the naval gunfire does merit discussion because of its roots in the unstable soil of joint operations.

By the time that the Calivigny raid was conducted, brigade and battalion ANGLICOs, TACPs, and air liaison officers (ALO) were all on hand. The naval gunfire portion of the preparation was fully coordinated by the 3 Brigade ANGLICO. Nevertheless, when the preparation was initiated the destroyers did not fire. The ANGLICO



**Soviet-made BMPs disabled by US Army Rangers.**

was unable to discover why the destroyers were not firing. Apprised of the problem, the division fire support element attempted to assist and was informed by the SACC that the Navy would not fire while friendly aircraft were over the target. The problem was not solved in time to have naval gunfire delivered on the target. Later, it was discovered that the CJTF, who reserved personal approval of all naval gunfire missions, had refused permission to fire because of his lack of confidence in ANGLICO-destroyer communications. The question may legitimately be asked why the 82d Airborne Division and the Rangers were not informed of these decisions prior to the initiation of the preparation. In stark contrast, support provided by the A7s and the AC-130 was uniformly superb.

No significant combat operations took place on Grenada following the Calivigny raid. Although hostilities were not declared terminated for several more days, activities from this point on centered on slowly clearing the island of small enemy groups, locating the Marxist leaders in hiding, locating and taking control of weapons caches, and patrolling. No fire support was required for these operations.

### **Conclusions and Recommendations**

The clearest and most obvious conclusion regarding the fire support provided during Operation URGENT FURY is that all the problems at the joint level had their sources in the inadequate pre-deployment planning. Three factors contributed to this key shortfall.

- First, the JCS placed very restrictive limits on the dissemination of information about URGENT FURY for reasons of security. Thus, OPSEC considerations restricted key fire support personnel from participating in the planning, particularly at the joint level.

- Second, because the operation was mounted so quickly, planners suffered from a severe shortage of time. Had

more time been available, more questions could have been raised and more details provided to the participating units.

- Finally, the absence of fire support experts from the 82d Airborne Division at LANTCOM (due to OPSEC) and the lack of fire support expertise on the LANTCOM peacetime staff together produced a shortfall in knowledge about joint support. No one from any service at the joint level apparently understood fire support doctrine sufficiently to anticipate and resolve the problems which surfaced in Grenada. This problem carried over into the operational phase because the CJTF did not augment his staff and the SACC with qualified Army personnel in accordance with current amphibious doctrine.

These three factors—OPSEC restrictions, time shortage, and overall lack of fire support expertise on the joint staff—formed the basis for the inadequate fire support planning.

Navy codes. Unfortunately, the ANGLICOs which supported the 82d did not have the correct communications information necessary to coordinate for naval gunfire either. The 2d Brigade ANGLICO flew to the *USS Guam* to obtain the correct material, but breakdowns in communications continued.

Restrictions placed on naval gunfire by the CJTF also degraded support to Army ground forces. The CJTF directed that all naval gunfire missions be personally approved by himself, ostensibly to prevent collateral damage from the inherently inaccurate gun systems. However, this rule of engagement effectively eliminated the use of naval gunfire against targets of opportunity. Still it was reasonable to expect naval gunfire against planned targets. However, as demonstrated by the absence of naval gunfire from the preparation for the Calivigny Raid, even this expectation proved unfulfilled. The SACC reported that the guns did

operations, there is no manual that covers the particular conditions of URGENT FURY—an airborne and airland assault on an island under the auspices of a joint task force, commanded by a naval commander.

The basic Army field manual on fire support, FM 6-20, *Fire Support in Combined Arms Operations*, does not adequately address the fire support requirements for an operation like URGENT FURY. Similarly, FM 100-27, *Joint Airborne and Tactical Airlift Operations*, discusses fire support principles in general terms only. It lacks sufficient procedural and organizational detail to be of use to operators. Furthermore, FM 31-11 (NWP 22, LFM 01, AFM 2-53), *Doctrine for Amphibious Operations*, identifies a number of tasks, responsibilities, techniques, and considerations; but it too does not provide the procedural and organizational detail for an operation like URGENT FURY. At best, these FMs describe ANGLICO teams and state that these teams will provide the necessary expertise to support Army units in joint operations.

On the other hand, two US Marine manuals, FMFM 7-1, *Fire Support Coordination*, and FMFM 7-2, *Naval Gunfire Support*, together describe detailed doctrinal principles, relationships, and procedures for amphibious operations which on the surface appear to be applicable to joint airborne operations. Had this doctrine been observed in Grenada, many of the problems discussed above would have been reduced. These manuals clearly prescribe procedures for establishing SACC-FSE relationships, communications links, composition of the joint fire support cell, respective command and coordination responsibilities, and more. The catch is that Marine fire support elements are organized to comply with these procedures; Army forces are not since in the past joint operations have been exceptions not the rule. From an organizational point of view, it must also be stated that the absence of the division ANGLICO team was a primary factor in the breakdown of naval gunfire support. Had this team deployed on time or had the division pulled a battalion team to operate temporarily at the division command post, Army-Navy coordination would have been enhanced. Without the team, the division FSE lacked both the detailed technical knowledge and the necessary infrastructure—personnel, equipment, FMs, and *radios*—to plan and coordinate naval gunfire.

Thus one may conclude that current US Army fire support doctrine is inadequate for operations like URGENT

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### **... restrictions on the use of naval gunfire during URGENT FURY, in effect, eliminated it from use as a fire support asset for the Army ground forces.**

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More than any other area of fire support, naval gunfire support was degraded by the poor planning at the joint level. Although two destroyers were on station to support ground forces, they did not deliver a single round of naval gunfire in support of the Ranger battalions and the 82d Airborne Division. In addition to the failure to lay a solid Army-Navy fire support foundation during the planning phase, other factors contributed to this problem, several of which have already been mentioned but which bear repeating.

As noted earlier, the division headquarters deployed to Grenada without its ANGLICO. In fact, the division ANGLICO did not arrive until D + 2, resulting in a shortfall at the division command post in the expertise needed to coordinate naval gunfire. Although the FSE chief or direct support field artillery battalion commander flew by helicopter several times to the SACC located offshore on the *USS Guam* to coordinate for naval gunfire, these efforts were not successful. The division FSE chief went so far as to borrow a UHF radio from the Marine headquarters on the *Guam* in order to be able to communicate directly with the SACC. Subsequent efforts by the FSE to request fires and to reposition the destroyers to more favorable locations, however, failed in part because of the inability to authenticate requests using

not fire because there were friendly aircraft over the target. This restriction, if true, violated established doctrine; clear procedures exist for the simultaneous engagement of targets by aircraft and naval guns. The second reason given for the silence of the guns—inadequate communications between ANGLICO and SACC—is legitimate, but the decision not to fulfill the preparation plan should have been announced to the supported unit prior to the raid.

In short, restrictions on the use of naval gunfire during URGENT FURY in effect eliminated it from use as a fire support asset for the Army ground forces. Necessary remedial action is relatively simple. In the first place, existing doctrine for the delivery of such fires must be observed by participating commanders. In addition, more ANGLICO live-fire exercises with destroyers should be conducted, to include participation by rapid deployment force Army units.

The third and last joint fire support issue to be examined in this article is the question of doctrine. Many of the preceding problems with fire support originate in part from either the lack of doctrine or the lack of knowledge about doctrine governing the conduct of fire support during a joint operation. Although there are a number of field manuals that govern naval gunfire and fire support during amphibious

FURY, except as it describes the functions and use of ANGLICO teams. Furthermore, Army FSEs are neither organized nor equipped to conduct joint fire support coordination in the absence of attached ANGLICO teams. Current Marine doctrine on this subject can function as a model for new Army doctrine. To close this doctrinal gap, the US Army Training and Doctrine Command (TRADOC) should lead through the Field Artillery School a joint review of fire support doctrine to determine how operations like URGENT FURY can be fully supported. Specific questions to be answered are:

- How should pre-deployment fire support planning be conducted between


Army forces and the SACC?

- What augmentation of the SACC and joint staff is required and where do these personnel come from?

- In the absence of ANGLICOs, how do Army FSEs and the SACC communicate?

- How and when is the responsibility for fire support passed ashore to the ground force?

Years ago, J.F.C. Fuller said that "Looking back is the surest way of looking forward." The operation in Grenada is now history, yet it has provided many lessons for the US Army's benefit. Surely, single-service operations in the future will be the exceptions; joint operations will be the rule.

Thus, it behooves the Army to bend its energies toward enhancing its capability to execute these complicated operations as flawlessly as possible. Perhaps the points presented in this article may contribute toward that end. 

**MAJ. Scott R. McMichael, FA, is assigned as a Research Fellow at the Combat Studies Institute of the US Army Command and General Staff College. He was commissioned through ROTC at Davidson College, and he has an M.A. from the University of Chicago. Major McMichael has commanded two batteries, served with the 1st Armored Division Assistant Chief of Staff Operations and Plans, and was the S3 for the direct support 155-mm self-propelled battalion in Germany.**

# Spectre

by Command Master Sergeant Gene Eller, USAF

The fixed-wing gunships—the legendary Spooky, Shadow, and Stinger—employed by the US Air Force in Southeast Asia flew a left-hand orbit over their targets and delivered a devastating volume of very accurate fire in a minimum of time.

The first gunship to be used in this role was the AC-47 "Spooky"—also called "Puff, the Magic Dragon," by the press. Spooky was armed with three .30-caliber miniguns of the Gatling gun type. A rudimentary site was located in the side window at the pilot's left shoulder. Spooky could carry a large amount of ammunition and could loiter for hours over the remote bases and camps it was assigned to protect.

The latest development in gunships is the Spectre—the AC-130H. A succession of technical improvements makes Spectre far superior to its venerable ancestors. Its original equipment—four miniguns, four 20-mm Vulcan cannons, and night observation scope and infrared sensors—has given way to improvements including coupling the night observation scope and the infrared sensors to a more sophisticated gun sight through a fire control computer, replacing two 20-mm Vulcan cannons with two 40-mm Bofors cannons, and ultimately replacing one of the 40-mm Bofors cannons with a 105-105-mm howitzer. The 40-mm cannon and 105-mm howitzer are now on mounts which allow more flexibility in the flight path of the gunship and more accuracy. The original night observation scope has also been replaced by a low-light television set, augmented by

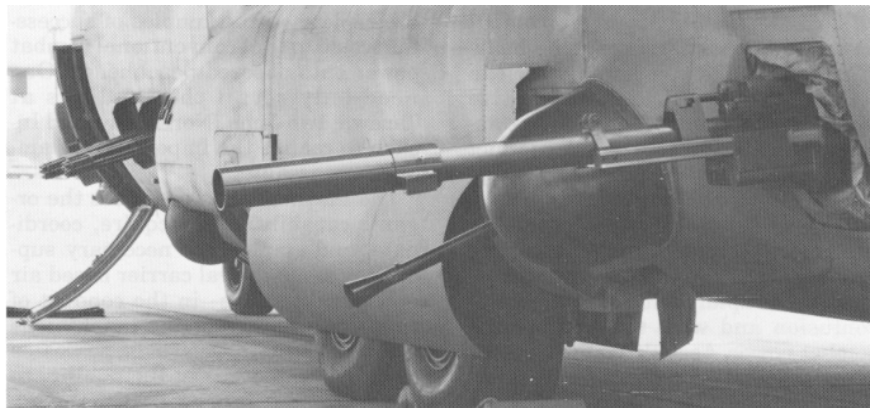
a two-kilowatt spotlight. Both the infrared and television presentations are on 18-inch screens for easy viewing. The latest AC-130H Spectre gunship is a modified C-130H aircraft configured with a side-firing weapons system. The addition of an air refueling capability allows the gunship to respond to any location in a minimum time and remain on station for hours. In fact, the Spectre holds the record for the longest flight—29.7 hours—by a C-130 aircraft.

Spectre was originally intended to have the same mission as the other gunships but proved so successful in the role of tank destroyer and truck killer that its primary employment was over the Ho Chi Minh Trail where it slowed the flow of supplies. In fact, it destroyed trucks at the rate of 10,000 per year. The night belonged to Spectre. The gunship's sensors provided

better capabilities than any other aircraft for seeing targets in the dark, and the advanced fire control computer yielded unparalleled accuracy.

In concert with US Army and Navy forces, Spectre aided the recovery of the ship *SS Mayaguez* and contributed greatly to the success of the Grenada rescue mission in October 1983. There it provided massive and accurate firepower in support of friendly ground forces. Among the critical targets destroyed by the gunships were antiaircraft artillery sites, armored personnel carriers, and numerous enemy positions.

The AC-130H gunships are assigned to the 16th Special Operations Squadron of the 1st Special Operations Wing at Hurlburt Field, Florida. This Military Airlift Command unit is the only active duty squadron in the United States which flies the AC-130H Spectre gunships. The older and somewhat less sophisticated A-models are currently flown by a USAF Reserve squadron. Both squadrons are ready for deployment—in terms of the motto of the 1st Special Operations Wing—"Any Time—Any Place."



Looking forward on the left side of the AC-130, the closest gun is the 105-mm gun, next is the 40-mm gun, with two 20-mm guns at the front.



# *ANGLICO: Ready to Go*

by Captain John A. Hucks II, USMC

**T**he nation's ability to project combat power upon a hostile shore relies heavily on the ability of joint American forces to conduct efficient and effective amphibious assaults. The ground commander, whose forces must conduct such operations, and the naval commander, whose ships must support it, possess the assets and the responsibility for swift joint planning, execution, and support. The maneuver must be conducted rapidly with a minimum of confusion and with the appropriate combat power. Assaulting forces must seize the beachhead and then press forward to prosecute the interior land campaign. The combat histories of both the Marine Corps and the Army are replete with

examples of successful projections of conventional combat power onto opposed beachheads. One need only recall the landings at Tarawa, Iwo Jima, Normandy, and Inchon to realize the importance of amphibious assaults.

The Marine Corps possesses the organic capabilities to acquire, coordinate, and employ the necessary supporting arms—naval carrier based air and naval gunfire—in the conduct of the initial phases of the amphibious assault. The Army, however, possesses no such organic ability. Its inability to project combat power ashore in the initial assault phase necessitates an extensive use of naval gunfire and of naval

air support. For this reason, the Marine Corps created the Air and Naval Gunfire Liaison Company (ANGLICO). Although a part of the Fleet Marine Force, this unit works with US Army and Allied units during their amphibious assaults.

The Marine Corps currently has four ANGLICO units: Second ANGLICO at Camp Lejeune, North Carolina; Third ANGLICO, a reserve unit at Long Beach, California; Third ANGLICO (EAST) at West Palm Beach, Florida; and a Separate Brigade Platoon (SEPBDEPLT), Second ANGLICO at Camp Pendleton, California. These units trace their lineage from the Assault Signal Companies at Normandy.



ANGLICOs also fought on the beaches of Vietnam, atop the hills of Lebanon, and in the valleys of Grenada. This article focuses on the history and training of one of these units—the Separate Brigade Platoon, Second ANGLICO.

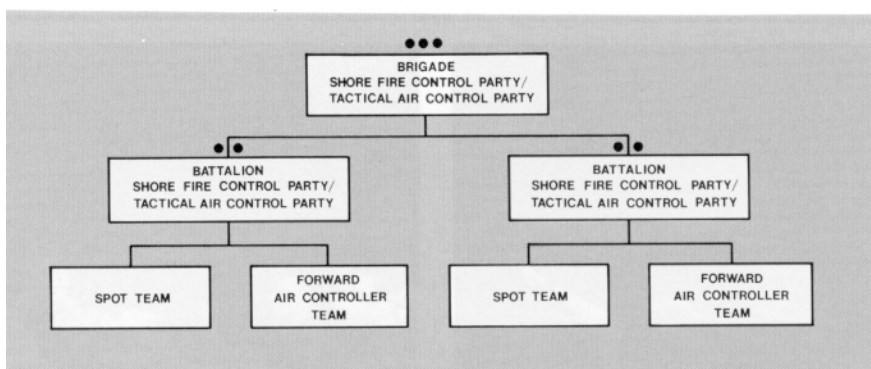
## History

The forerunner of the Separate Brigade Platoon was activated on 2 March 1951 at Marine Barracks, Pearl Harbor, Hawaii, and designated First ANGLICO, Fleet Marine Force. The unit relocated in September 1951 to Marine Corps Supply Depot, Oahu, Hawaii, and subsequently moved again to Camp Smith, Oahu, Hawaii. Subunit One of First ANGLICO was created on 14 May 1965, and deployed to the Republic of Vietnam as part of the Military Assistance Command. Subunit One participated in the Vietnam conflict from May 1965 until its deactivation in March 1973. In the meantime, First ANGLICO moved in May 1971 to San Diego, California and was redesignated as Separate Brigade Platoon, First ANGLICO. The unit relocated to Camp Pendleton, California in January 1975 and was assigned to the First Marine Division in January 1979. On 30 May 1980 it was redesignated as Separate Brigade Platoon, Second ANGLICO, and assigned to the First Marine Amphibious Force in January 1984.

## Organization

The people of ANGLICO and the Separate Brigade Platoon come from diverse backgrounds in the Marine Corps and Navy. Enlisted personnel are experts in such far-ranging areas as communications, administration, air operations, artillery support, and medical care. Their combined expertise adds up to an impressive unit support capability. The officer complement of the ANGLICO is also diverse. Among the command's many qualified officers are artillerymen as well as fixed- and rotary-wing aviators. Because of this diversity and its unique structure, ANGLICO can support a variety of operations. Of all its capabilities, however, perhaps the most valuable is the ability to coordinate close air assets and naval gunfire in support of an amphibious force.

The accompanying diagram depicts the organizational breakdown of the Separate Brigade Platoon into its components. It is designed to provide a wide variety of support to US Army or Allied forces. It is specifically structured



**Organizational breakdown of the Separate Brigade Platoon (SEPBDEPLT.)**

to assist control and liaison agencies associated with the ground element of a landing force in the control and employment of naval gunfire and naval close air support as well as to assist in amphibious assaults.

ANGLICO's operational assets are light and man portable, but it also has organic jeeps, trucks, and trailers. Even though ANGLICO would normally act as an attachment when in support, it possesses the organic transportation and radio assets to sustain itself. The command also possesses limited maintenance capabilities which would accompany it into the amphibious objective area.

As a highly capable and flexible attachment, ANGLICO can prove a great boon to the supported maneuver commander. It can serve as a repository for additional transport, communication, and maintenance capabilities. Similarly, ANGLICO personnel are a reserve of highly cross-trained talent. They can support missions which are not directly involved with an amphibious assault. Raids, tactical blocking maneuvers, breakouts, ambushes, feints, or any other small tactical maneuver in proximity to the shoreline could be supported by ANGLICO units. A perfect example of this would be the assault on Grenada and the subsequent student rescue. ANGLICO units coordinated the delivery of both rotary- and fixed-wing close air support to maneuver units on the ground.

## Training

The Separate Brigade Platoon trains extensively with US Army and Allied forces. It provides them the services necessary to acquire and use indirect fire assets during an amphibious maneuver. The SEPBDEPLT has participated in numerous tactical exercises: Gallant Eagle, Tangent Flash, Team Spirit, Cobra Gold, Bayonet Thrust, Kernel Potlatch, Kernel Usher, and Gallant Knight to name but a few.

During its annual deployment to the Republic of South Korea, the Separate Brigade Platoon trains with South Korean Forces to ensure that Korean ANGLICO units are kept abreast of the most up-to-date procedures and techniques. ANGLICO units have also worked with elements of the Army's 7th Infantry Division, the 75th Rangers, and the 5th Special Forces Group. The unit also aids in training amphibious staff planners by supporting the amphibious staff planning course at the Naval Amphibious Base on Coronado Island.



**Rappel training in Thailand.**



**Hand grenade training.**



**Paraloft team suiting up.**



**Pathfinder operations.**



**Pre-jump briefing.**

Separate Brigade Platoon personnel, like other ANGLICO members, are airborne-qualified in order to support operations with the 82d and 101st Airborne Divisions. They train on parachute operations as well as the full range of individual tasks including water safety; survivability; nuclear, biological, and chemical defense; and small-arms firing. Unit leaders schedule live-fire ranges whenever practical to train personnel in small-arms firing, grenade and light antitank weapon employment, and modern combined arms tactics. The Separate Brigade Platoon attends the Korean Mountain Warfare Course annually. This course is acknowledged as one of the world's most difficult courses. The unit also sends personnel to Special Forces training, Ranger training, Jumpmaster and Pathfinder schools, Spie and Rappel Master courses, and air/naval gunfire training. The purpose of these concurrent courses of training is to make ANGLICO members more valuable to using units. ANGLICO personnel are diversified in their capabilities and well-versed in conventional operations.

ANGLICO personnel study Army doctrine, tactics, and techniques to become familiar with the procedures of possible supported units. They not only strive to integrate standard Marine Corps operational procedures with those of the Army but also to refine current procedures in order to provide the most effective support possible.

The Separate Brigade Platoon and other ANGLICO units participate in a

wide variety of combined operations. During exercises ANGLICO personnel have executed numerous airborne insertions into foreign countries so as to rehearse procedures and to endure the stress associated with contingency operations. Each year ANGLICO participates in exercises in locations such as South Korea, Thailand, the Philippine Islands, Japan, Panama, Alaska, and Canada. These operations and their associated training educate both ANGLICO and Allied personnel. ANGLICO members acquire information which could be extremely valuable in future planning. Cultural peculiarities, diverse tactics, and language are normal examples of the items learned during combined training.

With a colorful combat history, a flexible organization, and demanding training, ANGLICO units have proved themselves to be an extremely valuable instrument to Army and foreign forces, conducting amphibious operations. ☒

**CPT John A. Hucks, II, USMC, received his commission through the United States Marine Corps Reserve and is a graduate of the Marine Corps Command and Staff College. He has served in India, South Korea, Thailand, and the United States and has participated in various exercises to include Gallant Eagle, Kernal Potlatch, Team Spirit, and Cobra Gold. Captain Hucks is currently assigned to the Separate Brigade Platoon, Second ANGLICO, as a naval gunfire spotter.**

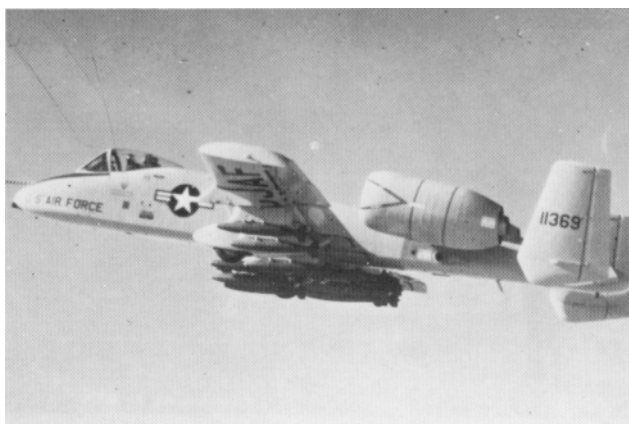
# Right by Piece

## NOTES FROM UNITS

### Awesome Twosome

FORT STEWART, GA—Operation Quick Thunder set the scene for effective live-fire training for the Air Force and the Army.

