Field Artillery

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A Professional Bulletin for Redlegs

September-October 2003

OPERATION Iraqi Freedom

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INTERVIEWS:

ARTICLES/POEM: Operation Iraqi Freedom

FEATURE:

Front Cover: Marine LCpl Oscar Hernandez, an artillery observer with M/3/11, receives a message about abandoned Iraqi T-55 tanks outside of an oil refinery in Az Zubayr, 23 March. *Photo by LCpl Kevin C. Quihuis, Jr.*

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FA Priorities After OIF

Shortly after the conclusion of major combat operations (MCO) in Iraq, an initial Army report clearly described the tremendous impact the Field Artillery had during Operation Iraqi Freedom (OIF): "Artillery played a key and essential role. Every commander cited artillery as indispensable during the fight."

The Field Artillery—skilled leaders and heroic soldiers displaying exceptional professional competence, equipped with a highly effective command and control system, operating precise target-locating capabilities and armed with lethal delivery systems—*was* "indispensable during the fight." In OIF, the FA was a fully integrated and effective element of the joint and combined arms team.

US Army FA units conducting MCO included one corps artillery, two division artilleries (Div Artys), three FA brigade headquarters (one of which had a nonstandard mission of sensitive site exploitation) and 11 FA battalions. The USMC was supported by a substantial Marine artillery complement, including five battalions and multiple separate batteries. Our allies from the United Kingdom added an additional 66 howitzers organized into three battalions. Another US Army Div Arty, an FA brigade and 10 additional FA battalions joined the force in support of stability and support operations (SASO) in Iraq and have done an absolutely *magnificent* job while conducting a full range of missions in a continuing hostile situation.

It has been suggested that this war was won with less artillery than was employed in Operation Desert Storm, and that is certainly true. It is also true that we won with fewer divisions, fewer tanks and fewer infantry fighting vehicles (IFVs). In fact, the ratio of US artillery pieces to US tanks and IFVs in OIF was the same as or higher than the ratio in Desert Storm.

On the other hand, we fought an Iraqi army that was very different than the force we fought in Desert Storm. It fought distributed throughout a much larger battlespace and employed very different tactics, often in adverse weather conditions. A combination of fires capabilities that included joint fires integrated with the artillery's close supporting and long-range fires was very effective in dealing with this threat. The great artillerymen in OIF emerged victorious while fighting for a longer time with fewer resources over greater distances against a dangerous enemy who was less predictable.

Each of the US Army's cannons and launchers delivered fires at a higher rate and greater volume per system than their Desert Storm counterparts. The Army's 62 155-mm howitzers fired almost 14,500 rounds—the 54 Paladins fired 13,923 and the eight M198s fired 516 rounds. The 62 105-mm M119 howitzers fired 4,107 rounds. Our 73 multiple-launch rocket systems (MLRS) fired 857 rockets and 414 Army tactical missile system (ATACMS) missiles. Additionally, American Marine Artillerymen delivered 19,883 rounds. By all reports, the effects of artillery fires were devastating.

Field Artillery accomplishments have been documented in detailed after-action reports (AARs) submitted by the commanders of our maneuver and artillery formations at every echelon as well as in numerous lessons learned efforts. These articles and reports are being reviewed in detail to address required warfighting capabilities and share the methodologies our Field Artillery warriors found successful in combat. Here are some of our most significant conclusions to date.

Doctrine. We must develop capabilities and procedures to support high-tempo offensive operations over extended distances. Further, we must develop procedures to support Special Operation Forces (SOF) with fires and influence joint fires doctrine, including targeting, fire support coordination measures (FSCM) and kill box methodologies. We also must document the role of Field Artillery units in SASO.

Training. We must sustain realistic training systems, improve the availability of joint fires and the replication of fires in our Combat Training Centers (CTCs), train on the transitions from MCO to SASO, train all soldiers on the call-for-fire as an essential task, and train and certify Universal Observers who can apply all categories of joint fires.

Leaders. We must sustain the training programs that produced outstanding OIF leaders, nurture leaders who can adapt to the changing conditions of the contemporary operating environment (COE) and develop additional expertise in integrating joint fires and effects.

Organizations. We must improve the ability of cannon batteries to operate independently with nonstandard missions, properly man fires and effects cells (FECs), recognize the agility an FA brigade headquarters provides forces in combat, increase our target acquisition capabilities and fix combat service support (CSS) to FA units.

Materiel. We require long-range communications and an improved command and control vehicle. Our delivery systems require longer range with precision, and we need to improve our targeting capabilities, both mounted and dismounted. We also need to simplify and integrate our digital systems and improve our gun display units (GDUs) and lightweight fire direction systems. Further, we need to enhance our munitions capabilities, resolve the unexploded ordnance issue and improve soldier and system survivability.

Soldiers. We train soldiers to be warriors—soldiers *first*—and provide them all the training and equipment they require, regardless of specialty or component.

The magnificent Field Artillerymen who fought this war have done a remarkable job of documenting their stories, sharing their experiences and providing their professional insights on the tactics, techniques and procedures that worked for them in OIF. We accept the challenge of enhancing capabilities so the Field Artillery can continue to *Create the Thunder!*

Overview: Field Artillery in Operation Iraqi Freedom

By Lieutenant Colonel William G. Pitts

In an unprecedented campaign, V Corps units—the 3d Infantry Division (Mechanized) (3d ID), 101st Airborne Division (Air Assault) and elements of the 82d Airborne Division (plus FA from the 41st, 212th and 214th FA Brigades)—fought their way from the Kuwaiti-Iraqi border on 21 March 2003 north and seized Saddam Hussein's presidential palaces in Baghdad in just 18 days with major combat operations ending three days later. The I Marine Expeditionary Force (I MEF) with its 1st Division (including the 11th Marines) simultaneously fought north from the Kuwaiti-Iraqi border to the southeastern part of Baghdad and seized Rasheed Airbase, a military complex. Simultaneously, the I MEF Marines of Task Force (TF) Tarawa (with the 1st Battalion, 10th Marines) crossed the Kuwaiti border rapidly to secure an airfield in southern Iraq and then followed the 3d ID route north to An Nasiriyah where it spent seven days slugging it out in urban operations to secure the city. British forces also crossed the line of departure on 21 March and encircled and rooted out resistance in Iraq's second largest city, Basrah. The newly arrived 4th Infantry Division (Mechanized) helped to secure Tikrit and, at the end of major combat operations on 10 April, began conducting stability and support operations (SASO) to rebuild the nation of Iraq along with other combat units.

What many thought would be a long, arduous fight to topple Saddam Hussein's regime with the possibility of the enemy's using weapons of mass destruction turned out to be a swift victory with Coalition Forces moving farther and faster than any corps-sized force in history—some 1,000 kilometers from Kuwait to the Turkish border in the north. (See the map in Figure 1.)

The FA supporting maneuver forces during Operation Iraqi Freedom (OIF) proved to be the deciding factor in many of the conflicts—although the enemy artillery outnumbered and outranged the Coalition Force FA. The FA in OIF was the lowest ratio of artillery pieces-to-troops in war since before World War I. (See Figure 2 on Page 4.) Artillery fires came at a premium with lines of communications stretched from the Kuwaiti border to Baghdad, including ammunition resupply.

The *magnificent* soldier and Marine Field Artilleryman adapted to changes while rapidly moving great distances, made critical decisions independently in decentralized operations with little or no sleep and executed fire missions with extraordinary precision in constant movements-to-contact, meeting engagements and urban operations as part of the most effective joint fires team in history. After the initial planning in Kuwait, combat was fast and fluid with minimal formal military decision making or formal fire planning and rehearsals.

The Army and Marine Field Artillery were key to combined arms operations and a major contributor to the joint fires team.

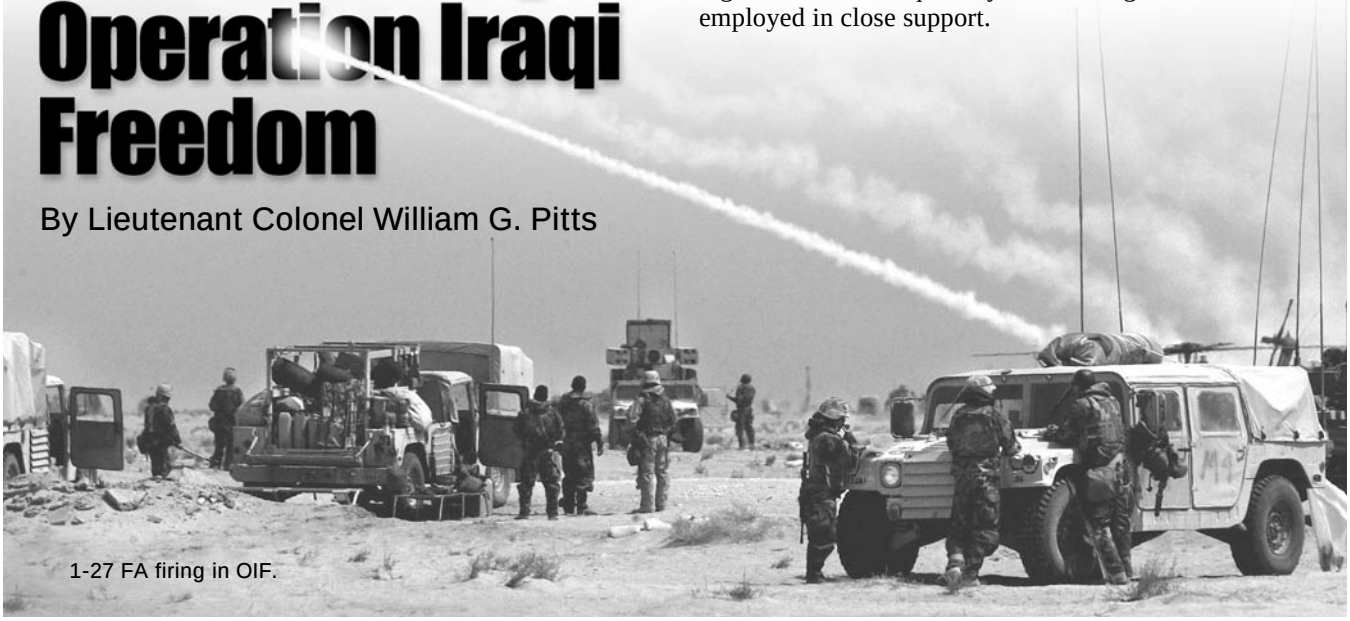
OIF Rounds Fired. Paladin and M198 155-mm rounds were effective across a wide range of missions, particularly, in destroying targets of opportunity, supporting urban operations and suppressing the enemy. The 3d ID fired almost 14,000 155-mm rounds, including more than 120 precision-guided sense and destroy armor munitions (SADARM), while the 101st Airborne Division's M198s fired 516 rounds. The 11th Marines participated in every battle in the 1st Marine Division's campaign from the Kuwaiti border to Tikrit—the only Marine regiment to do so—firing almost 20,000 M198 rounds.

1/10 Marines of TF Tarawa fired more than 2,000 155-mm rounds at An Nasiriyah—mostly high-explosive (HE) rounds with variable-time (VT) fuzes and improved conventional munitions (ICM), including one battalion 10-rounds of ICM.

During OIF, the British fired 9,042 155-mm rounds and 13,151 105-mm rounds.

The threat was primarily the Iraqi artillery, particularly the ballistic missiles that could deliver chemical weapons against Coalition Forces. These were high-payoff targets (HPTs) in OIF.

The Army tactical missile system (ATACMS) unitary missiles' debut in deep operations during the 20 March opening gambit "Shock and Awe" joint fires campaign proved deadly and included attacking some long-range command and control military targets. This new long-range precision-guided unitary missile has a small circular error probable (CEP) and a very promising future. Multiple-launch rocket system (MLRS) rockets were equally effective in counterfire, helping to break the Iraqi Army's will to fight. MLRS also was employed in close support.



1-27 FA firing in OIF.

Photo by David Leeson/The Dallas Morning News

The total number of MLRS fired in OIF was 857 rockets. In terms of ATACMS, V Corps fired more than 400 missiles (including 13 unitary missiles), which is 10 times the number fired in 1991 during Operation Desert Storm.

The 101st Airborne Division Artillery (Div Arty), along with the 2d Battalion, 319th Field Artillery (2-319 FA), 82d Airborne Div Arty, fired more than 4,000 105-mm rounds in close support of its maneuver forces. Most 105-mm fires were in support of light infantry in urban operations.

Maneuver commanders, once again, witnessed the lethality and precision of massed artillery fires to stop the enemy *cold*. In the worst weather, such as the Mother of All Sandstorms, the most effective fires available were artillery fires.

Enemy and Environment. Coalition Forces were victorious in OIF while facing diverse enemy forces who used asymmetrical tactics and were difficult to template. The enemy included the surprisingly fierce, at times suicidal, paramilitary forces in the south—Saddam Fedayeen, Ba'ath Party, Al Kuts paramilitary and others. Enemy forces then ranged to the remnants of the more organized Republican Guard Divisions around Baghdad to the Special Republican Guard and Special Security Organization (SSO) forces defending inside of Baghdad. These forces fought with determination in their last-ditch efforts to save the regime.

For the most part, the enemy looked like civilians and sometimes shielded themselves with civilians or forced civil-

Figure 1: Major Combat Units in Operation Iraqi Freedom (OIF). On 21 March 2003, the OIF ground force attack began with Coalition Forces crossing the Kuwaiti border into Iraq and racing toward Baghdad to topple the regime of Saddam Hussein. (Some Marine units crossed into Iraq on late 20 March.) On 1 May, President George Bush called an end to major combat operations.

ians to fight with them. They hid in schools, hospitals, mosques, historical sites and other locations governed by Coalition Force rules of engagement (ROE). They used low-tech to defeat our high-tech and tended to attack in small numbers from unpredictable locations, making them difficult to target and limiting the effectiveness of precision-guided munitions.

Friendly forces had to advance north on limited avenues of approach due to the restrictive terrain and road network. The terrain west of the Euphrates River where the 3d and 101st Divisions moved in convoys was the less populated desert with surfaces ranging from hard-packed to quick-sand-like. The 1st Marine Division's convoy north on Highways 1 and 7 were surrounded by the more populated, highly irrigated farmland along the Tigris River with surfaces that could not support armored vehicles. With the rapid movement of forces north, Coalition Forces often experienced changes in both terrain and enemy forces several times a day.

US Field Artillery in OIF

54 Paladin (155-mm) Self-Propelled Howitzers:
- 1-9 FA (18), 3d IN Div
- 1-41 FA (18), 3d IN Div
- 1-10 FA (18), 3d IN Div

62 M119 (105-mm) Towed Howitzers:
- 1-320 FA (18), 101st Abn Div
- 2-320 FA (18), 101st Abn Div
- 3-320 FA (18) 101st Abn Div
- 2-319 FA (8), 2d Bde, 82d Abn Div

110 M198 (155-mm) Towed Howitzers:
- C/1-377 FA (8), GS to the 101st Abn Div
- 1/11 Marines (12), 1st Marine Div
- 2/11 Marines (18), 1st Marine Div
- 3/11 Marines (18), 1st Marine Div
- 5/11 Marines (12), 1st Marine Div
- I/3/10 Marines (6) Attached to 1/11 Marines
- R/5/10 Marines (6) Attached to 5/11 Marines
- S/5/11 Marines (6) Attached to the 15th MEU
- F/2/10 Marines (6) Attached to the 24th MEU
- A/B/C/1-10 Marines (18), Task Force Tarawa

73 MLRS:
- 1-39 FA (12), 3d IN Div
- 1-27 FA (18), 41st FA Bde, V Corps
- 2-18 FA (19), 212th FA Bde, as part of 41st FA Bde
- 2-4 FA (18), 214 FA Bde, V Corps
- C/3-13 FA (6), 214th FA Bde, Round-Out to 1-39 FA

3 HIMARS: C/3-27 FA, 18th FA Bde (Under Control of SOF)

British Field Artillery in OIF

32 AS-90 (155-mm) Self Propelled Howitzers: 3d RHA (32) (Reinforced by the 27th and 4th Regiments), Reinforced the 11th Marines (US) Initially

34 L118 (105-mm) Towed Howitzers: 7th RHA (18), 1st AR Div (UK), Reinforced the 11th Marines (US) Initially 29th Commando Regiment RA (16), 1st AR Div (UK)

Legend:

Abn = Airborne
AR = Armored
Bde = Brigade
Div = Division
HIMARS = High-Mobility Artillery Rocket System
IN = Infantry
MEU = Marine Expeditionary Unit
MLRS = Multiple-Launch Rocket System
RA = Royal Artillery
RHA = Royal Horse Artillery
SOF = Special Operations Forces
UK = United Kingdom

Figure 2: Coalition Force FA Weapons in Operation Iraqi Freedom (OIF) during Major Combat Operations

FA *Firsts* in Combat. OIF included many "firsts" for the FA. The obvious is the fact that so much was accomplished with so little in every respect.

The FA was a critical part of the OIF joint fires team—our joint integration and effectiveness in combat made history.

The M109A6 Paladin performed magnificently as a first in combat. It consistently put rounds down range from nontraditional firing positions within two minutes after receiving the mission and was very reliable.

Additionally, this was the first time a Div Arty (3 ID) went into combat with its own general support MLRS battalion to provide deep fires and counterfire for the division—1-39 FA. This battalion fired MLRS in close support of troops.

It was also the combat debut of the high-mobility artillery rocket system (HIMARS). Linked with a Q-37 radar, a HIMARS platoon provided fires for Special Operations Forces (SOF) as they maneuvered on the western front in classified missions.With only one platoon in the Army, demand for HIMARS was high from the Coalition Forces' land, special operations and air component commands.

The precision-guided ATACMS unitary round, fired first in combat by 2-4 FA, 214th FA Brigade, during Shock and Awe, provided immediate and accurate fires against long-range critical enemy command and control targets.

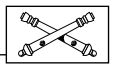
The first use of SADARM in combat by 1-10 FA, 3 ID, brought cannon artillery into the precision-guided age. Maneuver commanders were elated at the precision and destruction caused by this lethal munition.

2-4 FA employed M270A1 launchers for the first time in combat. The launchers performed very well and were reliable.

One beneficial first in combat was the use of the Bradley fire support vehicle (BFIST). This vehicle not only allowed fire supporters to execute calls-for-fires quickly, but also provided the protection and lethality fire supporters needed to move rapidly within armored formations in distributed operations.

Without a doubt, Operation Iraqi Freedom brought to the forefront that indirect fires remain the biggest force multiplier and killer on the modern battlefield.

Cannoneers and Rocketeers refused to leave their guns so they could provide continuous fires in support of their maneuver brethren. Field Artillery officers and NCOs improvised when enemy actions and terrain required a change in doctrinal procedures or established tactics, techniques or procedures. These Army and Marine Field Artillerymen truly were the keys to the success of land-based indirect fires in OIF.



Lieutenant Colonel William G. Pitts was the Operation Iraqi Freedom Study Group FA Representative, gathering data in Iraq from 23 April to 15 June. He is the Chief of the Doctrine Division, Directorate of Training and Developments, at the Field Artillery School, Fort Sill, Oklahoma. He also served as Advisor to the Royal Saudi Artillery in Riyadh, Saudi Arabia. In other assignments, he was the Executive Officer for 1st Battalion, 321st Field Artillery (Airborne), 18th Field Artillery Brigade, Fort Bragg, North Carolina. Also at Fort Bragg, he was the Assistant Fire Support Coordinator and Current Operations Officer for the XVIII Airborne Corps. He commanded A Battery, 5th Battalion, 18th Field Artillery, part of the 75th Field Artillery Brigade at Fort Sill.

Lieutenant General W. Scott Wallace
CG of V Corps in Iraq during OIF

Trained, Adaptable, Flexible Forces = Victory in Iraq

By Patrecia Slayden Hollis, Editor

Q *During Operation Iraqi Freedom (OIF), V Corps was extremely successful, traveling farther and faster than any combat force in history and defeating an enemy vastly superior in numbers on his own terrain—overall, what were the keys to V Corps' success?*

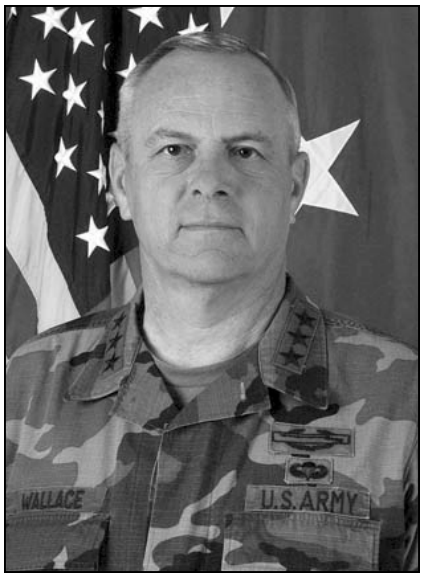
A Great soldiers, great leaders—a great team came together in the desert. The Army's training system allowed us to come together as a team in relatively short order.

Q *How would you characterize the enemy on the OIF battlefield?*

A That is a tough question—the enemy was not a homogenous force. In the south, we dealt with Iraqi irregulars who we didn't think were going to fight but did. Multiple sources had indicated they were going to abandon their equipment or surrender without much of a fight.

These irregulars actually were a combination of paramilitary organizations in the southern part of Iraq: the Saddam Fedayeen, Al Kuts, Ba'ath Party militia and others, including some foreign fighters we knew were there. We thought they were there to control the population and deny us use of the populated areas when, in fact, they attacked our formations out of those populated areas. In particular, they caused concerns about our lines of communications [LOCs], which were relatively extended at the time. So we had to adapt to that enemy tactic.

And then as we got closer to Baghdad, we dealt with the remnants of the Republican Guards with more organized formations and coordinated attacks. In Baghdad, itself, we faced forces that appeared to be paramilitary but were probably Special Republican Guards



and others who were the inner defense of Baghdad.

It was sometimes hard to differentiate among the groups because they were all shooting at us with the same weapons—AK-47s and RPGs [rocket propelled grenades]. Most of them were dressed in civilian clothes. In some cases, they armed civilians and, upon threat of death, forced the civilians to fight with them, just to increase their numbers. Sometimes the enemy came at our armored formations in SUVs [sports utility vehicles] that had weapons mounted on them or in cars with bombs—both suicidal attacks.

Our young soldiers were incredibly brave, incredibly heroic. They showed great endurance and great ferocity when they needed to…and tremendous compassion when it was called for.

The enemy force was very mixed from south to north, and the dynamics of the fight changed, depending on whom we were fighting. Our soldiers handled it all magnificently. They adapted to the changing enemy and terrain conditions—some conditions changing multiple times in a 24-hour period.

Q *V Corps lessons learned states, "Every fight was a movement-to-contact." What was the impact on your distributed battlefield?*

A Every fight was a movement-to-contact at the platoon through battalion levels, perhaps at the brigade level, largely because the enemy was so indescribable, so very difficult to template. Our traditional shaping operations against a conventional enemy just didn't work against this enemy.

For example, it was hard to determine how he was defending in the cities. In Baghdad, with a UAV [unmanned aerial vehicle] looking down, a guy with an AK-47 wearing a polo shirt and pair of blue jeans looks like a civilian—but he could be the enemy.

The fact is that when our young soldiers were in contact with the enemy, they were developing the situation at the same time they were fighting and adapting to the battlefield conditions continually.