The 1st Battalion, 35th Field Artillery; the 2d Squadron, 9th Cavalry; and the 356th Tactical Air Command (TAC) combined forces in a realistic joint operation. Forward observers from the 1st Battalion, 35th Field Artillery located targets and called in the enemy's grid coordinates to a tactical operations center while A-10's responded by bombarding enemy armored vehicles. The 2-9th Cavalry laid suppressive fire on enemy anti-aircraft positions and the 3d Battalion, 19th Infantry, shelled other enemy sites with their 4.2-inch mortars.



**A US Air Force A-10 prepares to bomb enemy armored vehicles in a live-fire training exercise conducted with the Army.**



**Captain Greg Calhoun, commander of the 1st 8-inch Howitzer Battery, retires the unit's colors as the unit becomes redesignated as Battery Q.**

### Marine Artillery Battalion Redesignated

TWENTYNINE PALMS, CA—On 1 October 1984, the Marine Corps' largest artillery battalion, the 4th Battalion, 11th Marines, was redesignated as the 5th Battalion, 11th Marines, and acquired another firing battery. The new firing battery, Battery P, is equipped with six M109A3, 155-mm self-propelled howitzers.

The battalion is an integral part of the 7th Marine Amphibious Brigade. During combined arms exercises, elements of the battalion often provide artillery and simulated naval gunfire support for visiting units.

During the redesignation ceremony, the 1st and 4th 155-mm self-propelled howitzer batteries, already in service with the battalion, were redesignated as Batteries N and O, respectively. And the 1st and 2d 8-inch

self-propelled howitzer batteries were redesignated as batteries Q and R, respectively.

The 3d 8-inch self-propelled howitzer battery, equipped with four M110A2 howitzers, was redesignated as Battery R, 5th Battalion, 12th Marines, and will remain under the operational and administrative control of the 5-11th Marines until the 5-12th Marines is activated in fiscal year 1988.

Also under the temporary control of 5-11th Marines is Battery G, 3d Battalion, 12th Marines, which is equipped with the M101A1, 105-mm towed howitzer. The 12th Marine Regiment is headquartered in Okinawa, Japan.

Current plans call for the 5-11th Marines to gain control of yet another firing battery of 155-mm self-propelled howitzers—Battery N, 5-12th Marines, will join the battalion during fiscal year 1986.



**Crew members from Battery Q, 5th Battalion, 11th Marines, prepare their M110A2 8-inch self-propelled howitzers for a fire mission.**

The redesignation and activation were just a small part of a comprehensive, long-range program that is changing the structure and composition of many Marine units, both ground and aviation, and bringing into service many new weapon systems and doctrines.

All the changes fit into an even more complex mosaic that make up the "big picture" of a Marine Corps which is better equipped and organized to counter a changing enemy threat. The changes are based on a number of in-depth studies conducted in recent years. (SGT Eric Carlson)



**Sustained field training provides more time for collective training.**

## **Getting the Most Out of Annual Training**

HUTCHINSON, KS—Reserve Component units in the United States are presently authorized to perform only 48 unit training assemblies during a training year plus two weeks of annual training (AT). The unit training assemblies are usually performed in blocks of four, so-called multiple unit training assembly-4s (MUTA-4s), on one weekend per month. Therefore, Reserve Component units normally have a total of 39 training days per year to achieve required US Army Forces Command (FORSCOM) readiness standards. Annual training is normally the highlight of this training year—the time when units put into practical application those tasks for which they have been training.

The limited training time presents a unique challenge to field artillery units in particular to meet the training standards specified in Appendix C, FORSCOM Regulation 350-2, published in 1982. This regulation requires that Reserve Component field artillery units receive an external Army Training and Evaluation Program (ARTEP) every three years and undergo associated nuclear technical assistance visits and FORSCOM technical validation inspections.

To meet these increased requirements, the 130th Field Artillery Brigade, Kansas Army National Guard, devised a training program which has significantly increased the productivity of its annual training over the last two years.

The first and most important element of this training program was the scheduling of pre-ARTEP annual training activities over eight consecutive days concluding with an external ARTEP for the 1st Battalion, 161st Field Artillery (FA). A brigade command post and field training exercise (CPX/FTX) based on the 130th Field Artillery Brigade's Capstone mission coincided with the external battalion ARTEP. The CPX/FTX drove the external ARTEP of the evaluated

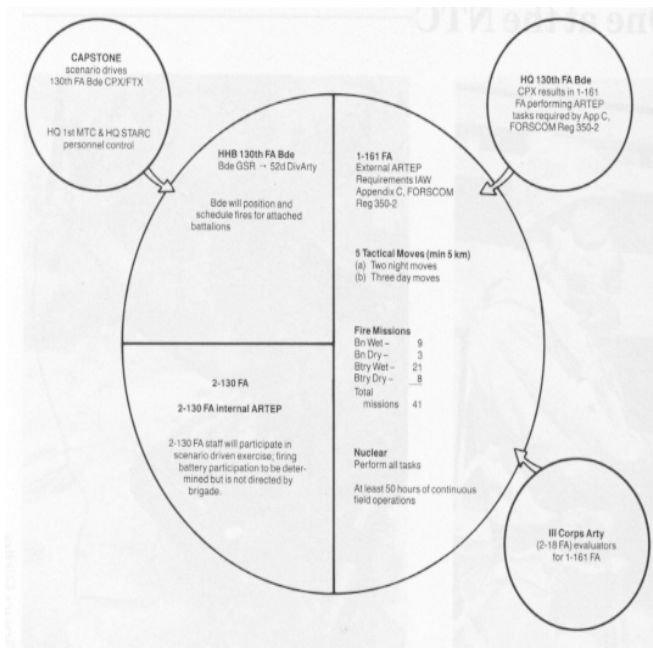
battalion, and the entire brigade training program was controlled by a team from the 1st Maneuver Training Command, Denver, Colorado, and selected members of the State Area Commander (STARC) Headquarters.

On 23 July 1983, the 130th began the long road march to Camp Guernsey, Wyoming. All units arrived by 1630 hours on 24 July; at 1900 hours, there was a brigade officer's call. On 25 July, the commander briefed his personnel; and, at 1400, units departed for the field. Training under battalion control took place from 16 July through 29 July. The brigade CPX/FTX described in the figure and battalion ARTEPs—external ARTEP for 1-161st FA and internal ARTEP for 2-130th FA—began at 0800 hours on 30 July and ended at 1000 hours on 1 August.

Battalions had maximum flexibility in controlling their training before the ARTEPs and brigade CPX/FTX.



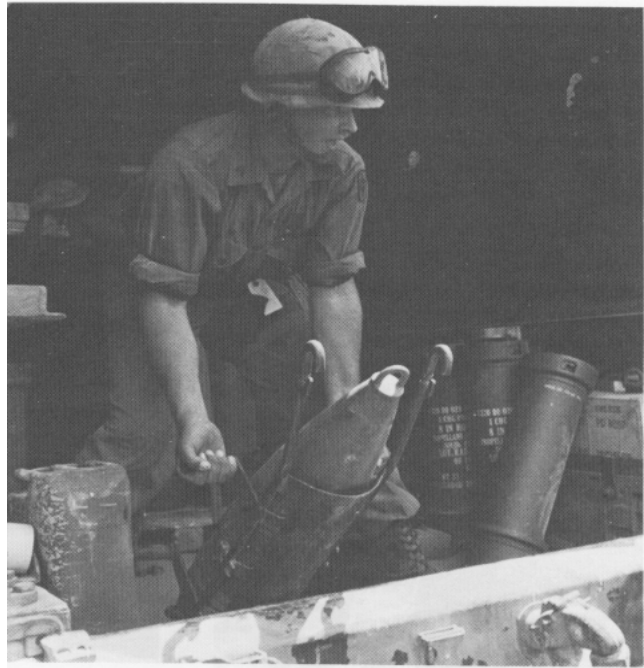
**Prolonged field training reinforces the importance of maintenance.**



The brigade CPX/FTX coincided exactly with the 50-hour, external ARTEP, and the internally evaluated battalion performed as many of the battalion ARTEP tasks as possible.

Comprehensive after-action reports, interviews with unit personnel, and comments by evaluators indicated that the eight-day training program provides many advantages:

- Allows gradual buildup in training momentum without interruption.
- Requires leaders and troops to learn to sustain themselves; i.e., learn to live in the field.
- Provides more time for collective training.
  - Creates opportunity to develop survivability skills.
- Improves physical conditioning.
- Reinforces the importance of maintenance.
  - Saves fuel because the unit goes to the field only once.



The eight-day field training program improves physical conditioning.

- Improves morale because of greater soldier satisfaction with training and because the troops will not have to return to the field when the eight-day cycle is completed.

The 130th Field Artillery Brigade used nearly the identical plan for AT 84 at Fort Sill, Oklahoma, and overall results appeared to be equally as good as those achieved during AT 83. The eight-day cycle requires thorough and careful planning and thorough briefing of troops, but the results are rewarding and very beneficial. It has proved to be a successful method of significantly increasing training benefits derived from the annual training period in the 130th Field Artillery Brigade. (COL Joseph H. Wolfenberger, 130th Field Artillery Brigade Commander)



Photo by Sam Orr

Soldiers at the US Army Field Artillery Training Center will be trained by the 402d Brigade during mobilization.

## The 402d Returns to Life

The Keathley Army Reserve Center in Lawton, Oklahoma, is the new home of the recently activated 402d Brigade (Training) (Field Artillery).

March–April

The 402d Brigade will be the fifth major subordinate command of the 95th Division (Training) and will have a total strength of 809 personnel. Colonel Louis Bedoka of Anadarko, Oklahoma, has been selected as the brigade commander.

The 402d Brigade will be organized into a headquarters command section and training committee command plus five battalions with a total of 24 training batteries. The battalions will be designated as units of the 89th Field Artillery Regiment, with the 1st Battalion stationed in Tulsa, Oklahoma; the 2d Battalion in Amarillo, Texas; the 3d Battalion in Denton, Texas; the 4th Battalion in the vicinity of Fort Worth, Texas; and the 5th Battalion in Wichita Falls, Texas.

The mobilization mission of the 402d will be to move into the Field Artillery Training Center and train field artillerymen.

## The Big Red One at the NTC



Sergeant Henry L. Knox and Sergeant Angel G. Gamacho scan the horizon watching for low-level enemy aircraft.



Private First Class James P. Herod, 12th Chemical Company chemical specialist, prepares to decontaminate vehicles after an opposing force nuclear, biological, and chemical attack.



Airman First Class William R. Green, weather observer, uses the TMQ-22 to gather weather data for the soldiers at the National Training Center.

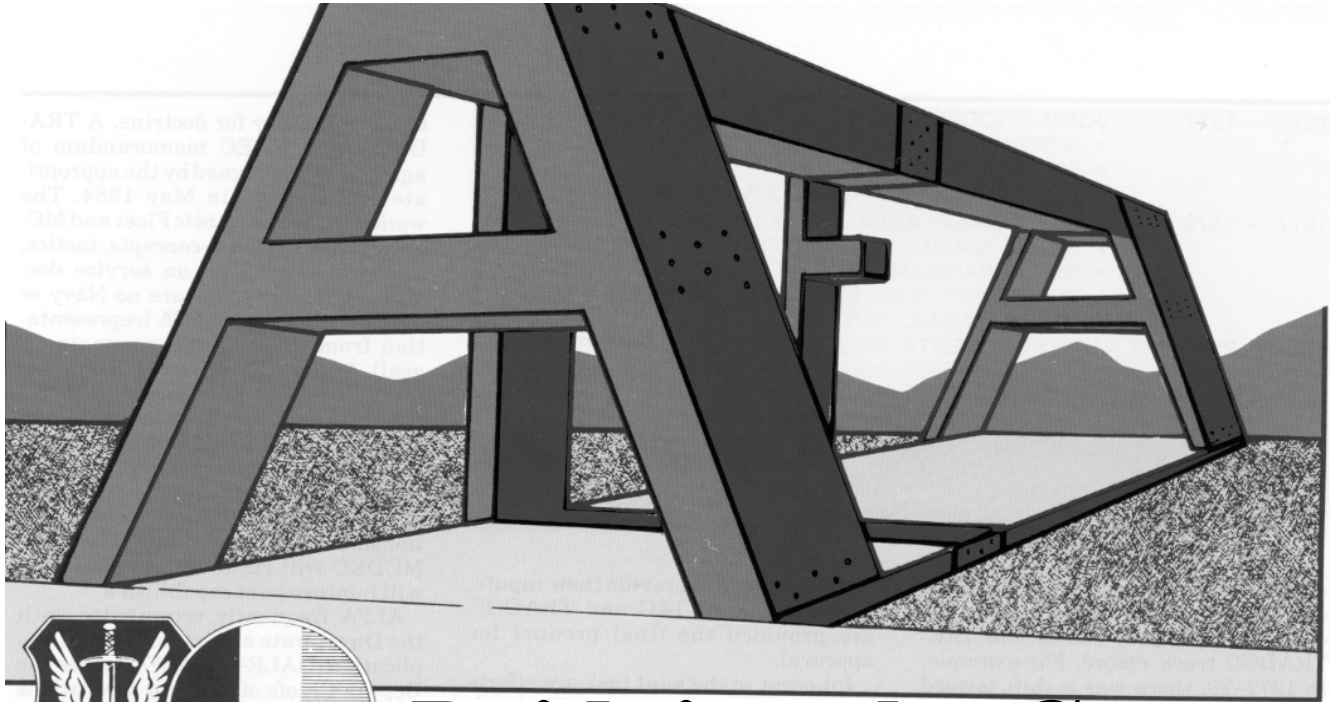


During a motorized rifle attack, a soldier of the 1st Brigade prepares to load a round.

## African Interoperability



KENYA, AFRICA—Battery C, 1st Battalion, 12th Marines, cross-trains with 5 Battery, 77th Kenyan Artillery Battalion, during VALIANT USHER 84, a combined US-Kenya exercise in Africa last September. Battery C, part of the 31st Marine Amphibious Unit during the exercise, made an amphibious landing and then moved inland to establish a bivouac area with the Kenyans. A series of reciprocal static displays and operational demonstrations followed. (Photo by 1LT Mark S. Murphy)



# Bridging the Gap

by the AirLand Forces Application Agency staff

**T**he Air Force's Tactical Air Command (TAC) and the US Army's Training and Doctrine Command (TRADOC) have joined forces in developing AirLand Battle concepts. The aim has been to sustain the relationship fostered between the services during wartime and to develop procedures in peacetime for fighting the AirLand Battle.

The interface of the commands was formalized with the establishment of the Joint Actions Steering Committee (JASC). The JASC is currently cochaired by the Deputy Chiefs of Staff for Plans (TAC-XP) and Doctrine (TRADOC-DCSDOC). As the bicommand relationship matured, the JASC function became more demanding and the amount of joint activity swelled to the point where an agency was needed to manage day-to-day actions. On 1 July 1975, the AirLand Forces Application Agency (ALFA) was created to meet that need.

ALFA is a joint TAC-TRADOC agency located at Langley Air Force Base, Virginia. To perform its unique mission, ALFA is authorized 10 officers—five Army and five Air Force. The ALFA director position will normally rotate every 18 months between the Army and the Air Force. The incoming director should be assigned six months prior to assuming the directorship. The present director is Colonel George H. Peacock, USAF, and the incoming director is Colonel George M. Mullen, USA.

## Missions and Roles

The agency's mission is embodied in a joint TAC-TRADOC regulation which states: "The mission of ALFA is to coordinate, integrate, and manage activities associated with joint TAC-TRADOC efforts regarding improved concepts and procedures for the conduct of the AirLand Battle."

ALFA has been involved with a variety of projects which focus on the AirLand Battle. Its work is routinely done in terms of budget out-years when developing concepts and joint needs and in the near-term when developing joint procedures.

ALFA serves as a bridge between the TAC and TRADOC staffs. Both TAC and TRADOC are involved with general-purpose forces and support overseas combat commands, and they both identify future hardware and doctrinal needs. However, TAC and TRADOC are not completely equivalent in command missions. TAC commands the Tactical Air Force Wings in the Continental United States, but Army Forces Command (FORSCOM) rather than TRADOC commands Army forces in the Continental United States. Thus, TAC and FORSCOM are deeply involved in daily combat readiness and training for forces to be deployed overseas. TRADOC unlike TAC is responsible for all individual training in its parent organization, whereas the Air Training Command has that mission for the Air Force.

TAC, as an Air Force major command, speaks to the Air Staff for the development of concepts and operational doctrine for only the Tactical Air Forces, while other Air Force major commands, for example Strategic Air Command and Military AirLift Command, also develop concepts and operational doctrine for their mission areas. All doctrine developed by Air Force major commands is submitted to the Air Staff for final coordination and approval before it becomes published Air Force doctrine. TRADOC, however, functions as the authority within the Army on concepts and doctrine. This same relationship holds true for weapon system requirements.

ALFA's goal is to develop the joint concepts, procedures, and needs necessary to win the AirLand Battle and to define joint needs in terms that enhance resource decisions. The action officers (AO) work relatively unconstrained by doctrinal issues or roles and missions disputes, and they support their work with the analysis necessary to identify shortfalls and joint needs. Their objective is to manage the development of concepts and practical procedures. In addition to concepts and procedures, TAC and TRADOC also interface in the requirements arena. A memorandum of agreement (MOA), signed by the Deputy Chief of Staff for Requirements for TAC and the Deputy Chief of Staff for Combat Developments for TRADOC, establishes the framework for consideration

<b>1975 – 1977</b>	<b>JOINT PROCEDURES</b>
	<ul style="list-style-type: none"> <li>• AIRSPACE MANAGEMENT</li> <li>• ELECTRONIC WARFARE</li> <li>• FORWARD AIR CONTROLLER/FIRE SUPPORT TEAM</li> </ul>
<b>1977 – 1979</b>	<b>JOINT MISSION AREA ANALYSES (MAA)</b>
	<ul style="list-style-type: none"> <li>• CLOSE AIR SUPPORT/BATTLEFIELD INTERDICTION</li> <li>• RECONNAISSANCE/SURVEILLANCE</li> <li>• SUPPRESSION OF ENEMY AIR DEFENSE (SEAD)</li> <li>• AIR DEFENSE/COUNTER-AIR</li> </ul>
<b>1979 – PRESENT</b>	<b>JOINT CONCEPTS, PROCEDURES, AND NEEDS</b>
	<ul style="list-style-type: none"> <li>• JOINT SUPPRESSION OF ENEMY AIR DEFENSE (J-SEAD)</li> <li>• JOINT COUNTER-AIR/AIR DEFENSE (J-CAAD)</li> <li>• AIRLAND FORCES INTERFACE (ALFI)</li> <li>• JOINT COMMAND, CONTROL, AND COMMUNICATIONS COUNTERMEASURES (J-C<sup>3</sup>CM)</li> <li>• JOINT ATTACK OF THE SECOND ECHELON (J-SAK)</li> </ul>

**TAC-TRADOC track record.**

of requirements with potential or demonstrated joint application. The accompanying figure shows the TAC-TRADOC track record. For example, in 1977-79, there was a shift toward the use of analysis as the central means to support new hardware needs. Specifically, Department of Defense directives required that the services identify operational needs through mission area analysis (MAA). TAC and TRADOC developed several joint MAAs during this time frame. Since then, ALFA has been able to strike a better balance between concepts, procedures, and joint needs.

Joint work is begun based on the priority concerns of the TAC and TRADOC commanders and the JASC. A recommendation for joint work may be made to the JASC, or the JASC may task ALFA in response to staff and departmental initiatives. In any event, the JASC must agree to an undertaking before ALFA becomes a player. ALFA's role is one of managing and coordinating JASC-directed joint work of wide diversity. Consequently, the 10 officers assigned to ALFA have broad operational backgrounds rather than narrow technical expertise in detailed aspects of the modern battlefield. The JASC has tasking authority to form joint working groups from within the TAC and TRADOC staffs and subordinate organizations; this is where the technical skills exist to work many of the problems. Frequently, these groups also include worldwide representation down to squadron and battalion levels in order to obtain direct field input. The draft products from these joint working groups are provided to TAC-XP and TRADOC-DCSDOC for staffing with other headquarters as they deem appropriate. For example, in August 1981, during the *Joint Air Attack Team Operations* pamphlet rewrite, ALFA had A-10, Cobra, and scout pilots come to Langley

Air Force Base to provide their inputs. Commanders of TAC and TRADOC are provided the final product for approval.

Inherent in the joint task are efforts that have a major impact on the hardcover manuals of the two services. One such recently completed project was entitled *Joint Suppression of Enemy Air Defense (J-SEAD)*. The concept was published in April 1981 and the training text (TT), which provides procedures for field use, was published in June 1982 (USREDCOM Pam 525-3, TRADOC TT 100-44-1, and TAC Pam 50-23). On 15 June 1984, the *J-SEAD Joint Service Agreement (JSA)* was approved by the Chief of Staff, US Army and Chief of Staff, US Air Force, thereby converting J-SEAD from a TAC-TRADOC concept to joint Army-Air Force doctrine. The Joint Service Agreement will serve as an authoritative document and will be used to incorporate the key provisions of J-SEAD into Army and Air Force manuals, publications, and school curricula. ALFA seeks to formalize Army-Air Force cooperation by producing joint publications. While ALFA does not have the authority to publish bi-service manuals, TAC-TRADOC efforts have influenced those who write uniservice manuals.

The TAC-TRADOC dialogue has recently expanded to include the US Atlantic Fleet at Norfolk and the Marine Corps Development and Education Command (MCDEC) at Quantico. ALFA's work with the Fleet is through their Deputy Chief of Staff for Readiness, Resources, and Security Assistance. These efforts involve not only the Fleet headquarters, but also its surface and air commands. A memorandum of agreement was developed and signed in 1984 to define the scope of Atlantic Fleet involvement in the TAC-TRADOC dialogue. As for MCDEC, ALFA works through their Deputy

Commander for doctrine. A TRADOC-TAC-MCDEC memorandum of agreement was signed by the appropriate commanders in May 1984. The work with both Atlantic Fleet and MCDEC focuses on joint concepts, tactics, and procedures, not on service doctrine. Although there are no Navy or Marine officers at ALFA (representation from those services remains a goal), Atlantic Fleet and MCDEC representatives do participate in JASC meetings and meetings between the commanders. Furthermore, Atlantic Fleet and MCDEC are now involved in five of ALFA's current projects. ALFA is optimistic that the working relationship with both Atlantic Fleet and MCDEC will result in products that will improve joint capabilities.

ALFA frequently coordinates with the Directorate of AirLand Forces Application (DALFA). DALFA serves the Deputy Chiefs of Staff for Operations at both US Air Forces Europe and US Army Europe, who also function as a Joint Actions Steering Committee. DALFA serves as ALFA's primary point of contact with US forces in Europe. ALFA receives information from DALFA on all of their projects and products and in turn provides information to them.

**Current Actions**

Action officers on the ALFA staff work on a wide variety of TAC-TRADOC actions each day, exchange ideas, and make appropriate connections. ALFA has eight ongoing projects.

**• Joint Attack of the Second Echelon (J-SAK)**

J-SAK describes the Army and Air Force command and control relationships and targeting processes required to accomplish attack of enemy follow-on forces. The concept was published as a TAC-TRADOC-US Readiness Command (USREDCOM) pamphlet on 13 December 1982 and was briefed to major US commands in the Continental United States, Europe, and the Pacific and to the Army and Air Staffs. *J-SAK General Operating Procedures* for field use have been developed and staffed with Army and Air Force major commands worldwide and published as a TAC-TRADOC-USREDCOM pamphlet. The key provisions of the *J-SAK Concept and Procedures* have been incorporated into an Army and Air Force Joint Service Agreement which was signed by the Army and Air Force Service Chiefs. The provisions of the JSA are now joint interservice doctrine for use in Army and Air Force manuals, publications, and curricula.





- **Joint Coordination for Employment of Air Delivered Mines (J-Mine)**

In March 1983, the JASC approved the program to develop the joint concept and procedures for coordination of employment of air-delivered mines. The purpose of the J-Mine pamphlet is to describe joint actions required to employ air-delivered land mines to delay, disrupt, destroy, and canalize enemy forces and minimize friendly maneuver restrictions imposed by air-delivered mines. Further, it establishes requirements for and coordination of information regarding friendly and enemy obstacle and mine employment that may affect Army or Air Force operations. ALFA is now preparing the TAC-TRADOC pamphlet for printing and distribution in the second quarter of FY 85.

- **Joint Laser Designation Procedures (J-LASER)**

J-LASER is an effort to develop procedures required for the integrated application of ground and airborne laser designation systems with target acquisition devices and laser-guided munitions. The resulting pamphlet will include a description of laser systems, their capabilities and limitations, and an in-depth description of pulse repetition frequency code management and planning factors. The working group membership included representatives from TAC, TRADOC, HQ Atlantic Fleet, an A-6 Wing at Oceana Naval Air Station, and HQ MCDEC. Final publication is anticipated in August 1985.

- **Joint Application of Firepower (J-FIRE)**

J-FIRE is a joint effort to produce a user-level, pocket-size, weatherproof fire support handbook in a guide and checklist format. The J-FIRE Handbook will provide data on fire support coordination organizations, calls for fire, air requests and briefing formats, communications nets, and points for interservice communications interface. The final draft is currently out for worldwide concurrence. Anticipated publication is April 1985.

- **AWACS-Army Interoperability Procedures**

Another project is one to pull together and publish procedures to pass Airborne Warning and Control System (AWACS) early warning information by voice to Army maneuver and short-range air defense (SHORAD) units. Early in a contingency environment with no established ground tactical air control system, neither

SHORAD nor maneuver unit tactical operations centers would obtain information from AWACS without direct-voice, early-warning procedures. Long-range solutions for an automatic, direct, digital data link to SHORAD depend upon Joint Tactical Information Distribution System (JTIDS) and the SHORAD command and control system, both several years away. Workable voice procedures are needed for the short term. The procedures were exercised during Gallant Eagle 84 and will be again exercised during Border Star 85. Publication is expected by July 1985.

- **Joint Tactical Deception (J-TD)**

J-TD is a project to develop a four-service pamphlet which addresses tactical deception at the joint task force (JTF) level and the component level as well as the interface between the levels. The J-TD pamphlet will cover joint deception planning and coordination and the threat to deception operations. The document will also address how each service conducts tactical deception to show a joint or component planner what resources are available in each service and how to obtain them. The J-TD pamphlet is in the first draft stage.

- **Joint COMSEC Compatibility**

As a result of lessons learned during Operation Urgent Fury, ALFA has sponsored a series of meetings with communications security (COMSEC) and communications representatives as well as experts from the National Security Agency, unified and specified commands, and major service commands to discuss joint authentication and COMSEC compatibility in general. The effort is focused on the intertheater command, control, and communications COMSEC package which was designed for joint use in short-notice contingency operations. The working group has identified problems with distribution requirements, proliferation, and education and training. Of particular concern has been an apparent lack of knowledge regarding the COMSEC package on the part of operations personnel in most units. Participating commands have completed their review of distribution requirements, and corrective actions have been initiated.


- **Joint Rear Battle**

The Joint Rear Area Protection concept was recently renamed "Joint Rear Battle." It is a new project to develop a framework for the many efforts

underway by all services to secure the rear area. The concept will include, but not be limited to, the rear area initiatives identified in the Army-Air Force memorandum of agreement on Joint Force Development. An initial Joint Working Group (JWG) consisting of 58 Army, Air Force, and Marine representatives of major service and unified commands, met in October 1984 to define the scope and structure of the concept.

The JASC recently directed ALFA to monitor service actions regarding airspace control. Both TAC and TRADOC had identified parallel areas of concern regarding the training of airspace control personnel and the update of relevant manuals. ALFA concluded that the establishment of a Joint Airspace Control Working Group, which should include the US Navy and US Marine Corps, was of paramount importance in attacking the ever-growing areas of concern in airspace control. This area is particularly important in order to maximize new weapon systems employment in the shrinking airspace over the battlefield. The JASC concurred and directed that an Airspace Control JWG be formed after the Army and Air Force have had time to evaluate and refine their internal procedures. The richest harvest of potential future projects is no doubt within the Joint Force Development thirty-one initiatives. Although much effort is underway between the Army and Air Force, expansion is envisioned with the Navy and the Marine Corps.

In summary, the TAC-TRADOC dialogue is active and working. Furthermore, ALFA is encouraged by the recent Navy and Marine Corps involvement in the TAC-TRADOC dialogue. Such participation promises to broaden the work and produce results beneficial to all four services. The bottom line is that services are working together to meet the challenges of future air, land, and sea battles.

Contact with the AirLand Forces Application Agency can be made by writing to: ALFA Agency, HQ, Tactical Air Command, ATTN: XP-ALFA, Langley Air Force Base, VA 23665-5001 or ALFA Agency, HQ, Training and Doctrine Command, ATTN: ATDO-ALFA, Fort Monroe, VA 23651-5000. ALFA may also be reached by AUTOVON: 432-5934 or 680-2589. 



# Minnesota Soldiers

by Mr. Reed C. Hildreth

*I read your July-August 1984 issue of the **Field Artillery Journal** with great interest. Having been away from field artillery for 20 years, I find that I have a lot of catching up to do.*

*I was especially intrigued by Colonel Robert M. Stegmaier's article, "Through Smoke of Distant Fires." As a youngster in the 1940s, I could not imagine how any parents could possibly have named their son Alonzo Oscar—the name of my father. The explanation is rooted in both Civil War and field artillery history. My great grandfather was a Union Army soldier and apparently was a friend or admirer of Lieutenant Alonzo Cushing mentioned so prominently in Colonel Stegmaier's article. My father was named after Lieutenant Cushing.*

*Reed Hildreth*

**M**y old unit, the 151st Field Artillery, is the oldest field artillery unit in the Minnesota National Guard. The following piece written by me captures a brief but important period of the 151st's history during World War II. This article appeared in the *Minneapolis Star and Tribune* and again in the *New Patriot*.

## Minnesota Soldiers Faced Panzers and Held Their Ground

Forty-one years ago this September, a group of Minnesota National Guardsmen refused to give up a single inch of Italian real estate. Because of their stubbornness, the precarious southern flank of the Salerno beachhead was saved, a second Dunkirk was averted, and German divisions in Italy's big toe were cut off.

Operation Avalanche received the green light on 27 July 1943, when the Allied Combined Chiefs of Staff ordered General Dwight Eisenhower to plan landings on the Italian mainland.

What resulted was the greatest concentration of men and ships up to that point in World War II. This Allied Fifth Army of 169,000 men was divided into two corps. The US Sixth Corps comprised the 36th Division (Texas) and the 45th Division (Oklahoma), with the 34th Division (Minnesota-Iowa) and Third Division (regular Army) in reserve. There also were 100,000 men in the British X Corps.

Avalanche's strategic plan called for this Anglo-American force to land near Salerno. It would drive inland to the east and south, linking up with Field Marshal Bernard Montgomery's

British Eighth Army coming up from Taranto in the southwest.

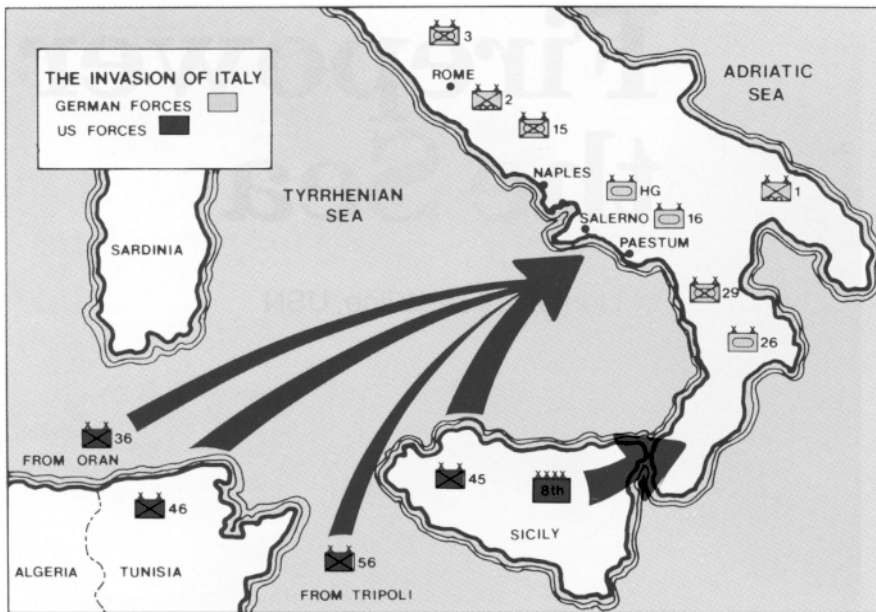
One must remember Italy's bootlike geographic shape. If the operation succeeded, the combined Allied force would seal retreating German divisions in Italy's big toe and instep.

The Sixth Corps' mission was to anchor the southern flank of the Salerno beachhead and make contact as quickly as possible with Montgomery's Eighth Army. The D-Day invasion in this sector was assigned to Texas' 36th Infantry Division. The 36th had yet to be bloodied in combat; that was about to change.

The 151st Field Artillery, a Twin Cities unit hardened in the deserts of Tunisia, North Africa, had been reassigned to support the 36th in its landing.

Those carefully laid pre-invasion plans that so often go awry had the 151st scheduled to go ashore after the initial assault, when some elbow room had been hammered out on the beach. It didn't work out that way.

Infantry assault teams of the 141st and 142d Regimental Combat Team immediately drew heavy fire at the water's edge. Most were pinned down



just yards off the beach. Some units were able to drive inland to Mount Soprano, east of the beachhead at Paestrum. Other units were unable to follow.

German infantry and armor occupied the area between the beachhead and the mountain. The aggressive forward elements near Mount Soprano were suddenly way out on a limb. Meanwhile, the hard-pressed troops on the beach were hugging the sand or slugging it out a few grudging yards at a time.

At 1:30 the next morning the 151st left its ship in the Gulf of Salerno and shoved off for the beaches. One amphibious Battery C DUKW (amphibious landing craft) with howitzer and ammunition was rammed and sunk in the darkness. The crew was pulled from the water, wet but unharmed.

Then infantry-carrying landing craft knifed through the 151st column of DUKWs, separating Batteries B and C from the rest of the battalion. The 151st would not be fully sorted out again until the end of the crucial battle that afternoon.

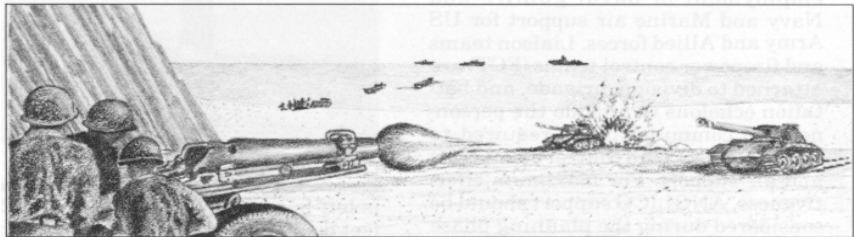
As the 151st moved shoreward, intense machine gun and artillery fire drew a curtain down in front of Green Beach, preventing any thought of a landing there. The Minnesotans were diverted to Red Beach, where the fire was less intense.

That created another worry. The DUKWs were beginning to run low on fuel. But they made it.

As the 151st's disorganized column of DUKWs finally hit the beach, battery commanders grabbed the first howitzers to roll ashore. No attempt was made to reorganize by battery because the situation demanded immediate

supporting fire for the hard-pressed beachhead defenders.

The Minnesotans quickly moved inland and dug in their howitzers to command two critically important highways. Here they received a rude shock:



There was only scattered infantry out front. To a large degree the 151st was leading the stalled infantry.

It was here that the fate of the beachhead's southern flank was decided. If German armor could break through and seize Highway Six, Salerno would be left open to the Panzers.

The 151st slammed the door in the Germans' faces. For six hours, essentially unsupported by infantry, the Minnesota Redlegs (Army terminology for artillerymen) drove back repeated tank attacks at point-blank range.

The first attack crashed into Battery A. Of seven German tanks, two were destroyed and the remainder driven off.

Battery A's stand had split the attack force. Half the tanks were forced south into rough country where they could not maneuver. The remainder moved north, where Batteries B and C inflicted more heavy losses and stopped their attempts to smash the beachhead.

Between 10:30 a.m. and 1:30 p.m., 14

tanks attacked Battery B's sector. The battery burned up or destroyed five of the tanks at ranges varying from 200 to 1,000 yards and dispersed the rest.


During one attack on a Battery B howitzer crew, one tank suddenly broke into the open at 200 yards. The tank was partially hidden by the rough ground, making it tough to get a clear shot. Tank and howitzer crews fired simultaneously. The tank's shell passed through the gun section's position and exploded against a rock wall behind the howitzer. The crew's gunner was seriously wounded by flying rock.

The howitzer's first round was a bull's-eye.

When the battalion support sections were finally able to land and get off the beach, they were like angels from heaven. One battery was down to its last high-explosive rounds, and the ammunition was just in time to help repel another attack. Service battery personnel were immediately assigned to relieve the weary gun crews.

On 10 September 1943, the beachhead was still there and the 36th Division's infantry was advancing through

the 151st's positions against sporadic resistance. Another Dunkirk had been averted because some hard-nosed Minnesota artillerymen held their ground.

Today the traditions of the 151st are carried on by Minnesota's First Battalion of the 151st. Its Headquarters Company is at Duluth. Battery A is at Cloquet, with Batteries B and C in Minneapolis and the battalion's Service Battery at Pine City. 

**Mr. Reed C. Hildreth served with the 151st Field Artillery in the early 1960s. He is a part-time writer of military subjects and is the historian for the newly created Gopher Gunners' Chapter of the US Field Artillery Association. Specific military assignments, all with the Minnesota Army National Guard, included Battery D, 257th AAA Gun Battalion, 216th Group; Battery A, 3d Rocket Howitzer Battalion, 151st Field Artillery; and the 125th Public Affairs Detachment. Mr. Hildreth presently works in public relations for The St. Paul Companies at Cottage Grove, Minnesota.**

What has two guns and more firepower than a battery of 155-mm howitzers? A *Spruance*-class destroyer, that's what. But why should a field artilleryman be interested in ships? Here's why: On past battlefields such as Okinawa and Inchon and on present ones such as Lebanon, naval guns have proved to be effective as a supporting arm in direct and indirect fires. And, to implement and coordinate the necessary naval gunfire support (NGFS), the maneuver commander relies on his fire support officer (FSO) to help integrate the Marine Corps Air and Naval Gunfire Liaison Company (ANGLICO) into his fighting organization. Thus, the more a field artilleryman knows about naval gunfire and its coordination the better he will be able to use its capabilities and destructive power.

## ANGLICO

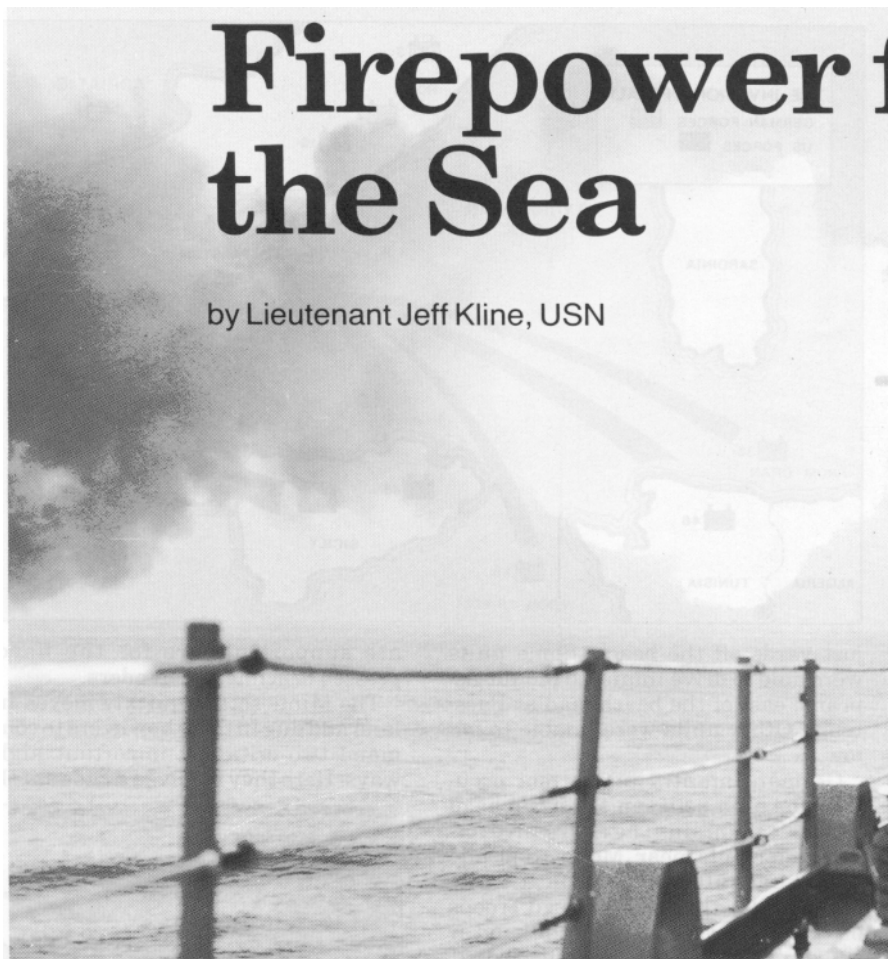
The Air and Naval Gunfire Liaison Company, a Navy/Marine Corps team, is tasked with providing control and liaison agencies for the planning and employment of naval gunfire and Navy and Marine air support for US Army and Allied forces. Liaison teams and firepower control teams (FCT) are attached to division, brigade, and battalion echelons to provide the personnel and communications required to request, direct, and control naval guns and air support. For maximum effectiveness, ANGLICO support should be considered during the planning phase of an operation. The liaison team provides information on weapon ranges, ammunition effects, landing zone requirements, and employment techniques.

The team is capable of limited self-support for 30 days; it has the necessary communication equipment, transportation assets, and radar beacons to conduct its mission. ANGLICO personnel are trained in parachuting, using inflatable rubber boats, skiing, and snowshoeing.

## Gun Systems and Ships

Naval guns are identified by their caliber and length of barrel in calibers; for example, a 16"/50 is a 16-caliber gun which has a barrel about 66 feet in length ( $16" \times 50 = 800"$  or 66.75').

The blast effects of the 16"/50 caliber gun are astounding. Imagine 2,700 pounds of armor-piercing shell screaming through the air fired from an *Iowa*-class battleship. The projectile scores a direct hit on a concrete bunker. When the dust settles, all that



# Firepower the Sea

by Lieutenant Jeff Kline, USN

is left is a crater 50 feet wide and 20 feet deep. With nine of these big guns aboard, the *New Jersey* (BB-62) and *Iowa* (BB-61) soon to be joined by their sister ships—the *Missouri* and the *Wisconsin*—can provide potent naval gunfire support. The maximum range of the 16"/50 gun is 37,800 meters, and its rate of fire is two rounds per minute. For secondary armament, battleships have twelve 5"/38 caliber guns which can throw a 55-pound projectile 16,000 meters at a rate of 6 to 15 rounds per barrel per minute.

However, the primary weapons system in the fleet today for providing naval gunfire support is the 5"/54 caliber gun which has two basic configurations: the Mark 42 (MK42) manned gun and the Mark 45 (MK45, with the Mark 86 gunfire control system) lightweight gun. The MK42 gun mount can fire up to thirty-two 72-pound projectiles per minute and attain a range of 23,000 meters; it can be found on older guided-missile cruisers, destroyers, and frigates. The MK45 lightweight gun mount is an unmanned weapon that fires the same projectile at the same range as the manned MK42, but

it can only fire at the rate of about 16 rounds per minute. The MK45 is extremely accurate and allows a ship to engage two independent land targets simultaneously.

The MK86 is a versatile gunfire control system (GFCS) which can acquire a land target by three different methods. In the indirect mode, the operator puts the target information supplied by the spotter directly into the computer. In the direct mode, a target can be acquired by a closed-circuit television or by a target designation transmitter from the weather deck. The MK86 is found on newer cruisers and on *Kidd*- and *Spruance*-class destroyers.

## Characteristics of Naval Guns

The trajectory of a naval gun is similar to that of an M16 rifle—fast and flat. Targets which are vertical to the gun-target line, such as gun emplacements on hills, are very vulnerable to the naval gun's hard-hitting punch. Targets in defilade, however, present a



The most obvious limitation of NGFS is that the ship must stay in navigable waters and can only fire as far inland as its maximum range minus the distance it is offshore. Therefore, the fire support officer must consider, during the planning and implementation of naval gunfire support, the hydrography of the operating area in relation to the distance from land the ship can safely navigate. In general, the seven-fathom curve can be used as the limiting line of approach; however, reefs, mines, or shoals can also affect the weapon system's ability to hit a target that is far inland.

Finally, because a ship normally fires when it is moving, its gun-target line changes constantly. The elliptical fall of shot will also change in relation to the target and possibly the friendly frontlines. Ship personnel will advise the spotter if the gun-target line changes by 10°; and, if the fall of shot begins to endanger friendly personnel or if the target becomes masked, the observer can check fire and request that the ship relocate to correct the problem.

Each ship has its own capabilities and limitations in shooting naval gunfire support based on its level of personnel training, manning, equipment status, and ammunition allowance. In order to come to grips with these unique conditions, fire support officers and agencies should establish liaison

with supporting ships prior to an operation. Each ship's combat systems officer or gunnery officer will be able to provide valuable information on how his ship can best support the Army's scheme of maneuver.