And *everybody* was in the fight, whether you were a truck driver or a POL [petroleum, oil and lubricant] handler or an infantryman. There was no truly secure rear area. Periodically, artillerymen found themselves in direct fire contact. Some combat supporters showed up ready to support but not ready to fight. That's a training issue we've got to deal with. Regardless of branch, soldiers must be able to use their assigned weapons, both individually and collectively.

Q *What was your Commander's Intent for Fires? How did you employ your fires—both joint and land-based?*

A My Commander's Intent for Fires was to kill as many bad guys as we could as often as we could so they weren't effective when we got in direct fire contact. Generally, we targeted the enemy's artillery to preclude him from massing fires.

The enemy was fighting a "positional defense." Most of his defensive preparations were in and around Baghdad, and it didn't appear he had the wherewithal to do a lot of repositioning. We reasoned that our direct fire and joint fires team would be effective against his positional defense.

The only way the enemy really could hurt us was if we slowed down and he massed indirect fires on our formations. Of particular concern were his ballistic missile forces and the potential for using chemicals against us . So that's what we targeted with joint fires. Our UAVs and corps-directed indirect fires and CAS [close air support] went after his artillery systems—especially his rocket forces—as high-payoff targets.

MLRS [multiple-launch rocket system] in counterfire was very effective. Every time the enemy tried to mass his artillery, he got *whacked* with something. We do need to come up with an alternative for DPICM [dual-purpose improved conventional munitions] bomblets on the battlefiewld.

Unexploded bomblets are a problem for innocent civilians and our light forces, our dismounted infantry, who come after MLRS has been used in an urban environment.

Our joint fires were very effective. We had CAS in abundance. Sometimes our soldiers and young airmen on the ground employed it very close to friendly formations. We weren't 100 percent successful at avoiding fratricide—recognizing that one fratricide is one too many. But given the ferocity of the fight, the closeness of the fight, the lack of separation between the combatants in many cases, our ability to avoid fratricide was good.

The Air Force worked closely with the Army to identify and *whack* targets during the fight. An Air Force SCAR [strike control and reconnaissance] aircraft flew over an area in which we were in direct fire contact and identified targets. Then it served as a terminal guidance for Air Force precision-guided munitions to attack the targets—or for other fires. The Army directed the SCARs to places we wanted them to look, a great complement of joint capabilities.

There were episodes in the fight when operational maneuver caused the enemy to react; when the enemy reacted, it allowed us to employ joint fires against him, which, in turn, allowed our operational maneuver to be more successful. For example, around Baghdad, maneuver caused the enemy to move out of his defensive positions, and when he was moving, the Air Force identified him and we attacked him with aircraft and long-range rockets. The complementarity between fires, maneuver and reconnaissance was evident at the corps level down to the tactical level.

I just can't say enough about our ability to integrate fires in Operation Iraqi Freedom, regardless of where they came from.

As the V Corps Commander in Operation Iraqi Freedom, Lieutenant General Wallace tours the Tigris River area in Tikrit, Iraq, on 21 April 2003. *Photo by SSG Michelle A. Labriel, 55th Signal Company Combat Camera, 4th Infantry Division (Mechanized)*

Q *What do we need to improve in our integration of joint fires?*

A First, the Army should give the Air Force credit for being as good as it is. We've got the best Air Force in the *world*. Our pilots are good at what they do and heroic—ready to fly in some very tough enemy circumstances.

I recall A-10s flying about 600 feet over the top of a particularly tough fight going on at the traffic circle in Baghdad. Those A-10 pilots were just as heroic as the guys on the ground.

Also, we need to develop soldiers as terminal controllers for Air Force assets without having to go through an intermediary, such as an ETAC [enlisted terminal air controller]. We've got to make sure the Air Force agrees and put rigor into our training, the same rigor the Air Force has in its ETAC training.

We need to refine our joint fire control measures. On a linear battlefield, fire support coordination lines, FSCLs, tend to make sense but not on the nonlinear battlefield. Kill boxes that we opened and closed to allow the Army and Air Force to engage the enemy in the boxes worked well in this particular environment.

I'm not really in love with kill boxes because the convention is that they are 30 by 30 miles, which is too big to be really precise. I'd like my fires to be more prescriptive. I don't think one or the other is the exclusive fire control measure of the future.

Overall, the integration of CAS with Army ground forces was pretty damn good throughout the fight.

Q *Is the Air Force's 96-hour air support request (ASR) cycle used in OIF realistic on a fluid battlefield?*

A I have no problem with the ASR cycle or the ATO [air tasking order] cycle. The problem is that Army

guys don't understand it. They think because the requests are for 96-hours out that the cycle is rigid. The ASR is rigid in planning but not in execution. The more fire supporters and Army leaders who understand the flexibility that's inherent in the cycle, the more the Army will be able to use it to our advantage.

And we shouldn't resist putting ATACMS [Army tactical missile system] or helicopters on the ATO—that's no big deal. It's an "air tasking order," something that allows us to describe to our Air Force brethren and the entire force what we're planning to do with our fires, so we can deconflict airspace and make sure nobody gets hurt.

In fact, it is completely conceivable that we might put some of our artillery and attack aviation under the control of the CFACC [Coalition Forces Air Component Commander] for a specific task and purpose. For example, we might want to execute a surgical strike that requires the synergy of simultaneous attacks by, say, ATACMS, Army attack aviation and Air Force F-16s. We would put them under one commander for the attack and on the ATO. It doesn't matter who actually owns the munitions or aircraft as long as we *whack* the bad guys.

Q *Why did you consolidate the fires and effects coordination cell (FECC) in the V Corps main command post with the air support operations center (ASOC) and the analysis and control element (ACE)? How effective was your FECC?*

A Why did we consolidate? Because no one of those elements—the ACE, FECC or ASOC—had the "keys to the kingdom." The ACE knew where the bad guys were, the FECC had the means to attack the bad guys with indirect fires, and the ASOC had the means to attack the bad guys with precision-guided munitions delivered by the Air Force. Putting the three together made sense.

And they operated very well together—decide, detect, deliver and assess.

Now, that didn't come without some pain. We started training the three together about two years ago to get the level of proficiency they demonstrated in Iraq.

Baghdad, 18 April-LTG Wallace speaks to the soldiers of the 101st Airborne Division's 2d Brigade Combat Team, telling them to stay vigilant as OIF transitions into a peacekeeping and humanitarian stage. "Don't let your guard down," Wallace said. "Show the people of this country the proper respect, but be careful. There's still a bunch of knuckleheads running around." *Photo by SPC Robert Woodward, 101st Airborne Division*

In terms of the FECC, it did well. But we need to integrate nonlethal effects into the FECC. The FECC should be the manager of all effects on the battlefield. For example, information operations should be managed and executed by the FECC.

I realize lethal and nonlethal are two different "sciences," but the commander achieves his intent with both lethal and nonlethal effects. The nonlethal piece should be part of the FECC.

Q *How did you conduct battle command and control on the move while your forces moved so rapidly to Baghdad?*

A We built a secure commercial satellite-based communications system that went from point to point. That allowed me, as the commander, to visualize the fight using the tool called C^2PC [command and control personal computer], which is a visualization tool showing icons on maps, driven by the GCCS-A [global command, control communications system-Army].

I visualized fires using ADOCS [automated deep operations coordination system] software [an advanced technology concept demonstration, or ACTD, software]—not a system bought by the Army. ADOCS worked fine. It allowed me to visualize fires, our forces, the enemy, radar fans and fire missions with red vectors for the enemy artillery and blue for our artillery. It also allowed me to see the ATO exported from the Air Force's TBMCS [theater battle management core system].

ADOCS is not an artillery execution tool. It is a visualization tool for the maneuver of fires.

On the move, I had C^2PC so I could see the fight: blue icons and red icons. I had ADOCS so I could see the fires: blue vectors, red vectors, range fans and radar zones. I had a system called "blue force tracking," which is an $FBCB^2$ [Force XXI battle command brigade and below] screen that showed where certain vehicles were located on the battlefield in real time. I had access to analytical intelligence information in ASAS [all-source analysis system] that my intel guys used. And I had a 25-kilohertz single-channel TACSAT [tactical satellite] terminal with a high-look angle that allowed me to talk to commanders. I could use all of these systems on the move—I even did email on the move.

In spite of these communications innovations, we were not independent of terrestrial-based systems. I believe our commo system is too terrestrial-dependent—it goes from point to point, from antenna to antenna. Our commo needs to go from antenna up to a satellite that can zap it back to wherever the hell you want it in theater—or with a "step site,"

zap it to a server bank located at our headquarters at Heidelberg [Germany].

The technology is there to do that—a combination of secure commercial and military satellites. If we are going to fight in distributed operations, independent operations, over a wide expanse of battlespace, then we must make the commitment to improve the communications' infrastructure. The network must support the warfighter, not the other way around.

Q *How big was your battlespace?*

A The dimensions varied. From Kuwait to Baghdad was about 500 kilometers [see the map on Page 3]. During the move to Baghdad, it probably was not more than 200 kilometers wide, but then after we got to Baghdad and expanded west into the desert, the 3d ACR [Armored Cavalry Regiment] alone had a 300-by-400 kilometer zone. Then we expanded from Baghdad north to the Turkish border, which was another 450 to 500 kilometers. We had a logistical tail from Kuwait to Mosul in northern Iraq. Our area was *immense*.

Now, we weren't occupying all that terrain. For commo, we had to have nodes all over the place separated by great distances. FM communications won't give you that kind of range, so we had to use satellite communications.

Q *Your forces experienced the Mother of All Sandstorms from 24 to 27 March: 100-meter visibility with winds gusting to 50 knots; thousands of Iraqi paramilitary in the area; and supplies, including ammunition, low. What did you do?*

A We fought like *hell.* We had to slow down considerably, but the troops still could use thermal devices to see and engage the enemy, who was still fighting. We could use signals intelligence and intercepts. The night-vision goggles didn't work well, but they worked. And the enemy didn't have these advantages.

During that dense sandstorm, indirect fires proved most valuable. We used the lethal effects of artillery and mortars with some degree of precision, in particular, HE [high-explosive] artillery.

At one point during the Mother of All Sandstorms, we used maneuver to cause the enemy to move so intelligence could identify the enemy's exact location so artillery and mortars could kill him—like we talked about earlier.

We continued to fight, as did the enemy. But he was more debilitated by the conditions than we were, even on his own terrain.

Q *In the Coalition Forces' drive to occupy Iraq, what were your biggest surprises (good or bad)?*

A One of them we already have talked about: the willingness of some of the paramilitary forces to not only fight but attack our armored formations—suicidal attacks in some cases. That surprised me.

One good surprise was that Iraqi forces never used chemical weapons against us. I expected them to.

Another pleasant surprise was the success armored formations had operating in urban environments. Fundamentally, we used heavy metal to "bust" into the cities and take down whatever defenses the Iraqis had. Then we used light formations to clear the cities and towns in detail, supported by smaller groups of armored vehicles. That freed up larger armored formations to go break down other "doors." Armored vehicles were effective in urban environments frequently without dismounted infantry to protect them.

These procedures worked in this environment and in this particular fight. I am not sure there is "global" application.

Artillery was very effective in urban operations. HE munitions with VT [variable-time] fuzes were effective on likely locations of enemy bunkers, high buildings and all sorts of other urban structures to clear the enemy out before the armored formations arrived. At least one maneuver commander routinely used HE VT with great precision to clear the tops of overpasses before his formation drove under them.

As reported to me, SADARM [sense and destroy armor, an unfunded cannon precision-guided munition] worked very well.

I am not sure if there is a place for precision-guided munitions for cannons. But we need to be very cautious, very suspicious, of any suggestion that there is no role for the suppressive effects of artillery on the battlefield.

The enemy we fought in Iraq, who tended to gather in small numbers vice large enemy formations, was not susceptible to precision strike. That means you could be very precise and have no effect on the enemy. But the suppressive effects of the artillery caused the enemy to hunker down, which allowed maneuver to close with and kill him.

Sometimes our armored forces need to drive on, letting our artillery shrapnel bounce off the front decks of their tanks. So we need the right balance of precision munitions and precise suppressive fires so commanders can take out a specific building or provide the precise effects he wants against a specific area. Solutions are joint fires, not the exclusive realm of Army artillery or the USAF.

Q *How effective was the fires system in supporting the deep attack? In protecting our Apache attack helicopters?*

A The ATACMS unitary rounds showed great promise in the deep attack. It has long-range and a small circular error probable [CEP]. If we can locate the target at long range, we can have precision fires on it quickly.

In fact, the CFACC recognized that the first night when the Coalition Forces fired the "Shock and Awe" attack. Some of the Shock and Awe was executed by Army unitary missiles going deep against specific enemy regular army headquarters in southern Iraq.

We were not very good at protecting our Apaches. It wasn't what we did wrong; it was what the enemy did right. The ability of our fires system to take out the bad guys depends on our finding the bad guys.

We habitually train against a higher technology air defense threat, one that uses radars. This enemy didn't use them, so we couldn't get the electronic intercepts associated with his air defense systems. This enemy almost exclusively used direct fire weapons with "iron sights."

Our ability to template and engage this type of enemy is very difficult. We can't find them with UAVs because they look like civilians. They can come and go quickly from anyplace—mosques, schools, hospitals, under a palm canopy. And there are rules of

engagement issues that make positively identifying and attacking the enemy in these locations complicated.

To compensate, we learned not to use our helicopters so deep; we used them in close support of ground forces, so they didn't get too far out in front of the ground forces. The ground troops kept the small arms busy while the helicopters attacked in support of the ground troops.

Protecting our attack helicopters during deep operations in Iraq was a challenge—something we've got to train to. We have to add these kinds of complexities to our battlefields at the NTC [National Training Center, Fort Irwin, California], JRTC [Joint Readiness Training Center, Fort Polk, Louisiana] and CMTC [Combat Maneuver Training Center, Hohenfels, Germany]—and anyplace else we train fire supporters and Army aviation. It's a different way of fighting.

Q *That leads to my next question: Based on your experiences in OIF, what do we need to change in our training at the Combat Training Centers (CTCs)—in addition to suppression of enemy air defenses to protect Army aviation?*

A As we discussed, training soldiers to be terminal controllers for joint aircraft.

More urban operations training.

More training with the Air Force. We've got to put a joint context in virtually all our training. In particular, we've got to leverage joint intelligence and fires to the benefit of the entire force. The requirements for jointness are increasingly more prevalent at lower echelons, so we've got to school our young leaders in a joint context.

The OPFORs [opposing forces] at the CTCs need to use the same asymmetries that a future enemy formation might. The Training and Doctrine Command [TRADOC] contemporary operating environment [COE] for our training programs is okay. But it's not hard enough because the real bad guys are less conventional—are less predictable, fight more in depth.

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

A I had the *honor* of commanding great young Americans in Iraq who displayed extraordinary endurance, bravery and compassion, including Army and Marine Field Artillerymen. They never shirked a fight—found fights on occasion because they knew that was their job.

At the same time, they demonstrated the values that make our nation strong—a true compassion for the weak and oppressed. I guess my message is one of thanks for being who they are—the very *best* in the world.

★★★

Lieutenant General W. Scott Wallace commanded V Corps during Operation Iraqi Freedom. Currently, he is the Commanding General of the Combined Arms Command (CAC) and Fort Leavenworth in Kansas. He commanded the Joint Warfighting Center and was Director of Joint Training, J7, in the US Joint Forces Command, Suffolk, Virginia, and commanded the 4th Infantry Division (Mechanized), Fort Hood, Texas. In various tours at the National Training Center (NTC), Fort Irwin, California, he served as the Commanding General of the NTC, Commander of the Operations Group and Senior Armored Task Force Trainer. He also commanded the 11th Armored Cavalry Regiment in V Corps, and the 3d Squadron, 2d Armored Cavalry Regiment, VII Corps, both in Germany. He holds an MS in Operations Analysis from the Naval Postgraduate School at Monterey, California, and an MA in International Relations from Salve Regina University, Newport, Rhode Island.

Sergeant First Class (SFC) Joseph M. "Smoke" James, Jr.: *Jacksonville, Florida, 13B, Platoon Sergeant, B/1-41 FA, 3d ID.* SFC James demonstrated valor and courage in the face of personal danger under fire during combat operations in Iraq. On the morning of 27 March 2003, 2d Paladin Section, 2d Platoon (B22), suffered a catastrophic loss of an M109A6 Paladin howitzer during a fire mission in support of 1st Brigade operations at attack position Raiders in the vicinity of An Najaf. A second Paladin (B23) was about 100 meters away from the exploding howitzer. B23 then evacuated its combat-loaded vehicle. SFC James first evacuated the battery from the area surrounding the exploding howitzer and, at great personal risk, ran the 100 meters to the second howitzer and drove it to safety. SFC James' bravery resulted in the battalion's maintaining critical combat power for future operations.

On the afternoon of 4 April, a battalion convoy was returning from recovery operations to the battalion's maintenance collection point located at Saddam International Airport in Baghdad. The convoy was ambushed two kilometers from the battery resulting in two friendly casualties. SFC James quickly dispatched three M992 FA ammunition support vehicles (FAASVs) to suppress the enemy and recover the ambushed convoy. Once the convoy returned to B Battery's firing point, SFC James coordinated the battery's defense in the face of an attacking enemy force. His actions resulted in three enemy vehicles destroyed, one enemy mortar position destroyed and 12 enemy personnel killed and preserved the safety of both the firing battery and medical treatment and evacuation of the two casualties. SFC James' bravery and dedication to duty resulted in the safe and timely evacuation of one critically wounded soldier and the safe return of all personnel and essential combat vehicles to the battalion.

SFC James was awarded the Bronze Star Medal with "V" Device for valor for his actions during combat in Operation Iraqi Freedom.

Brigadier General Lloyd J. Austin III
Assistant Division Commander (Maneuver) for the 3d Infantry Division (Mechanized)
in Operation Iraqi Freedom

3d ID in OIF: Fires for the Distributed Battlefield

By Patrecia Slayden Hollis, Editor

***"Mission*:** On order, the 3d Infantry Division (Mechanized) attacks in zone to defeat the 11th Infantry Division and seize crossing sites over the Euphrates River vicinity of An Nasiriyah in order to set the conditions for continued attacks north to the Republican Guard Forces. On order, 3d ID (M) attacks in zone to destroy the Medina Division in order to isolate Baghdad from the south and set the conditions for the removal of the Saddam Hussein's regime." Taken from the "3d ID (M) After-Action Review (AAR)," June, 2003.

Big Picture: In Operation Iraqi Freedom (OIF), the 3d ID's battlespace was 16,000 square kilometers—four times the size of the National Training Center at Fort Irwin, California—with a 720-kilometer route along the western side of the Euphrates River from Kuwait to Baghdad; the division took only 18 days to take the presidential palaces in Baghdad. (See the map on Page 3.)

Q *The 3d ID AAR states, "Artillery is key to successful combined arms fires." What is your assessment of the cannon and rocket support in Operation Iraqi Freedom (OIF)?*

A The cannon and rocket artillery support was absolutely *magnificent*. We crossed the berm into Iraq with no reinforcing artillery. We only had our four organic Div Arty [division artillery] assets of three Paladin battalions and our division MLRS [multiple-launch rocket systems] battalion. The 214th FA Brigade with one MLRS battalion was assigned a mission of GSR [general support reinforcing] to the division on 30 March.

Now, ask any infantryman if he has enough artillery, and he always will answer, "*No*." Before we crossed the line of departure, I asked for more artillery—I am an infantryman.

But we won decisively; so one could argue that we had enough artillery. We made good use of joint fires—CAS [close air support] was on target and available most of the times we needed it, so that was a success story.

Having a lot of artillery really becomes key when you're fighting on a noncontiguous battlefield—when you have brigades employed over vast distances. Their direct support [DS] artillery battalions naturally will follow them. Massing fires is more challenging on that battlefield.

Once again, you could build the argument that we had enough artillery because we won, but I would have liked to have had more going into the fight.

Q *During OIF, Paladins and the Bradley Fire Support Team Vehicles (BFISTs) were used in combat operations for the first time. Were you pleased with their performance?*

A I was extremely pleased with the performance of Paladins and BFISTs during OIF. Our Paladins delivered responsive, accurate fires, usually within a couple of minutes of receiving a call-for-fire. They provided effective fires from any place, just about any time. They did not need an "artillery position area"—a concept we've grown up with. They shot from the sides of roads and a number of other impromptu positions.

The BFISTs enabled our artillerymen to keep up with their combat arms brethren during the fight that, from time to time, was pretty intense. From their BFISTs, artillerymen could acquire targets with 10-digit resolution and rapidly call for fire by voice.

Artillerymen had to direct fire BFISTs on occasion. Very few vehicles on this battlefield were not engaged by some sort of fire— or both direct and indirect fires. Certainly, the Div Arty TOC [tactical operations center] and my TAC [tactical command post] received indirect fire and were subject to ambushes along the routes to Baghdad. Fighting distributed operations over a large area requires all soldiers to be prepared to employ all weapons available.

Q *How did your FA do in urban operations?*

A The Field Artillery did well in urban operations. Once we determined a target would be engaged best by 155-mm fires, we employed Paladin, principally with HE [high-explosive] rounds. We stayed away from DPICM [dual-purpose improved conventional munitions] in urban areas for obvious reasons [potential for unexploded bomblets].

We engaged the enemy in heavily fortified buildings with CAS, using JDAM [joint direct attack munition] as the preferred weapon. When it was more difficult to pinpoint a specific target, then Paladin was the preferred weapon.

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A The enemy frustrated me the most. It was tough to figure out where he was and what he was going to do next so we could apply our fires systems effectively enough to neutralize him.

We have some good intelligence processes, but we need more precise information on an elusive enemy for the artillery to engage his formations and more effectively determine the outcome. The enemy in Iraq had learned from being bombed for 10 years. That enemy made it tough to "see" him with our satellite imagery or aircraft flying overhead; for example, he positioned towed artillery underneath highway overpasses and tanks and BMPs under palm trees.

Q *What happened in the Mother of All Sandstorms—visibility at 100 meters, winds gusting to 50 knots, Iraqi forces all around fighting fiercely?*

A Have you got a couple of hours? Basically, we dealt with it because our equipment and our systems were more capable than the enemy's. Our training is such that our soldiers were confident in their ability to do what they had to do. They have sandstorms in Kuwait where we spent a fair amount of time training before crossing the border into Iraq. So, we knew what to expect.

Ground-based indirect fires were absolutely critical during the Mother of All Sandstorms. The enemy lobbed mortars or artillery at us, and our radars detected his systems for howitzers or MLRS to quickly negate his indirect fire. Also, our tanks fired in that sandstorm.

What a lot of people don't know is that during that sandstorm, we used joint fires very effectively. JSTARS [joint surveillance and target attack radar system] acquired targets, and we subsequently engaged them with CAS and other means. When we had good enough target data, high-flying CAS aircraft flew above the sandstorm and engaged targets.

Q *Overall, were FA fires effective for the 3d ID?*

A We fought for 21 days, including our artillery. We fired almost 14,000 155-mm rounds and 794 MLRS rockets—that's a lot of shooting. We fired 91 counterfire missions, which means the Iraqi forces were shooting at us 91 times in 21 days. On numerous occasions the artillery, both cannon and MLRS, delivered effective fires in very short order and helped bring about positive outcomes.

By the time the major combat in Iraq was over, our soldiers had immense confidence in their artillery's ability to shape future fights, support the close fight, acquire the enemy once he fired and execute counterfire effectively.