### Calls for Fire

The naval gunfire call for fire is composed of the same six elements as the artillery call for fire; however, the naval gunfire elements are grouped together in only two transmissions. For example:

• **W4F, THIS IS J7N, FIRE MISSION, TARGET NUMBER NC1003, OVER.**

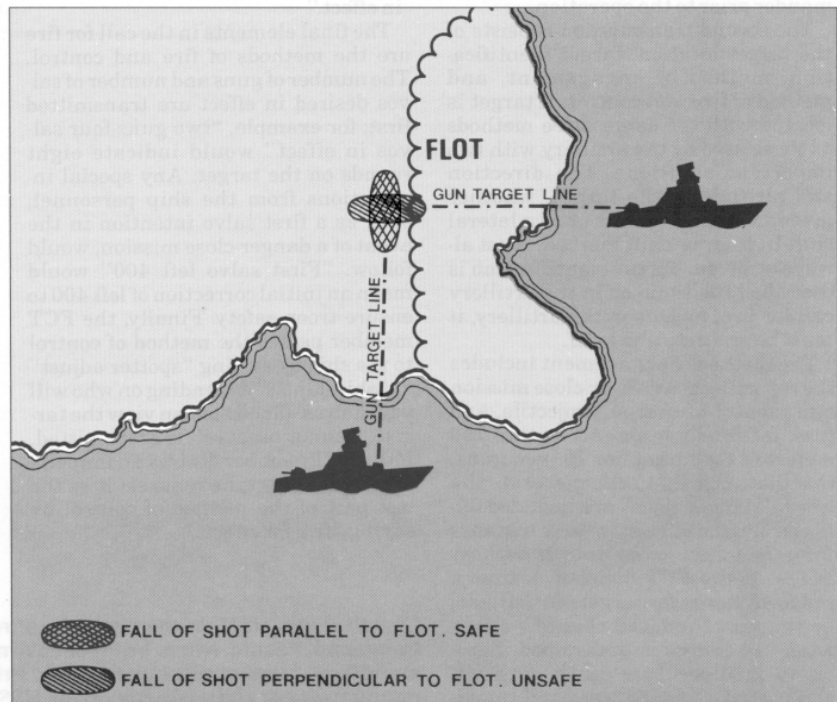
• **GRID 74375613, ALTITUDE 100, DIRECTION 4710 MILS, ENEMY OBSERVATION POST, FUZE VT IN EFFECT, TWO GUNS FOUR SALVOS IN EFFECT, SPOTTER ADJUST, OVER.**

Said over the right net, the above call for fire will get the Army commander eight rounds of high-explosive (HE) ammunition with variable time (VT) fuze over the heads of the enemy observation post.

The elements of the first transmission are the observer's identification and the warning order. The main difference

more difficult problem. The Navy counters this limitation by using a reduced powder charge which "lobs" the round behind a hill. A destroyer has a limited number of these charges on board; so they must be used selectively. Also, the accuracy of shot is decreased when a reduced charge is used. When possible, flat trajectory targets should be selected for naval gunfire.

Another consideration of the NGFS, particularly when used for close support, is its fall of shot. Naval guns have a long-range probable error and a narrow deflection error so that the impact area resembles a narrow ellipsis along the line of fire (see figure). These characteristics make the NGFS an excellent close support weapon when friendly frontlines are parallel to the gun-target line, but they are a limitation when the NGFS is used to fire over the heads of our own troops. Linear targets along the line of fire are particularly susceptible to the weapons' fall of shot. If possible, the mobility of the ship should be used to locate the weapon in the most favorable position relative to the forward line of own troops (FLOT).



Line of fire of naval guns.



Photo by LT Jeff Kline, USN

**ANGLICO observer controls firepower from a lofty perch.**

from the artillery call for fire is the warning order; the words "fire mission" followed by the target number are the only information sent. Target number blocks are assigned to a unit by the amphibious task group commander prior to the operation.

The second transmission consists of the target location, target identification, method of engagement, and method of fire and control. A target is located with the same three methods as those used by the artillery with two important additions: The direction and altitude of the target, whether given in absolute terms or as a lateral shift in polar or shift method, must always be given. Target identification is described the same as in the artillery call for fire; and, as in the artillery, it must be accurate and brief.

The method of engagement includes the reporting of a danger-close mission and request of charge, projectile, and fuze. If friendly troops are within 750 meters of the target (for 16-inch guns, the distance is 1,000 meters), the words "danger close" are included followed by the direction and distance *from the target to the nearest friendly troops*. If the FCT member desires a reduced charge for targets in defilade, he requests "reduced charge"; otherwise, full charge is understood. Similar to artillery, fuze quick with HE shell is the standard fuze-shell combination for spotting unless otherwise

requested for effect. If fuze delay, time, or VT is desired or a shell other than HE is needed in adjust or effect missions, it is requested in the last part of the method of engagement; for example, "fuze VT in adjust" or "shell WP in effect."

The final elements in the call for fire are the methods of fire and control. The number of guns and number of salvos desired in effect are transmitted first; for example, "two guns four salvos in effect" would indicate eight rounds on the target. Any special instructions from the ship personnel, such as a first salvo intention in the event of a danger-close mission, would follow. "First salvo left 400" would mean an initial correction of left 400 to ensure troop safety. Finally, the FCT member passes the method of control to the ship by stating "spotter adjust" or "ship adjust" depending on who will adjust fires. If neither can view the target, "cannot observe" is transmitted. If the FCT member desires an immediate fire for effect, he requests it as the last part of the method of control by saying "fire for effect."

**LT Jeff Kline, USN, is the Naval Gunfire Instructor at Landing Force Training Command, Pacific, where he teaches Army, Marine, and Allied personnel various aspects of naval gunfire operations. Prior to his instructor duty, he served as gunnery officer and navigator on the *USS Moosbrugger* (DD-980) and as a propulsion officer on the *USS Ranger* (CV-61).**

Another example of a call for fire using the polar method for target location is:

- **W7F, THIS IS N9R, FIRE MISSION, NUMBER NC1002, OVER.**
- **DIRECTION 4320 MILS, DISTANCE 1500, DOWN 150.**
- **COMPANY OF TROOPS IN OPEN, DANGER CLOSE NORTH 700, FUZE VT IN EFFECT, TWO GUNS EIGHT SALVOS IN EFFECT.**
- **FIRST SALVO INTENTION LEFT 200, ADD 400.**
- **SPOTTER ADJUST, OVER.**

Prior to opening fire, the ship makes the following report to the spotter:

- **GUN-TARGET LINE 187 DEGREES TRUE, READY 15; FIRST SALVO INTENTION: LEFT 200, ADD 400.**

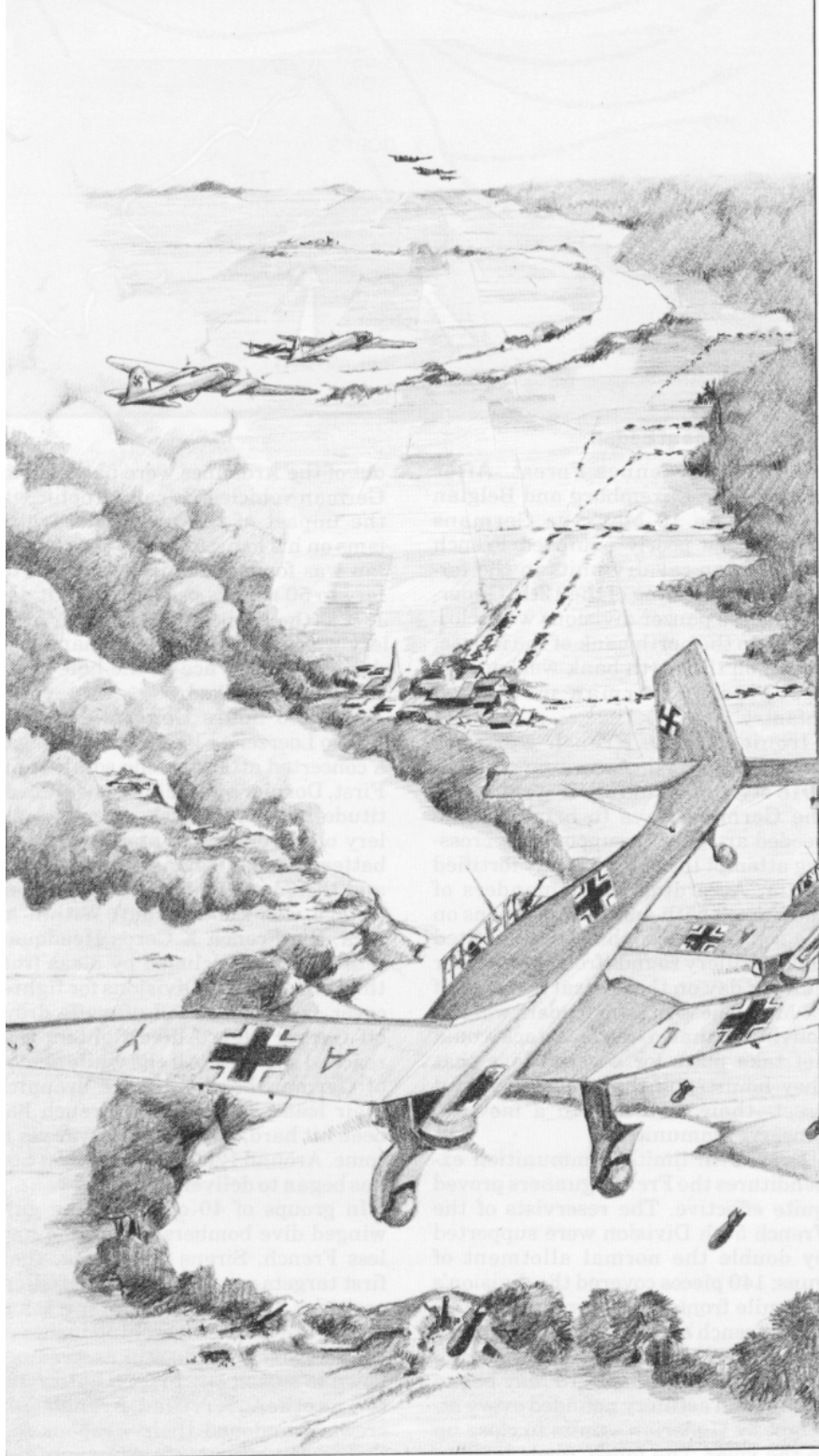
The gun-target line of 187° should be checked by the spotter for safety. "Ready 15" indicates that the ship is ready to fire and that the time of flight for the round to detonate is 15 seconds. When the ship is ready to fire the first salvo, ship personnel transmit "ready" and then await the spotter's command to fire. For subsequent salvos, "ready" is transmitted by the ship personnel only if "at my command" has been ordered by the spotter. Once the spotter receives the ship's report, he tells the ship personnel when to fire the first salvo. Adjustment and end-of-mission reports are the same as those used by the artillery.

## Conclusion

Naval gunfire has proved its worth to the ground combat commander. To provide maximum firepower from the sea, the fire support officer must understand the naval weapons available to him and how to integrate them into his fire support plan. ☒

# A Fatal First:

## Joint Operations on the Meuse



by Captain John Gordon

The German crossing of the Meuse on 13 May 1940 was history's first modern joint operation, and to this day it remains a classic example of how such operations ought to be conducted. On that fateful day a panzer spearhead of the German Wehrmacht supported by the dive bombers of the Luftwaffe Fliegerkorps II forced a crossing of the strategic Meuse River and achieved a breakthrough that led directly to the destruction of the flower of the French Army, the surrender of Belgium, and the desperate British evacuation at Dunkirk. More importantly, the joint force that crossed the Meuse sealed the fate of France itself—in a short span of six weeks the French suffered a complete defeat.

### Devising the Plan

In their pre-invasion planning, the Germans identified the Meuse River, in particular that portion which flows through the Ardennes Forest, as the critical terrain barrier they would have to overcome in order to reach the English Channel and split the Allied armies. The section of river near the famous city of Sedan was chosen as the site of the decisive crossing. Although the river was to be breached along an 80-mile front, the Sedan sector was to receive the main punch in the form of General Heinz Guderian's XIX Panzer Korps, consisting of the three strongest panzer divisions in the Wehrmacht. Guderian and his chief, General Ewald von Kleist, realized that the Meuse crossing had to be accomplished very rapidly or French reserves would be able to respond forward and seal off the bridgehead before the race to the channel could begin. Speed was of the essence. That fact necessitated a joint operation. Only a joint force possessed the agility, depth, and synchronization necessary to seize and retain the initiative.

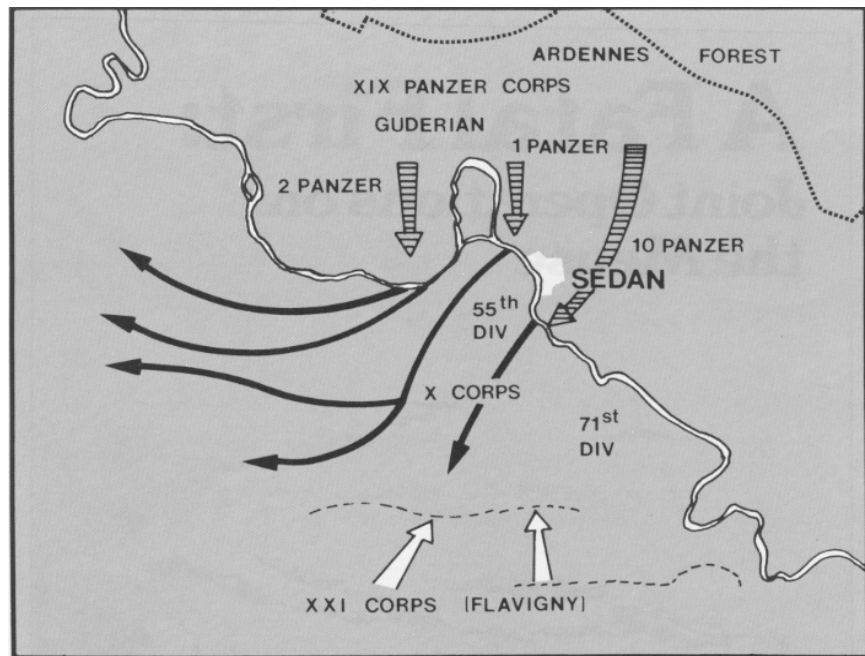
In the First World War, major ground force offensives took weeks to prepare. Artillery preparations often lasted days or even weeks. While this would invariably lead to the devastation of the defender's forward positions, it

also eliminated the element of surprise. Indeed, the ponderous concentration of thousands of men, hundreds of guns, and millions of rounds of ammunition usually alerted the enemy even before preparatory fires began. Guderian could not afford such a logistical luxury. In fact, he did not want such a buildup. As one of the founding fathers of the *blitzkrieg* theory, he valued speed and despised the gross expenditures of human and materiel resources that had occurred in the Great War. His operational plan did not allow the time necessary to move large numbers of heavy guns and howitzers with hundreds of tons of ammunition through the narrow forest roads of the Ardennes. Yet Guderian realized that he needed firepower to breach the so-called Maginot Line Extension with its concrete pillboxes and gun emplacements that occupied the south bank of the Meuse. Geography was also against the Germans, for their assault troops on the low north bank of the river would be dominated by the French dug in on the steep bluffs on the south side. Firepower was needed to pin down and overwhelm the French. Guderian's solution was simple: He would use the combat power of the Luftwaffe.

The Germans entered this crucial battle with one tremendous advantage: They had made thorough preparations for joint operations. From the time of its rebirth in 1935, the Luftwaffe had planned to support the Army in the field. Its aircraft were designed for that purpose, and it made provisions for air liaison officers and air controllers from army group down to division level. During the planning for the Meuse crossing, the Luftwaffe and Wehrmacht had worked in close cooperation; the Luftwaffe agreed to subordinate its major assets to the Wehrmacht for the bridgehead operation. The only problem was among the Army commanders themselves. A last minute conflict between Guderian and Kliest arose concerning the tactics the Luftwaffe should use. Kliest wanted a short, intense pre-crossing air attack; Guderian desired a day-long bombardment to wear the French down. When the assault was actually made, the Luftwaffe attacked in accordance with Guderian's proposal. The excellent relations between the Wehrmacht and the Luftwaffe stood in sharp contrast to the muddled French command structure that virtually precluded Army-Air Force cooperation.

### Executing the Crossing

In a mere three days, Guderian's troops advanced to the Meuse through



**The crossings at Sedan.**

the dense Ardennes Forest. After crossing the Luxemburg and Belgian frontiers on 10 May, the Germans swept aside poorly equipped French and Belgian cavalry units in the forest. By the evening of the 12th, Guderian's three panzer divisions were closing up to the north bank of the Meuse. Sedan on the north bank was quickly occupied by German motorized infantry.

Ironically, the French were not overly concerned. According to their 1918-style of thinking, it would take the Germans days to bring up the needed artillery to support any crossing attempt in such a heavily fortified sector. Accordingly, commanders of the French 55th and 71st Divisions on the south bank of the Meuse limited their artillery rounds from 30 to 80 per gun per day on the critical morning of 13 May. These French leaders were so convinced that a major attack could not take place for several days that they hamstrung their most powerful asset—their artillery—in a move to conserve ammunition.

Even with limited ammunition expenditures the French gunners proved quite effective. The reservists of the French 55th Division were supported by double the normal allotment of guns; 140 pieces covered the division's five-mile front. One German recalled, "The French are shooting at every single vehicle, even motorcyclist signalers." As the morning of 13 May began the French artillery pounded every attempt by Guderian's units to close up to the river. The forest roads leading

out of the Ardennes were packed with German vehicles. So catastrophic was the impact of the numerous traffic jams on his logistics effort that Guderian was forced to limit his own artillery to 50 rounds *per battery* that day. Just as the French thought their artillery was gaining the upper hand, Guderian's joint "ace-in-the-hole"—the Luftwaffe—arrived.

At 0700 hours Generalleutenant Bruno Loerzer's Fliegerkorps II began a concerted attack on the south bank. First, Dornier and Heinkel medium altitude bombers struck. French artillery observers lost contact with their batteries as telephone lines were cut and the 71st Division's telephone exchange was knocked out. Within an hour, the French X Corps Headquarters was being deluged by pleas from the 55th and 71st Divisions for fighter cover. Overhead, the Luftwaffe drove off the very few Allied fighters that reached the area. All the while, waves of German bombers were dropping their loads. By noon the French had been hit hard, but the worst was yet to come. Around 1200 hours the first Stukas began to deliver a fatal blow.

In groups of 40 or more, the gull-winged dive bombers struck the hapless French. Sirens screaming, their first targets were the French artillery positions. The German infantry and panzer crews stood watching in awe on the north bank as the Stukas screamed down to smash one French battery after another. Terrified French gun crews abandoned their weapons and fled as wave after wave of German dive



bombers struck. For three hours the Stukas continued to attack, and French artillery fire died down to a trickle.

At 1430 hours, as the Luftwaffe continued its attack, the German artillery opened fire. This combined arms attack drove the French infantry near the river into their bunkers and trenches. Meanwhile, antiaircraft gun crews manhandled their 20-mm and 37-mm automatic cannons to the river's edge and opened direct fire against the French bunkers. German tanks soon rumbled down to the riverbank and joined the attack. Behind the tanks were German combat engineers and infantry carrying rubber boats.

At 1500 hours, as the last Stuka bomb fell, the German assault troops sprang up and dashed to the river; some surviving French machine guns opened fire. In several places, especially in the 10th Panzer Division's sector, casualties were heavy, but elsewhere the attack proceeded with relative ease. The 1st and 2d Panzer Divisions and the elite Grossdeutschland Regiment, for example, made easier crossings. By 1800 hours German infantry had reached a point two


miles south of the river, and French resistance collapsed in front of them. At the river, the first German ferry was in operation within 38 minutes, and by midnight a 16-ton bridge was in full operation. The initial crossing was a smashing success.

### Expanding the Bridgehead and Beyond

During the operation German infantry had suffered casualties from French automatic weapons, but the deadly French artillery had been rendered impotent by the Luftwaffe. Only on the flanks, where adjacent French units had escaped the bombing, did French artillery fire prove a problem for the attacking Germans.

After fending off poorly coordinated French counterattacks that night and on the morning of 14 May, Guderian was ready for his breakout. By the evening of 14 May his three panzer divisions had their tanks across the river and had

turned to the west. In conjunction with four other panzer divisions that had crossed the Meuse farther north, Guderian's divisions drove for the English Channel.

On the evening of 20 May Guderian's own 2d Panzer Division was the first to reach the sea at Abbeville. They had advanced 200 miles in 10 days. The Allied Armies were severed; the Dunkirk evacuation was only days away. Behind the panzers lay the wreckage of the French Army, its fate decided by a classic joint operation that had breached the Meuse and toppled the two dimensional mentality of soldiers forever. 

**CPT. John Gordon, FA, received his commission through ROTC at the Citadel in South Carolina. He is a graduate of the Field Artillery Officer Advance Course and has served with the 82d Airborne Division Artillery, with the G3 of the 2d Infantry Division in Korea, as a basic gunnery instructor, and as a battery commander. He is currently assigned to Fort Sam Houston, Texas, as an operational research systems analyst.**

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# View from the Blockhouse

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## FROM THE SCHOOL

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### Updating Doctrine

This series of articles has repeatedly emphasized the importance of Fire Support Community involvement in the development of field artillery doctrine. Past "Updating Doctrine" columns have demonstrated that units in the field can have a significant influence on doctrinal development. In one instance 93 percent of the comments received from the field were incorporated in the final draft.

All unit commanders need do is respond to the coordinating drafts of field artillery manuals that they receive from Fort Sill. Recent response levels vascillate significantly. The pendulum swings between 2 and 100 percent of the units responding. Those units who receive manuals for review should never forget that they have the opportunity and responsibility to influence future field artillery doctrine. The response pendulum should stick at close to 100 percent.

Significant doctrinal development actions ongoing at the US Army Field Artillery School (USAFAS) include the following:

- Subject matter experts will complete preliminary drafts of the following manuals in March:

FM 6-2	Field Artillery Survey
FM 6-20-2	Division Artillery, Field Artillery Brigade, and Field Artillery Section (Corps)
FM 6-42	Field Artillery Battalion, Lance

- Coordinating drafts of the following manuals will reach the field in the months shown in parentheses:

FM 6-161 (Change 1)	Field Artillery Radar Systems (April)
FM 6-1 (Change 1)	TACFIRE Operations (July)
FM 6-20-1	Field Artillery Cannon Battalion (June)
FM 6-40-4	Field Artillery Lance Missile Gunnery (June)

- DA will distribute the following completed manuals during the months indicated below:

FM 6-11	The Pershing II Training Battery (May)
FM 6-30	The Field Artillery Observer (August)

- USAFAS will distribute the following field circulars in the months indicated below:

FC 6-1-3	TACFIRE Tactical Standing Operating Procedures (Battalion) (Version 6) (April)
FC 6-1-4	TACFIRE Tactical Standing Operating Procedures (Div arty/Corps) (July)

- USAFAS is currently publishing the following field circulars pertaining to automated gunnery procedures. They will eventually be incorporated in FM 6-40-1, *Automated Gunnery*:

FC 6-40-2	Battle Computer System Job Aids
FC 6-40-31	Back-up Computer System Cannon Job Aids
FC 6-1-1	TACFIRE/non-TACFIRE Interface

In the November-December 1984 issue of the *Journal*, the USAFAS announced that FMs 6-141-1 and 2, both titled *Target Analysis Munition Effects-Tables*, would be mailed to the field as coordinating drafts in December 1984. However, the contents of the manuals

do not require staffing because they are merely a compilation of computer derived tables. Also in that issue the Field Artillery School announced the development of FC 20-4, *Construction of Field Expedient Antennas*. This project was dropped because the Signal School's new Field Manual 24-18 will provide identical information.

Anyone with questions or comments regarding doctrinal issues should feel free to contact the School's Directorate of Training and Doctrine by calling AUTOVON 639-4225/4240 or writing to:

Department of the Army Commandant USAFAS ATTN: ATSF-DD Fort Sill, OK 73503-5600 Chief of Doctrine (ATSF-DD)	AV 639-4225/6063
LTC Pat Connor C3/Fire Support Mr. C. C. Klein	4225/4240
CPT Bill Bennison Missile/Tac Data Systems Mr. Al Beemer	4225/6063
CPT Mark Trumbo Publications (ATSF-DP) CPT Bob Krokus	4902/3468

## Air Force and Marine Liaison Officers

Lieutenant Colonel Hermann H. Busse has been the German Air Force Liaison Officer to the US Army Field Artillery Center and School at Fort Sill since 1982. He has served in Surface-to-Surface Missile Wing 1 and 2 assignments as Pershing Platoon Commander and Pershing Firing Battery Commander. Colonel Busse is a 1965 graduate of the German Air Force Officers School. Later that same year he received his commission.

Colonel Ernest B. Beall, Jr. has been the United States Marine Corps Representative at Fort Sill since July 1983. He has served in numerous command and staff billets worldwide. Colonel Beall graduated from Delta State University in Mississippi in 1959 and received his commission later that year. He is also a graduate of the US Army Artillery Officers Career Course and the Armed Forces Staff College.

Colonel John P. (Jack) Heffernan has been the Senior Air Force Representative to the US Army Field Artillery Center and School at Fort Sill since June 1983. Among his duties, he is responsible for all officer Air Force instruction and also performs all Air Force Liaison functions. Colonel Heffernan is a command pilot with over 20 years experience flying jet fighters. He is a member of the Tactical Air Command and has received numerous awards including the Legion of Merit and Meritorious Service Medal. He received



Photo by PFC Tony Muralha

From left to right: LTC Busse, COL Beall, and COL Heffernan.

his commission through the Reserve Officer Training Corps program at the University of Wisconsin at Madison and is a graduate of the Air Command and Staff College.

## Fort Sill Conferences

Projected conferences to be held at the US Army Field Artillery School are:

### Senior Field Artillery Commanders Conference (16-18 April 1985)

- **For:** Active and Reserve Component commanders of corps artilleries, division artilleries, field artillery groups and brigades, separate units, and US Marine Corps field artillery regiments.

- **Purpose:** To provide a forum for Army and Marine Corps field artillery commanders to discuss command issues, provide input from the field on methods which have improved operations or training, and disseminate guidance from the Commandant on subjects applicable to all field artillery units.

### Fire Support Conference (Fall of 1985)

- **For:** Active and Reserve Component operations officers or representatives from the S3 sections of corps and division artilleries, FA brigades and

groups, and action officers from Department of the Army, US Army Training and Doctrine Command service schools, Reserve Officer Training Corps regions, and selected Army and US Marine Corps commands.

- **Purpose:** To provide the latest combined arms team doctrine and to identify changes taking place in field artillery weapons, tactics and techniques, as well as a forum for exchanging ideas and experiences.

### Field Artillery Target Acquisition Conference (4-7 June 1985)

- **For:** Target acquisition battery commanders and key personnel.

- **Purpose:** To discuss target acquisition problem areas and innovations. The point of contact is Captain Clark at AUTOVON 639-3312/6179. Attendees who wish to give a presentation should send an outline to Commandant, US Army Field Artillery School, ATTN: ATSF-FS, Fort Sill, OK 73503.

## Attention 13Bs, 13Es, and 13Fs

Before attending the basic noncommissioned officer course (BNCO), you must pass a mathematics prerequisite survey at your education center. To help prepare yourself for this test, you can enroll in Subcourse FA 6002, Basic Mathematics for Field Artillery. When you complete the subcourse, you will have not only earned four credit hours and promotion points, but you will have also prepared yourself for the BNCO prerequisite survey. To enroll in the subcourse, all you need do is submit DA Form 145, *Army Correspondence Course Enrollment Application*, to:

Institute for Professional Development  
US Army Training Support Center  
Newport News, VA 23628  
AUTOVON: 927-2079

### **ENROLL NOW, SEE YOUR FIRST SERGEANT FOR DA FORM 145.**

Your point of contact at Fort Sill is SGM Robert Martin, SGM of the Directorate of Training and Doctrine, US Army Field Artillery School, Fort Sill, OK 73503, AUTOVON 639-2005.

## FAC Facts

The joint Tactical Air Command (TAC) and US Army Training and Doctrine Command (TRADOC) Phase II Report on Initiative 25 (forward air controller [FAC]/tactical air control parties [TACP] structure) identified two basic issues relating to close air support (CAS):

- The size and nature of the future tactical air control party structure.
- The type and quantity of equipment each service provides in support of the TACP.

At present, TACPs are manned with liaison officers, forward air controllers, and support personnel. The basic piece of equipment used by the Air Force TACP is the AN/MRC-107/108 communications central. The communications package is being replaced by second-generation communications equipment (Pacer Speak) and high mobility multipurpose utility vehicles. When mobility or vulnerability considerations preclude the use of the Air Force's communications central, the Army by doctrine provides the TACP with specialized vehicles such as tanks, armored personnel carriers, and helicopters with crews.

The basic functions of the TACP are liaison and close air support control. Since the liaison function is continuous, the TAC/TRADOC position is that a full-time air liaison officer (ALO) is needed during combat in all maneuver units at battalion level and above. The report also concluded that FACs must be available in sufficient numbers and be located to provide the required close air support anywhere on the battlefield and at any threat level.

Based upon findings and recommendations regarding use of the organic helicopters, organic maneuver vehicles, and increased Air Force representation at the maneuver battalion, the Initiative 25 study group has developed a TACP employment option. This option will accomplish the basic functions during wartime by providing a full-time ALO at all levels from battalion up and other appropriate resources positioned at centralized locations on the battlefield. Under

this option, close air support control will be accomplished by pooling ground forward air controllers (GFAC) at the division TACP and by pooling air forward air controllers (AFAC) at a forward operating location under control of the Air Support Operations Center. The study group believes this proposal would achieve the following notable improvements in close air support:

- Enhance the maneuver unit GFAC's capability to reach critical posts on the battlefield by using divisional helicopter support. This arrangement would be similar to the field artillery aerial observer mission flown by division general support helicopters.
- Enhance the GFAC's performance by moving him quickly to critical points on the battlefield in an organic maneuver vehicle that affords him mobility and survivability. The organic maneuver vehicle from which he can control close air support could be a tank, a Bradley Fighting Vehicle, or an armored personnel carrier depending on the supported unit.

- Provide a full-time ALO to the maneuver battalion during combat operations. (During peacetime, there is little requirement for full-time Air Force representation at the battalion level except for special units such as Ranger units.) The ALO would normally operate out of the command post. If the supported unit is equipped with armored vehicles, one armored vehicle (preferably an armored personnel carrier) will be modified as necessary to accept TACP communications. When the ALO moves forward with a maneuvering battalion commander, he will do so by displacing a crew member on one of the battalion's maneuver vehicles. The ALO will use the vehicle's organic communications equipment to communicate with the TACP and will have his own communications equipment to communicate with close air support aircraft in those unusual situations in which a FAC is not available. More often than not, a second individual, either a GFAC or fixed-winged AFAC, will control close air support strikes. (The GFAC will arrive with his own communications equipment for communicating with the close air support aircraft and will be transported on an organic maneuver vehicle by displacing a crew member.) TRADOC supports the TAC proposal of assigning ALOs by name to the maneuver battalions so that each time the battalion trains on a major exercise it would have the same air liaison officer. This habitual relationship should produce a more effective joint combat team.

There are other TACP-related issues generated by the Army of Excellence force structure. During the next two to five years, the number of TACPs required will increase with the programmed conversion and restructuring of current Army forces. These increases result from conversion of standard infantry divisions into new light infantry divisions and the formation of combat aviation brigades in division and corps.

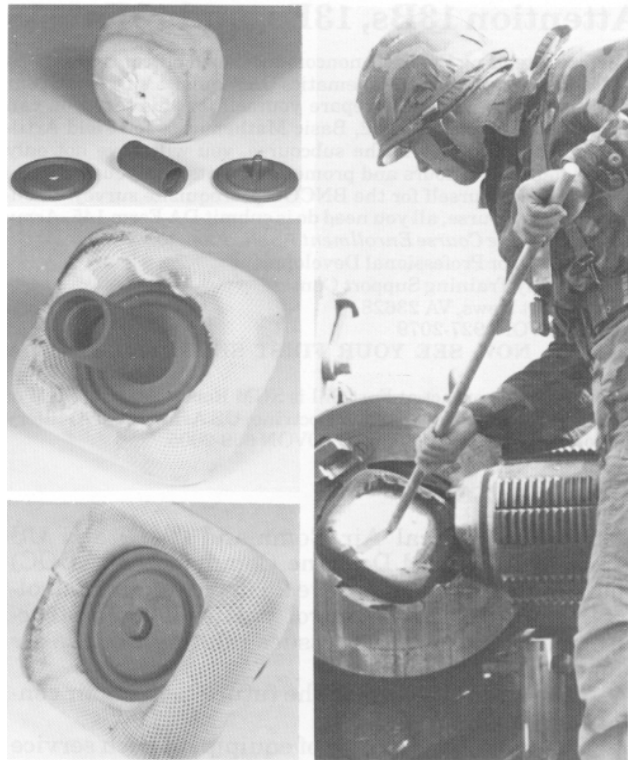
Initiative 25 has provided the stimulus for a searching look at how the Army and Air Force coordinate the AirLand Battle. The employment options will be evaluated during Phase III of the study to determine if a dedicated ALO is appropriate for the battalion during combat. Also during Phase III, procedures for dedicated helicopter and maneuver vehicle support will be proposed and evaluated, and combat aviation brigade TACP requirements will be considered.

## BATTLEKING Projects

BATTLEKING continues to receive excellent ideas from the field, the Field Artillery School, and industry.

### Super Swabs

•BK 57-84 (Source: San-Bar Corporation)—Among the ideas recently evaluated was a new powder chamber swab design submitted by the Break-Free Division of San-Bar Corporation. These are the people who make CLP bore cleaner and the BOR-CAP cannon barrel cleaning system. The chamber swabs come in 155-mm and 203-mm versions and are made of a high density, low absorption polyethylene material encased in a nylon mesh cover. The sponges are unaffected by ultra-violet light, acid, carbon, or oil. The swabs evaluated by BATTLEKING used lightweight aluminum staffs, although the standard swab holder with rammer staff will also work. The chamber swabs used by cannon sections are usually made from the foam rubber insert of an M548 or Gamma Goat seat cushion; the chamber swabs made by Break-Free outlast these homemade swabs by months. One early prototype swab has been in continuous use for more than three months without wearing out.



'Skunkworker' tests new swab.

### A Whiz of a Gizmo

•BK 44-84, Lightweight C<sup>2</sup> Computer Demonstration (Source: 8th Infantry Division)—The 3d through the 14th of December 1984 was an extremely busy time for BATTLEKINGers as 55 participants from four different Army installations gathered at Fort Sill under the auspices of the Field Artillery Board to check out some new electronic gadgetry. Two major defense contractors provided several items of new or improved digital equipment as candidates for future integration into field artillery tactical data systems primarily for the light divisions. Green suiters from the 9th Infantry Division, the 82d Airborne Division, and the US Army Infantry School had a chance to get their hands on the new "smart" boxes under the watchful eyes of a select group of experts from the US Army Field Artillery School and the US Army Communications and Electronics Command New Equipment Training Team equipped with clipboards, cameras, stopwatches, and tape recorders.

In addition to these highly experienced personnel, two recent graduates of the Field Artillery Training Center—soldiers who had never seen any kind of digital equipment—were brought on-board to receive training on the new items and then demonstrate their proficiency in an effort to evaluate the user-friendliness of the devices. These soldiers learned quickly and were retained throughout the exercise to assist with off-line testing.



Privates Luis Vasquez and Chris Taylor learn to operate two different devices.

All in all, the demonstration participants put in nearly 7,000 man-hours in a 12-day period and had the opportunity to operate the equipment under all kinds of conditions ranging from clear and mild to freezing rain. They even operated in a couple of inches of snow. After the weary participants returned to their respective duty stations, BATTLEKING analysts continued to burn the midnight oil in an effort to assimilate and draw conclusions from the voluminous stacks of questionnaires, printouts, and user comment sheets generated during the conference.

Although the final report has yet to be published, the emerging results of the conference were briefed to visiting VIPs on the last day of the operation and then incorporated into a command memorandum. These results indicate that the new equipment looks promising. Watch for a full-length feature article on this BATTLEKING "sneak preview" of the new lightweight digital equipment in an upcoming edition of your *Journal*.



Photo by PFC William C. Spiess

SFC Allen LaRock operates the touch panel of a Briefcase Terminal (BCT) configured as a Battalion FDC in a HMMWV.

## FIST Fights

• BK 4-84 (Source: 2d Battalion, 35th Field Artillery)—This early BATTLEKING proposal concerned direct control of close air support (CAS) by the fire support team chief. The unit was having trouble with responsive, timely support when missions were relayed through a forward air controller (FAC). Their concern was that adjustments were being delayed and that Pave Penny was not as effective as it could have been. BATTLEKING did not accept the proposal because a joint service working group, called J-FIRE, was examining the issue, and the FIST Force Development and Experimentation II (FDTE II) was scheduled to test FIST-Air Force operations.

Paragraph J-12d of FM 6-20-1J, *Field Artillery Battalion*, and paragraph 7-9 of FM 6-30, *The Field Artillery Observer*, permits the FIST chief, senior fire support sergeant, or other qualified FIST members to direct a close air support strike during emergencies. US Air Force doctrine also endorses communication between the FIST and A-10 pilot via FM radio. However, relatively few Air Force aircraft have FM radios and FIST teams are not equipped with AM radios. Thus, for many CAS missions, the FAC or air liaison officer (ALO) must be present to provide the communications link. The FIST FDTE II also showed that when the FIST coordinates a CAS mission, all other FIST support stops. Moreover, there are differences in procedures for laser switch settings which the air liaison officer buffers. While there may be advantages to direct communication and control between FIST and Air Force aircraft, the problems with mismatched communication, laser switch procedural differences, and competition with other equally urgent FIST duties outweigh the benefits. The FIST FDTE II showed that that part of our joint doctrine was sound.



Photo by Sam Orr

FIST chief observing close air support strike.



# Joint Command—The Operational Level of War

by Lieutenant Colonel Michael R. Devlin and Major Theodore M. Shadid

A very valuable aspect of the 1982 version of FM 100-5, *Operations*, was its identification of three distinct levels of war. Previous doctrine was generally limited to two levels: strategy—the overall guidance for military activities, and tactics—the conduct of small unit movement and combat operations. However, the current FM 100-5 changed that narrow perspective by providing definitions for the operational level as well as the strategic and tactical levels of war. Specifically, it defined these levels as follows:

- Operational—This level plans the use and campaigns of available military resources to attain strategic goals for larger unit operations within a theater of war. Campaigns are sustained operations to defeat an enemy force in a specified space and time with simultaneous and sequential battles. The disposition of forces, selection of objectives, and actions taken to weaken or to out-manuever the enemy all set the terms of the next battle and exploit tactical gains. The operational level also marshals forces and logistical support, provides direction to ground and air maneuver, applies conventional and nuclear fires in depth, and employs unconventional and psychological warfare.
- Strategic—The level at which the armed forces of a nation are employed to secure the objectives of national policy by applying force or the threat of force. Military strategy sets the fundamental conditions for operations.
- Tactical—This level includes the specific techniques smaller units use to win battles and engagements which support

operational objectives, and it employs all available combat, combat support, and combat service support. The tactical level involves the movement and positioning of forces on the battlefield in relation to the enemy, the provision of fire support, and the logistical support of forces prior to, during, and following engagements with the enemy.

In addition, the new FM 100-5 states: "At corps and division, operational and tactical levels are not clearly separable." Battlefield actions planned by the staffs of these headquarters may contain elements of both levels. Military headquarters above corps, however, prepare and execute plans which are purely operational, tying strategy to tactics and providing the necessary link that can transform national objectives into global and regional battlefield maneuvers. The joint operational command structure manages this purely operational level of war and ties together the forces of all military services in the most efficient and effective manner. On today's battlefield, no separate service is able to defeat the enemy by itself. General John A. Wickham, Jr., the Chief of Staff of the US Army, recognized this fact when he stated: "If we are going to war, we are going joint." Therefore, in today's world, operational level planning and execution has to be a *joint* project. The conduct of joint operations involves the use of the forces of the various services under the operational command of unified commands, specified commands, or joint task forces.

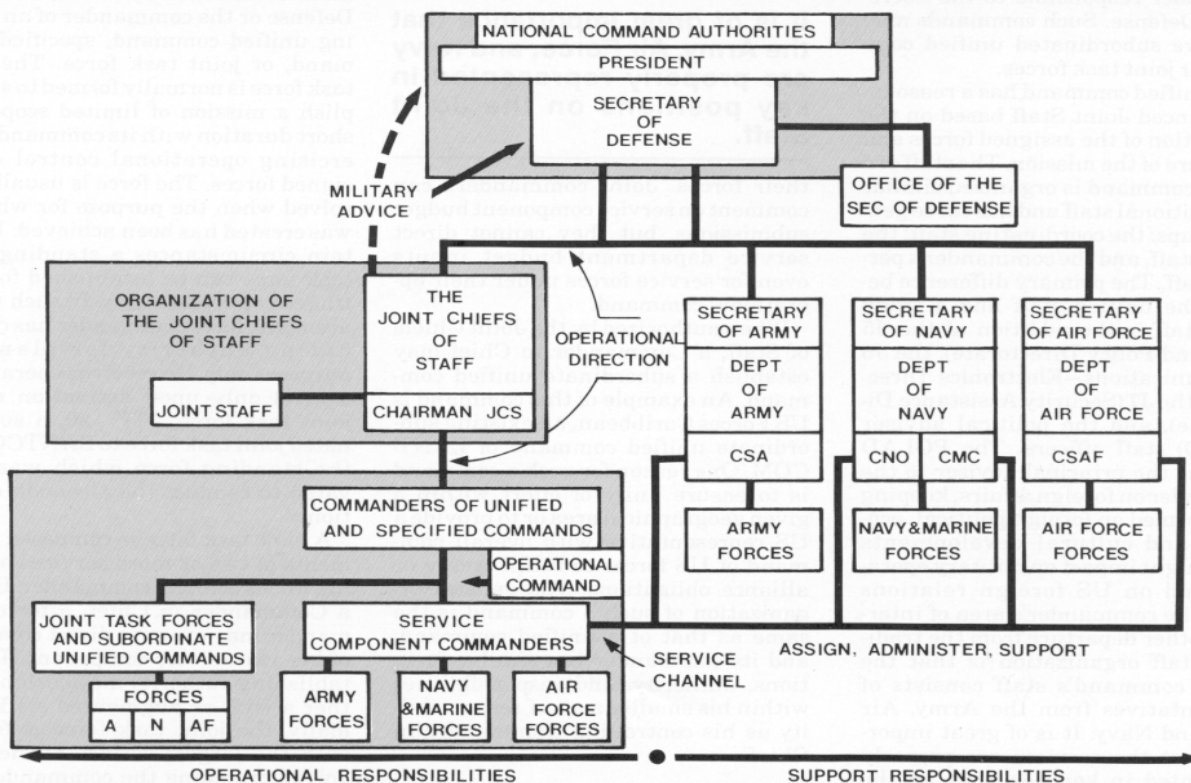
## Chain of Command

As shown in the figure, the chain of

command at the highest levels runs from the President, who is the Commander in Chief, through the Secretary of Defense (SECDEF) and then to the military departments and joint commands. The President and the Secretary of Defense form the national command authority (NCA), which is the highest military authority in the nation and is the embodiment of civilian control of the military. The Joint Chiefs of Staff (JCS) are the military advisers to the President and the Secretary of Defense. They also provide strategic and operational direction to joint commanders. The Secretary of Defense is the principal assistant to the President in all matters related to defense. The service secretaries are responsible to the Secretary of Defense for internal organization and administrative efficiency of their respective military departments. The joint commanders are responsible to the Secretary of Defense for planning, operations, and intelligence within their assigned areas. Orders to the joint commanders are issued by the President, by the Secretary of Defense, or by the Joint Chiefs of Staff with NCA approval.

The administrative and logistical chain of command is provided by the military services under the civilian leadership of the service secretaries. The service chief of staff is the secretary's primary military subordinate. The services have three types of functions assigned to them within the military structure: *common*, *primary*, and *collateral*.

- Common functions apply to all military services and deal primarily with administration and logistical support of their respective forces to include



Chain of command for joint forces showing the organization for national security and the national military command structure.

the very important role of preparation and submission of budgets.

- Primary functions are those which are usually referred to as operational or developmental "service missions." For example, according to JCS Publication 2, one of the Army's primary functions is "to organize, train, and equip Army forces for the conduct of prompt and sustained combat operations on land—specifically, forces to defeat enemy land forces and to seize, occupy, and defend land area." Another example of a primary function is the Navy's responsibility for the development of amphibious doctrine, procedures, and equipment, in coordination with the other services.

- Collateral functions may be considered to be secondary missions which are usually the primary functions of another service.

## Organization

The Joint Chiefs of Staff constitutes the military staff of the Secretary of Defense; the Office of the Secretary of Defense (OSD) is the Secretary's civilian staff. The two primary missions of the Joint Chiefs are to provide military

advice to the NCA and provide strategic and operational direction of the unified and specified commands. All of the remaining duties are subsidiary or are related to these primary missions. The so-called corporate body of the JCS consists of the Chairman, who outranks all other officers of the Armed Forces; the Chief of Staff of the Army; the Chief of Staff of the Air Force; and the Commandant of the Marine Corps. The Chairman is appointed by the President for a term of two years and may be appointed for one additional term. All members of the Joint Chiefs of Staff except the Chairman are service chiefs and, in that capacity, are responsible to the respective service secretaries for the internal working of their military departments. Each service chief appoints a flag officer—operations deputy—to represent his service on a subsidiary body to the Joint Chiefs of Staff. This group of operation deputies considers and acts on routine matters for the Joint Chiefs, so that they can focus on matters which cannot be delegated. Staff support is provided to the Joint Chiefs by the Joint Staff, which consists of not more than 400 officers. These billets are divided more or less equally among the military

services. The Joint Staff is organized along conventional staff lines.

There are the three basic types of joint force organizations: a unified command, a specified command, and a joint task force (JTF). The type of command selected for a given situation depends on a number of criteria which can be articulated as a series of questions.

- Who may legally create the command, and at what level should the command be established?
- What is the purpose or mission of the organization?
- Is the scope of the command tied to a geographical area or to fulfill a specific function?
- What type of forces will be assigned?
- What level of command authority does the commander require, particularly with regard to logistics?

## Unified Command

The *unified command* is established and designated by the President and has a broad continuing mission. The command consists of significant assigned components of at least two services and is organized under a single

commander responsible to the Secretary of Defense. Such commands may also have subordinated unified commands or joint task forces.