Operation Iraqi Freedom was truly a success story for the Field Artillery.

Q *What do we need to change in training to better prepare for future combat?*

A We have the best training in the world. It prepared us to fight a multi-faceted enemy in a multi-dimensional fight, an enemy who initially surprised us with his ferociousness. It is our training that enabled us to adjust to that enemy very quickly.

In Iraq, I was close to our gunners everyday; my TAC was positioned behind the brigades and just forward of the artillery. Everyday, I saw artillerymen doing exactly what they trained to do at home station and the CTCs [Combat Training Centers]. They didn't hesitate or have to stop and think about what to do. They just fired their weapons very effectively.

Now having said all that, we still can improve our training. We've got to find a way to better replicate the effects of artillery fires at our CTCs—admittedly, that's not easy to do. But we must give credit in training for the impact artillery fires have on the outcome of the fight.

And that means not only outgoing artillery fires, but also incoming fires. If the enemy is putting even semi-effective artillery fires on you, it has a tremendous impact on your ability to do what you need to do. We must train to that.

We need to train more with the Div Arty engaged in the CTCs as a headquarters, so we all become accustomed to FA battalions answering the Div Arty's call for massed fires or whatever. We do some of that training now at the CTCs, but we need to take that training to the next level. When the division goes into a fight, the Div Arty is a critical piece of it.

We also need more urban operations training—we need to develop TTPs [tactics, techniques and procedures] to be more effective in this arena. Urban areas are where people live, and that's where we are going to fight in the future.

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

A The artillery did a great job of delivering fires in Iraq due to your great soldiers and their NCO leaders. We have excellent equipment, but if we had given our equipment to the Iraqis, we *still* would have won. That's because of our well-disciplined, well-trained soldiers and their NCO leaders, starting at the top with the 3d Infantry Division sergeant major through the Div Arty sergeant major all the way down to the gun crews and observers.

We need to maintain the high standards that allowed us to adapt and adjust to this elusive enemy. At the same time, we need to understand that "the future enemy" *also* learned from Operation Iraqi Freedom. In the next war, he will be different, maybe a lot tougher.

There's a place on the future battlefield for well-delivered artillery fires as part of the joint fires system. It takes a combination of fires to have a complete arsenal.

Brigadier General (Promotable) Lloyd J. Austin III was the Assistant Division Commander for Maneuver in the 3d Infantry Division (Mechanized) in Iraq during Operation Iraqi Freedom. Recently, he took command of the 10th Mountain Division (Light Infantry) at Fort Drum, New York, and deployed the division (minus) to Afghanistan where he serves as the Deputy Commanding General, Combined-Joint Task Force 180. In previous assignments, he served as the Chief of the Joint Operations Division (J3) on the Joint Staff at the Pentagon; and G3 for the 82d Airborne Division, Fort Bragg, North Carolina. Also in the 82d Division, he commanded the 3d Brigade; the 2d Battalion, 505th Parachute Infantry Regiment; and a combat support company. In addition, he commanded a US Army recruiting battalion. He holds a Master of Education from Auburn University in Alabama and a Master of Business Management from Webster University in Missouri.

101st Div Arty:
Fighting with Artillery Fires in an Urban Environment

By Colonel William L. Greer, Major Martin J. Holland and Captain Charles W. Kean

The 101st Airborne Division's (Air Assault) experiences during Operation Iraqi Freedom (OIF) offer several case studies for fighting with fires in an urban environment and demonstrate that artillery remains a vital part of the maneuver commander's successful operations.

The 101st Division deployed by sealift and civilian reserve air fleet (CRAF) to Kuwait during late February and early March 2003. By 20 March, elements of the division were prepared to participate in the initial invasion of Iraq by both air assault and ground assault convoy.

While the difficult desert terrain and sheer distances involved challenged our initial advances, enemy resistance was relatively light as we followed the lead elements of the 3d Infantry Division (Mechanized) northward. After an initial after-action review (AAR) following an armed aerial reconnaissance, the division gained a better appreciation for the size and magnitude of the major population centers in south-central Iraq. The 3d Division made spectacular advances in a relatively short period of time, but enemy forces remained behind in the large urban areas .

Najaf, Iraq. The 101st Division's first major ground combat action centered on the city of Najaf from 28 March through 5 April. The 1st Brigade Combat Team (BCT) attacked from the south while the 2d BCT attacked from the north. (See the map on Page 3.)

Initially, units were deliberately restricted in their use of artillery fires in urban areas because of rules of the engagement (ROE) that reflected concern for the welfare of innocent civilians and (or) damage to infrastructure. Mechanized and light infantry maneuver commanders and their fire supporters effectively used indirect fires against confirmed enemy targets and in support of attacks. High-explosive ammunition with variable-time fuzes (HE/VT) was effective against enemy snipers and observers on rooftops.

Units also learned they could fire this shell-fuze combination in close proximity to friendly forces. In at least one instance, friendly troops were clearing the lower floors of a building when HE/VT swept the roof of enemy soldiers. (This was confirmed by the infantrymen who looked out the windows to see the dead and wounded foe fall past them).

Artillery fires with both rocket-assisted projectiles (RAP) and Charge 8 proved very accurate, even without a current meteorological update (Met) or survey control beyond that provided by the gun laying and positioning system (GLPS). Additionally, units executed an extremely effective counterfire program against enemy mortars and artillery systems.

At Najaf, the division artillery (Div Arty) weighted the fight, adjusting the artillery organization for combat by attaching C Battery, 1st Battalion, 377th Field Artillery (C/1-377 FA), an M198 155-mm towed battery, and firing batteries from 3-320 FAR (FA Regiment) to 1-320 FAR and 2-320 FAR, the latter two FA battalions in direct support (DS) of the 1st and 2d BCTs, respectively.

Gunners from C/3-320 FA launch an attack on the historic city of Hillah (ancient Babylon). *Photo by 1SG James B. Waters, C/3-320 FA*

One major obstacle to overcome was communications throughout the depth and width of the battlefield. Each brigade had an operating area of approximately 12 by eight kilometers of city blocks. Because of the nature of urban fighting (crawling through windows, moving through holes in walls and low power lines), fire supporters were restricted to using short-whip or broken down long-whip antennas. The urban structures and interference from power lines further reduced the range of the single-channel ground and airborne radio system (SINCGARS) advanced system improvement program (ASIP) radios carried by fire supporters. Due to the quick movement of the infantry, fire supporters could not always make it to the upper floors in buildings in time to get better radio range.

To counter the problem of limited radio ranges, the artilleryman used a combination of tactics, techniques and procedures (TTPs). Fire support elements (FSEs) often used centralized control to transmit mission requests and operational updates on the fires nets. The battalion fire support officer (FSO) moved with the dismounted tactical command post (TAC). Once the infantry gained a foothold, the battalion fire support NCO (FSNCO) moved forward with the mounted TAC, which allowed him to use an ASIP radio with a power amp for increased range. The mounted TAC filled the communications void and provided a pivotal communications node for each FSE. Additionally, the artillery battalion pushed its retransmission as close as the situation permitted to the line of departure (LD), thus, increasing the range of the brigade fires net.

Although these TTPs proved invaluable as the forward elements pressed deep into the city streets, new equipment, such as the military operations in urban terrain (MOUT) antenna developed by the Marine Corps, would enhance our ability to communicate in an urban environment significantly.

Karbala. Before the fight in Najaf was finished, elements of the 2d BCT began to prepare for an attack to Karbala in the northwest. The Div Arty weighted the main effort, leaving C/1-377 FA attached to 1-320 FAR and assigning 3-320 FAR (-) a reinforcing (R) mission to 1-320 FAR. Two Q-36 radars provided counterfire coverage, and the Div Arty established a sensor-to-shooter-link between a 234 FA Detachment (FAD) Q-37 radar section and a multiple-launch rocket system (MLRS) battery from the 41st FA Brigade: C/1-27 FA.

1. The fire support element (FSE) designates a one-kilometer box around the artillery units as a no-fly area when missions are being processed.
2. The aircraft are restricted to a 500-foot ceiling.
3. The aircraft call the battalion or company FSE with the mission.
4. Company commanders clear the fires.
5. Missions then are sent to the battalion FSE and FA battalion.
6. Missions are sent as "At My Command" missions. This allows the aerial observer to get into position to observe before the initial round is fired.
7. In deconflicting airspace, the gun target line (GTL) is sent in the message to the observer. The ultimate responsibility for clearing airspace falls on the battalion fire support officer (FSO).
8. Once the initial round is fired, the observer lases the burst and sends the burst grid.

Tactics, Techniques and Procedures (TTP) for Artillery Fires in Urban Operations Using Aerial Observers

1-320 FAR and 2d BCT incorporated fires into planning and executing the battle in Karbala very effectively from 4 through 7 April. The fire plan involved sending a clear message to the enemy in the form of three Air Force joint direct attack munition (JDAM) strikes on key Ba'ath Party headquarters, initiating an echelonment of fires.

Immediately after these precision air strikes, fire supporters used brigade and battalion targets to orient the firing batteries on possible enemy locations. As the maneuver forces closed with the enemy, they used indirect fires and close combat attacks with rotary-wing aircraft to destroy the enemy.

For all fire missions, fire supporters adjusted each mission with at least one round before entering the fire-for-effect (FFE) phase. Executing adjust fire missions actually minimized collateral damage. This prevented forward observers (FOs) from having to adjust fire with multiple volleys for effects on targets. HE/VT remained the munition of choice and, once again, proved very effective at inflicting enemy casualties while minimizing harm to civilians or structures.

The fight in Karbala presented a different set of obstacles, requiring the artilleryman on the ground to adjust his operating procedures. To best observe the target and ensure civilian or friendly personnel were not in close proximity, we used multiple observers on fire missions. This allowed us to clearly observe the target via multiple site lanes created by alleys and streets.

However, under heavy fire, the observers could not always gain the vantage point with a clear line-of-site to the target and also observe adjusting rounds. In these situations, we integrated 2-17 Cav's OH-58 Kiowa Warriors as aerial observers that were particularly effective in positively identifying targets and controlling artillery fires. The aviators monitored the brigade's FM fires net, cleared fires directly with the various task force commanders and FSOs, and then sent their calls-for-fire through the FSE to the DS artillery battalion tactical operations center (TOC).

The brigade's plan involved four maneuver battalions attacking simultaneously from different directions. Each element was supported by 2-17 Cav aircraft for close combat attacks and aerial observation.

Clearing fires and deconflicting airspace proved challenging with artillery firing across the width of the battlefield. See the figure for TTP to conduct missions using aerial observers.

This TTP allowed us to cover each ground maneuver battalion with attack aviation continuously and ensured the safety of the pilots and aircraft. With the OH-58s monitoring the fires net and all involved elements understanding the TTP, artilleryman repeatedly massed two or more batteries against high-payoff targets (HPTs) and inflicted many enemy casualties—particularly against dismounted forces. In Karbala, FA fires controlled by FOs and attack aviation provided devastating effects on enemy forces.

Hillah. Immediately on the heels of the battle in Karbala, the 3d BCT

launched an attack on the historic city of Hillah (ancient Babylon). Partially because Hillah was mid-way between Najaf and Karbala, the Div Arty provided nine artillery batteries in support of the 3d BCT. In addition to its normal DS battalion, 3-320 FAR, the 3d BCT received supporting fires from 1-320 FAR in a reinforcing mission to 3-320 FAR, a battery from 2-320 FAR (105-mm, towed) attached to 3-320 FAR, and C/1-377 FAR (155-mm, towed) also attached to 3-320 FAR. Once again, two Q-36 radars supported the battle, and the Div Arty established a sensor-to-shooter link between a 234 FAD Q-37 radar section and C/1-27 FA (MLRS).

3d BCT initiated the battle with a reconnaissance-in-force on 8 April with a heavy force advancing from the west and a light force approaching from the south, both supported by close and accurate fires. 3-320 FAR "tucked" five firing batteries behind the armor column of 14 tanks. Meanwhile, two batteries supported the light force and one battery continued a long move into position.

The artillery targeted enemy troop locations along the roads, sniper/machine gun positions in buildings and known air defense artillery (ADA) sites. Artillery fired throughout the night, using illumination for harassing fires and HE/VT for known enemy positions within the city.

Ninety minutes before initiating the main attack on 9 April, 3-320 FAR executed an aggressive schedule of fires, massing multiple batteries on single targets and firing as many as eight batteries simultaneously. These preparatory fires focused on ADA sites, troop barracks and military facilities. The brigade FSO also incorporated Army aviation assets and close air support (CAS) into the attack.

The artillery fires were extremely accurate, and the massed fires proved effective at destroying point targets. As the maneuver forces continued their advance, FSOs and FOs cancelled some of the planned targets because earlier fires had already destroyed them.

The initial onslaught of accurate and massed fires was largely credited with destroying the enemy's will to resist and contributing to a general collapse of enemy defenses. After the initial volleys, maneuver forces advanced rapidly; by mid-morning, the 3d BCT had secured the city.

Throughout urban operations south of Baghdad, fire supporters struggled with employing battalion and company mortars in the fight. Due to the depth of the battalion area of operations and the need to maximize range, 81-mm mortar platoons occupied close to city edges. Company 60-mm mortars moved forward with their lead elements into the city.

As the maneuver forces progressed deeper into the city, the mortars often occupied complexes with exterior walls. The exterior walls provided protection from direct fire, and security forces, to include snipers, occupied the upper levels of buildings within the walls to provide force protection for the mortars. Due to concerns for civilian casualties and infrastructure damage, fire supporters found it challenging to register the mortars. Within the cities, 60-mm mortars proved to be a valuable asset in direct lay mode against an identified enemy.

Given the circumstances, fire supporters and their maneuver counterparts often opted to use artillery fires instead of mortar fires.

After Coalition Forces advanced to Baghdad and the regime collapsed, the bulk of the division helped secure and clear the southern portion of the Iraqi capital while 1st BCT remained in the south attached to the 82d Airborne Division.

Mosul. The division then advanced to the north to defeat non-compliant forces and establish a safe and secure environment in the ethnically diverse region. The division's efforts focused on the population center of Mosul.

Initially hovering in the gray area between combat operations and stability and support operations (SASO), the 2d BCT advanced on the city with 1-320 FAR DS and the recently arrived 1-377 FA (-) reinforcing 1-320 FAR. Although the initial situation in the city had been tense, the 2d BCT entered under semi-permissive conditions and rapidly established a military presence and instilled order. 1-320 FAR and 1-377 FA (-) used illumination effectively to discourage looters, supporting infantrymen with nonlethal fires.

Urban Fires Lessons: Maps and Low-Angle Fire. Due to the scope of operations in Iraq, units were issued

C/3-320 FA fires in support of combat operations in Karbala. *Photo by 1SG James B. Waters, C/3-320 FA*

1:100-kilometer scale maps for the majority of the country. Although these maps provided a large-scale picture of operations spanning hundreds of kilometers, they did not provide fire supporters the detail needed to accurately call-for-fires. 1:12.5-kilometer maps of the cities were available in limited quantities.

To provide every FO a map with detailed imagery down to five-meter resolution, battalion FSEs printed satellite imagery available on Falcon View. This satellite imagery provided FOs the resolution required to identify particular buildings and navigate through the city streets. They used these printouts to obtain accurate target grids in conjunction with the Viper laser rangefinders or mini eye-safe laser infrared observation sets (MELIOS).

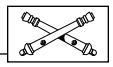
At a minimum, observers were required to call in eight-digit grids and elevations for targets in urban areas. Six-digit grids allowed too much room for error in the urban environment. A difference of 100 meters easily could result in civilian and (or) friendly casualties and unwanted infrastructure damage.

Although doctrine calls for high-angle fires in urban environments, low-angle fires proved the firing method of choice for fire supporters in close proximity to the enemy. Except for Baghdad, most of the buildings in the Iraqi cities did not exceed three stories in height. The use of eight-digit grids with elevations reduced the challenge of clearing intervening crests. Therefore, units were not forced to use high-angle fires.

The longer range of low-angle fires decreased the number of moves artillery units had to make to provide indirect fire coverage of the entire operating area. The combination of greater range and accuracy afforded by low-angle fires proved effective in most urban areas.

Although the urban environment presented unique challenges, artillery continues as a relevant, critical element of combat power across the spectrum of urban operations. Fire supporters and artilleryman complied with all the tenets of the Laws of Land Warfare and the Coalition Forces Land Component Command (CFLCC) ROE while delivering close and accurate fires in support of maneuver forces. Artilleryman must continue to be proactive and ensure the maneuver commander incorporates FA fires into his operations.

The 101st Airborne Division (Air Assault) experiences during OIF are ample testimony to the effectiveness of fires in the urban environment; the battles should be reviewed as case studies for fighting with fires in an urban environment.

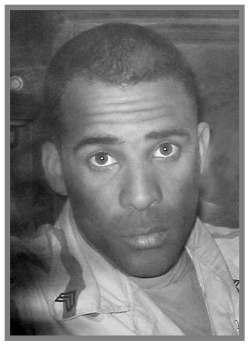


Colonel William L. Greer, until recently, commanded the 101st Airborne Division (Air Assault) Artillery and deployed the Div Arty to Iraq in Operation Iraqi Freedom (OIF). Currently, he is the Deputy for Plans and Policy, J5, of the US Forces in Korea. Prior to 101st Div Arty command, he was the Senior Fire Support Observer/Controller (O/C) at the Joint Readiness Training Center, Fort Polk, Louisiana, where he had served as a Brigade Fire Support O/C. In other assignments, he was the Div Arty Executive Officer and commanded the 3d Battalion, 320th Field Artillery (3-320 FA), both in the 101st Division at Fort Campbell, Kentucky.

Major Martin J. Holland is the S3 of the 101st Division Artillery and deployed with the division to Iraq for OIF. He also served as the Div Arty Assistant S3 and S3 of 1-320 FA, both in the 101st Division. He taught Military History at the USMA at West Point after being awarded an MA in History from the University of North Carolina at Chapel Hill. Major Holland was the Executive Officer for Headquarters and Headquarters Battery in the 101st Div Arty during Operations Desert Shield and Storm in the Gulf in 1991.

Captain Charles W. Kean, until recently, was the Battalion Fire Support Officer for 1-502d Infantry Battalion, 2d Brigade Combat Team, as part of the 1-320 FA, 101st Airborne Division; he deployed with the division to Iraq for OIF. Currently, he is the Fire Control Officer of the 101st Div Arty. He also served as a Platoon Leader, Battery Executive Officer and Battalion Maintenance Officer in 4-27 FA, 1st Armored Division in Baumholder, Germany. He is a graduate of the FA Captain's Career Course, Fort Sill, Oklahoma.

Sergeant Rashaan G. Canady: *Far Rockaway, New York, 13F20, Battery Commander's Driver, HHB, 1-41 FA, 3d ID.* SGT Canady was courageous under fire while engaged in combat near Baghdad, Iraq, in support of Operation Iraqi Freedom. On the afternoon of 4 April 2003, SGT Canady drove Captain Tristan Aitken, the HHB commander, in his high-mobility multipurpose wheeled vehicle (HMMWV) as he led a convoy to recover disabled vehicles and return them to the battalion's maintenance collection point at the Baghdad International Airport.



After the convoy recovered four combat vehicles, the enemy ambushed it with rocket-propelled grenades (RPGs) and small arms fire about three kilometers away from the battalion's position. SGT Canady continued to drive the lead vehicle through heavy enemy fire without regard for his own safety or well being. An RPG struck the vehicle on the senior occupant's side, ejecting SGT Canady from the vehicle. SGT Canady's right arm was partially amputated by the blast, and he sustained a significant fragmentation wound to his left hand.

Despite his severe injuries, SGT Canady moved 150 meters under heavy enemy fire to retrieve his vehicle and his wounded commander still inside. After determining his vehicle could move under its own power, he backed it out of a ditch and drove his mortally wounded commander through a maelstrom of concentrated enemy fire to the safety of B Battery's position.

SGT Canady's bravery under fire prevented the deployment of additional soldiers from the B Battery Quick-Reaction Force to retrieve his convoy, potentially saving their lives as well. Additionally, his dedication to duty resulted in the safe and timely return of essential combat vehicles to the battalion for continuing combat operations.

SGT Canady was awarded the Silver Star and a Purple Heart for his heroic actions during combat in Iraq.

Historical Recounting of *Marne Thunder* in OIF

By Major Robert W. Rooker

1-9 FA, 3d ID

"That's my story and I'm sticking to it," joked the 3d Infantry Division (Mechanized) Artillery (Div Arty) Commander during a post-conflict briefing to the V Corps Commander. The PowerPoint slide read,

"Enemy killed by 3ID(M) Artillery = 2,754; 3ID (M) soldiers lost to Enemy Artillery = 0."

While artillerymen argue the validity of artillery battle damage assessment (BDA) in forums everywhere, the spirit of the slide remained unquestioned—the artillery battle was truly a one-sided victory for Coalition Forces.

The 3d Div Arty fought hard during the 21-day invasion of Iraq, providing timely and effective fires in support of the division. While in constant enemy contact, artillery units traversed across 600 kilometers and arrived on the steps of Baghdad with lightning speed.

The 3d Div Arty and 214th FA Brigade fired 13,923 155-mm rounds, 794 M26 multiple-launch rocket system (MLRS) rockets and six Army tactical missile system (ATACMS) missiles in combat. Be it firing for counterfire or close support of maneuver or synchronizing close air support (CAS), the King of Battle *delivered*.

Prelude to War—3d Division Arrives in Kuwait. Operation Desert Spring was a familiar mission to the division's brigades. The 3d Brigade Combat Team had just returned from a continental US (CONUS) crisis reaction force (CCRF) mission (March through October 2002) with 1st Battalion, 10th Field Artillery (1-10 FA); B Battery, 1-39 FA (MLRS) (B/1-39 FA); and one Q-37 Firefinder radar section. Units began arriving in the area of operations in mass in January 2003. The 3d Div Arty units echeloned into Kuwait with their habitually supported maneuver units as well as the Div Arty headquarters.

The 3d Division's 2d Brigade was already on the ground, finishing its scheduled six-month CCRF rotation as the rest of the division fell in line. 1-9 FA, C/1-39 FA and one Q-37 radar welcomed the rest of the Div Arty into country; the units ultimately closed by the end of January. The 3d Division units arrived from Forts Benning and Stewart, Georgia; C/3-13 FA (MLRS), from the 214th FA Brigade, Fort Sill, Oklahoma, rounded out 1-39 FA.

February brought reception, staging, onward movement and integration (RSOI) activities to the Div Arty as it drew equipment from Army prepositioned stocks (APS) in Camp Doha, Kuwait. The Div Arty also conducted "Thunder in the Desert," a live-fire exercise (LFX), to validate the recently fielded advanced FA tactical fire direction system (AFATDS) software. The Div Arty massed fires for the first time in 12 years during the LFX.

Early March brought movement of the division from its base camps to tactical assembly areas (TAAs) in the Kuwaiti desert. Div Arty units began pre-combat checks and inspections plus rehearsals for the upcoming conflict.

On 17 March, the President of the United States set the stage for what was to come by issuing a 48-hour ultimatum to Saddam Hussein to leave Iraq or be thrown out.