The unified command has a reasonably balanced Joint Staff based on the composition of the assigned forces and the nature of the mission. The staff of a unified command is organized similar to a traditional staff and has three general groups: the coordinating staff, the special staff, and the commander's personal staff. The primary difference between the unified staff and a traditional staff is the addition of the J5 (Plans and Policy Directorate), the J6 (Communications—Electronics Directorate), the J7 (Security Assistance Directorate), and the political adviser (POLAD) staff officers. The POLAD serves as the principal adviser to the commander on foreign affairs, keeping him informed on foreign political, economic, and cultural developments which might impact on military operations and on US foreign relations within the commander's area of interest. Another departure from the traditional staff organization is that the unified command's staff consists of representatives from the Army, Air Force, and Navy. It is of great importance that the services are properly represented in key positions on the joint staff. The Commander in Chief (CINC) of a unified command or a member of his staff will normally not serve as a service component or subordinate force commander.

Joint commands with regional responsibilities such as US Central Command (CENTCOM), US European Command (EUCOM), US Pacific Command (PACOM), and US Atlantic Command (LANTCOM) are unified commands. They have primary responsibility for contingency planning within their regions. Additional unified command responsibilities include the following:

- Maintaining security and protection against hostile attack.
- Carrying out assigned tasks, missions, and responsibilities.
- Ensuring unity of effort and communicating with services, JCS, SECDEF, and defense agencies.
- Keeping the JCS informed of significant events.

The Commander in Chief has directive authority in the field of logistics to ensure effectiveness and economy of operations, the elimination of unnecessary duplication of facilities, and overlapping of functions among the service components of the command. This authority in no way relieves the services of their responsibility for administrative and logistics support of

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### **It is of great importance that the Army, Air Force, and Navy are properly represented in key positions on the Joint Staff.**

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their forces. Joint commanders can comment on service component budget submissions, but they cannot direct service department budget inputs even for service forces under their operational command.

When authorized by the Joint Chiefs of Staff, a Commander in Chief may establish a subordinate unified command. An example of this command is US Forces Caribbean, an existing subordinate unified command of LANTCOM. One reason for such a command is to ensure unity of effort within a given geographical area or to provide a US representative with overall command of US forces to fulfill treaty or alliance obligations. The general organization of such a command is the same as that of a unified command; and its commander has similar functions, authority, and responsibilities within his smaller area of responsibility as his controlling Commander in Chief.

### **Specified Command**

The *specified command*, which is established by the President, is similar to the unified command in many respects. Its commander is responsible to the SECDEF for accomplishment of a broad continuing mission, subject to the strategic and operational direction of the Joint Chiefs of Staff. A specified command is composed of forces primarily from one service, although it may have elements of other services assigned. Also, its responsibilities tend to be functional rather than area responsibilities. One might ask, "Why is this a joint command if the assigned forces are primarily from one service?" The answer is that a specified command requires and receives strategic and operational direction from the Joint Chiefs of Staff. Some examples of specified commands are the Military Airlift Command (MAC) with functional responsibility for airlift of US military forces worldwide and the Strategic Air Command (SAC) which controls the Air Force's strategic deterrent forces.

### **Joint Task Forces**

The third type of joint command is the *joint task force*. It is best described as a temporary command arrangement established by the Secretary of Defense or

the commander of an existing unified command, specified command, or joint task force. The joint task force is normally formed to accomplish a mission of limited scope and short duration with its commander exercising operational control of assigned forces. The force is usually dissolved when the purpose for which it was created has been achieved. In certain circumstances a standing joint task force can be established for contingency purposes only. In such a situation, the force commander has coordinating authority for planning purposes only. He receives operational control only upon activation of the joint task force. JTF 120, a subordinated joint task force to LANTCOM, is the standing force which was activated to conduct the Grenada operation.

A joint task force is composed of elements of two or more services operating under a single commander. Unlike a Commander in Chief, a force commander may exercise direct command of his own service component. The establishing authority may designate either a joint or augmented staff. Normally, the joint task force is formed with the largest service element involved providing the commander and the staff nucleus. This core staff is then augmented with representatives of other services in appropriate functional areas. A final point regarding a joint task force is that its commander does not exercise directive authority in the field of logistics. He may, however, exercise logistic coordination to the extent necessary for mission accomplishment.

### **Service Components**

The military forces that make up joint commands have dual chains of command. Operational command is provided through the joint command while full command *less* operational command comes through the military services. Specifically, joint commanders who exercise operational command are authorized to control or provide the following elements:

- Composition of subordinate forces.
- Assignment of tasks.
- Designation of objectives.
- Authoritative direction necessary to accomplish the mission.

Operational control exercised by a joint task force commander includes the first three elements but does not include authoritative direction which applies primarily in the field of logistics.



The service component commander is under the operational command of the joint commander and is primarily responsible for providing him with a fighting force that is adequately manned and disciplined, properly administered, logistically supported, and trained in its own service doctrine. However, for the day-to-day functioning of his force, the service component commander is under the command of the service secretary.

Tactical employment of military forces is accomplished by the service components of the unified command, by joint task forces or subordinated unified commands formed by the unified Commander in Chief, or in combined (international) operational commands such as the North Atlantic Treaty Organization or the Combined Forces Command (CFC) in Korea.

## Unity of Effort

By law, the services must be maintained as separate military departments. However, to provide unity of effort and efficient use of scarce resources, it is imperative that the efforts of the separate services be closely integrated. Unity of effort at the national level is attained through *centralized direction* provided by the President and the Secretary of Defense and by the strategic and operational direction provided by the Joint Chiefs of Staff. Unity of effort at the theater or operational level is achieved through joint force organizations which provide the operational chain of command for *decentralized execution* of plans and directives worldwide. The *common doctrine* essential for mutual understanding between a commander and his subordinate in a joint-service environment is provided by JCS publications,

**... to provide unity of effort and efficient use of scarce resources, it is imperative that the efforts of the separate services be closely integrated.**


primarily JCS Publication 2, *Unified Action Armed Forces (UNAAF)*, and the *Unified Command Plan (UCP)*, which is a classified document that spells out the specific tasking of each unified and specified command.

## Summary

The President and the Secretary of Defense form the national command authority. Together they preside over the entire military establishment. The Joint Chiefs of Staff, consisting of the service chiefs and a military staff, are led by the Chairman and are the military advisers to the national command authority. They provide strategic and operational direction to the operational commands. The military departments control the budgeting process and are responsible for organizing, manning, equipping, training, and supporting military forces for employment

worldwide. The military services are also responsible for the administrative and logistical sustainment of their respective forces (full command less operational command).

Commanders of unified commands are responsible to the Secretary of Defense through the Joint Chiefs for the operational command of US military forces within their areas of responsibility. Specified commanders are generally functionally oriented and have the same responsibility as unified commanders within their functional areas. The focal point of the operational level of war is at the unified command, where national strategy is converted into military missions, tasks, and orders. At that level national strategy is tied to tactical realities by operational planning and execution.

There is, therefore, a logical path for efficient, effective, and realistic command and control of joint military operations. If services at many different levels are to fight together to win the armed conflicts of the future, military professionals must understand the interrelationships within our defense establishment which provide the framework for joint command and control of the operational level of war. 

- **LTC Michael R. Devlin, AV, is an instructor at the US Army Command and General Staff College (USACGSC). An ROTC graduate from North Dakota State University, he has a master's degree in business administration from Boston University. He is a graduate of the USACGSC, and has had numerous assignments in theater operations ranging from platoon leader and company commander of an armor battalion to Long Range Plans Chief for the Office, Deputy Chief of Staff for Military Operations and Plans, United States Army, Europe.**

- **MAJ Theodore M. Shadid, IN, is an instructor at the USACGSC. He received his commission from the United States Military Academy and has a master's degree in public administration from Harvard University. He is a graduate of the USACGSC and has had extensive infantry experience at company and battalion levels including tours as company commander and battalion executive officer. Major Shadid also served as a Division Assistant Inspector General and studied two years in Germany as an Olmstead Scholar.**

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# Command Update

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## NEW REDLEG COMMANDERS

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COL Stanley Kwieciak  
9th Infantry Division Artillery

LTC Jeffrey L. Wishik  
3d Battalion, 9th Field Artillery

LTC Gregory A. Renn  
1st Battalion, 82d Field Artillery

LTC Evan R. Gaddis  
5th Battalion, 15th Field Artillery

LTC Robin L. Elder  
2d Battalion, 5th Field Artillery

LTC William G. O'Connor  
7th Battalion, 15th Field Artillery

LTC John Ryneska  
1st Battalion, 320th Field Artillery



# OD and Blue Flags

by Major Richard Ross

Concurrent with the development of AirLand Battle doctrine, Army and Air Force leaders identified a pressing need for systematic instructions on the coordination channels that would link Army, Air Force, Navy, and Marine Corps units in combat. Moreover, they saw a requirement to exercise joint procedures regularly outside of large unified command war-games. Responding to these needs, the Commanding General, US Army Training and Doctrine Command (TRADOC), and the Commander, Tactical Air Command (TAC), agreed to support courses of instruction in joint and combined operations as well as provide the facility and personnel to test, exercise, and evaluate these procedures. To fulfill this requirement, the Army and Air Force established two related units. The first organization, the US Air Force Air-Ground Operations School, is located at Hurlburt Field, Florida, just a few miles west of Fort Walton Beach. The second unit, the 4441st Tactical Training Group (TTG), commonly referred to as the Blue Flag, is located within the Tactical Air Warfare Center at Elgin Air Force Base in close proximity to Hurlburt Field.

## Air-Ground Operations School

Although the Air-Ground Operations School (AGOS) is an Air Force operation, almost half of the instructor staff is composed of Army personnel—including one Redleg. The mission of the school is to provide instruction and training in doctrine, control systems, tactics, techniques, and procedures by which air and ground component forces plan, integrate, and conduct joint and combined operations. The instruction emphasizes subjects relating to the employment of the tactical air control system (TACS) and the Army air-ground system (AAGS) and is accomplished through two courses:

- **Battle Staff Course (BSC)**—This course is designed for officers whose duties involve the air-ground system at the division or higher levels. Normally scheduled five times a year, the battle staff course is three weeks in length and covers all aspects of air-ground operations to include Army, Air Force, Navy, and Marine assets and procedures. The academic

training phase covers the Threat; tactical air and ground force employment concepts; weapon systems and effectiveness; sortie generation potential; logistics and communication support considerations; combined command, control, communication, and intelligence (C<sup>3</sup>I) procedures; and C<sup>3</sup>I countermeasures.

The demonstration and exercise phase of the battle staff course employs TACS equipment during an air-ground operation system joint exercise. Students function in various positions within the TACS and AAGS organizational structures.

Personnel eligible for the battle staff course include G2 and G3 staff officers and their assistants, fire support coordination personnel; members of the battlefield coordination element (BCE), fire support element (FSE), air defense command posts, and aerial and surveillance units; and all liaison personnel operating with a tactical air control center.

- **Joint Firepower Control Course (JFCC)**—This two-week course is designed for personnel at the brigade level and below. It is scheduled several times a year and includes instruction on the approved joint concepts, procedures, techniques involved in the AirLand Battle. For Air Force students, emphasis is placed on the tactics of the Army division and its subordinate units. Army students concentrate on planning



Air-Ground Operations School in action.

and operating using the TACS and AAGS at the brigade and battalion levels. Applicable duty positions relevant to this course include S3, S3 air, fire support coordinator, fire support officer, fire support team (FIST) chief, FIST sergeant, S2, assistant S2, tactical surveillance officer (TSO), forward observer, and operations NCO at all levels.

### The Blue Flag


The 4441st Tactical Training Group's mission is to develop and conduct training for tactical combat and support force battle managers. Such training focuses on the actual joint operation of multiservice C<sup>3</sup>I systems in a realistic threat environment. The Blue Flag exercise simulates a crisis or military action in some real-world locale using actual friendly and enemy orders of battle, contingency plans, and concepts of operations. Also included in each exercise is the use of real-world National Collection Assets. Though carefully detailed, each scenario allows battle staff members the flexibility to initiate free play and to try out new concepts, equipment, and procedures. The exercise requires the development and management of objectives, training, support, and analysis activities. Each exercise retains its credibility by using current US and Allied operations plans and incorporating advisory teams of experts from Europe, the Pacific, or US Central Command (CENTCOM), depending on the regional scenario. The Blue Flag exercises are conducted four times a year and usually run nine days.

The first exercise (Blue Flag 77-1) was held in December 1976 when personnel from the Tactical Air Warfare Center deployed to Shaw Air Force Base, South Carolina. Since 1979, the exercises have been held at Hurlburt Field, Florida, next to the Air-Ground Operations School. The 4441st TTG, in conjunction with the 4442d Tactical Control Group which provides the facilities and equipment for the exercise, starts planning each Blue Flag four months before the start of the exercise. Actual on-site coordination with the Army and Air Force personnel involved in each exercise is accomplished by selected representatives of the 60-member Blue Flag staff which includes four full-time Army personnel assigned to the Army Advisory Group (AAG). Although assigned out of the Combined Arms Center at Fort Leavenworth, Kansas, the AAG is a functional part of the 4441st and provides the coordination to ensure effective Army participation in the Blue Flag activities.

Exercises have been conducted with as few as 20 Army participants and as many as 252 III Corps personnel in Blue Flag 79-3. The training is not restricted to active duty personnel. During Blue Flag 85-1, personnel from the 75th Maneuver Area Command from Houston, Texas; the 1st Battalion, 152d Armor; and 31st Armor Brigade of the Alabama National Guard were the principal players in a Korean scenario. Moreover, a memorandum of agreement between US Army Forces Command (FORSCOM) and TRADOC divides the exercise between the two commands to ensure equal distribution of training benefits. The following table describes the scenario topics

and Army participation in Blue Flag exercises since 1982.

Exercise	Scenario	Army participation	Remarks
82-1	4ATAF/CENTAG	FORSCOM (40)	All participants were from 87th Maneuver Area Command
82-2	Korea	TRADOC (35)	28 of the Army participants were students from Command and General Staff College (CGSC)
82-3	Mid-East	FORSCOM (118)	XVIII Airborne Corps jumped into Eglin and established a Corps Forward Command Post as the principal Army player
82-4	AFNORTH (Baltap Area)	TRADOC (20)	Players and controllers from four TRADOC installations.
83-1	6ATAF/LAND-SOUTHEAST	FORSCOM (37)	Principal Army Players: 75th Maneuver Area Command
83-2	AFNORTH	TRADOC (24)	Principal Army Players: CGSC
83-4	2ATAF/NORTHAG	FORSCOM (56)	Principal Army Players: III Corps
83-4	Southwest Asia	FORSCOM (200)	Principal Army Players: 3d Army and XVIII Airborne Corps
84-1	Korea	FORSCOM (119)	Principal Army Players: 87th Maneuver Area Command
84-2	4ATAF/CENTAG	TRADOC (50)	Principal Army Players: CGSC
84-3	Southwest Asia	FORSCOM (227)	Principal Army Players: 3d Army and XVIII Airborne Corps
84-4	Italy	TRADOC (44)	6 TRADOC Schools and Centers
85-1	Korea	FORSCOM (83)	Principal Army Players: 75th Maneuver Area Command and Alabama National Guard (1-152d Armor)

Both the AGOS and the Blue Flag provide excellent opportunities for professional development and training. Both the schools and the exercises develop essential joint operational skills, knowledge, and practice in members of the Fire Support Community ranging from the fire support team at company level to the battlefield coordination element at corps level and above. 

**MAJ Richard Ross, FA, received his commission through ROTC at Texas A&M and is a graduate of the Field Artillery Officer Advanced Course. He has served as a platoon leader, battery commander, nuclear target analyst, and ROTC instructor. Currently, he is the Plans Officer of the Army Advisory Group to the 4441st Tactical Training Group (Blue Flag).**

## DOWNRANGE

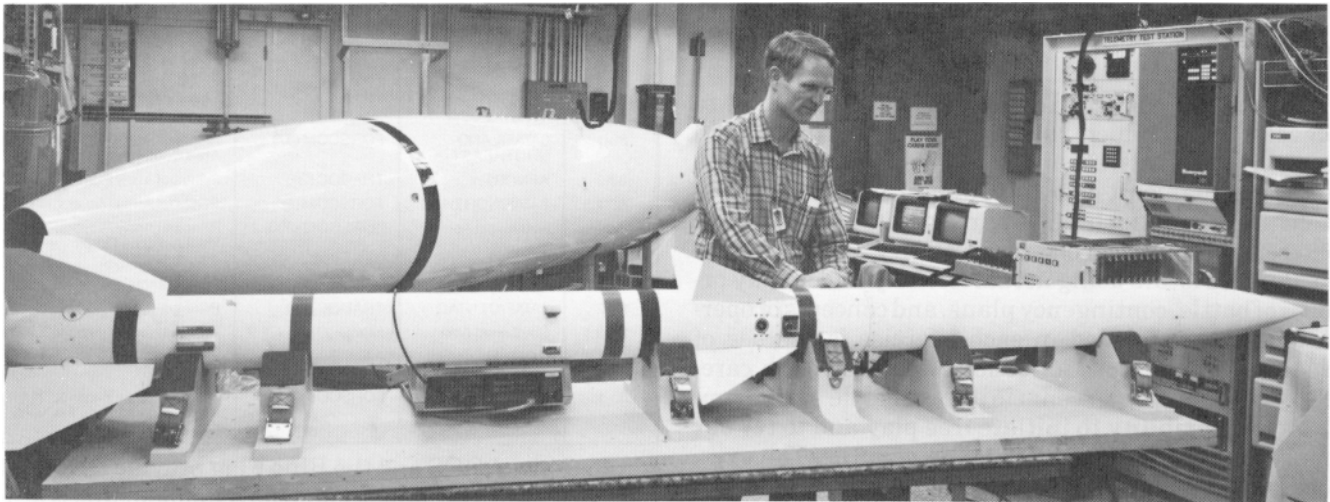
Recent issues of the *Field Artillery Journal* have focused on a single theme such as interoperability and survivability. This magazine tackles the complexities of fire support in joint operations, and future issues will continue this thematic motif. If you have something—a concept, an experience, a solution, an observation—regarding any of the following themes, join the professionals who share their ideas by publishing in the *Journal*.

TACTICS AND TECHNIQUES  
LEADERSHIP  
TRAINING  
DOCTRINE AND DEVELOPMENT  
DEEP ATTACK  
RESERVE AFFAIRS  
APPLIED MILITARY HISTORY  
COMBAT SERVICE SUPPORT

Remember, professionals read, professionals think, and Redleg professionals contribute to the *Field Artillery Journal*.

# Fragments

## FROM COMRADES IN ARMS



An AMRAAM-shaped test vehicle, used to measure alignment of an aircraft carrying a full load of AMRAAMS, is inspected by a Hughes Aircraft engineer. Another vehicle used for airborne testing of the AMRAAM's guidance section is in the background. (Photo by Dick Kaz of Hughes Aircraft Company)

### Taking Joint Aim

The first "full up" versions of the advance medium-range air-to-air missile (AMRAAM) are being tested at Holloman Air Force Base, New Mexico. These tests will be followed by firings from F/A-28, F-15, and F-14 aircraft, all of which are compatible with the weapon.

The AMRAAM AIM-120 will also become the medium-range standard missile for the North Atlantic Treaty Organization under a 1980 agreement signed by the United Kingdom, France, Germany, and the United States.

The AMRAAM, which is expected to enter the US inventory in 1987, features advanced technologies that meet the requirements announced by a joint-service working group. The new all-weather missile has to be within Sparrow dimensions to avoid airframe modifications and has to be able to operate with existing fire control systems in current aircraft. Also, increased weapon reliability is essential.

The 12-foot long, radar-guided AMRAAM weighs less than the Sparrow, travels at higher speeds, and offers greater immunity against electronic countermeasures. (Claudette Olson, *Hughes News*)

### Air-to-Air Tests

The Army is conducting tests to determine the air-to-air combat capabilities of helicopters. Participants in a December 1984 test included representatives from the Marine Aviation Weapons Tactics Squadron One, the Applied Technology Laboratory, the US Naval Test Pilot School, the Army Engineering Flight Activity, and the 5th and 7th Cavalries. In addition to the Army AS-1S Cobra and OH-58A aircraft, the Hughes Model 530F and an MBB BK-117 were tested. Sophisticated electronic equipment was used to monitor the performance of the test aircraft.

Testing included all types of air-to-air combat maneuvers such as horizontal scissors, wing-over attacks, high and low yo-yos, side flares, and quick stops. Maneuvers also included acceleration and deceleration at a constant altitude, dives, rolling pullouts, turns, climbs, pushovers, bob-ups, rearward flight, and accelerating climbing turns.

Results from the evaluations will enable Army experts to assess the maneuverability and agility of current helicopters and identify technical advancements needed to counter potential threats.



The 530F Lifter, the commercial version of Hughes Helicopters' newly introduced 530MG Defender helicopter goes through its paces during an Army testing last December. (Hughes Helicopters, Inc. photo)



The AH-64 Apache attack helicopter.

## Hellfire and Apaches

The Hellfire missile, the prime weapon of the AH-64A Apache attack helicopter, was successfully launched from a production AH-64A at the Yuma Proving Ground in Arizona. Two laser-guided Hellfire missiles were fired, and both scored direct hits.

The Apache can carry up to 16 Hellfire missiles on four wing-mounted pylons, up to 76 2.75-inch folding-fin aerial rockets, and 1,200 rounds of 30-mm ammunition for its M230 chain gun.

The versatile Hellfire missile, which was designed to kill tanks during both the day and night and adverse

conditions, can be series- or salvo-launched. It can also be fired in single rounds with either the launch helicopter or a ground-based unit designating the target.

The quick, maneuverable Apache is being developed by Hughes Helicopters for Navy and Marine applications as well as for Army use. The Army version is equipped with infrared, laser, and other high-technology systems to seek out and destroy enemy armored vehicles with precision. The 13 on-board computers and special helmets permit the pilots to see at night, slave the nose optics to the pilots' head movements, and lock onto targets.



## Sparrow Hawk

Sparrow Hawk is a new weapon being developed by the Army Missile Laboratory that mates the Navy's Sea Sparrow surface-to-surface missile with the launcher and guidance of the Army's tried-and-true Hawk system. The experimental system, which is much smaller than the Hawk, produces more firepower and has the mobility and transportability to meet the needs of rapid deployment forces.

Sparrow Hawk may be fitted with either nine Sparrow missiles or the Hawk's usual complement of three missiles. A beefed-up Hawk launcher has been designed to accommodate the extra weight of the nine Sparrow missiles. In addition to adding more firepower, this launcher can be moved or transported while partially loaded with missiles. It can be towed to a new location or transported on C-130 aircraft while loaded with four Sparrow or two Hawk missiles.



Photos by Ed Peters

A Sparrow-equipped launcher carries five missiles in a clip and four missiles mounted individually on a platform. The clip is removed during moving or transporting and is carried on the truck that tows the launcher. A spare five-round clip is also carried on the truck.

The Sparrow Hawk program is an excellent example of evolutionary development. It is a tri-service—Army, Marine Corps, and Navy—program that capitalizes on the strengths of existing systems to produce a hybrid weapon with far-reaching applications.



Artist's drawing shows the Spike rocket with multiple penetrator warhead being fired from a helicopter.

## Spike Gets New Warhead

The Spike hypervelocity rocket, which has speed and accuracy similar to that of a rifle bullet, is being fitted with a new warhead that will give it the effect of a shotgun blast. The new warhead contains 18 hypervelocity penetrators of tungsten that resemble large nails with fins on the ends.

Spike differs from other Army rockets in that its warhead does not contain explosives. Instead, it has a one-pound tungsten rod that travels 5,000 feet per second and hits so hard that its kinetic energy liquifies the armor plate so that the warhead can penetrate.

Spike was originally built for heavily armored targets; but its small size, speed, accuracy, and inexpensiveness prompted researchers to develop a warhead for use against lightly armored ground targets and aircraft. The rocket is also being considered for use on helicopters and the new high mobility multipurpose wheeled utility vehicle. On the utility vehicle, the rockets will be paired with Stinger guided missiles and high technology sensors in a light air defense system being developed for roof-mounting.

The rocket can be mounted on almost any type of air or ground vehicle. The motor case consists of a metal mandrel wrapped with graphite fiber and then over-wrapped with kevlar (the tough plastic-like material used for body armor), which can withstand the intense internal pressure. The rocket has few metal parts besides the tungsten warhead and the stabilizing petals on the tail that function similar to fins. These spring-loaded petals fold up inside the launch tube. On the underside of the petals are little spin vanes. The exhaust plume impinges on these vanes and gives the rocket a spin rate of 40 revolutions per second as it leaves the launch tube. Hurling downrange at 5,000 feet per second, the rocket's booster burns out at 180 meters, at which time the warhead separates from the booster and flies straight to the target.

In flight tests, Spike has demonstrated the best accuracy ever achieved with a rocket whose motor burns outside the launch tube. A 130-round test program included shots which demonstrated that the rocket can be fired from a helicopter accurately and without damaging the aircraft.

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# Redleg Newsletter

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ITEMS OF GENERAL INTEREST

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## First Field Artillery Battalion Rotation System

The battalion rotation system is designed to create a more stable unit environment in the combat arms force than is possible under the individual replacement system. This is done by keeping the same soldiers together with their leaders for extended periods.

The US Military Personnel Center implemented the battalion rotation system in July 1984 based on a decision by the New Manning System Senior Council.

Battalion rotation will deploy highly trained, experienced, and cohesive combat arms battalions on a programmed schedule. Battalions will serve 36 months in the Continental United States (CONUS), followed by 36 months outside the Continental United States (OCONUS).

First-term soldiers will serve their first 18 months in either CONUS or OCONUS and then will rotate with the battalion for their final 18 months. Career enlisted soldiers and officers will be stabilized in their cohesive operational readiness training battalions for a minimum of 48 months.

After the minimum stabilization period, officers and career enlisted soldiers can be reassigned out of the battalion only during specific periods.

There will be no movement into or out of the battalion during the six months before or after rotation or during the three months before or after the point when first-term soldiers in the battalion are replaced. (MAJ Jim Hayes)



# Map Happy

by Mr. Del Malkie

A Navy rear admiral aviator is inducted as a member of the Honorable Order of St. Barbara, the prestigious group of leaders associated with the patron saint of the field artillery? It didn't figure at first, but it all seemed appropriate when one learned that Rear Admiral E. A. Wilkinson, Jr., is director of the Defense Mapping Agency (DMA). For in today's Army, the field artillery simply cannot function without products and data developed by the Defense Mapping Agency—and the same holds true for other Army units as well as the Navy, Air Force, and Marine Corps.

The Army cartographer's tradition goes back to the earliest days of the American Revolution when General George Washington, on his second day as commander in chief, directed that the engineers map out fortifications around Bunker Hill and Boston. In those days, the soldier shot at what he saw. Through the generations, range of weapons continued to lengthen, so that during the Civil War observers mapped out enemy dispositions and fortifications from tethered balloons—beginning an aerial photography technique that led to cameras in open cockpits in World War I, to automated cameras in World War II, to the very

sophisticated aerial photographic techniques of 1985.

The Defense Mapping Agency was formed in 1972 to combine the map-making elements of all the services into a single unit for more efficient operations and to use computer technology which revolutionized the art of map-making and made it possible to pinpoint the effects of today's modern weapon systems.

DMA provides the millions of paper maps and charts required by US forces worldwide and develops electronic guidance data for virtually all US systems and missiles—including the Army's Pershing II and the military's versatile cruise missiles which may be launched from land, sea, or air.

Today's Armed Services require a wide range of maps in varied detail. Many maps are prepared specifically for individual missions. In 1985, DMA will distribute more than 40 million copies of some 50,000 different maps and charts, plus hundreds of specialized publications for air and sea navigation. In the same period, DMA will develop digital data for some 4.5 million square nautical miles of the surface of the earth to be used in missile guidance and other computerized modern requirements.

A particularly dramatic application of DMA data is in the Army's Firefinder radar system. Using DMA maps and digital elevation data bases, Firefinder operators in mobile vans can identify incoming artillery or mortar rounds, immediately trace the trajectory of the shells in flight, and get accurate coordinates of the enemy firing



Interior of Firefinder mobile van.

positions from their computer readout. They transmit positions of the enemy pieces to counterbattery units—artillery, naval, or aircraft—so that these units can knock out the enemy weapons in short order.

Another significant DMA program features a portable, desk-top computer system using a complex system of aerial photographs, extremely accurate reference points stored in a tape cassette, and an index to pinpoint positions on the ground. Working from known points on this "point positioning data base," technicians in the field can place artillery pieces, for instance, with extreme accuracy and then locate targets as small as a tank or a truck with precise coordinates and altitude.

DMA data is vital to the operation of the positioning and azimuth determining system (PADS) in overland navigation of cannon batteries, the multiple launch rocket system, and the Lance missile system. Specifically, DMA information is necessary to develop an initial location and to update the systems as they move about.

In the DMA pipeline is a significant expansion of a terrain analysis data program, which is vital to a mobile force. Before deployment, battlefield commanders must have detailed information about their future area of operations. They need to know such things as soil composition—rocky or sandy—and

the type of foliage available for cover. They will need to determine whether trees are too dense for tanks and whether a bridge is strong enough to support a jeep, a truck, or a howitzer.

Today's computers have made development and storage of this tremendous volume of detail practicable, and the Defense Mapping Agency is generating such digitized data for hundreds of areas around the world where US forces are or may be deployed. These massive "data banks" are being designed so that stored information may be recovered in the format required for various users and weapons systems.

The cruise missile, for instance, is guided by terrain contours. It flies close to the ground, under enemy radar, and as the missile nears its target area a radar altimeter takes periodic readings and compares what it sees with an on-board map prepared by DMA. The cruise missile then corrects its course as needed and speeds to its target with great accuracy.

The Pershing II, on the other hand, is guided by a radar return scene, similar to that used by manned aircraft. Dropping from a high altitude, the Pershing's radar takes a series of readings, compares the radar return with scenes prepared in advance with DMA data, and corrects its course as it descends on the target. Again, the accuracy is remarkable.

Even different versions of the same area must be mapped by DMA. When close air support is needed by ground forces, for instance, both soldiers on the ground and pilots in the air are guided by matching DMA maps known as Joint Operations Graphics (JOG). Of course, these JOGs include the same coordinates and checkpoints for ground and air elements, but are modified for the different users—for instance, a hill is measured in meters on maps for the soldiers and is measured in feet for the pilot's altimeter.

Those charts used by helicopter or airplane pilots are printed in special ink to make them visible under the red lights aircrews use to protect their night vision.

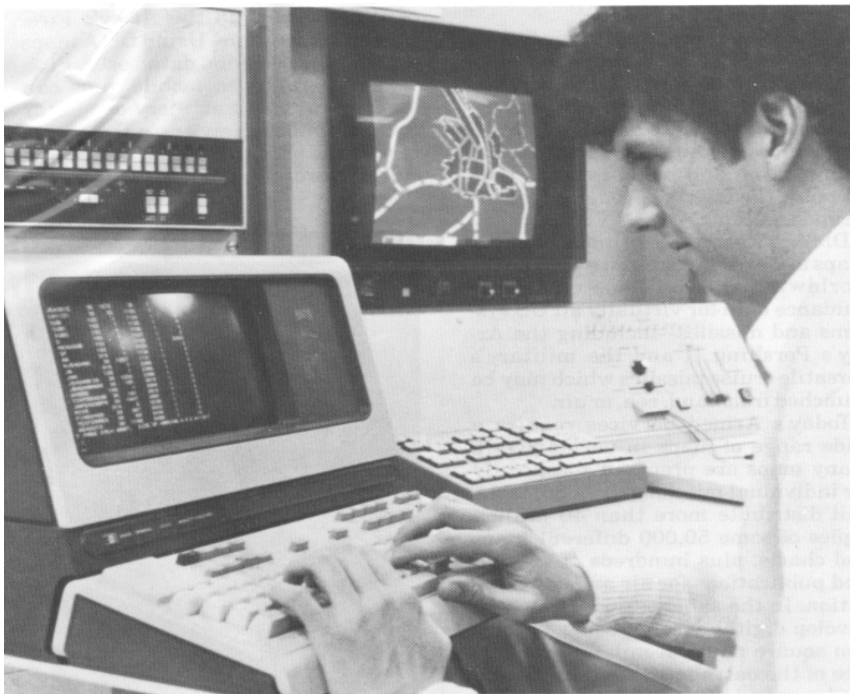
When American forces are deployed overseas, they are often required to work with Allied forces. DMA produces maps with details printed in two or even three languages so that troops from different nations can immediately identify those towns, roads, or forests used in their combined operations.

When military units go into an area on very short notice, DMA crisis support teams provide the maps and charts needed in as little as 2 to 72 hours. If maps in stock are dated or do not contain specific details required by the deployed units, limited special maps are produced rapidly with the specifics required.

A wide variety of materials has been used as map printing stock over the years. In addition to the standard, resilient wet-strength paper maps, silk maps were made for World War II Army Air Corps pilots, plastic escape and evasion maps for ground troops, and even three-dimensional plastic relief maps for special operations.

The traditional paper maps will likely be around for some time, but the DMA products delivered to Army field units will soon be computerized. Currently being developed by the Army's Engineer Topographic Laboratories at Fort Belvoir, Virginia, is a new portable quick-response multicolor printer unit on which xerox-like color maps will be reproduced in the field. In the future, digital information from DMA will be used in preparation of these maps. Someday this mapping data will be transmitted via satellite and received by map producing units around the world—complete with real-time, updated information provided by aerial photography.

An 18-satellite Global Positioning System (GPS), currently under DOD development, will have special application for the Army, as well as other



**Defense Mapping Agency technician checks the data on an existing program.**



military elements. With three or four of these satellites visible at any one time from any point on earth, relatively small, portable "black box" receivers can locate points within a 15-meter accuracy—horizontally and vertically, moving or standing still, in all weather. These new black boxes will be carried by ships and planes and by soldiers in jeeps and tanks.

Field units can use the GPS to find their coordinates quickly and, working with DMA standard maps, relate their positions to other friendly and unfriendly units. Pinpointing firing locations for artillery units will be virtually immediate, and locating ground elements for close air support will be much more efficient and also safer for friendly forces.

The Global Positioning System will be invaluable to commanders using the Army's new positioning locating and reporting system (PLRS); for instance, a brigade commander will be able to spot his exact location on a map with GPS and then plot locations of his battalions and companies on a television screen in his command post.

GPS and PLRS can revolutionize management of artillery assets under the move-and-shoot concept by reducing exposure to enemy monitoring and permitting more frequent movement and more accurate area coverage by coordinated units.

The Defense Mapping Agency produces maps, charts, and geodetic data for the Armed services and government agencies with a work force of approximately 8,500 highly skilled civilians and 500 military specialists. While DMA people work in some 50 locations around the world, most are located in two production centers: a



Designer examines topographic coordinates in one of the DMA production centers.

Hydrographic/Topographic Center in Brookmont, Maryland, and an Aerospace Center in St. Louis, Missouri. Worldwide map distribution is managed from the Office of Distribution Services also located in Brookmont. The Defense Mapping School at Fort Belvoir trains hundreds of personnel annually from all services, and an Inter-American Geodetic Survey at Fort Sam Houston has worked with most Latin-American nations on mapping projects since the late 1940s.

Headquarters of the Defense Mapping Agency is at the US Naval Observatory in Washington, DC. As a joint DOD agency, DMA has military personnel assigned from all four services, and the post of director rotates among general officers from the four services. ✉

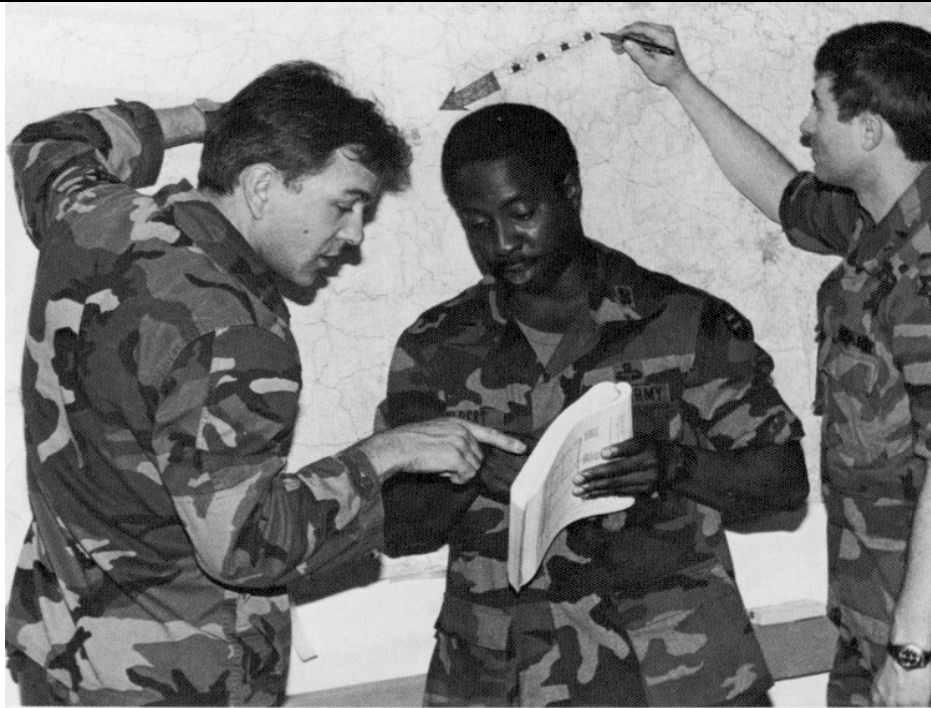
**Mr. Del Malkie is the Director of Public Affairs for the Defense Mapping Agency.**

## KEEP IN TOUCH—READ THE FA JOURNAL!



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# WARRIOR PREPARATION CENTER

## Air Force and Army Hammer Out a Close Cooperation

by General John R. Galvin

One way, perhaps the most important way, to achieve a major advance in combat capability within current North Atlantic Treaty Organization (NATO) force levels is to improve the interaction of air and ground forces in an AirLand Battle.

A study of air-ground coordination since the beginnings of airpower would show, I believe, that air-ground teamwork has never reached its great potential in any sustained campaign. Essentially, air and ground forces have been two separate presences on the battlefield. The vaunted "blitz" was not the coordinated effort that German propaganda at the time made it seem to be. It was heavy in close air support at the expense of battlefield interdiction, and a lack of air-ground communications made even the close support unpredictable. As the Luftwaffe of World War II gradually disintegrated, the Allies did not employ

their unprecedented air power in a coordinated air-ground team effort. Even in the breakout from Normandy, probably the best example of what we would now call battlefield air interdiction in support of a major offensive, army-level ground commanders were not involved to any great extent in the planning and execution. In his book *Banks of the Suez*, Bren Adan, commanding an Israeli armored division during the 1973 war, writes that when his air support showed up, he was grateful for the help but really had little control over the timing or targets.

For one thing, air and ground commanders have not had the reconnaissance and the intelligence resources to plan or conduct anything more than a generalized air interdiction campaign; these resources are now becoming available in terms of a broad set of capabilities for gathering and analyzing intelligence—although the means available are not yet well coordinated. For another thing, ground and air

forces were not as powerful as they are today. NATO forces today possess an ability to deliver ordnance at devastating levels—if employed as a critical part of a coordinated team effort. The increased capability to provide field commanders with far more reliable intelligence and far more air power means that the ground force commander can no longer operate in splendid isolation in the development of his battle plan. The air forces must be intimately involved. Both ground and air force commanders must have a common view of how the battle will be fought.

While we know the fundamental procedures, we do not fully understand the potential for integrating our own systems with those of the Air Force, and I do not see that the blue suiters do either. In Vietnam, our most recent occasion for ground-air interoperability, we scheduled close air support by ordering up "preplanned" strikes 24 hours in advance. We guessed at possible targets, knowing that we would be able to convert these "preplanned" sorties to "immediate" when they arrived in our area. In effect, we were "using" the system. Rather than create a better way, we were bureaucrats: we accepted the existing rules, no matter how awkward and unrealistic, and simply bent them to our own use. The preplanned strike requests were our insurance that we would have air support over us—whether we needed it or not. By forcing the Air Force into this mode we were ensuring an administrative rather than a tactical employment of air support. One lesson we might learn from this is: *Where a powerful fighting force is employed in a small war, it does not regain a tactical approach, but in fact it becomes more bureaucratic.*

Although we have put great emphasis on AirLand Battle in recent tactical developments, the tendency has been to continue on our separate ways in the ground and air forces; that is, to neglect joint planning and execution, especially of battlefield air interdiction. From the ground point of view, it is easier to say, "We'll take care of the close-in battle; the Air Force will take care of the rest." We cannot, however, leave this part of the battle to air power alone. It is too closely related to the close-in battle. This is the essential meaning of AirLand Battle: It is the combined effort of all ground and air forces, directed against the enemy in-depth as part of an overall plan that includes deep, close-in, and rear battles. The recent Memorandum of Agreement between the Chiefs of Staff of the Air Force and Army shows a

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great attitude of cooperation and a recognition that we need to move *now* to get together tactically in AirLand Battle doctrine and joint training.

The Air Force has recognized also the tendencies to bureaucracy as the distance from WWII grows longer, and it has responded to this danger with the creation of *Project Warrior*, which got its start when Air Force leadership became increasingly concerned that the ever-expanding technology would move the pilot ever farther away from face-to-face confrontation with the enemy, making him more a battle manager than a fighter. The result of this concern was a training concept that encourages detailed knowledge of the potential threat strategy, tactics, weapon systems, and psychology—a program that extends to *all* Air Force personnel. A series of pamphlets brings home a greater sense of military history and an increased understanding of the role of the Air Force combat leader, emphasizing three goals:

- Create an environment for thinking and planning in warfighting terms.
- Identify ways to improve the warfighting spirit.
- Encourage an improved understanding of the theory and practice of war with particular emphasis on the contributions of airpower and the roles of Air Force people.

With Project Warrior, the Air Force has led the way in developing the Warrior Preparation Center and bringing the Army on board. The center is meant to operate on several levels. It is an initiative by Headquarters, US Air Forces in Europe and US Army Europe to provide European battle commanders with opportunities to gain experience in force employment in the NATO environment. The center provides a first-time opportunity for commanders to explore the possibilities inherent in a total integration of forces in the prosecution of a potential central European conflict. Located in three newly-constructed buildings at Ramstein Air Force Base, Germany, it consists of two integrated sections: the threat training facility, to provide instruction on threat status and countermeasures as well as hands-on experience with Warsaw Pact weapon systems, and the battle commanders' training facility, with instruction and practical experience of the principles and procedures of coalition warfare through the use of battle simulation.

The simulation facility accommodates collocated Air Force and Army

staffs. Since there exists no single game that allows ground and air to work together (another indicator), the center has combined three different simulations using two separate VAX 11/780 computers. The McClintic Theater Model is an attrition-based simulation, originally designed at the Army War College in 1979-80. It models ground maneuver and combat; fire support; obstacles; aviation; short-range air defense; electronic warfare; deception; nuclear, biological, and chemical warfare; personnel; and logistics. It is the first computer game to come to the field with the advantage of allowing players to enter the program and make changes. This is a great capability; it is the players, tacticians themselves, deeply involved in the game, committed to it, who have the motivation and the experience to suggest the changes that will bring the model closer to tactical reality. The McClintic model is supplemented by an air defense simulation that plays offensive air, counter air, and air-to-air engagements. This model was used because the computer load was too much for McClintic alone. A third computer game, the intelligence collector package, is a stand-alone model with simulated electronic, human, and communications intelligence capabilities, including all currently available Army and Air Force systems.

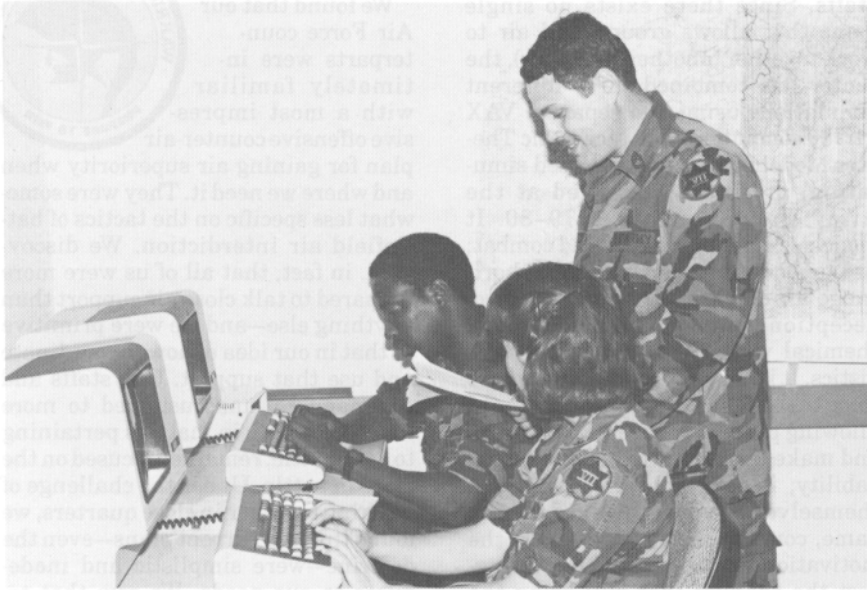
This was a trailbreaking combination of three simulation systems, and we experienced the usual amount of "bugs" during four practice runs, but by April of this year—in time for the first full-up exercise—we were well integrated. Since this was the first run of the McClintic model at the center, we limited ourselves to a single corps rather than, for example, the two German and two American corps of Central Army Group. Obviously, it would be far better to have extensive NATO participation, and this is one of the future goals of the center.

Intelligence integration became a major interest in the two-week exercise. The computer was programed to handle intelligence collection and reconnaissance assets of both the Army and Air Force. Within the intelligence computer mode, subroutines were established by 12 separate collection or reconnaissance systems. Collection and reporting routines were current with capabilities as they exist in the theater today. Previously in our command post exercises, we needed elaborate stubby pencil drills to handscript the threat activity. With the McClintic model, game play was not constrained by the requirement for manually dealing with each move and countermove.

We found that our Air Force counterparts were intimately familiar with a most impressive offensive counter-air plan for gaining air superiority when and where we need it. They were somewhat less specific on the tactics of battlefield air interdiction. We discovered, in fact, that all of us were more prepared to talk close air support than anything else—and we were primitive at that in our idea of how to coordinate and use that support. Our staffs and commanders, unaccustomed to more than lip service in matters pertaining to deep battle, remained focused on the close-in battle. Under the challenge of working together in close quarters, we found that our current plans—even the doctrine—were simplistic and inadequate to our needs. We saw that together we could do far more. We began to talk tactics. The exercise became a running conversation. With everything in the same building, we were able to walk from one "cell" to another and talk over our problems. Under the pressure of a battle situation that posed problems and required answers, all of us felt the need to talk and interrelate. The learning curve was close to vertical.