The War Begins, 19-20 March. On 19 March, Div Arty units moved to attack positions and prepared for war. 1-41 FA moved with 1-10 FA to positions five kilometers from the Kuwaiti-Iraqi border. The 3d Division plan called for a combined arms destruction with Div Arty taking out a series of 11 Iraqi intelligence, surveillance and reconnaissance observation posts (ISR/OPs) in conjunction with AH-64 Apaches from the division's 4th Brigade. These outposts traversed the Kuwaiti-Iraqi border for 70 kilometers along the 3d Division's zone. (See the map on Page 3.)

1-41 FA occupied the northern sector, and 1-10 FA occupied the center with the Div Arty headquarters. 1-9 FA occupied the southern sector of the border with 2d Brigade. The plan called for battalions to fire battery six-round mis-

sions on each ISR/OP with the Apaches confirming the destruction.

The Div Arty planned the destruction as a time-on-target (TOT) mission with combat observation lasing teams (COLTs) and brigade reconnaissance teams (BRTs) as observers. Additionally, one hour after the ISR/OP destruction, 1-39 FA occupied a position area to shoot six ATACMS in support of V Corps deep shaping operations.

The ISR/OP destruction occurred one day ahead of schedule, setting the stage for the next morning's ground attack.

The Battle for An Nasariyah and Tallil Airbase, 21-22 March. Combat units crossed the Kuwaiti-Iraqi border early on 21 March. The plan called for two brigades to move north 140 kilometers and destroy the Iraqi 11th Infantry Division in An Nasariyah. The Div Arty's organization for combat called for 1-41 FA reinforcing (R) 1-10 FA in direct support (DS) of the 3d Brigade.

Simultaneously, the division cavalry squadron (3-7 Cav) and the 2d Brigade raced through the Iraqi desert 275 kilometers northwest toward As Samawah and An Najaf. 1-9 FA traveled northwest through the Iraqi desert with 2d Brigade and provided a battery DS to 3-7 Cav.

The Div Arty headquarters retained 1-39 FA in general support (GS) along with the two Q-37 radars. Both 1-39 FA and the Div Arty traveled to An Nasariyah in the 3d Brigade's march column.

As 3d Brigade raced toward An Nasariyah, the FA battalions moved toward their position areas to provide preparatory fires for the brigade's attack. The enemy started firing artillery immediately on the 3d Brigade as it came into range, forcing all artillery units to stop short of their planned objectives and commence emergency fire missions. DS Paladin emergency missions broke high-mobility multipurpose wheeled vehicle (HMMWV) windshields as the Paladins fired from their march columns.

This gave tankers and infantrymen their first glimpse of Paladins' firing up close—155-mm power and concussion never experienced or replicated in training.

At one point during the attack on An Nasariyah, 1-41 FA stopped and quickly fired a mission next to the division tactical command post (DTAC). The battalion's speed in action garnered a pleasant first reaction from the Assistant Division Commander (Maneuver) as he witnessed Paladin in battle for the first time. From that point on, Paladin was a welcome addition to the play book of maneuver commanders who formerly had been hesitant to lead with artillery.

1-39 FA and the Div Arty tactical operations center (TOC) stopped short of their positions and engaged an enemy D-30 cannon artillery battalion, stopping the enemy fire immediately.

The battle for Tallil Airbase kicked off roughly three hours ahead of schedule with the Div Arty firing an 11-target suppression of enemy air defense (SEAD) plan supporting 4th Brigade's aerial attack. 1-10 FA and 1-41 FA provided DS fires for the 3d Brigade's attack into the night; the FA battalions encountered enemy dismounts within their perimeters.

B/1-10 FA helped give tankers and infantrymen their first glimpse of a Paladin's firing up close-155-mm power and concussion never experienced or replicated in training.

All the while, 1-39 FA provided MLRS counterfire against the 11th Infantry Division Artillery. AFATDS and the automated deep operations coordination system (ADOCS) interface worked better than expected, providing the Div Arty real-time graphical situational awareness of counterfire acquisitions for the first time in battle. The Div Arty could witness enemy vectors on a map or satellite photograph overlay—a *first*—and decide how to engage the acquisitions in a matter of seconds.

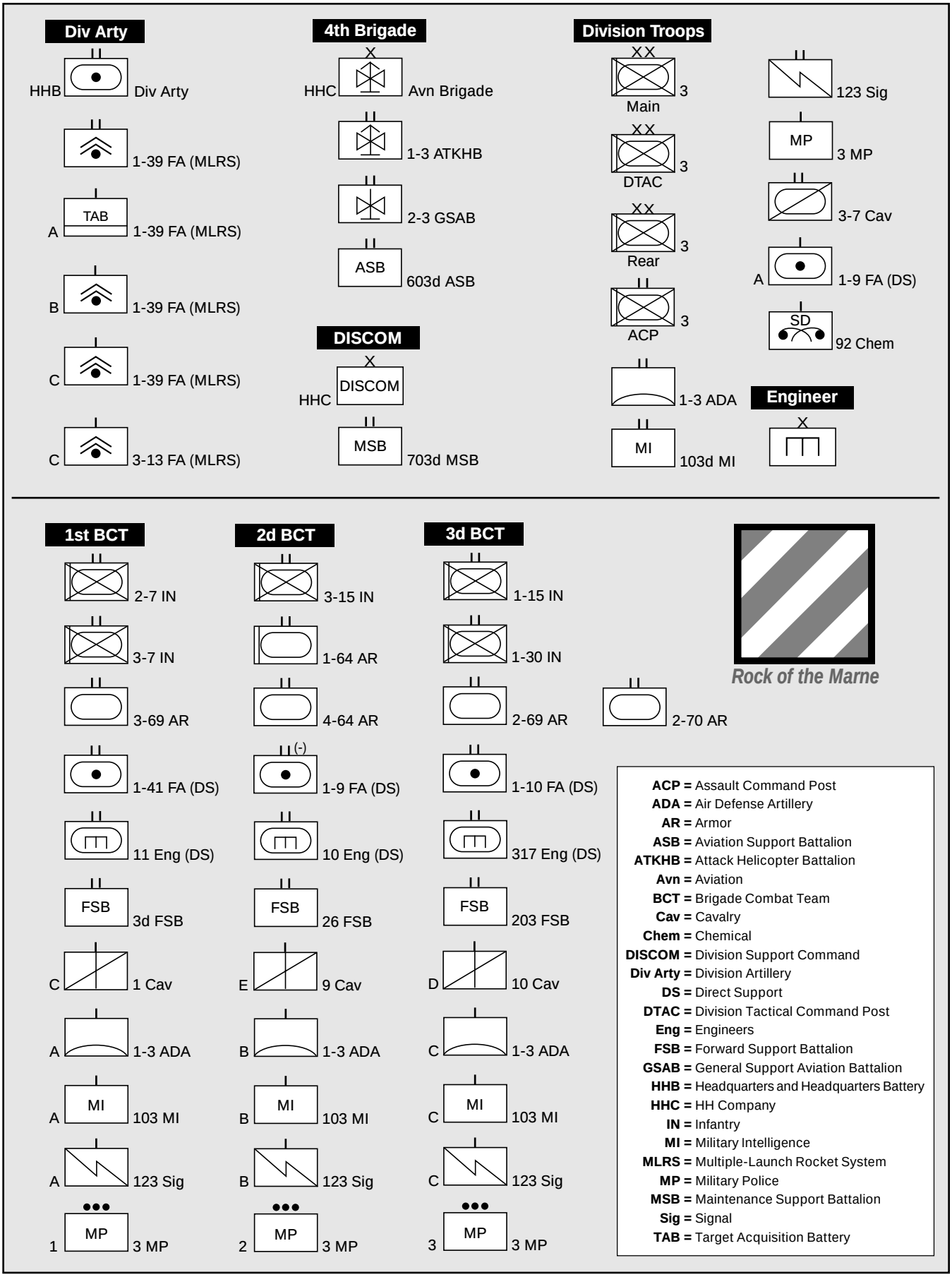
At the end of the day, dog-faced artillerymen had had their first taste of combat yet remained focused. Paladin had proven itself in battle as expected, and the artillerymen were ready to continue the fight.

The *Marne* 500—Forward Passage-of-Lines, 22-24 March. While 3d Brigade fought at Tallil, 2d Brigade and 3-7 Cav continued to move through the southwestern Iraqi desert and arrived in As Samawah early on 22 March. Enemy dismounted soldiers, artillery and paramilitary trucks with machine guns—the latter dubbed "technicals"—greeted the 2d Brigade with a not-so-friendly welcome. 3-7 Cav stopped in As Samawah and contained the enemy while 2d Brigade (with 1-9 FA DS) bypassed and continued north toward An Najaf and Objective Rams. Ojective Rams was key terrain close to a pass known as "the escarpment" and eventually was occupied as a logistics support area. 2d Brigade encountered occasional artillery barrages during its move toward Rams. 1-9 FA stopped several times to fire counterfire missions.

1-10 FA with 3d Brigade in An Nasariyah also recorded a *first* for the FA. Observers spotted two tanks and destroyed them with sense and destroy armor (SADARM) rounds—the first fired in combat. The munition worked exactly as designed and destroyed the tanks.

Early morning on 22 March found the division conducting a forward passage-of-lines as planned before the war. 1st Brigade moved through 3d Brigade and traveled 275 kilometers toward Objective Raiders. This objective was just north of Objective Rams (the escarpment) on Highway 28. The race was on.

When 1st Brigade conducted its passage-of-lines, 1-10 FA and 1-41 FA



3d Infantry Division (Mechanized) Task Organization in Operation Iraqi Freedom (OIF)

T-72 tank knocked out by the 3d Brigade, 3d Infantry Division.

flip-flopped combat roles. 1-10 FA reinforced 1-41 FA's DS fires for 1st Brigade. Both battalions raced alongside 1st Brigade toward Objective Raiders.

1st Brigade battled through a road along the escarpment while moving more than 3,500 corps and division vehicles north through As Samawah in the fastest attack in the Army's history. 1-41 FA stopped to fire missions short of the escarpment, a natural canalization point, and screened the brigade's movement with smoke on the northern (upper) side.

Heavier than expected enemy resistance in As Samawah diverted the division's move around the town. The Div Arty and 1-39 FA, caught in the rerouted traffic, moved through the division support command (DISCOM) to get vital MLRS launchers and radars to the fight.

Fierce enemy resistance caused Div Arty units to move under constant contact during their 48-hour marathon. The Div Arty cannon battalions fired 24 missions during the move.

Tired yet determined, artillerymen finally occupied Objectives Raiders and Rams with their brigades. 1-39 FA occupied Objective Raiders in the early morning of 24 March and silenced enemy artillery with its MLRS almost immediately upon arrival—a welcome relief to the brigades.

Fighting the Fedayeen, 25-31 March. As the division finished its massive move north, 3-7 Cav and 3d Brigade fought fiercer than expected resistance in As Samawah and An Najaf. An intense sandstorm helped enemy Fedayeen and Ba'ath Party paramilitary fighters engage M1A2 Abrams tanks and M2 Bradley fighting vehicles at point-blank range. The enemy disabled two tanks and one Bradley.

While A/1-9 FA engaged human waves of Fedayeen fighters at 1,400 meters, 1-39 FA fired 12 rockets in support of 3-7 Cav, allowing the cavalry squadron to disengage. Critically low on ammunition, 3-7 Cav fire supporters called the MLRS missions within 1,200 meters of the squadron, enabling it to break contact. The rockets stopped the enemy attack *cold* as 3-7 Cav pulled out.

When asked if they needed additional fires, the Cav observers responded, "There's no need—*everything* is burning." Under arduous circumstances, MLRS fires were used danger close for the first time with great effectiveness.

The division's plan included a feint by 3-7 Cav across the Euphrates River to draw Republican Guard Forces out of Baghdad to the south. The plan worked exactly as designed, and the division hastily conducted two more feints; waves of Iraqi fighters moved south. 1st Brigade engaged thousands of enemy paramilitary soldiers in Al Kifl while 2d Brigade engaged forces in An Najaf and An Diwaniyah.

1-41 FA and 1-10 FA fired countless close fire missions as 1st Brigade repelled wave after wave of enemy foot soldiers in Al Kifl. Additionally, 1-39 FA and both cannon battalions engaged an enemy column temporarily halted while moving south along the highway; an unmanned aerial vehicle (UAV) had confirmed the enemy column. The battalions destroyed at least 21 enemy vehicles with cannon and MLRS fires.

The 214th FA Brigade joined the 3d Infantry Division fight general support reinforcing (GSR) on 27 March and reinforcing on 31 March. The 214th *Leader* Brigade brought to battle 2-4 FA (MLRS) and the 1st FA Detachment (FAD)—a welcome sight for the 3d Division.

The fight in Objectives Raiders and Rams lasted for seven days as the division continued using feints at key river crossing points between An Najaf and Karbala. An interesting dynamic developed as the division used the feints to draw forces in the open to engage them with fires: maneuver shaped the battlefield for fires instead of fires shaping the battlefield for maneuver.

In seven days of fighting, Div Arty units fired 2,828 155-mm artillery rounds and 196 rockets, providing 3d Division maneuver forces close supporting fires and counterfire.

Attack Through the Karbala Gap and Across the Euphrates River, 1-3 April. While 3d Infantry Division units fought valiantly on the outskirts of An Najaf and An Diwaniyah, a giant task loomed ahead: continuing the offensive toward Baghdad. Units conducted tactical resupply and prepared for orders to continue the attack. Morale across the division soared when the order came on 1 April to attack through the Karbala Gap toward Baghdad.

The division's plan called for the 3d Brigade to fix forces in Karbala while 1st and 2d Brigades attacked through the gap and seized a bridgehead along the Euphrates River. Intelligence indicated the four-kilometer gap west of Karbala was the best tactical emplacement point for the enemy's chemical agents. 3d Infantry Division soldiers increased their mission-oriented protective posture (MOPP) to Level II, preparing for a chemical strike that, thankfully, never came.

The Div Arty initiated the attack through Karbala with a nine-target, 96-rocket prep fired in support of 3d Brigade reconnaissance elements. Artillery preparatory fires lit up the sky as maneuver forces moved toward the town and the gap. Shortly thereafter, 1st Brigade with 1-41 FA moved through the gap, bypassing 3d Brigade to the west.

The 214th FA Brigade moved with the 1st Brigade and occupied a position north of the gap to provide counterfire coverage, engaging 10 acquisitions. Once the 214th Brigade was set, the 3d Infantry Div Arty and 1-39 FA moved

through the gap and sped north to the Euphrates River.

1-41 FA, moving with the 1st Brigade, crossed the Euphrates with the lead task force; simultaneously, 1-39 FA closed on its position to support seizing the bridgehead line—a four-lane bridge known as Objective Peach. 1-10 FA, then reinforcing the 1st Brigade, moved to an alternative crossing site 15 kilometers south of Objective Peach in Mussayib, called Objective Hannah, and supported the brigade's attack on this secondary objective. On 1st Brigade's heels, the 2d Brigade also moved through the gap and positioned itself to become the division's main effort for the attack across the river.

An intense counterfire battle broke out immediately as the Div Arty and 1-39 FA occupied position areas along the Euphrates River. Iraqi Republican Guard Artillery fired numerous volleys while 1-39 FA returned rocket fire in 10 counterfire missions, silencing the enemy guns. Intense fire fights with enemy dismounts also broke out in artillery perimeters across the front.

By the morning of 3 April, the *Rock of the Marne* Division had added the Euphrates River to its famous combat history.

Attack to Baghdad, 3-5 April. The tempo never slowed as the 3d Infantry Division established a bridgehead line with 1st Brigade and secured the eastern shore of the Euphrates River. The 2d Brigade with 1-9 FA blew across the river. The brigade immediately attacked a key enemy strongpoint at the intersection of Highways 1 and 8 south of Baghdad, known as Objective Saints.

1-9 FA crossed the Euphrates River heading toward a position area eight kilometers southeast of Objective Saints. As the battalion's lead elements cleared the position for occupation, they captured 11 enemy soldiers. Intense indirect and direct fire fights broke out simultaneously as enemy Republican Guard units fiercely defended their capital city. 1-39 FA fired two targets on 400 enemy dismounts during the attack on Objective Saints. By the end of the day, the 2d Brigade had isolated Baghdad to the south.

After the 2d Brigade secured Objective Saints, 1-10 FA, then reinforcing 1-9 FA, crossed the Euphrates in support of 2d Brigade's move south to destroy the remaining Medina Division Republican Guard units.

Exploiting 2d Brigade's success, 1st Brigade and 1-41 FA attacked north to Baghdad International Airport, known as Objective Lions. 1-39 FA and 2-4 FA fired preparatory fires against Special Republican Guard defenses on the airport complex.

MLRS fires followed by cannon fires immediately preceded Task Force 3-69 Armor's (TF 3-69 AR's) attack. 1st Brigade tanks began their assault on the airport in near-perfect synchronization after the last of the 90 rockets and hundreds of 155-mm rounds paved the way.

1-41 FA fired on enemy strongpoints on the airport and battled enemy dismounts throughout the day. The battalion ultimately fought its way to a position area four kilometers southwest of Objective Lions. The 1st Brigade with 1-41 FA fought Iraqi Special Republican Guard strongholds in the heart of

On 5 April, 3d Division units rolled into Baghdad. The division's speed and lethal firepower caught the Republican Guard forces by surprise- 3d Division soldiers *knew* they were on the verge of victory.

enemy territory, taking two days to clear the massive airport complex of enemy resistance. Altogether, 1-41 FA fired 75 missions and 2,097 rounds during the Battle for Baghdad International Airport.

The Div Arty continued its counterfire battle against Republican Guard Artillery on the outskirts of Baghdad. Radar acquisitions came fast and furiously as the Div Arty processed them. 1-39 FA and 2-4 FA continued a steady volume of MLRS fire throughout the attack.

The Div Arty then moved 1-39 FA across the Euphrates, positioning MLRS east of the river to better support the attack. 1-39 FA fought its way through enemy dismounts and occupied a position with the Div Arty headquarters south of Baghdad.

By the morning of 5 April, 3d ID units had completely isolated Baghdad from the south and west. 2-4 FA moved across the Euphrates River and joined 1-41 FA on Objective Lions to extend the division's MLRS rocket coverage, enveloping the entire city of Baghdad.

The division's speed and lethal firepower caught the Republican Guard forces by surprise—3d Division soldiers *knew* they were on the verge of victory.

The Iraqi Regime Collapse, 5-9 April. Despite Iraqi television reports to the contrary, the 3d Division forces controlled the outskirts of Baghdad. To prove this point, on 5 April, the division sent an armored task force from 2d Brigade through the middle of Baghdad to join up with the 1st Brigade at the airport. This attack, called "Thunder Run One," broke the spirit of the Iraqi Army as well as the credibility of the Iraqi government reports.

The 3d Division successfully controlled south and west Baghdad. With Marines closing in from the east, the only area remaining to complete the encirclement was north of Baghdad.

On 6 April, the 3d Brigade received orders to attack and isolate Baghdad from the north. 1-10 FA rejoined the 3d Brigade and moved north then east around Baghdad to seize the key intersections of Highway 1 and Canal Road, known as Objective Titans. The battalion fought through small-town "sniper alleys" and heavily populated areas north of Baghdad as it moved toward its objective. In its longest day of battle, 1-10 FA fired 31 missions in support of 3d Brigade's attack. Eventually, the 3d Brigade completed the encirclement and isolated Baghdad.

Redlegs celebrate- 3d Infantry Division units brought to fruition years of training, technological improvements and soldier professionalism on the banks of the Euphrates River.

Expanding on Thunder Run's success, the 2d Brigade launched an attack into the heart of Baghdad to seize the Presidential Palace Complex and Iraqi Ministry buildings on 7 April, known as "Thunder Run Two." The Div Arty and 1-39 FA opened the attack with a 12-rocket preparatory fire plan on four targets along 2d Brigade's route. 1-9 FA also fired 19 targets during the attack as the brigade battled enemy forces at every turn. The Iraqi soldiers were in the final throes of trying to protect their powerless leader.

The Iraqi forces defended in vain as the 2d Brigade and Marines attacked the heart of the city. Saddam's statue fell on 8 April, signaling the unofficial collapse of his regime. US forces continued to fight pockets of resistance and seize palace compounds as Iraqi citizens cheered the 3d Division on.

1-41 FA fired the last artillery round of the war on 10 April. The Div Arty headquarters received word it would become the Force Protection Headquarters for Baghdad International Airport. The 3d Division had won the war and was quickly transitioning to stability and support operations (SASO).

The 3d Infantry Division Artillerymen performed admirably during Operation Iraqi Freedom. As a testimony to FA units everywhere, the 3d Infantry Division Artillery units brought to fruition years of training, technological improvements and soldier professionalism on the banks of the Euphrates River. Soldiers and leaders at every level executed artillery tasks, contributing immensely to the 3d Infantry Division's success and earning a place in military history.

Altogether, the 3d Infantry Division Artillery cannon and rocket battalions with the 214th FA Brigade destroyed 526 enemy tanks, trucks and artillery pieces; 67 buildings, OPs and bunkers; and 2,754 enemy soldiers without losing a single soldier or piece of equipment to enemy indirect fire—truly a one-sided artillery fight and truly a victory for the Coalition Forces.

Major Robert W. Rooker is currently the S3 for 1st Battalion, 41st Field Artillery in the 3d Infantry Division (Mechanized), Fort Stewart, Georgia. He was the Assistant S3 for the 3d Division Artillery in Iraq during Operation Iraqi Freedom. He commanded A Battery, 1st Battalion, 7th Field Artillery in the 1st Infantry Division (Mechanized), Schweinfurt, Germany, deploying in support of Operation Joint Endeavor in Bosnia-Herzegovina. He also served as the Task Force Fire Support Officer for the 1st Squadron, 10th Cavalry with the 194th Armored Brigade (Separate) at Fort Knox, Kentucky. His other assignments are as the Media Relations Officer for the 25th Infantry Division (Light) in Schofield Barracks, Hawaii, and Branch Chief of Basic Camp for the 2d ROTC Region, also at Fort Knox.

Military Wives

They say, "You must be used to it,"
My heart says it's not so.
There's just no getting used to watching
The man that I love go.

I know that I am not alone
Many others share my strife.
We share a bond - a sisterhood
Of the military wife.

We say good-bye time and again
And we fight to hide the tears
As we face the lonely nights ahead
Our sadness and our fears.

We stand strong as they depart
We'll keep the home fires warm
Beneath our breath, we say a prayer
That they will meet no harm.

We send our loves to foreign lands
That others may be free.
We watch them march to battle
To fight for liberty.

They have faith that we'll be fine
And we'll stand behind our men
As we await their coming home
Although we know not when.

As we gaze upon our nation's flag
It makes us catch our breath
For the flag they've followed in their lives
Will cover them in death.

We know that we are privileged
We've been blessed throughout our lives
For we're married to our heroes
We are military wives.

Kathy McCauley
2-18 FA Military Wife
Operation Iraqi Freedom

Cannon Cockers at War:
The 11th Marines in Operation Iraqi Freedom

By Lieutenant Colonel Michael R. Melillo, USMC

During the 1st Marine Division's epic attack from northern Kuwait to Basrah, Al Kut, Baghdad and Tikrit, the 11th Marine Regiment moved farther and faster than any Marine artillery regiment in history.

Despite the arduous conditions, rapid advance and difficult terrain, the 11th Marines engaged the enemy in every battle of the campaign. No other regiment can make that claim. The 11th Marines processed more than 1,900 radar missions and fired 19,883 rounds with tremendous accuracy and devastating effects in support of the 1st Marine Division.

This is the story of the 11th Marines in Operation Iraqi Freedom (OIF).

The 11th Marine Regiment began deploying in support of Operation Enduring Freedom (OEF) and OIF on 17 January 2003 when elements of the 1st Battalion, 11th Marines (1/11) set sail from San Diego, California, as part of the seven-ship flotilla comprising Amphibious Task Force West (ATF-West).

Training for War. Although 17 January marked the beginning of the regiment's deployment, the 11th Marines began preparing for the deployment and eventual combat operations months before. All training focused on the potential deployment: moving rapidly, delivering accurately massed fires and defeating the Iraqi Army's potent artillery threat.

Initial training exercises at Camp Pendleton, California, (July 2002) and the Marine Corps Air Ground Combat Center (MCAGCC) at Twentynine Palms, California, (September 2002) focused on moving through restricted terrain, deploying using maritime prepositioning force (MPF) assets, meeting the five requirements of accurate predicted fire and streamlining command and control (C^2) of the regiment. This initial training culminated with a live-fire division tactical exercise without troops (TEWT) at MCGACC.

Marines of Gun Two, Lima Battery fire their M198 towed howitzer at a target in Iraq.
Photo by LCpl Andreas A. Plaza, USMC

Upon returning from Twentynine Palms, the regiment participated in a I Marine Expeditionary Force (I MEF) exercise that served as a rehearsal for operations in Iraq. This enabled the regiment to integrate many of the command, control, communications and computer (C^4) systems that were not employed during the division TEWT in September and exercise C^2 in a scenario it was likely to face in the near future.

In each of these exercises, the regiment learned new lessons. The interaction between the staffs within the regiment served to build a cohesive team and developed a greater understanding of the enemy and the terrain on which the regiment would fight.

FA-Air Wing Quick-Fire Counterfire Tactics, Techniques and Procedures (TTP). In the fall, as the regiment began more detailed planning for initial operations against the Iraqi III Corps in southeastern Iraq, the 11th Marines developed TTP to strike at the enemy's tactical center of gravity: his artillery. Based on the 11th Marines' assessment, the threat was, specifically, the Iraqi Army's multiple rocket launchers (MRLs) and its long-range artillery (GHN-45 and G-5 howitzers).

To counteract this threat, the regiment developed, tested and established a reactive counterfire procedure that integrated the division's artillery with the Marine air wing's fixed-wing aircraft using a "quick-fire" link between the 11th Marines combat operations center (COC) and the direct air support center (DASC).

The regiment communicated digitally—via the advanced FA tactical data system (AFATDS)—with the 1st Marine Division fire support coordination center (FSCC) and used a DASC hotline to accelerate the tasking of "on-station" aircraft to the target, which had been located by a radar. This process reduced the time it took to pass the request between sensor and shooter and to destroy the enemy artillery through a combination of artillery and fixed-wing fires.

Through command post exercises (CPXs) at the I MEF and MCAGCC Simulation Center and a subsequent live-fire exercise at Camp Pendleton, the 11th Marines validated the quick-fire TTP and trained to aggressively employ Q-46A and Q-37 radars to locate the enemy artillery and destroy it with artillery and fixed-wing fires. Throughout the campaign in Iraq, these procedures were employed with great success.

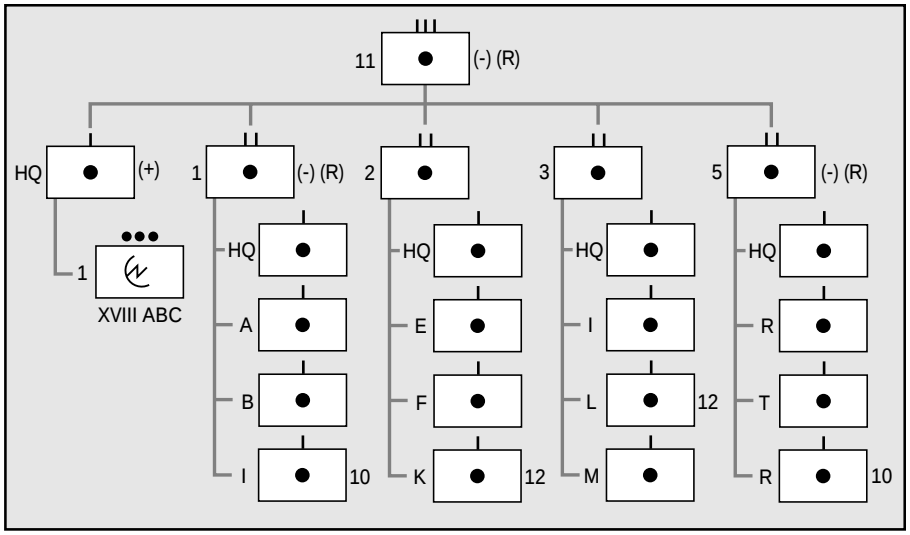


Figure 1: 11th Marines Task Organization. The 1st Battalion, 11th Marines (1/11) and 5/11 were reinforcing (R).

11th Marines Task Organization. The 11th Marines deployed to Kuwait during January and February in support of OEF. Deployed by both air and sea, the regiment had a combination MPF and organic equipment. (See the 11th Marines task organization in Figure 1.) In Kuwait, the regiment had a counterbattery radar (CBR) detachment from the 10th Marines attached—four Q-46A radars, a target processing center (TPC) and 23 Marines—as well as two batteries (I/3/10 and R/5/10). (The two batteries from the 12th Marines were in their six-month rotation with the 11th Marines as part of the routine unit deployment program.) Additionally, the 1st FA Detachment (1st FAD) from the Army's XVIII Airborne Corps in Fort Bragg, North Carolina, was attached, bringing two Q-37 radars, a TPC and 24 soldiers.

During February as the entire regiment slowly reassembled in Kuwait, the regiment maximized its time planning and rehearsing through a combination of CPXs and live-fire training. The regiment calibrated propellant lots on the MPF shipping and conducted a live-fire rehearsal of anticipated initial combat tasks.

By early March, the 11th Marines had integrated its attached units. On 5 March, the regiment occupied position areas in northern Kuwait to provide counterbattery support to the engineers conducting berm-clearing operations along the Kuwaiti-Iraqi border. On 19 March, the 1st Marine Division was ordered to move to attack positions in northern Kuwait.

Going into this operation, the 11th Marines Commanding Officer's guidance to his staff and subordinate commanders was simple: "We must *kill* the enemy at every opportunity—no *pinpricks.*" His intent was equally succinct and left no doubt as to the 11th Marines' purpose: "Protect the Marines and sailors of the 1st Marine Division from the effects of enemy indirect fire systems."

These straightforward words resonated throughout the 11th Marines and were put into action during the 1st Marine Division's attack from northern Kuwait to Al Kut, Baghdad and then Tikrit.

Early on 19 March, the 11th Marine Regiment occupied its tactical dispersal areas south of the Kuwaiti-Iraqi border and made final preparations for the attack into southern Iraq. Task organized with its four organic cannon battalions, the additional CBR detachment from the 10th Marines and the 1st FAD, the regiment was reinforced by two British Army artillery units: the 7th Royal Horse Artillery (RHA) Regiment (18 L118 105-mm towed howitzers) and the 3d RHA (-) (16 AS-90 155-mm self-propelled howitzers).

Integrating these combined forces required detailed coordination to establish unique C^2 arrangements and assign tactical missions to exploit the British artillery's capabilities and complement the divi-sion's scheme of maneuver. (See the 1st Marine Division scheme of maneuver in Figure 2 on Page 26.)

With 106 howitzers, six Q-46A radars, two Q-37 radars and more than 3,000 Marines, sailors and soldiers from two allied nations, the 11th Marines was prepared to support the 1st Marine Division's "Opening Gambit." This was

the division's simultaneous two-pronged attack to seize the Ar Rumaylah Oilfields with Regimental Combat Team 5 (RCT-5) in the west and destroy the Iraqi 51st Mechanized Division with RCT-7 in the east, the latter the division's main effort.

Opening Gambit. Early on 20 March, the 11th Marines occupied their initial position areas just south of the international border. While the remainder of the division occupied its attack positions, the regiment continued to provide counterbattery coverage across the division zone.

At 1132Z, the 11th Marines fired the first rounds of OIF in counterfire to Iraqi cross-border mortar fires. The regiment's response to the mortar fire—a two battalion fire-for-effect (FFE)—set the tone for the war.

H-Hour was planned for 0300Z on 21 March. At 1500 on 20 March, the division issued a fragmentary order (FRAGO) altering the timing of the attack. RCT-5 was to start its attack to seize the key gas-oil separation plants in the Ar Rumaylah Oilfields at 1730Z, nine and one-half hours earlier than planned. In response to this order, 1/11 and 2/11 displaced forward immediately to their planned firing positions.

At 1700Z, the 11th Marines initiated the 1st Division attack against the enemy with a 30-minute counterbattery program against the 51st Mechanized Division and III Corps Artillery defending the Ar Rumaylah Oilfields.

Because the weather conditions on 20 and 21 March reduced the number of close air support (CAS) sorties flown, the 11th Marines had to fill the gap in fire support. Firing at targets previously planned for aviation attacks, the regiment fired with deadly accuracy nearly non-stop throughout the night, destroying several high-payoff targets (HPTs). The HPTs included two Iraqi artillery D-30 battalions, a Type 59-1 battery, a regimental command post, armored vehicles, tanks and an entrenched infantry battalion.

The division FSCC played a key role in the unfolding fight, directing artillery on previously planned air targets and coordinating with the division collections officer for unmanned aerial vehicle (UAV) coverage. The UAVs located the enemy artillery and armor formations, and the 11th massed multiple artillery battalions on the formations.

When RCT-7 crossed the line of departure (LD) at 0300Z on 21 March, the 11th Marines weighted the main effort with three battalions. Leapfrogging battalions to keep pace with RCT-7's tank and mechanized task forces, the regiment delivered unrelenting artillery fires with devastating effects, stripping the enemy defenders of their will to resist.

Within 24 hours, the 1st Marine Division had secured the critical oil infrastructure and rendered the 51st Mechanized Division ineffective—the 11th Marines had silenced the Iraqi artillery.

By nightfall on 22 March, the opening gambit was complete. No friendly forces suffered casualties due to indirect fire, the relief in place by the 1st Armor Division (United Kingdom) was complete, the 7th and 3d RHA Regiments reverted to the tactical control of the 1st Armor Division, and the 11th Marines were displacing west in preparation for the next attack.

Attack Across the Euphrates. On 23 March, the 1st Marine Division attacked across the Euphrates River on a movement-to-contact toward Ad Diwaniyah. By 24 March, sandstorms blinded the force and fuel was in short supply. Fedayeen forces engaged the halted division column all along Highway 1 east of Ad Diwaniyah.

Because visibility was near zero, the conditions prevented aviation from supporting the division. The 11th Marines were the only fire support available to protect the division's forward elements from mortar and surface attack.

For six days and nights, despite fatigue, severely worsening weather, countless enemy mortar attacks and constant probing by Fedayeen "death squads," the 11th Marines provided reactive counterbattery and suppressive fires all along the division's main supply route, Highway 1. (See the map on Page 3.)

Attack Along Highway 7. Simultaneously, for the division's supporting attack up Highway 7, the regiment weighted 1/11 with a TPC and an additional radar to support RCT-1's attack in the east. This decision had an impact on the counterfire fight to the east as one Q-46A radar that routinely supported RCT-1 was down with mechanical problems; the additional radar had to serve as the sole counterfire "eyes."

Once the 11th Marines were within range of Al Kut, the regiment took the division fight to the Baghdad Republican Guard Division, destroying multiple artillery batteries, fortified positions and a regimental headquarters.

While the Division amassed adequate logistics to continue its attack to Baghdad, the 11th Marines coordinated with RCT-5, the division's lead regiment, to integrate 11th Marines units into its column for the attack north. Because of

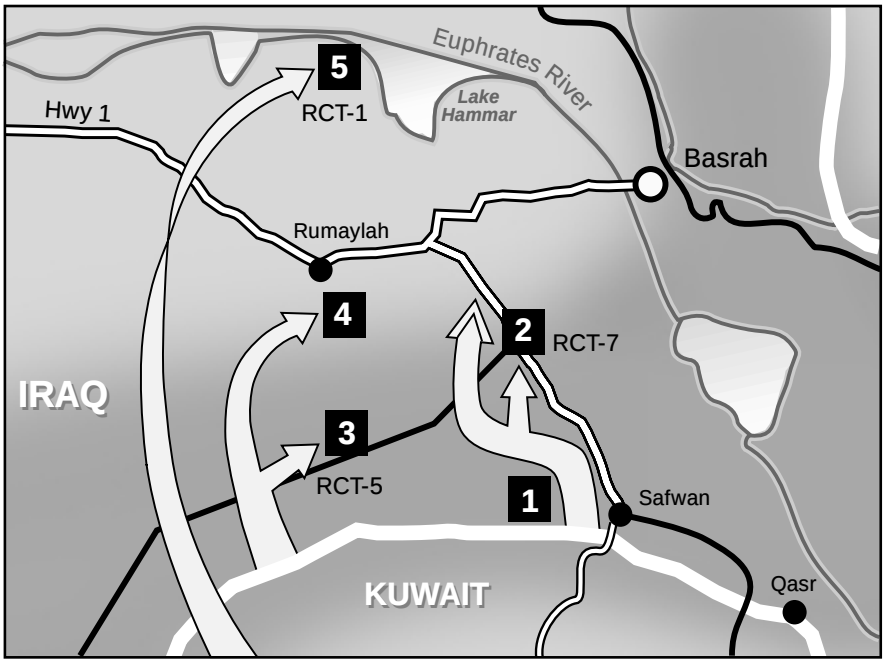


Figure 2: 1st Marine Division's "Opening Gambit." Early on 20 and 21 March, regimental combat teams (RCTs) moved rapidly into Iraq to secure five objectives: 1. Safwan Hill, a high point on the battlefield; 2. Az Zubayr Pumping Station; 3. and 4. Southern and Northern Gas-Oil Separation Plants (GOSP), respectively; and 5. Rumaylah bridgehead across the Euprates River. Simultaneously, the 1st Armored Division (United Kingdom) moved into Iraq and north to isolate and contain Basrah.

the narrow attack corridor and the length of the column, integrating the artillery with the mechanized infantry and armor was the only way to ensure the artillery could range RCT-5's forward battalion.

This required the already fatigued regiment to move more aggressively and maintain the speed and flexibility of the mechanized infantry and tanks. The regimental headquarters integrated its forward and main COCs into the subordinate battalions' convoys and employed battalion clusters to maximize the limited terrain that was suitable for howitzers and trucks.

Due largely to this innovation on-the-fly, the 11th Marines consistently maintained at least two battalions within range to support the division's main effort in its attack across the Tigris River while fighting the Baghdad and Al Nida Republican Guard Divisions.

On 31 March, the division continued its attack toward Baghdad, seizing the Hantush Airstrip on Highway 1 to sustain subsequent attacks across the Tigris River toward Baghdad. The next day RCT-5 secured a vital crossing site over the Saddam Canal and, by 2 April, had seized the bridge across the Tigris River at An Numaniyah, a few kilometers east of Sabat.

Throughout this historic advance, the 11th Marines were directly behind the lead maneuver battalion with never less than two artillery battalions and six radars providing close support and counterbattery fires.

11th Marines Crosses the Tigris River. On 3 April, the division attacked to destroy the Baghdad Republican Guard Division at Al Kut. RCT-7 attacked from the west along Highway 6 north of the Tigris (supported by 3/11 and reinforced by 5/11), and RCT-1 fixed the enemy division from the south along Highway 7 (supported by 1/11).

When the battle was won, the main effort shifted back to RCT-5 as it sustained the division's advance toward Baghdad along Highway 6. Interspersed with RCT-5 were 2/11 in direct support (DS), 5/11 reinforcing 2/11, 3/11 in general support (GS) to the 1st Marine Division and the 11th Marines' forward and main COCs.

By 4 April, the 11th Marines had reassembled for the first time since 21 March. (1/11 had been DS to RCT-1 for its attack up Highway 7 to Al Kut and completed an arduous 200-kilometer road march to rejoin the regiment). Located less than four kilometers behind the 3d Battalion, 5th Marines (3/5) along Highway 6 and just east of the Diyala River, the entire regiment assembled in a four-kilometer area. The regiment was so close to 3/5 that it had to fire reduced charges to provide close support to the infantry battalion during its battle with the Egyptian, Iraqi and Syrian "Jihadists" who stopped its advance.

The 11th Marines cross the Tigris River.

To break through the enemy blocking force, RCT-5 broke contact with the dug-in enemy forces to allow a six-minute regimental mass mission using dual-purpose improved conventional munitions (DPICM). This four-battalion fire mission disintegrated the battalion-sized enemy formation, reopened Highway 6 and allowed RCT-5 to regain the momentum. The mass mission also cleared the remaining enemy forces in zone, thus opening the route for the rest of the 1st Marine Division to advance to the eastern approaches to Baghdad on 5 April.

Lance Corporal Oscar Hernandez, an artillery observer from Mike Battery 3/11, receives a message from another platoon about abandoned Iraqi T-55 tanks outside an oil storage/refinery in Az Zubayr on 23 March. *Photo by Lance Corporal Kevin C. Quihuis, Jr.*

Artillery Adaptability in Baghdad. As the Division established its cordon around the city, the 11th Marines continued to provide counterbattery fires against the Iraqi artillery, firing from within the open areas in the city (stadiums, racetracks, roadways and military complexes). To minimize collateral damage to noncombatants and civilian infrastructure, many of the radar-acquired targets were passed exclusively to aviation to engage with precision munitions using the quick-fire TTP the regiment established before the operation.

In another innovation, the COC used high-resolution imagery to check for the potential of collateral damage before initiating counterfire missions.

Artillery targets became fewer, and by 11 April, the 11th Marines headquarters and two battalions, 1/11 and 3/11, were in the city conducting security and stability operations and establishing the 1st Marine Division civil-military operations center (CMOC).

Also on 11 April, 5/11 was ordered to support Task Force Tripoli's attack to Tikrit, 170 kilometers north of Baghdad. To support the operation, two Q-46A radars and a TPC were attached to 5/11

to provide target acquisition. In the ensuing seven-day operation, the battalion fired 36 counterbattery missions against enemy mortars and artillery and confirmed the destruction of two D-30 batteries defending the city.

Upon entering Baghdad, the 11th Marines gained two additional tasks not typically assigned to an artillery regiment: establish the 1st Marine Division CMOC and establish its own zone in which to conduct security and stability operations. The 11th Marines approached these new tasks with the same gusto and professionalism it had when preparing to cross the LD 22 days earlier.

Security and Stability Ops. The regimental headquarters immediately established two command posts: one in the 11th Marines' zone to command and control security and stabilization operations in the 11th Marines sector and a second at the Palestine Hotel in downtown Baghdad where the CMOC would operate.

In the 11th Marines zone, the regiment's task was to restore order and help ease suffering. Within 24 hours, the zone was greatly improved and 1/11 and 3/11 were in the community conducting patrols, removing weapons caches, detaining looters and showing the Iraqi people that Americans were not conquerors, but liberators. Throughout it all, the 11th Marines still maintained a firing capability to support in and around the city.

The 11th Marines Commanding Officer was assigned as the Civil-Military Operations Coordinator for the 1st Marine Division, and he set the tone for accomplishing the daunting challenges in Baghdad. He had daily meetings with the RCT commanders, 3d Civil Affairs Group liaison detachment, civic leaders, nongovernmental organizations (NGOs) (such as the International Red Cross and Red Crescent, CARE, Doctors Without Borders, etc.), and former Iraqi government officials. He organized the CMOC into functional departments to focus the humanitarian efforts in east Baghdad, the 1st Marine Division's area of responsibility.

The priorities of work were security, electrical power, water and medical support. Each day the CMOC accomplished more, achieving small victories to improve the situation in Baghdad.

Working with RCTs 1 and 7, the 11th Marines began providing security at key locations within the city (hospitals, government ministries, power plants, the banking district, and food and medical storage warehouses). This prevented looting of critical supplies and provided a secure environment for Iraqi citizens to return to work and help in the recovery effort. Policemen who returned were incorporated into a "ride along" program with Marines with positive results.

In the 11th Marines zone, the regiment's task was to restore order and help ease suffering.

Water. Daily fuel convoys delivered fuel to fill the generator tanks that pump fresh water from northern watersheds to help provide clean water to the 6.5 million residents of Baghdad.

In Saddam City, where a large Shi'ite population resides, the water infrastructure had to be reinforced with water storage bladders to prevent a humanitarian catastrophe. The 11th Marines' logistics train delivered in excess of 55,000 gallons of fresh water made by Combat Service Support Group 11 (CSSG-11).

Key Infrastructure. The CMOC coordinated convoy escort for key infrastructure personnel and support agencies (electrical engineers, medical personnel and NGO/private volunteer organizations) to assess electrical power plants, water treatment facilities, telephone switching centers and hospitals.

Explosive Ordnance Clean Up. 11th Marines coordinated the division's explosive ordnance retrieval and disposal. It established an ordnance storage site at the Rasheed Military Complex and a disposal site that destroyed several hundred tons of ordnance recovered in the division's zone.

The conditions in Baghdad began to improve.

Taking Tikrit. The 11th Marines steadily coordinated its own "three-block war" for 11 days with one battalion fighting with Task Force Tripoli at Tikrit, one supporting RCT-5 north of the city and two battalions conducting security in zone. The regiment's remaining resources were fully engaged in the humanitarian efforts throughout east Baghdad.

On 21 April, the 2d Armored Cavalry Regiment (ACR) relieved the 1st Marine Division in Baghdad with the ACR's civil affairs (CA) assuming the duties as CMOC in east Baghdad. The Next day, 3-7 Infantry conducted a relief-in-place with the 11th Marines, and by 23 April, the 11th Marines were in the division assembly area at Ad Diwaniyah, awaiting guidance on MPF reconstitution and redeployment.

During OIF, the 11th Marines provided complete fire support to the 1st Marine Division. The results of the 32-day campaign bear witness to the devastatingly accurate fires and decisive impact the regiment had on the enemy—and the equally positive impact the regiment had on the people of Baghdad while conducting civil-military operations.

The effectiveness of the 11th Marines as the division's counterfire shield was significant with few casualties due to enemy indirect fires—a testament to the regiment's pre-war foresight, professionalism and battle leadership.

During Operation Iraqi Freedom, the Marines, soldiers, and sailors of the 11th Marines wrote a new chapter in the long and proud history of Marine Corps Artillery support.

Lieutenant Colonel Michael R. Melillo, USMC, is the Executive Officer of the 11th Marine Regiment and deployed with the regiment to Iraq for Operation Iraqi Freedom. In his previous billets, he was the G3 Future Operations Officer of the Central Command (CENTCOM) Branch and the Regional Planner in the G5 (CENTCOM), both in the I Marine Expeditionary Force (MEF), Camp Pendleton, California. He was the Commanding Officer of A Battery, 1st Battalion, 12th Marines at Marine Corps Air Station Kaneohe Bay, Hawaii. In September 1991, he deployed to Southwest Asia as an Operations Officer (S3) of the Security Detachment of the 1st Marine Expeditionary Brigade to provide security for the reconstitution of the maritime prepositioning force. Lieutenant Colonel Melillo is a graduate of the Marine Command and Staff College at Quantico, Virginia, from which he graduated with Distinction, and earned a Master of Military Studies degree. He then attended the School of Advanced Warfighting at Quantico.