The most obvious missing link was the workaday communications between air and ground at the level of tactical planning and operations. We took a hard look at our air liaison officers (ALO) and asked ourselves the question, "Are we using them to best advantage?" We have allowed the planning and execution of air support to sink into a predictable routine, and in this environment the ALO has been more a dispatcher of aircraft than a tactician, planner, and adviser to the ground commander. Accustomed to being consulted only after the battle plan is well on its way to completion, most ALO's have not tried to enter the net until asked, and at that point they have been content to respond with quotations of numbers and times from the tasking order, a document that changes little from day to day, except as it reflects (administratively) aircraft availability. In more or less the same manner, the ground liaison officer finds that he is viewed as a repository of Army lore and is periodically asked to provide information, but his duties for the most part are administrative.

Near the end of the second week, we held what amounted to an impromptu joint commander's conference. The 15 or so key leaders of VII Corps and 17th Air Force met for a four-hour discussion



**Players check the computer for the order of battle of opposing forces.**

that continued for seven hours. Our Warrior Preparation Center simulation took on a new role: In addition to serving as a basis for building teamwork, mutual understanding of procedures, and a close interface of the several echelons of joint-combined command and control, on this day it became a vehicle for tactical and doctrinal discussion and development. It was an exhaustive session, covering virtually every conceivable aspect of our ground-air interrelationships in prosecuting the AirLand Battle. We moved much, much closer to the ideal of a comprehensive tactical interface and a team effort.

We had hoped that the lead-in exercise, scrubbing down our techniques for using the McClintic and Air Defense Simulation models, and the game itself, would be a unique chance to work out our procedures. It was with surprise—and even elation—that we found the ongoing game could indeed serve as a vehicle for far-ranging discussion of everything from techniques to doctrine. In fact, the senior officer workshop becomes a crucible. The game is the tangible, concrete challenge that brings the abstractions of doctrine out on the table for scrutiny. Faced with the need to solve immediate problems, the players are quick to cross service barriers and work out answers. Senior officers who become involved in the game are likewise motivated. We may find that a workshop coincident with the game is as important as the game itself.

As always, the battle commander has to have the "feel" for the situation that allows him to anticipate where and when to apply air power. The key here is his "shaping" of the close-in

battle; that is, controlling or influencing, through combat pressure, the moves of the enemy so that at the right moment he can seize the initiative and destroy him. This molding of the battlefield allows the ground commander the freedom to plan for the most effective use of his own forces and his air support.

The close-in battle, the deep battle, and the rear battle form an integrated whole; and each must be fought in accordance with the commander's overall concept. The deep battle establishes the framework in which the close-in battle is fought. Success in the deep battle—delaying, disrupting, and destroying follow-on forces—provides windows of opportunity for offensive action in the close-in battle. Planning of the deep battle precedes the detailed planning and preparation for the close-in battle. Deep and close-in battles may be executed simultaneously. If the commander estimates that the deep battle cannot be, or is not being, fought successfully, he must decide whether or not the close-in battle can be fought as planned with the resources available. Additional combat power may be required to ensure the success of the close-in battle, and if it is not available the commander may be forced to change his plan—to defend, delay, or withdraw—in order to create a more favorable opportunity for later offensive action.

We must recognize the absolute requirement for joint-combined operations. In the past, we ground commanders have given lip service to this, but in actuality have made our plans in such a way that we could execute them unilaterally if necessary. Also, the concept of deep battle does not

stand alone. It is part of the integrated AirLand Battle; it should be seen as an extension of the close-in battle in time, depth, and attack assets. It is a vital part of the corps commander's battle plan for the next 72 hours. As the corps receives the enemy attack, it will focus on the isolation and destruction of the first echelon army (close-in battle) while disrupting, disorganizing, attriting, and delaying follow-on forces. At the proper moment, the defending corps will seize the initiative and prepare for rapid follow-on actions to prevent the enemy's recovery. In defensive operations, we do not fight the deep battle simply to attrit the enemy or merely to disrupt and disorganize him. The tactical purpose for the deep battle should incorporate this attrition factor, but more importantly, it should be tied into the tactical plan for the close-in battle.

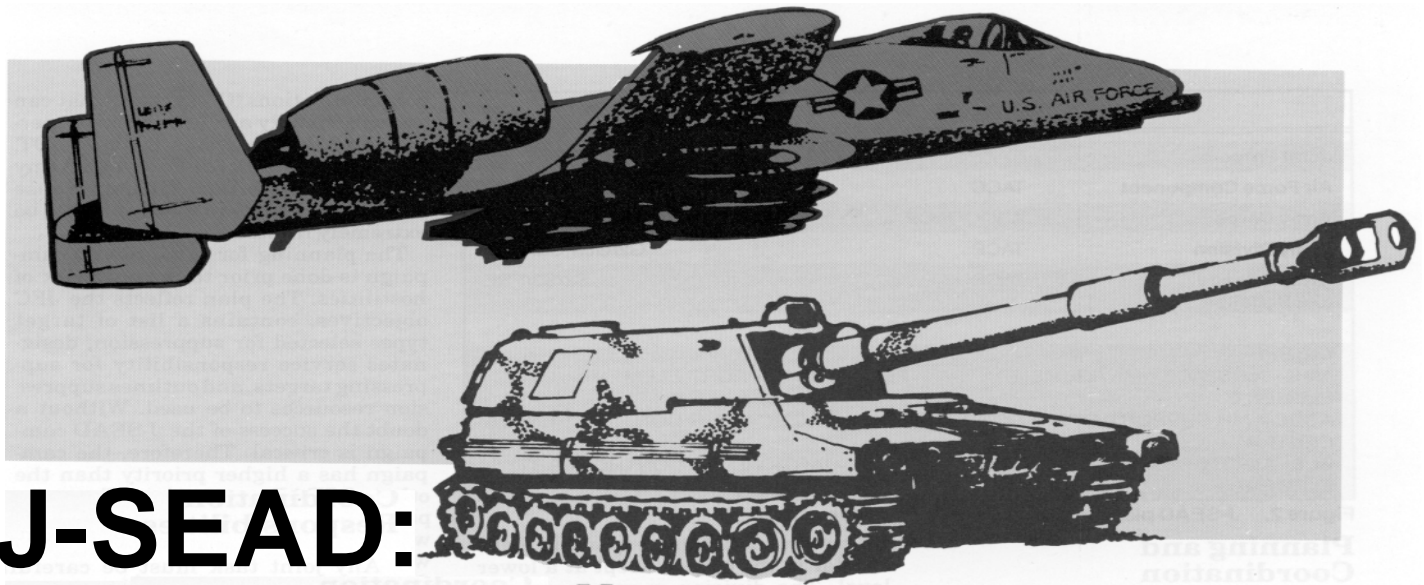
Given that air support will not be unlimited, it will always be necessary to prioritize its use. By determining *which* enemy forces can affect the course of the close-in battle and by studying their dispositions and the factors of mission, enemy, terrain, troops available, and time, (METT-T), the ground and air commanders can decide what tactic to use against these forces.

The Warrior Preparation Center is a prime example of the kind of training we need in other areas in the future. With the blossoming complexities of joint-combined arms tactics, and with the increased importance of the "operational art"—campaign planning at corps-level and higher—we need places where we can bring in the scattered battlefield counterparts to work out "game plays" that best use their talents and the capabilities of their fighting systems. We must ensure a common understanding of AirLand Battle concepts. That requires, among other things, a common vocabulary and officers, air and ground, who have studied and trained together. ✉

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# J-SEAD: Doing It Together

by Major Bob Ashey, USAF

On June 15th of last year the Chiefs of Staff of the Army and Air Force signed a Joint Service Agreement (JSA) delineating responsibilities for joint suppression of the enemy's air defenses (J-SEAD). The JSA formalizes key provisions of TRADOC TT 100-44-1 (J-SEAD) as joint Army and Air Force doctrine which drew heavily on our experiences in Southeast Asia and the Israeli-Arab wars of 1967 and 1973. In Vietnam we saw that if ground SEAD assets were coordinated with air assets, aircraft loss rates dropped dramatically and, likewise, that the air support given to the Army increased just as strikingly. In other words, the combining of Army and Air Force SEAD resources produced a synergistic effect. In 1973 the Israeli Air Force (IAF) suffered severe losses attacking targets on the East bank of the Suez Canal. It was not until the Israeli Army attacked the Egyptian air defenses that the IAF was able to provide support. The Israeli Forces worked together to counter the air defenses and crossed the Suez Canal. Thus history and a little common sense tells us that if the Air Force and Army do it together and give the job to the one who can do it best, we both win.

## Execution Responsibilities

The J-SEAD document assigns each service areas of responsibility on the battlefield. As depicted in figure 1, the Army has primary execution responsibilities

for J-SEAD to the limits of observed fire. The Air Force has secondary responsibilities in this area—the Air Force agrees that the Army can best defeat the surface-to-air threat near the forward line of own troops (FLOT). Therefore, the Army should develop the doctrine and obtain the resources needed for that mission. Why?

Because near the FLOT, the Army has the better sensors and weapons to kill the threat. However, beyond the range of observed fire the Air Force has primary J-SEAD responsibility including suppression for Army Aviation, and the Army has secondary responsibility out to the limits of unobserved indirect fire.

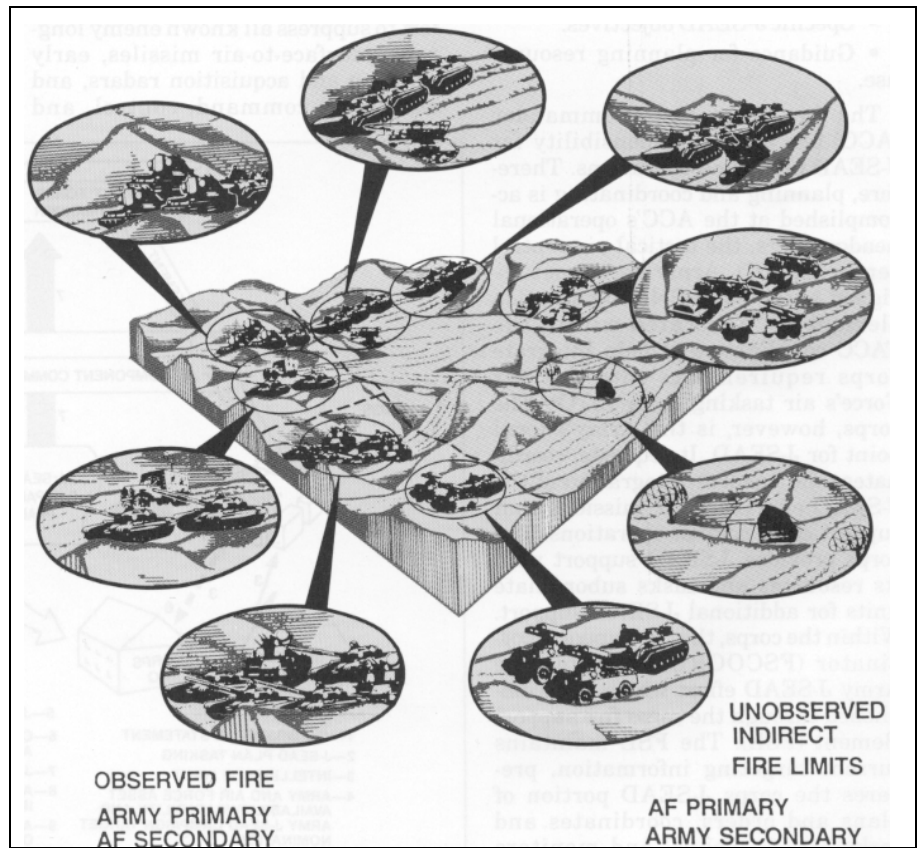


Figure 1. Army and tactical air force responsibilities

Illustration by Fred Thayer

Air Force		Army
<b>Joint Force</b>	JOINT FORCE HEADQUARTERS	
<b>Air Force Component</b>	TACC	BCE
<b>Army Corps</b>	ASOC/TACP	G2/G3/FSE/AME
<b>Army Division</b>	TACP	G2/G3/FSE/AME
<b>Army Brigade and Battalion</b>	TACP	S2/S3/FSE
<b>Legend:</b>		
<b>AME</b> —AIRSPACE MANAGEMENT ELEMENT	<b>FSE</b> —FIRE SUPPORT ELEMENT	
<b>ASOC</b> —AIR SUPPORT OPERATIONS CENTER	<b>TACC</b> —TACTICAL AIR CONTROL CENTER	
<b>BCE</b> —BATTLEFIELD COORDINATION ELEMENT	<b>TACP</b> —TACTICAL AIR CONTROL PARTY	

Figure 2. J-SEAD planning and coordinating elements

## Planning and Coordination Responsibilities

Any joint task must be carefully planned and coordinated to be effective. The J-SEAD planning and coordinating elements are shown in figure 2. Current J-SEAD doctrine delineates planning responsibilities starting with the Joint Force Commander (JFC). The JFC's guidance regarding J-SEAD should include:

- An assessment of the surface-to-air threat.
- Specific J-SEAD objectives.
- Guidance for planning resource use.

The Air Component Commander (ACC) has overall responsibility for J-SEAD plans and operations. Therefore, planning and coordinating is accomplished at the ACC's operational headquarters, the tactical air control center (TACC). Army personnel assigned to the battlefield coordination element (BCE) located within the TACC coordinate and help integrate corps requirements into the Air Force's air tasking order (ATO). The corps, however, is the Army's focal point for J-SEAD. It requests, coordinates, and ensures integration of the J-SEAD efforts for air missions that support corps combat operations. The corps provides J-SEAD support with its resources and tasks subordinate units for additional J-SEAD support. Within the corps, the fire support coordinator (FSCOORD) manages the Army J-SEAD effort which is accomplished through the corps fire support element (FSE). The FSE maintains current targeting information, prepares the corps J-SEAD portion of plans and orders, coordinates and tasks attack means, and monitors execution.

The division has responsibilities similar to the corps' except at a lower level. The division requests, coordinates, integrates, and conducts J-SEAD operations within the division area. It also requests J-SEAD support from the corps and the Air Force when required.

## Categories of J-SEAD

In discharging their responsibilities both components use three categories of J-SEAD: campaign, localized, and complementary.

- **The J-SEAD campaign.** The J-SEAD campaign is a theater-wide effort to suppress all known enemy long-range surface-to-air missiles, early warning and acquisition radars, and associated command, control, and

communications (C<sup>3</sup>) systems that can engage friendly airborne sensors operating on the near side of the FLOT. This includes both Air Force and Army airborne platforms. Without these sensors our ability to see deep would be extremely limited.

The planning for the J-SEAD campaign is done prior to the outbreak of hostilities. The plan reflects the JFC objectives, contains a list of target types selected for suppression, designates service responsibility for suppressing targets, and outlines suppression resources to be used. Without a doubt the success of the J-SEAD campaign is critical. Therefore, the campaign has a higher priority than the other J-SEAD categories. The campaign's objective should be completed within the first two or three days of the war, thus ensuring we have the freedom to operate our sensors on our side of the FLOT. Figure 3 shows functional relationships used to develop the J-SEAD campaign plan.

- **Localized J-SEAD.** Complementing the J-SEAD campaign is localized J-SEAD which is conducted to suppress short- and medium-range air defense radars, and C<sup>3</sup> systems that threaten specific Army or Air Force missions. Localized J-SEAD operations are confined to the geographic area adjacent to a specific target. Its objective is to increase the effectiveness of individual air missions. A good example is a close air support (CAS) attack by Warthogs (otherwise known as A-10s) against a tank battalion. The

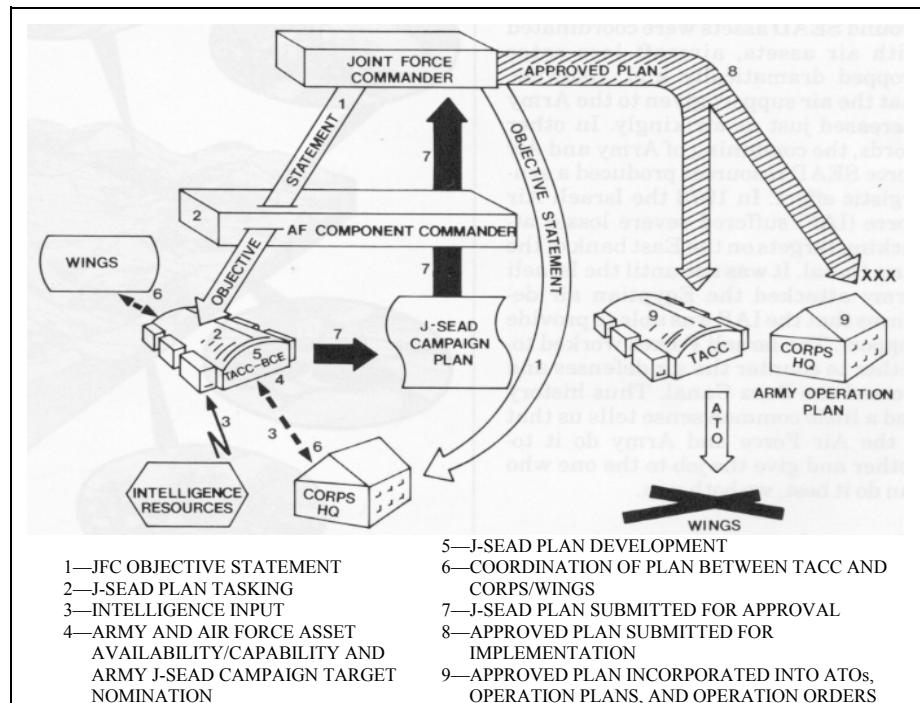


Figure 3. Functional relationships for J-SEAD campaign plan development.

localized J-SEAD effort would most likely use artillery to suppress any known short- or medium-range surface-to-air missiles or antiaircraft sites in the target area. Clearly, this would increase the effectiveness of the A-10s resulting in more tanks killed.

Planning for localized J-SEAD must be integrated with a specific air mission. It originates with the echelon that initiates the request for air support and uses the existing Tactical Air Control System/Army Air Ground System (TACS/AAGS) structure.

The TACC plans Air Force suppression and coordinates through the BCE for Army J-SEAD support. The Army, on the other hand, requests Air Force support for Army aviation missions using the same structure as for requesting CAS; i.e., the TACS/AAGS structure.

The availability of Army suppression is determined by the FSCOORD in conjunction with the appropriate operations officer. The Army's primary means of suppression is field artillery with attack helicopters, tanks, and other maneuver forces as additional suppression assets. Any shortfall should be passed to the TACC for the Air Force to fill. The important point is the Air Force can request Army J-SEAD support, and the Army can request Air Force J-SEAD support.

- **Complementary suppression.** The final category of J-SEAD is complementary suppression which is graphically depicted in figure 4. This form of J-SEAD is used to counter surface-to-air threats that have not been detected in time to plan a suppression attack. These are threats that pop up unexpectedly during a mission and must be suppressed. There are two types of complementary suppression: aircrew self-defense and targets of opportunity.

When under imminent or actual attack aircrews have the inherent right to defend themselves. The Army and Air Force recognize that it is vital for aircrews to counter the threat without prior coordination. Therefore, aircrews can attack such targets between the FLOT and the fire support coordination line (FSCL) without additional coordination provided the target is visually or sensor confirmed, ordnance is confined to the immediate target vicinity, attacks are conducted outside no-fire areas, and the air or ground commander has not prohibited such attacks. This is significant. The Army and Air Force have agreed that suppressing surface-to-air targets is so important that the normal means of coordinating

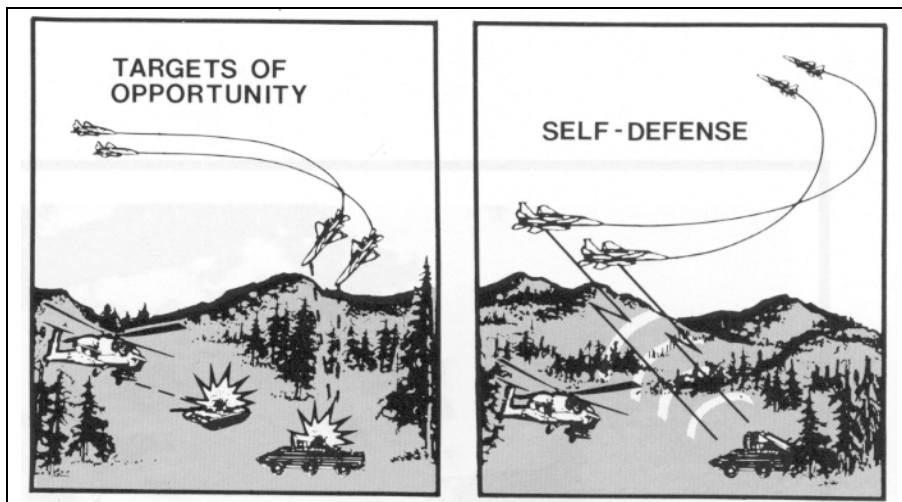


Figure 4. Complementary suppression.

air attacks inside the FSCL can be bypassed.

The second type of complementary suppression applies to targets of opportunity. J-SEAD targets of opportunity are threat systems that appear during combat and have not been scheduled for suppression. Many of these air defense systems are highly mobile and are fleeting targets. The same rules pertaining to self-defense apply to suppression of targets of opportunity. However, due to mission commitments, aircrews will seldom be in a position to suppress targets of opportunity. Therefore, the J-SEAD agreement requires aircrews to pass the target location to whatever agency is controlling the mission. Often this agency will be a forward air controller (FAC). As an integral part of the AirLand operation, FACs have the authority to request suppression of targets of opportunity through Army fire support channels. Targets of opportunity suppression will be a major role for field artillery because it has the response and flexibility to fire on these targets as they are located.

## Ammunition Expenditures

Has anyone thought of what J-SEAD requirements will do to our ammunition expenditure rates? The answer is yes. Currently, the Joint Studies Cell at US Army Training and Doctrine Command is examining what the Army's contribution to J-SEAD will do to ammunition expenditure rates. Their study is in response to Initiative 15 of the 31 joint development initiatives agreed to by the Chiefs of Staff of the Army and Air Force (the July 1984 edition of *ARMY* has a good description of this agreement). The Joint Studies

Cell expects to have an answer by late spring.

## Conclusion

The important concepts and procedures contained in the J-SEAD document formally recognize what we all know—modern surface-to-air defenses are so lethal that it takes the combined resources, used in an intelligent manner, of the Air Force and Army to defeat them.

The three categories of J-SEAD each has a specific and complementary objective. The campaign gives us freedom to use the skies on our side of the FLOT while localized J-SEAD improves the effectiveness of specific air missions by defeating their air defenses. Finally, complementary J-SEAD provides the means to eliminate those targets that we did not foresee.

The J-SEAD agreement is an excellent example of Army-Air Force cooperation. However, if we do not study the document, incorporate it into field manuals, and practice J-SEAD during exercises, the real value of J-SEAD will never be realized. ✉

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**Tackling the Tough Ones . . . Tactics and Techniques?  
Tear into our May-June issue.**