Decisive Fires, Decisive Victory: 1-9 FA in OIF

By Major Philip D. Rice

What enabled such a small force to have such devastating effects on the battlefield in Operation Iraqi Freedom (OIF)? At every instance where success was in question, US forces simply destroyed the enemy's will to fight.

US forces had three key advantages that led to their consistently and decisively defeating the Iraqi forces. These were a technological superiority that enabled our forces to see, understand and act more quickly than the Iraqis; a markedly higher level of training that ensured US soldiers could execute combat tasks quickly with confidence; and a thoroughly ingrained determination to accomplish the mission with the means at hand. It was this triad of technology, training and mission focus that enabled the US military, with help from its Coalition partners, to make short work of the Iraqi Army.

While technology and training were essential to the destruction of the enemy, it was by far the soldiers' and leaders' initiative, innovation and determination in the face of adversity that enabled our forces to deploy, attack 500 miles across Iraq, rapidly strike into downtown Baghdad and then hold out until the corrupt and despotic regime of Saddam Hussein crumbled.

From my position in an M109A6 Paladin battalion in direct support (DS) of the 2d Brigade of the 3d Infantry Division (Mechanized) (3d ID), I witnessed the overwhelming and cumulative effects of individual efforts, united in purpose, against an enemy reliant on a centralized and restrictive decision-making process. Even though the Iraqi forces outnumbered and outgunned us, the American soldier made the difference: it was a one-sided fight.

A 1-9 FA Paladin during a light sandstorm in Iraq.

This article reports and assesses the important actions, hard work and initiative of individual soldiers and leaders so their story won't get lost in the praises of superior technology.

Crossing the Border. Our forces determined the time and place of the attack. The plan had the 2d Brigade moving to its attack positions on 19 March with two days allocated for preparations before crossing into Iraq. 1st Battalion, 9th Field Artillery (1-9 FA) was to fire in a 3d Division Artillery (Div Arty) preparation (prep) to destroy enemy observation posts along the border before the division attacked.

Everyone in the battalion expected the prep to occur on the evening of 21 March. Strategic intelligence regarding the location of key Iraqi leaders resulted in air attacks beginning a day early. This pushed everyone's timeline one day forward.

Losing that final day created some angst at the battalion level, but there was no reason to delay. 1-9 FA had established adequate communications with the Div Arty, the guns were in position, we had meteorological data and survey, and the Div Arty had already pushed 176 rounds of high-explosive (HE) ammunition forward for immediate consumption.

1-9 FA fired a battery six-rounds at each of our targets with excellent effects. Attack aviation and infantrymen then cleared the area of the remaining enemy. The attack had begun, and the 3d ID started across the border.

Assessment. Beginning the attack a day early was not without cost. At higher levels, critical logistical and command and control (C^2) infrastructure were not fully in place. Leaders at all levels lost an opportunity to conduct detailed checks/inspections and had to modify their plans.

The decision to attack early brought with it unanticipated elements of friction. Problems with ammunition and maintenance parts and the synchronization of efforts that units experienced days later were the result. The division had to slow its tempo of attack as soldiers and leaders developed innovative techniques, accepted additional risks, and worked and fought through hard, sleepless nights to overcome the cost of the early movement.

Leaders must make decisions quickly to take advantage of fleeting opportunities. All decisions have a cost. It is the soldiers' initiative, creativity and dedication to accomplishing the mission that gives US Army leaders the agility to make dynamic decisions with certainty of success.

Movement to Objective Rams. The 2d Brigade had little contact with the enemy during the first two days of the operation. The brigade focused on moving to Objective Rams. This was a large staging area in the desert southwest of An Najaf and more than 300 miles from the Kuwaiti border. (See the map on Page 3.) Seizing Objective Rams would enable attack aviation to execute operations in the vicinity of Karbala while the 3d Division pushed forward essential supplies to continue the attack.

1-9 FA's movement to Objective Rams took 35 hours along a narrow dirt road through the Iraqi desert. The battalion followed the lead maneuver Task Force (TF) 1-64 AR to the southern edge of Objective Rams at 2200 on 22 March.

The brigade was in contact with enemy dismounts, mortars and paramilitary forces operating in sport utility vehicles. The battalion immediately established security and a firing capability with howitzers along the road. We chose these positions because the adjacent terrain was too muddy and broken to support the occupation of the guns. There was a gap of several kilometers between TF 1-64 AR and 1-9 FA with reports of hundreds of enemy dismounts operating between the units.

TF 1-64 AR faced heavier enemy resistance than anticipated, and the brigade decided to mass close air support (CAS) with direct and indirect fires on enemy strongholds. While maintaining the highest level of security possible, 1-9 FA fired missions to allow TF 1-64 AR to clear enemy bunkers and destroy forces in zone. These fires, along with the CAS and direct and indirect fires from maneuver, destroyed the enemy strongholds and enabled TF 1-64 AR to neutralize enemy resistance in zone until TF 4-64 AR arrived to help secure Objective Rams.

Assessment. When 1-9 FA arrived at Objective Rams, it was dark and the soldiers were tired. The 35 hours of continuous stop-and-go movement along the unimproved dirt road combined with the anxiety of facing the unknown had a discernable effect on the soldiers. Added to this was the unanticipated contact with a determined, organized enemy force and a several-kilometer gap between the lead maneuver task force and the battalion. 1-9 FA had the challenge of establishing a firing capability in highly restrictive terrain very different than that of the open deserts on which the battalion had trained and the knowledge that the next maneuver task force would not arrive for several hours.

The situation was tense, but the soldiers and leaders understood it and acted effectively. The howitzers, fire direction centers (FDCs) and command post vehicles quickly occupied positions as they could along the road. Within minutes, cannons, CAS and ground maneuver elements focused their complementary and reinforcing effects on key Iraqi positions and denied the enemy the opportunity to seize the tactical initiative.

This was a meeting engagement. The brigade had no fire plan and entered action from the march. With the added elements of darkness, uncertainty and fatigue, the brigade's tactical risks were high.

If it had not been for the soldiers and leaders acting independently to make critical decisions based on their shared understanding of the situation, it is likely the brigade's attack would have stalled. Instead, at first light, the brigade moved forward 16 kilometers to complete the seizure of Objective Rams ahead of schedule.

Karbala and the Attack Across the Euphrates. After the brigade seized Objective Rams, the tempo of operations slowed considerably as the division executed shaping operations while pushing forward the forces and materials necessary to penetrate the enemy's defenses around Karbala. During the next nine days, the 2d Brigade conducted limited attacks in zone to support the 3d Division's shaping operations.

On the morning of 2 April, the 2d Brigade received orders to move north of Karbala. The brigade was then to attack across the Euphrates River to destroy the Iraqi Army's Medina Division while seizing the intersection of Highways 1 and 8 south of Baghdad at Objective Saints. The purpose of this attack was to deny enemy forces the ability to reinforce Baghdad from the south.

2d Brigade was to follow the 1st and 3d Brigades through a narrow pass west of Karbala, referred to as the Karbala Gap. 2d Brigade was then to pass through 1st Brigade in the vicinity of a bridge crossing the Euphrates to continue the attack.

2d Brigade saw an opportunity to begin its move early and avoid the congestion at the Karbala Gap. The brigade moved east of Karbala.

1-9 FA began its move six hours earlier than planned, taking the route east of Karbala. The lead elements of the brigade had intermittent contact, and the movement was neither swift nor smooth. During the movement, the brigade's leadership determined that the route east of Karbala was not suitable. The brigade reconnaissance troop (BRT) began searching for a bypass. This process took several hours during which 1-9 FA halted and established security along a canal road east of Karbala.

The brigade could not find a bypass and decided that TF 1-64 AR and 1-9 FA should turn south and then west to move through the Karbala Gap. The brigade then would reorganize at an attack position before attacking the Medina Division.

It was dusk as TF 1-64 AR started moving south. Several kilometers along the route, the task force came into direct fire contact with a company of BMPs. 1-9 FA's main body rolled through this area directly behind TF 1-64, taking intermittent small arms fire as secondary explosions went off in the burning hulks.

Near the rear of 1-9 FA's convoy, there was a break in contact that resulted in four ammunition trucks missing the turn south. These vehicles continued along a canal road until that road became impassable. The battalion ammunition officer realized the trucks had gone the wrong way and returned to get them. The battalion's leadership decided to keep the main body moving to the attack position and send the executive officer (XO) back to help the trucks link up with the main body.

1-9 FA arrived at the attack position on the morning of 3 April after more than 20 hours on the road. Despite the move taking significantly longer than planned, there was no change to the time of 2d Brigade's attack. The battalion refueled and immediately went into the attack across the Euphrates. During the 30-minute stop in the attack position, the battalion refueled as mechanics conducted emergency maintenance and repaired two C^2 vehicles and a howitzer.

As the battalion moved through the Karbala Gap, the XO was trying to get the misdirected ammunition trucks back up with the main body. TF 1-30 IN, the task force responsible for the area around Karbala, told the XO that the route 1-9 FA's main body had taken was no longer clear of enemy. Through further coordination, the XO learned that a platoon from TF 2-69 AR was conducting a raid to the north toward the attack position. The XO and the ammunition trucks followed the platoon raid until the platoon came into significant direct fire contact. Then, with an escort from TF 2-69 AR, the XO's element bypassed the enemy and moved to the attack position.

The ammunition trucks arrived at the position approximately 30 minutes after 1-9 FA's main body had departed. The XO then followed where he could and linked up with the battalion trains later on 3 April.

For the attack across the Euphrates, 1-9 FA followed TF 1-64 AR to a position along a road six kilometers to the west-southwest of the intersection of

1-9 FA in Baghdad during Operation Iraqi Freedom.

An M109A6 of 1-9 FA fires at night in Iraq.

Highways 1 and 8. The terrain in the position area was heavily irrigated farmland, and the battalion had to occupy nonstandard firing positions along the road.

As the battalion's lead elements were clearing the position for occupation, they captured 11 enemy infantrymen along with their small arms, machine guns, rocket-propelled grenades (RPGs) and mortars. 1-9 FA fired 15 missions from the position area DS to the brigade's successful attack to seize the intersection of Highways 1 and 8, known as Objective Saints.

Assessment. The movement through Karbala and the subsequent attack across the Euphrates did not go as planned. The long halts and the changes in the route during movement resulted in confusion, frustration and fatigue. The battalion passed through unsecured areas at night followed only by a brief pause before heading into the attack. The amount of control the battalion's leaders could exercise on the long column from the radios in their vehicles was minimal.

Despite these difficulties, the battalion was in position and fired for the brigade's main effort as it attacked the objective. Technology and training certainly aided the battalion in accomplishing its tasks, but it was soldiers' initiative and their unflagging will to succeed that ensured 1-9 FA could provide effective fires at the critical place and time.

Attack of Baghdad. 1-9 FA's final major combat action was during the attack to seize key governmental infrastructure in downtown Baghdad. The brigade planned this attack as a raid to show that US ground forces could attack the most prestigious symbols of Iraqi power at any time they pleased.

On the morning of 7 April, 1-9 FA executed a series of 16 targets in support of the brigade's raid into Baghdad. To maintain suppression directly ahead of the lead maneuver element, the battalion lifted and shifted its fires to the next target at the direction of the TF fire support officers (FSOs). The fires supported maneuver as planned, and the brigade quickly seized its objectives in downtown Baghdad.

The brigade commander determined he had enough combat power to retain the objectives in Baghdad for as long as he could provide fuel and ammunition for his tanks. With the approval of division, the brigade commander had his forces remain in Baghdad, and the focus of the fight shifted to maintaining the lines of communication (LOCs).

While the maneuver task forces were fighting in Baghdad, a missile hit the brigade's tactical operations center (TOC), killing several soldiers and wounding more. The missile attack severely degraded the brigade's ability to provide C^2.

1-9 FA's TOC took responsibility for controlling and clearing fires in the brigade's zone. The battalion also sent six FA ammunition support vehicles (FAASVs) to help secure the brigade TOC and provided medical assistance for the injured.

At this point, the fight for the LOCs began in earnest. The lead maneuver forces of the 2d Brigade had moved into Baghdad more quickly than Iraqi units could respond. As the bypassed Iraqi units were able to grasp the situation, they conducted frequent but uncoordinated attacks against US forces securing the highway. These attacks continued throughout the day.

1-9 FA fired 24 missions in support of TFs 3-15 IN and 2-7 IN during their battle for control of the LOCs, and many of these were danger-close fires. The battalion also fired 10 counterfire missions against artillery and mortar targets trying to disrupt 2d Brigade's operations. 7 April ended with TFs 1-64 AR's and 4-64 AR's controlling key enemy infrastructure in Baghdad, TFs 3-15 IN's and 2-7 IN's controlling the highway south from Baghdad and 1-9 FA in position and firing DS to the brigade.

Conclusion. During this war, operations seldom went as planned. In each action, some element of friction severely threatened our chances of success, whether the friction was generated by the enemy, the terrain or ourselves. It was during these moments of difficulty and doubt when the advantages of technology and training were not quite enough that individual soldiers and leaders took matters into their own hands and mastered the challenges.

The Iraqis had many advantages in this war. They had a military with a vast numerical superiority that had personal knowledge of the terrain. They fought from well-prepared defenses arrayed in depth, and they had a thorough understanding and control of the populace. What they didn't have was the tactical or operational agility to use these advantages to even temporarily seize the initiative. We seized and held the initiative.

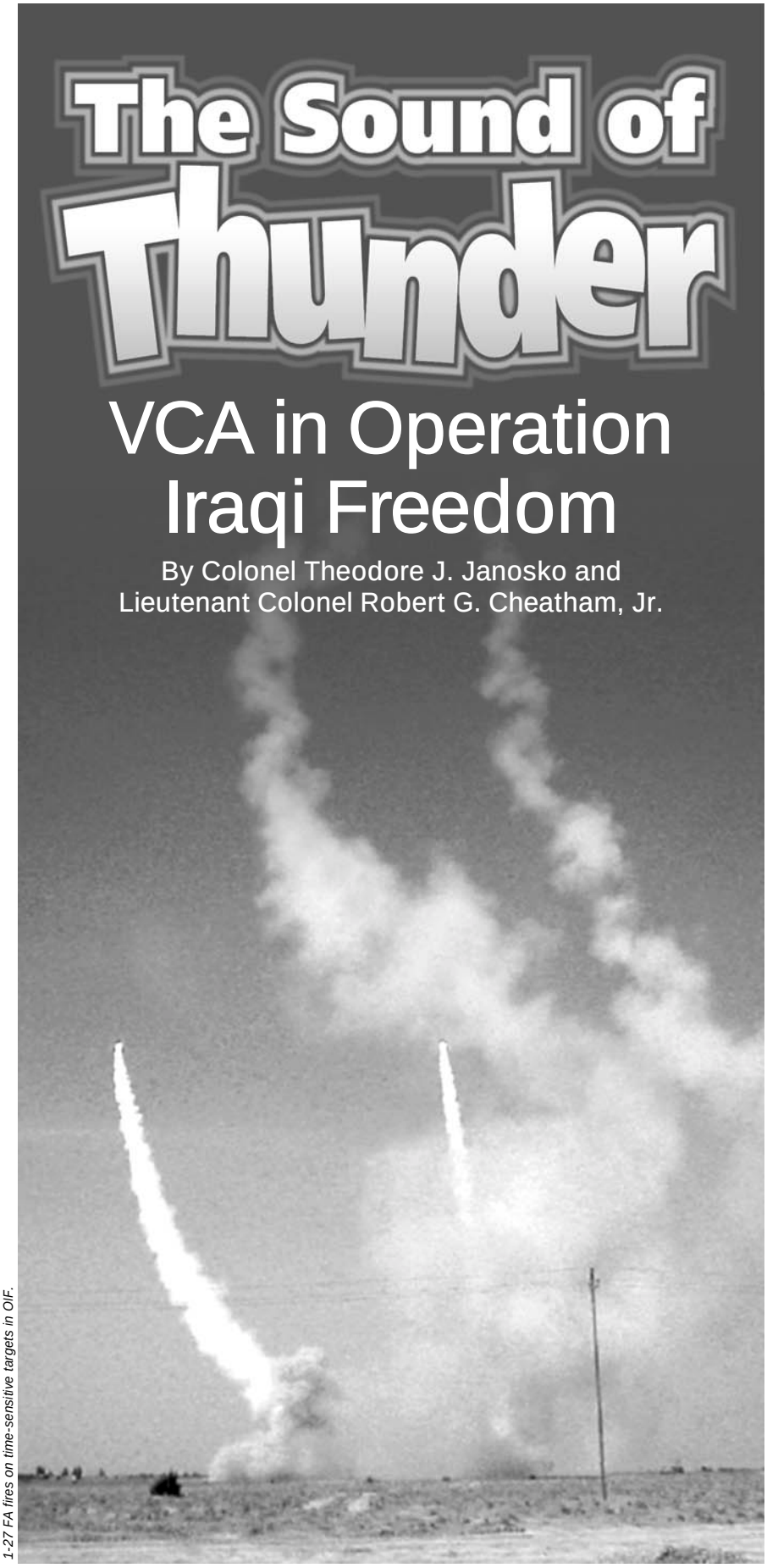
It was the soldiers' and leaders' willingness to act and their determination and innovation—shaped and directed by the objective and commander's intent—that magnified our capabilities, minimized our vulnerabilities and allowed us to utterly crushed the Iraqi military's will to fight.

Major Philip D. Rice was the S3 of the 1st Battalion, 9th Field Artillery, 3d Infantry Division (Mechanized) in Iraq during Operation Iraqi Freedom. Currently, he is the Brigade Fire Support Officer (FSO) for the 2d Brigade and has served as the Assistant Fire Support Coordinator (AFSCOORD) for Plans, both also in the 3d Infantry Division, Fort Stewart, Georgia. He commanded B Battery, 8th Battalion, 8th Field Artillery (M109A3), and F Battery, 26th Field Artillery (Target Acquisition), both in the 2d Infantry Division in Korea. In other assignments, he was the Artillery Battery Trainer with the 218th Training Support Brigade, Fort Jackson, South Carolina; Squadron FSO for the 1st Squadron, 7th Cavalry in the 1st Cavalry Division, Fort Hood, Texas; and Company FSO, also in the 2d Infantry Division. He is a graduate of the Command and General Staff College, Fort Leavenworth, Kansas, and Ranger and Airborne Schools, Fort Benning, Georgia.

The Sound of Thunder

VCA in Operation Iraqi Freedom

By Colonel Theodore J. Janosko and
Lieutenant Colonel Robert G. Cheatham, Jr.



1-27 FA fires on time-sensitive targets in OIF.

In October of 2002, the soldiers of Headquarters and Headquarters Battery (HHB), V Corps Artillery (VCA), began deploying to the Central Command (CENTCOM) area of responsibility to train and prepare for possible hostilities with Iraq. VCA soldiers and leaders worked tirelessly to create a corps fire support annex and an FA support plan (FASP) that would meet the objectives of V Corps' Contingency Plan Cobra II.

In addition, the unit simultaneously conducted many training exercises to hone warfighting skills and improve teamwork with headquarters that would interface with the corps. VCA had been in a high state of training for months before it deployed. (See the sidebar "V Corps Artillery Training for War" on Page 36.)

Throughout all phases of the operation—pre-war planning and training, hostilities, and post-hostility stability and support operations (SASO)—VCA units displayed a great deal of flexibility and adaptability in conducting both artillery missions and a variety of nonstandard missions.

During combat, V Corps units fired 414 Army tactical missile system (ATACMS) missiles, 857 multiple-launch rocket system (MLRS) rockets and more than 18,500 projectiles in support of a wide range of missions. VCA's 3d Infantry Division (Mechanized) fired the *first* sense and destroy armor munitions (SADARM) in combat while VCA FA brigades fired the *first* ATACMS Block IA and ATACMS unitary rounds in combat with devastating effects.

Starting in early April and continuing after the President declared an end to major hostilities on 10 April, VCA faced the challenge of hauling captured enemy ammunition (CEA). Again, VCA excelled at accomplishing a difficult, nonstandard mission, hauling more than 22 million pounds of CEA during post-hostility operations.

VCA derived a number of significant lessons from Operation Iraqi Freedom (OIF). This article describes each phase of VCA operations, the obstacles encountered and lessons from combat operations in Iraq.

Organization for Combat. The first challenge was the FA organization for combat. As the start of hostilities neared, there were fewer units in theater than the initial plan stipulated. For example, we did not have six FA brigades and 18

FA battalions in theater to provide fires for maneuver units. In early February, the only FA units in theater were organic to the 3d Division, so building combat power was of paramount importance.

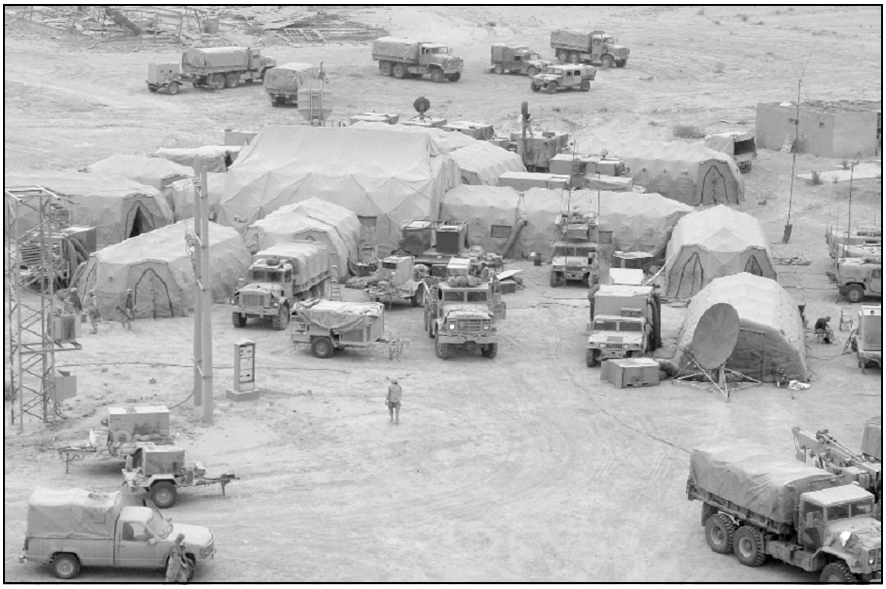
First to arrive was 2-4 FA (MLRS), part of the 214 FA Brigade, from Fort Sill, Oklahoma. VCA coordinated closely with the reception, staging, onward movement and integration (RSOI) cell and port authorities, thus providing command and control (C^2) as well as critical logistical support for incoming units. The rapid influx of personnel severely tested the infrastructure and often resulted in resource shortfalls. 2-4 FA reported combat ready 72 hours after its equipment was downloaded at the port.

With hostilities imminent and an uncertain timeline, VCA's planners worked furiously to adapt to an ever-changing task organization. With every new timeline and time-phased force deployment listing, VCA planners reworked the FASP. VCA had to develop a plan to satisfy all corps-level fire support requirements with a single FA battalion.

VCA, again, modified the master plan just days before the line of departure (LD), incorporating the newly arrived 1-27 FA (MLRS) of the 41st FA Brigade from Germany. This unit reported combat ready less than 48 hours before executing its first fire mission.

Each of the two divisions—the 3d Division and 101st Airborne Division (Air Assault)—received a reinforcing FA brigade, each had a brigade headquarters with one MLRS battalion. The original plans envisioned six FA brigades to provide supporting fires.

Changes were not limited to task organization, however. Each alteration of the plan had a ripple effect, creating a new set of problems and an increasing amount of coordination to accommodate the revised scheme of maneuver. Target sets changed daily, and the G2 (intelligence section) worked with the fires and effects coordination cell (FECC) to update existing fire plans based on the latest intelligence reports. The G3 (operations section) continued to update the FASP, relentlessly tracking changes to the corps plan. The G4 (logistics section) constantly revised the allocation of limited resources with each change. The G6 (communications section) faced perhaps the greatest challenge: determining voice and digital communications for a variety of units spread over a battlefield hundreds of kilometers in size.



V Corps Tactical Command Post (TAC) at Objective Grady, just south of Baghdad.

VCA Communications. Communications were a restrictive factor throughout the planning process.

Mobile subscriber equipment (MSE) networks required units establish C^2 nodes within line-of-sight distance no greater than 30 kilometers from established node centers across the battlefield. These MSE "lily pads" allowed units to establish connectivity and served as the primary means of communication within the corps. Each FA brigade maneuvered from one lily pad to another, thus retaining MSE connectivity. Terrain and airspace management in the vicinity of these node centers became quite a challenge as units converged on them.

In the case of the 214th FA Brigade, it moved farther and faster than the node centers supporting it. Only by using the attached TSC-93C satellite communications team was the 214th FA Brigade able to maintain MSE communications on the battlefield independently of the node centers.

Assigning one TSC-93C team to each FA brigade would prove extremely valuable in operations requiring rapid maneuver over extended distances. Additionally, assigning two small-extension node (SEN) teams to each FA brigade and at least one SEN team per FA battalion in future conflicts would greatly facilitate the continuity of digital communications over a large battlefield. Integrating these assets into peacetime training events would enhance the effectiveness of this organization for combat.

V Corps used PRC-150 high-frequency (HF) radio systems as an alternate means of long-range communications. Many of the challenges associated with the HF radios resulted from the late fielding of the system and the inexperience of soldiers using them. The dipole antenna, which was the most effective antenna for the HF radios, required a large amount of space to erect. This required us to reconfigure the corps main command post (CMAIN) antenna farm.

The HF radios with the dipole antenna allowed the force FA headquarters in Camp Virginia, Kuwait, to communicate with the 214th FA Brigade Headquarters at the Baghdad International Airport, more than 540 kilometers away. Employing HF radios and developing the means to transmit data via such systems would improve future corps artillery C^2 options on distant and expansive battlefields.

VCA also used single-channel tactical satellite (TACSAT) communications when MSE was not established. This system worked well but was susceptible to interference, which made positioning the antenna critical. Competition for space in the immediate vicinity of the CMAIN frequently inhibited positioning the antenna most effectively.

V Corps deep operations validated the requirement for a reliable, corps-level fires single-channel TACSAT net. Any effort to obtain the ability to pass digital advanced FA tactical data system (AFATDS), Version 7.0, traffic reliably over TACSAT would improve the Army's C^2 in deep operations significantly.

Coordination for Land and Airspace. Position areas for artillery (PAA) presented a unique set of challenges and illustrates the coordination inherent in every facet of the operation.

Each PAA was developed with a specific target set in mind and, thus, required close coordination with the G2. The MSE lily pad approach to communications severely restricted maneuver and PAA choices because the G6 could only support a PAA if it were close enough to a node center.

Army airspace command and control (A^2C^2) cleared the airspace, while the division terrain manager cleared maneuver space. Each time a clearance conflict arose, the process began anew with the VCA G3's selecting a new area and, in turn, each section's reworking the plan. This iterative revising process consumed precious time, while VCA kept subordinate units apprised of the changes to the plan using tenuous long-range communications.

Throughout all phases of the operation, the close interaction between the FECC, force FA headquarters and A^2C^2 cell proved invaluable. Several situations arose that required immediate ATACMS fires in support of the Coalition Forces Land Component Command (CFLCC) and corps-level high-payoff targets (HPTs). These situations called for setting up a PAA restricted operating zone (ROZ) over the firing unit and ensuring the airspace was cleared to fire. The units were overwhelmingly successful in delivering ATACMS in a safe and timely manner because of several months of training with A^2C^2 leading up to OIF and familiarity with the personnel and TTPs to clear the fires.

With airspace clearance procedures in place and the communications network with the FA brigades set, VCA was poised to shape the battlefield with lethal ATACMS fires and place the operations plan into action.

VCA planners worked vigorously to determine the most effective means to incorporate the FA brigades into the V Corps plan. The revised plan had the 214th FA Brigade general support reinforcing (GSR) to the 3d Division, so the brigade participated in the corps artillery time-on-target (TOT) and crossed the LD the following day with the 3d Division in the east. The 41st FA Brigade provided reinforcing fires to the 101st Division Artillery (Div Arty), participating in the TOT and then crossed the LD with the 101st Division in the west.

FA units began to occupy attack positions on 18 March under the careful direction of the VCA staff. The VCA G2 continued to work an aggressive counterfire plan, developing extended-range radar coverage in support of the corps requirement for a "Hot" ATACMS battery that could respond in 15 minutes.

The VCA G4 began pushing ammunition forward, even before the first shot was fired. It was a well-coordinated logistical plan that kept the batteries armed.

With the two FA brigades in position and ready to provide synchronized fires from different PAAs, VCA conducted final preparations for A-Day fires.

Combat Ops. On 201519ZMAR03, 2-4 FA (MLRS) executed fire plan "Unitary." The 13 unitary ATACMS fired represented V Corps' opening salvo in OIF, which was synchronized with CENTCOM's initial cruise missile strikes into Baghdad. The targets were corps, division, corps artillery and division artillery command posts from Al Basrah to An Nasiriyal to Al Amarah—some 210 kilometers away. (See the map on Page 3.)

Hours later, 2-4 FA unleashed fire plan "Cherry": 24 Block 1 ATACMS fired at 1930Z. The targets were 11th Infantry Division air defense artillery (ADA) assets and the division's counterbattery assets (preemptive) 140 to 180 kilometers away near An Nasiriyah.

2-4 FA then executed suppression of enemy air defense (SEAD) plan "Carrot" at 2016Z against 11th Division ADA and ground forces' fighting positions, launching 24 missiles (23 Block 1 and one Block 1A) up to 180 kilometers. This completed the 214th FA Brigade's opening fires. 2-4 FA returned to its previous attack position, thus permitting the I Marine Expeditionary Force (I MEF) to preposition breach assets in the battalion's former firing position.

Finally, the 41st FA Brigade and 1-39 FA executed fire plan "I MEF" at 2026Z, which were preemptive counterbattery strikes against the Iraqi's 11th and 14th Infantry Division Artilleries and the 6th Tank Division Artillery positioned from Al Basrah to An Nasiriyah, 60 to 125 kilometers away. 1-27 FA fired 22 Block 1 missiles from its firing point, while 1-39 FA, the 3d Division's MLRS battalion, fired six Block 1 missiles. After executing this plan, the 41st FA Brigade prepared to move the next morning.

A-Day fires shaped Iraq's 11th Infantry Division by disrupting its command and control and denying it the ability to mass indirect fires above the battery level—the MLRS and ATACMS fires' effectiveness are unquestionable. By the next day, the division had ceased to exist as a coherent fighting force.

V Corps maneuver units crossed the LD at 0300Z on 21 March with FA assets trailing closely behind. Coalition units put several months of planning into action and were on their way to Baghdad. The move toward Baghdad was slowed due to the poor road network, frequent chokepoints and large volume of vehicles moving along and through the chokepoints. These constraints forced the force FA headquarters to create hasty firing points along the route and deconflict air routes and land management with other units on short notice.

One effective means to work around the movement problem was to echelon the batteries moving north. This required a battalion C^2 node to remain with the firing battery in a hasty PAA created by the force FA headquarters while the remainder of the FA brigade continued on to the predetermined firing position.

In the first 36 hours of the operation, positioning the force FA ATACMS forward in zone to support setting the conditions against the Medina Division took precedence over guaranteeing a continuous firing capability during movement. After that, VCA ensured continuous ATACMS fires by echeloning firing units along a series of cleared corps PAAs.

Revised corps plans called for a deep attack the evening of 23 March. It was clear the 214th FA Brigade could not reach its designated firing point in time to support the SEAD plan. The staff set to work planning a series of PAAs progressively farther south for the 214th to occupy, but, given existing target sets, the PAAs soon reached the maximum range of the Block 1 missile.

Per guidance from the VCA G3, the brigade commander estimated his limit of advance (LOA) based on accelerated movement and radioed the proposed grid location of the PAA to VCA operations. The VCA staff worked rapidly and soon cleared the airspace over the position that was within Block 1 range of all but one target.

As a result, the brigade successfully executed SEAD plan "Beet" at 2100Z, firing 29 Block 1 and 3 Block 1A missiles in support of the 11th Attack Helicopter Regiment's (AHR's) deep at-

tack. The 214th FA Brigade fired at Medina Republican Guard Division maneuver and artillery assets between Hillah and Al Haswah, some 140 to 165 kilometers away from the brigade's positions 65 kilometers west of As Samawah.

The 214th FA Brigade remained in position that night, and the Hot battery delivered four Block 1 and five Block 1A missiles in support of immediate targets before midnight.

On 25 March, the 214th FA Brigade continued to execute immediate targets and, by just after noon, had fired 16 Block 1 and four Block 1A missiles. VCA responded to ammunition shortages by shifting responsibility for planned fires to the 41st FA Brigade.

1-27 FA combined with 2-4 FA, both several miles south of An Najaf, to fire plan "Mango" at 1245Z; the former fired 12 Block 1 missiles, while the latter fired six Block 1 missiles. The targets were Medina Division maneuver and artillery.

The 41st FA Brigade executed SEAD fire plan "101SEA01" at 2055Z, firing 10 Block 1 missiles in support of the 101st Division's attack aviation. The missiles struck Medina Division ADA systems and visual observation posts 125 to 195 kilometers away in the vicinity of Karbala, Al Hillah and Al Haswah.

Both brigades then received a change of mission. The 214th FA Brigade assumed a reinforcing role to the 3d Div Arty and moved to PAA Jackson in the 3d Division's zone north of the escarpment and 30 kilometers south of Karbala. The 41st FA Brigade reverted to GSR and occupied the 214th's PAA 53, 15 kilometers west-northwest of An Najaf, after the 214th FA Brigade moved forward.

Both brigades were positioned forward in support of the LD planned for 30 March. 2-4 FA fired seven immediate targets with Block 1 missiles striking two radars in An Najaf, one ADA system 10 kilometers southeast of Markab Airfield and one surface-to-surface missile 15 kilometers southwest of Baghdad International Airport. These were the only ATACMS fired that day before the battalion moved forward.

The day ended with the 214th FA Brigade in its 3d Division attack position, green on ammunition, and the 41st FA Brigade's completing final preparations for movement and ammunition resupply. With the change in mission, the 214th FA Brigade had to maintain one Hot ATACMS battery.

2-4 FA moved forward from PAA Jackson into attack positions 15 kilometers southwest of Karbala, and VCA synchronized follow-on movement and positioning with the 3d Division. At day's end, the battalion was poised at the Karbala Gap, ready to provide reinforcing fires in support of 3d Division attacks.

The 41st FA Brigade remained in PAA 53 to provide ATACMS fires. 1-27 FA executed fire plan "FP8IMEF," a preemptive strike against Medina Republican Guard Division Artillery 55 kilometers southeast of Baghdad at 0505Z. The brigade fired four Block 1 missiles in support of these MEF deep targets. Later in the day, the brigade executed fire plan "FP9IMEF," firing 11 more Block 1 missiles for I MEF preemptively against the Baghdad Division Artillery and the remnants of the Al Nida Division Artillery 30 kilometers east of Baghdad. 1-27 FA fired at these targets 125 to 140 kilometers from its position 60 kilometers south-southwest of An Najaf.

On 5 April, the 214th FA Brigade occupied a position at the Baghdad International Airport as the 3d Division secured the airport; B/2-4 FA was the designated Block 1A Hot battery.

VCA had committed the 214th FA Brigade to the counterfire fight while the 41st FA Brigade focused on ATACMS fires. The 41st Brigade executed SEAD plan "Lemon" at 0745Z in support of the 11th AHR; it fired 10 Block 1 missiles at ADA systems and visual observation posts 40 kilometers southwest of Buhayrat Ar Razzazah Lake 87 kilometers away. SEAD plan "Dest04" followed at 1357Z; the 41st Brigade fired 15 Block 1 missiles in support of the 101st Division, attacking

V Corps Artillery Training for War

The V Corps Warfighter exercise in March-April 2002 used the same terrain and possible combat scenario as in Operation Iraqi Freedom (OIF). The exercises continued in August with a corps artillery command post exercise (CPX) driving a maneuver rights exercise (MRE) for the 41st Field Artillery Brigade in the vicinity of the Grafenwoehr Training Area, Germany.

One month later, V Corps Artillery (VCA) deployed for Victory Strike, a corps-level exercise in Poland. Victory Strike provided an external evaluation (EXEVAL) for the 11th Attack Aviation Regiment (AHR) and the 1st Battalion, 27th Field Artillery (1-27 FA), the multiple-launch rocket system (MLRS) battalion in the 41st Field Artillery Brigade. It was a simulations-driven exercise that had a deep operations battle rhythm.

While still executing Victory Strike, the VCA began deploying a robust package of support personnel and equipment to Kuwait for the Coalition Forces Land Component Command's (CFLCC's) exercise Lucky Warrior in October; the force FA Headquarters and fires and effects coordination cell (FECC) followed in late November for the Central Command's (CENTCOM's) exercise Internal Look. Both exercises were conducted in Camp Virginia, Kuwait, to refine tactics, techniques and procedures (TTPs) for the combined arms team that had never worked together.

While leaving a functioning corps headquarters with its fire support systems in place at Camp Virginia, the majority of VCA redeployed with the corps staff to Germany in late December in preparation for exercise Victory Scrimmage scheduled for late January. This exercise focused on building the future corps combat team and validating TTPs the *Victory Corps* would use. Within days of completing the Battle Command Training Program- (BCTP)-driven exercise, the VCA staff began redeploying to Kuwait to man the corps FECC and force FA headquarters in response to the growing threat of hostilities.

Medina Division ADA and maneuver assets southwest of Al Fallujah 100 to 120 kilometers away. Six more Block 1 missiles in support of 101st immediate targets closed out the fires.

The VCA headquarters then directed the 41st FA Brigade to push a firing battery and radar forward to an airfield nine kilometers north of Iskandariyah, posturing the brigade to provide counterfire in support of the 101st Division's forward operating base in the same vicinity. Both brigades were set, and VCA planned no movements for the next 24 to 48 hours.

On 7 April, the 3d Division battled for control of key government buildings in Baghdad's center. The 214th FA Brigade continued to provide reinforcing fires and counterfire from the Baghdad airport, and the 41st FA Brigade remained in position. As the city fell to Coalition Forces, VCA's planning shifted much farther to the north. With organized resistance all but eliminated, VCA still was responsible for ATACMS fires in support of Coalition Forces, but no more were executed.

2-4 FA fires ATACMS in OIF. ATACMS should be employed as a first option against enemy indirect fire assets when the acquiring system provides the necessary target location accuracy.

Lessons of OIF. Throughout the operation, both FA brigades executed fire missions flawlessly and engaged several CFLCC and corps-level targets. From the time the 3d Division began offensive operations until the fall of Baghdad, VCA units fired 414 ATACMS and numerous rockets, helping to bring about the regime's collapse and annihilation of the Iraqi army. The result was overwhelming success. We learned several fire mission processing techniques and standing operating procedures (SOPs) along the way to streamline and enhance the corps artillery's effectiveness in engaging targets.

Close Air Support (CAS) for Counterfire. A few key issues arose as VCA began executing fire plans and engaging various targets of opportunity. One issue was the reliance on CAS for counterfire rather than the more responsive ATACMS. Contrary to recent reports that stated CAS was more timely for counterfire, it often took too long to be very effective in engaging targets. CAS typically took 30 minutes to attack the targets that were handed off to them for prosecution. These targets could have been serviced much more quickly with ATACMS.

ATACMS would have been effective against the large number of towed artillery systems on the battlefield; however, ATACMS requires a dual-purpose improved conventional munition (DPICM) payload to provide deep counterfire capabilities against the armored and self-propelled artillery systems.

ATACMS should be employed as a first option against enemy indirect fire assets when the acquiring system provides the necessary target location error.

Automated Deep Operations Coordination System (ADOCS). To process targets and create missions, the V Corps FECC experienced success in employing ADOCS, an advanced concept technology demonstration (ACTD) software. ADOCS provides a suite of tools that works in conjunction with AFATDS to allow the commander to visualize the battlefield in near real-time.

ADOCS is not a stand-alone system. Its information is only as good as the information within the systems that it draws from: global command and control system-Army (GCCS-A), AFATDS, the Air Force's theater battle management core system (TBMCS), all-source analysis system (ASAS), etc.

Using ADOCS, the VCA commander and the corps chief of staff visualized target sets from the air tasking order (ATO), discussed ATACMS targeting, viewed the counterfire battle and saw the corps focus of fires.

Some of the most powerful uses of ADOCS during the war included aviation fire support officers' (FSOs') building SEAD plans, Judge Advocate General (JAG) lawyers' advising commanders and in association with unmanned aerial vehicle (UAV) feeds. The JAG section used ADOCS to cross reference the no-strike list (NSL) with satellite imagery and then discuss collateral damage estimate concerns with the commander before fires were executed.

The aviation FSO built SEAD plans based on real-time electronic intelligence (ELINT) acquisitions plotted against the aviation routes and then built the fire plans into ADOCS. The fire plans were passed to the air defense artillery (ADA) liaison officer (LNO) for analysis and the Staff Judge Advocate (SJA) for collateral damage estimate analysis.

Once the fire plan was in the system, the air support operations center (ASOC) could view the impact points and adjust the CAS stack accordingly. The visualization of the impact points and route also helped the fire support NCO (FSNCO) coordinate closed kill boxes with the battlefield coordination detachment (BCD) to clear air interdiction (AI) traffic out of the airspace.

Because the information resided on a server, each section could coordinate its piece of the SEAD plan simultaneously. In addition, SEAD plans remained in the system to track the areas that might have unexploded ordnance later.

Clearing ATACMS Fires. Upon receiving the mission and before executing fire plans, clearance of ATACMS fires with the Air Force was important. Again, training and practicing together paid off as the interaction between the two was very effective. Instances where interaction between the ASOC and the FECC were critical were supporting the attack aviation deep attacks and fighting within Baghdad.

During the 101st Division's armed reconnaissance, the assistant fire support coordinator (AFSCOORD) coordinated directly with the air boss to keep CAS orbiting in close proximity to the target area while outside of the hazard area for ATACMS. Normally, the airborne warning and control system (AWACS) cleared the airspace between the firing platoon and the target hazard area. The close coordination permitted the ASOC to push aircraft into the airspace immediately after the mission to attack the suppressed target while main-

taining spatial separation from the AH-64 helicopters.

ATACMS Range Limitations and Effects. Another issue that VCA faced was the constant planning for the range limitations and effects of Block 1 and Block 1A munitions around friendly troops and civilian targets. Current MLRS range and precision limitations did not allow units to fire close to friendly troops or in areas of potential collateral damage.

On three separate missions, VCA units were tasked to support maneuver divisions with rocket fires. During these missions, rocket fires were not employed because of the collateral damage implications of DPICM. Additionally, due to range limitations, more precise cannon units were not in position to engage ground targets. The range of the M26 also placed M270 units at a disadvantage when encountering enemy long-range artillery.

If the artillery is to make itself a viable option for close support missions, the production and delivery of guided multiple-launch rocket system unitary needs to be expedited to provide commanders increased range and precision.

Conclusion. The corps artillery worked closely with corps planners to ensure all CFLCC and corps essential fire support tasks (EFSTs) were achieved. The FA played an integral part in the regime collapse and reduced the number of American soldiers subjected to attack by Iraqi artillery, armor and air defense assets. Artillery effects on these targets as well as the demoralizing effects of barrages of artillery on the enemy's morale and will to fight were an extremely lethal and effective combination. Maneuver units were rarely subjected to enemy indirect fire, and both Army aviation and fixed-wing aircraft received negligible anti-aircraft fire throughout the campaign. We were able to use the UAV to watch the lethal effects of our ATACMS fires on Astro IIs and other targets.

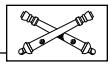
However, the greatest testament to the power and effectiveness of artillery on the battlefield may have come from an intelligence intercept of an Iraqi soldier professing that artillery fires had discouraged the Iraqi forces' will to fight and man their air defense systems—when they light up their ADA, it tended to be their last act.

With the cessation of hostilities, V Corps units quickly transitioned to conducting SASO operations across Iraq. Initial corps long-term planning focused on using FA assets as the nucleus of humanitarian assistance teams by capitalizing on the C^2 and line-haul capacities in FA battalions. VCA units prepared to fulfill a distinctly different and challenging role as the corps artillery headquarters took the lead in hauling enemy ammunition and arms out of Baghdad to keep it out of enemy hands.

The FA community must consider nonstandard missions as routine. SASO is a large part of the Army's worldwide missions and both direct support battalions and general support brigades are being assigned those missions.

VCA deployed to Iraq well-trained and ready. An outstanding team was assembled from units in III Corps, V Corps, and XVIII Airborne Corps to form V Corps Artillery during OIF. The flexibility and forward thinking of VCA soldiers provided leaders the ability to quickly adapt to a very fluid plan once ground hostilities commenced.

OIF is one likely template for how America will wage modern war: months of planning, days of hostilities and years of SASO to rebuild the former enemy nation.



Colonel Theodore J. Janosko commanded V Corps Artillery (VCA) during Operation Iraqi Freedom (OIF) and has been extended in command for a third year. He is also the *Victory Corps* Fire Support Coordinator (FSCOORD). In addition to VCA, he commanded the 30th Field Artillery Regiment in Training Command, Fort Sill, Oklahoma; the 1st Battalion, 319th Field Artillery (1-319 FA), 82d Airborne Division, Fort Bragg, North Carolina; and two batteries. He has worked in every level of fire support elements (FSEs) from company to corps. He also served as the Executive Officer of 2-41 FA, 3d Infantry Division (Mechanized) in the Persian Gulf during Operation Desert Storm, and later commanded the battalion during its deactivation.

Lieutenant Colonel Robert G. Cheatham, Jr., is the Chief of Staff of VCA and served as the Assistant Chief of Staff, G3, for VCA during OIF. In addition, in the 1st Armored Division in Germany, he was the S3 of the 1st Armored Division Artillery; S3 of 2-3 FA, deploying with the battalion in Kosovo Force Rotation 2A (KFOR2A); and the Division Fires Planner. In the 2d Infantry Division in Korea, he was in 1-15 FA as the Fire Support Officer for the 5th Battalion, 20th Infantry and as a Battery Commander.

Staff Sergeant (SSG) Aaron Carter: *Bartlesville, Oklahoma, 13F, Combat Observation Lasing Team (COLT) Platoon Sergeant, 1-41 FA, 3d ID.* SSG Carter demonstrated valor and courage in combat as part of C Troop, 1st Cavalry (Brigade Reconnaissance Troop).

SSG Carter's actions ensured the successful seizure of the bridge at Objective Jenkins north of An Najaf, Iraq. He led a COLT with scouts and air defense artillery (ADA) assets through heavy small arms fire and rocket propelled grenade (RPG) attacks while continuously providing fire support in order to seize the objective. Upon reaching the objective, SSG Carter continued to suppress the enemy with small arms and indirect fires while ensuring the safety of the bridge. Upon securing the bridge, SSG Carter demonstrated his bravery and dedication by choosing not to return across the bridge to relative safety—instead opting to remain in place to continue calling for fires.

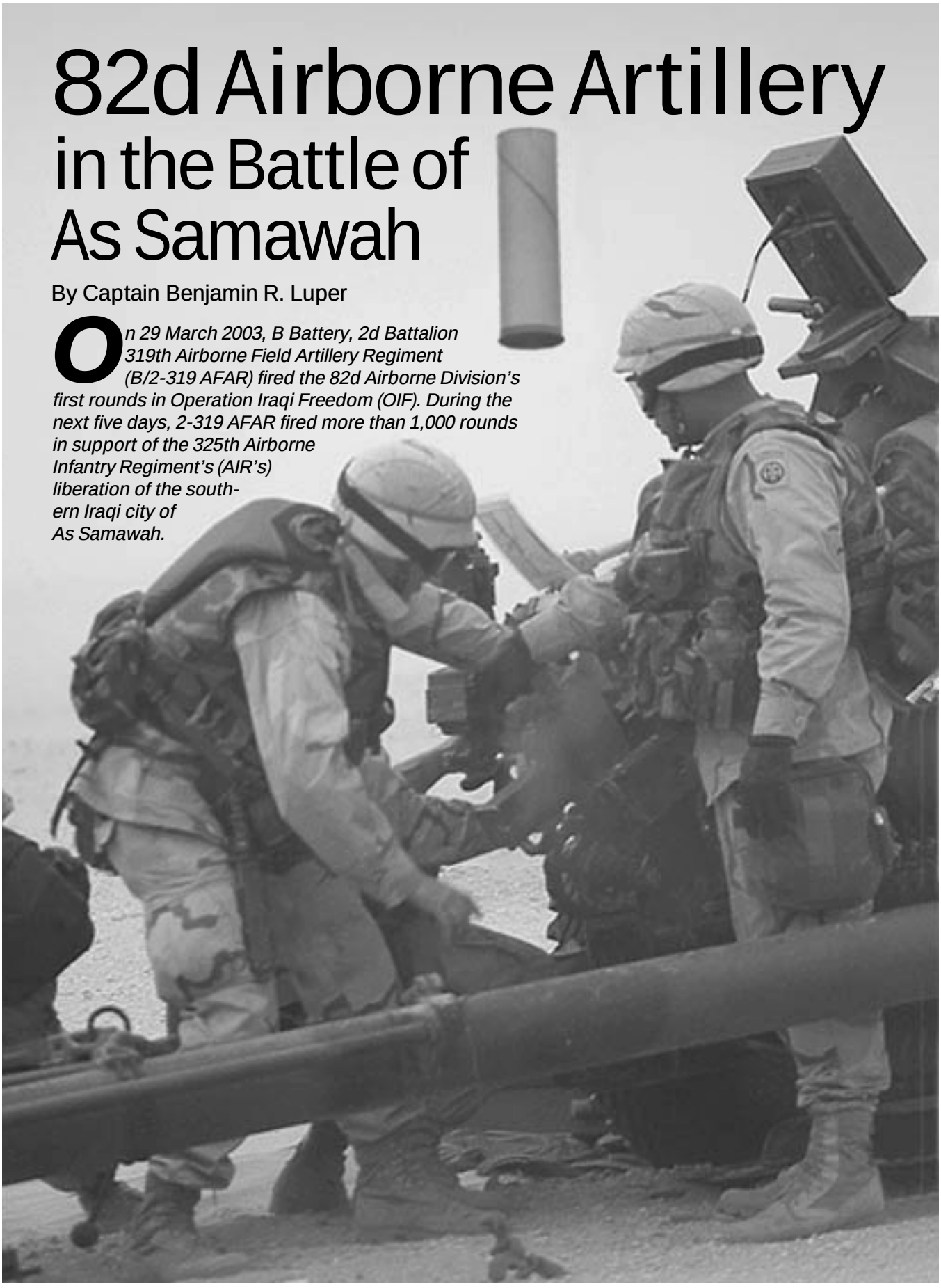
SSG Carter also helped defend the bridge by establishing final protective fires (FPF) and a strong defensive position, resulting in the destruction of enemy patrols around the objective. He was instrumental in the seizure and defense of the bridge resulting in the success of the operation.

SSG Carter was awarded the Bronze Star Medal with "V" Device for valor for his actions in combat during Operation Iraqi Freedom.

82d Airborne Artillery in the Battle of As Samawah

By Captain Benjamin R. Luper

On 29 March 2003, B Battery, 2d Battalion 319th Airborne Field Artillery Regiment (B/2-319 AFAR) fired the 82d Airborne Division's first rounds in Operation Iraqi Freedom (OIF). During the next five days, 2-319 AFAR fired more than 1,000 rounds in support of the 325th Airborne Infantry Regiment's (AIR's) liberation of the southern Iraqi city of As Samawah.



2-319 AFAR firing during a sandstorm. Photo by SPC Jason B. Baker, 49th Public Affairs Detachment (Airborne)

2-319 AFAR's actions during combat operations undoubtedly exhibited that the Field Artillery is committed to supporting the close fight as well as provide the only 24-hour, all-weather fire support asset on the battlefield. Our experience demonstrated that close air support (CAS) and attack aviation—with their excellent lethality and precision—were not always readily available and were vulnerable to enemy air defense systems and susceptible to inclement weather/lack of lunar illumination.

Organization and Missions. 2-319 AFAR deployed to Kuwait with the mission of seizing the Saddam International Airport under the conditions of a capitulated Saddam Hussein regime. The battalion deployed with a task organization modified for its role in the brigade's airfield seizure mission.

Instead of the normal direct support (DS) artillery battalion task organization (three firing batteries each with six 105-mm howitzers and a Q-36 radar), the battalion deployed with two four-howitzer batteries and its Q-36 radar.

The logic for this deviation was two-fold. First, the limited availability of aircraft to support a brigade-sized airfield seizure forced the 82d Airborne Division staff to assume risk by limiting the number of 82d howitzer platforms deployed into theater. The division reasoned that this risk was mitigated by the availability of CAS and the division's OH-58D Kiowa Warrior helicopters in the 1st Battalion, 82d Aviation (1-82 Avn). Second, under the conditions of a capitulated Iraqi Army and a collapsed Saddam Hussein regime, the brigade would be able to assault under semi-permissive conditions.

After a week of intense ground fighting by Coalition Forces, the Coalition Forces Land Component Commander (CFLCC) assessed that the Saddam Hussein regime would not quickly capitulate—thus not meeting the conditions for an airborne assault into the heart of Baghdad. Due to the rapid advance of the 3d Infantry Division (Mechanized) (3d ID) and I Marine Expeditionary Force (I MEF), the supply lines between the Kuwaiti border and Coalition Forces became vulnerable to attacks by remnants of Republican Guard and Saddam Fedayeen forces. Therefore, on 24 March 2003, the 325th AIR received a new mission: Secure a portion of V Corps' ground lines of communication (LOCs) along Highway 8 in As Samawah. (See the map on Page 3.)

After a 250-kilometer ground assault convoy (GAC) from Kuwait City to Tallil Airfield, the brigade staff began planning its assault on the remaining Special Republican Guard, Saddam Fedayeen and Syrian mercenary forces occupying the southern city of As Samawah. By 30 March, the entire brigade combat team (BCT), with the addition of the 1st Battalion, 41st Mechanized Infantry (1-41 IN) from 1st Brigade, 1st Armored Division, had cordoned off the southern portions of the city. The 325th AIR was poised for an assault along Highway 8 across the Euphrates River, a feat attempted three times by the 3d ID before it decided to bypass this portion of Highway 8.

The 2-319 AFAR commander and 325th AIR fire support officer (FSO) faced daunting tactical problems. First, they had to decide how best to provide responsive fires for three airborne infantry battalions and one mechanized infantry battalion from the two four-howitzer batteries and their Q-36 radar. Second, they had to determine how to execute counterfire with two firing units without neglecting the infantry in the close fight. Third, the challenge was to protect this force against an asymmetrical threat adept at blending into the civilian population and using ambulances and taxis as troop carriers. Lastly, they had to manipulate the limited communications platforms to establish sensor-to-shooter connectivity between the infantry battalions and the firing batteries to facilitate responsive fires.

With support from the 307th Engineers, 2-319 AFAR established two battery firebases three kilometers southwest of As Samawah. Due to the enemy's inability to employ counterbattery fire and unwillingness to conduct offensive operations outside As Samawah, it was unnecessary to continually reposition the batteries for survivability.

To protect one of the brigade's high-value assets, the radar was emplaced in B Battery's firebase; this firebase was reinforced with an infantry platoon.

Immediately upon occupying inside the firebase, the Q-36 section began acquiring enemy mortar fire, thus allowing B/2-319 AFAR to fire the 82d Airborne Division Artillery's first rounds in OIF.

Communications and Quick-Fire Nets. To shorten the sensor-to-shooter link, the fire support coordinator (FSCOORD) established quick-fire nets between his two firing batteries and two of the infantry battalions. The remaining maneuver battalion and the OH-58Ds used the brigade fire support coordination net to attack targets.

To bring this communications structure to fruition with limited communications platforms in the battalion and battery fire direction centers (FDCs), the FSCOORD decided to execute all fire missions and fire support coordination by voice. This freed the battalion and battery FDCs digital nets to support the quick-fire nets. The battery FDCs exclusive use of dual handheld terminal units (HTUs) for fire mission processing instead of the advanced FA tactical data system (AFATDS) further reinforced this plan.

Liberation of As Samawah. On 31 March, 2-325 AIR was the brigade's main effort in an assault to destroy enemy forces on the southern bank of three bridges that crossed the Euphrates River along Highway 8 and then conduct a relief-in-place with 1-41 IN. The purpose was to set the conditions for a future assault across the Euphrates and prevent the Republican Guards and Saddam Fedayeen from threatening the seam between the 3d ID and I MEF boundary along Highway 8.

A 2-319 AFAR M119 howitzer at one of the firebases three kilometers southwest of As Samawah.

Due to the lack of illumination, the OH-58D Kiowas of 1-82 Avn could not fly until two hours after beginning morning nautical time (BMNT) and, therefore, were unable to provide reconnaissance of the objective area or aerial fire support during the attack. To limit collateral damage, preparatory fires were not planned on company objectives on either the northern or southern sides of the bridges. 2-325 AIR depended on the 105-mm howitzers of A/2-319 AFAR and its own 81-mm mortars to execute planned targets and targets of opportunity.

Soldiers of B/2-325 Airborne Infantry Regiment move cautiously in the city of As Samawah. *Photo by SGT Kyran V. Adams*

Just before dawn, A Company made contact. As 3d Platoon approached the southern side of the eastern bridge, it engaged a platoon of Saddam Fedayeen defending from dug-in positions along the northern bank.

Specialist Daniel Falcon, the 3d Platoon forward observer (FO), immediately initiated a planned target on the northern bank. Within one minute, both the battalion mortars and A Battery howitzers reported, "Shot." With one correction, the battalion mortars and A Battery rapidly delivered devastating fire onto the enemy within 200 meters of friendly troops.

Throughout the engagement, the mortars and A Battery fired in excess of 250 high-explosive (HE) rounds onto the northern banks of both bridges.

Thirty minutes into the engagement, the enlisted terminal air controller (ETAC) for A Company had an F-16 aircraft armed with MK82s on station. After receiving reports from the company FSOs on the accuracy and devastating effects of the 81-mm mortars and 105-mm howitzers and the FOs' inability to observe fires more than a few hundred meters north of the bridges, the 2-325 AIR commander decided not to use these aircraft. His rationale was to limit unnecessary collateral damage from the aircraft's 500-pound bombs.

In the waning minutes of the two-and-one-half-hour engagement while 2-325 AIR began its relief-in-place with 1-41 IN, the OH-58Ds arrived on station. Due to the lack of reliable FM communications between the brigade and 1-82 Avn, a problem that plagued the BCT throughout the five-day battle for As Samawah, FOs or ETACs could not communicate with the Kiowa Warriors to guide them onto targets.

The responsiveness and lethality of the FA and mortars enabled the paratroopers of 2-325 AIR to seize the initiative and maintain fire superiority throughout the two-and-one-half-hour firefight, which enemy prisoners of war (EPWs) captured days later reported inflicted 36 enemy killed in action (KIA) and more than 20 enemy wounded in action (WIA).

On 2 April 2003, the conditions were set to attack north of the Euphrates along Highway 8 and complete the liberation of As Samawah. 1-41 IN was to lead the assault by conducting a penetration across two bridges along Highway 8, destroy enemy forces in northern As Samawah and then screen the brigade's northern flank. 2-325 AIR was to follow 1-41 IN across the Highway 8 bridges and clear the area of enemy forces just north of the Euphrates.

2-325 AIR was to fight in the most unenviable of environments: urban warfare.

The only fire support assets available were the howitzers of the 2-319 AFAR. The OH-58Ds, limited to only flying during daylight hours, could not arrive on station until three hours after 1-41 IN initiated the attack. Because the 3d ID was decisively engaged in the vicinity of the Karbala Gap, all other aircraft were dedicated to its mission.

The brigade FSCOORD and the brigade FSO analyzed the best course-of-action to support 1-41 IN's crossing of the two bridges on the Euphrates River along Highway 8. It was imperative that 2-319 AFAR simultaneously suppress the northern and southern bridgeheads of both bridges. This plan was further complicated by the unavailability of the OH-58Ds to provide observation for the artillery fires.

A 20-minute artillery prep was executed on eight targets using HE with point-detonating fuzes (HE/PD) and HE with variable-time fuzes (HE/VT). Due to the limited number of firing units, this amounted to a separate aiming point for each howitzer.

The prep concluded with 10 minutes of hexachloroethane zinc (HC) smoke mixed with HE to provide obscuration and suppression to facilitate the bridge crossing. This fire plan suppressed the enemy and obscured the two-story buildings surrounding both bridgeheads just long enough for 1-41 IN to cross the 250 meters of open bridge. Once across the river, both 1-41 IN and 2-325 AIR executed targets of opportunity on quick-fire nets established with each howitzer battery.

The artillery prep was executed flawlessly, and both 1-41 IN and 2-325 AIR reached the far side of the Euphrates River with little opposition. However, once across the Highway 8 bridges, 1-41 IN received sporadic rocket-propelled grenade (RPG) fire, destroying its battalion fire support team vehicle (FIST-V). At day's end, the 325 AIR had completed the liberation of As Samawah and prepared for future operations.

2-319 AFAR repeatedly executed danger-close fires in support of infantry maneuver at As Samawah. These airborne Redlegs provided the only 24-hour, all-weather fire support available to the 325th AIR—the hallmark of the FA.

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"Acquisition!"

3d ID Counterfire in OIF

By Warrant Officer Three Brian L. Borer
and Lieutenant Colonel Noel T. Nicolle

"Acquisition! Acquisition Acquisition!" *crackled over the 3d Infantry Division (Mechanized) (3d ID) counterfire net as we bumped along the desert at a high rate of speed near An Nasiriyah. In less than 15 minutes after the division artillery (Div Arty) tactical command post (TAC) came to a halt,* Marne Thunder *was fighting its first counterfire fight of the war.*

The word "Acquisition!" electrified the 3d Div Arty tactical operations center (TOC) every time the alert came across the net during Operation Iraqi Freedom (OIF). Enemy artillerymen or mortarmen were targeting American soldiers, and it was the job of the force FA headquarters to defeat that threat immediately. The timely and accurate delivery of fires was paramount: lives were at stake. Adherence to the rules of engagement (ROE) was also important: the credibility of the Coalition Forces and the strategic aims of our country were at stake.

During OIF, the 3d Div Arty engaged in an overwhelmingly successful counterfire effort. In 21 days, we processed more than 1,800 hostile acquisitions with no recorded deaths of 3d Division soldiers due to Iraqi mortar, cannon or rocket fire. There were no Law of Land Warfare violations and no reports of fratricide due to counterfire. The 3d Div Arty fired 74 general support (GS) counterfire missions with an estimated battle damage assessment (BDA) of more than 150 enemy artillery systems destroyed and 700 enemy killed in action (KIA). This record speaks for itself.

This article explains what counterfire challenges we faced in terms of our command and control (C^2) equipment and organization, training, and ROE considerations. In addition, we outline the 3d Div Arty counterfire battle drill for OIF, including the "vector management" process we devised, and radar zone management. We also discuss the overall performance of the Firefinder radars and recommendations for improving counterfire operations in future combat operations.

Counterfire C^2 Equipment and Organization. The 3d Div Arty TOC was organized with a TAC as a C^2 on-the-move platform and the TOC as the traditional static C^2 node. That allowed us to leapfrog our counterfire capabilities as the division moved rapidly toward Baghdad.

Counterfire in the TAC and TOC. We built the TAC around two rigid-wall shelter (RWS) high-mobility multipurpose wheeled vehicles (HMMWVs) and a small extension node (SEN) team. Other assets included the target processing section (TPS), a metrological team, an FM retransmission team and security HMMWVs.

The TAC provided the Div Arty a limited C^2 on-the-move and short-halt capability as the fire control element's (FCE's) advanced FA tactical data system (AFATDS) in the RWS had constant power. The TAC had all the communications capabilities of a traditional TOC, but it was suited only for short-term operations because it relied on standard integrated command post systems (SICPS) or exterior set up.

In the TAC, the TPS did not have an RWS and could not provide constant power for AFATDS. Although we could establish C^2 of the counterfire fight within 15 minutes, we still could not conduct digital counterfire operations on the move.

We built our TOC around our modified table of organization and equipment (MTOE) M935 expando vans. Although it was an excellent static command post, it could not provide constant

power for AFATDS. To decrease the emplacement time, we developed internal tactics, techniques and procedures (TTPs) for setting up the TOC quickly. We had a detailed set up battle drill for the standard red–amber–green configuration and exterior-mounted OE-254 antenna poles.

One field modification allowed us to mount a spare signal corps nine-meter mast on the expando van's forward wall. This gave us another extended-range quick-erect antenna.

Between the quick-erect antenna mount (QEAM) antennas on the two RWS and the exterior-mounted OE-254s, we could erect 12 long-range antennas in less than 25 minutes. This corresponded to about the same amount of time it took to boot up the AFATDS computer, so both communications and fire direction capabilities were available almost simultaneously.

Our major challenge was the TPS. Our MTOE only authorizes a single section; we had neither the personnel nor the equipment to man a second TPS. In order to have a TPS in both the TOC and TAC, we built a second section by cross-leveling radios from within the Div Arty and assigned TPS2 a float AFATDS. We staffed TPS2 with the assistant counterfire officer (CFO) from 1st Battalion, 39th Field Artillery (1-39 FA), the 3d Division's multiple-launch rocket system (MLRS) battalion, and divided the NCOs and enlisted soldiers evenly between the two sections, based on the soldiers' experience.

TPS1 fought from the FCE shelter in the TOC; TPS2 fought from an M998 HMMWV with the TAC. In both cases, the TPS' AFATDS were powered down for movement. This meant that either the TOC or TAC had to be stationary if the Div Arty was to have a continuous digital counterfire capability.

An operational TOC and TAC gave the Div Arty flexibility with its C^2 options. Neither was optimal, but without a reinforcing brigade to conduct mutually supported unit (MSU) operations, we had no choice in order to maintain a counterfire capability while the division was moving.

Once the 214th FA Brigade from Fort Sill, Oklahoma, was assigned to the 3d Division in a reinforcing role on D-Day+10, we rehearsed and executed MSU operations with the brigade. At that point, we changed our tactics slightly and merged the TAC and TOC. The TAC remained our C^2 on-the-move and short-halt platform, and upon deliberate occupation, when the TOC was up and operational, the TAC stood down and normal TOC operations resumed.

Counterfire Headquarters. Because we started the war without a reinforcing FA brigade, the 3d Div Arty was the counterfire headquarters throughout OIF. When the 214th FA *Leader* Brigade joined the division in a reinforcing role, it was a tremendous boost to the 3d Div Arty. The brigade brought 2-4 FA as well as the 2d FA Detachment (FAD) from Fort Campbell, Kentucky. The additional firepower and radar were critical during the next major operation at the Karbala Gap, a significant natural obstacle that required a C^2 capability on both the near and far sides of the gap.

We decided to keep the counterfire headquarters mission within the Div Arty headquarters for several reasons. First, the counterfire battle drill was successful up to that point, and our TTPs were established. Second, we had not trained with the 214th FA Brigade before hostilities began. Third, we had no idea how long the 214th Brigade would remain reinforcing, and we did not know if V Corps had "strings" attached to the brigade from V Corps. For example, the 214th Brigade retained the V Corps Artillery (VCA) time-sensitive target (TST) mission that required it to keep one battery ready to fire Army tactical missile system (ATACMS) Block IA missiles at all times.

The real combat multiplier brought by the 214th FA Brigade was its brigade-level C^2 capabilities and its two Q-37 radars in 2 FAD. The additional Q-37s augmented our radar coverage to provide 4,800 mils of radar coverage when set and a degree of continuous radar coverage while on the move.

Automated Deep Operations Coordination System (ADOCS). Because the AFATDS effects management tool (EMT) software was not available for training at either home station or in theater until a few days before we crossed the line of departure (LD) from Kuwait into Iraq, our counterfire system was a combination of AFATDS and ADOCS. ADOCS is advanced concept technology demonstration (ACTD) software that is a suite of tools for visualization and analysis. ADOCS is not stand-alone software; its information is only as good as the systems it draws from, such as AFATDS. Our battle drill used AFATDS as the fire control and fire direction platform and ADOCS as the primary counterfire analysis tool.

ADOCS allowed us to store the 17,000 targets on the Coalition Forces Land Component Command (CFLCC) no-strike list (NSL), and its mapping tool displayed five-meter satellite imagery across the division's 300-kilometer battlespace in a matter of seconds. Additionally, ADOCS could process other global command and control system-Army (GCCS-A) feeds and display friendly maneuver "icons" in conjunction with the all-source analysis system (ASAS) enemy database. It also could display fire support coordinating measures (FSCM) and graphic control measures, to include the USAF kill box grid system.

Finally, because VCA used ADOCS as its primary fire support tool, our using ADOCS allowed VCA access to our counterfire common operating picture (COP) in near real-time. This automated our reporting requirements to VCA, thereby freeing man-hours to fight the battle rather than prepare reports.

Counterfire Training. Training the TPS to execute its wartime mission was

Q-37 Firefinder in a sandstorm in Iraq. In 21 days, the 3d Div Arty processed more than 1,800 acquisitions.

a challenge because Combat Training Center (CTC) rotations only replicate counterfire at the brigade level and below. The best TPS training opportunities usually are simulated Warfighter exercises or local digital gunnery exercises using training tapes in conjunction with a Q-37. Because the TPS was assigned to the target acquisition battery (TAB) in the divisional MLRS battalion (1-39 FA) and the CFO is assigned to Div Arty headquarters and headquarters battery (HHB), it is difficult for the CFO to build a cohesive team with his section in garrison due to the operational tempo (OPTEMPO).

After arriving in Kuwait, the TPS was moved to the Div Arty TOC and placed under the control of the CFO. We trained the TPS during a three-month period by using a number of cannon and rocket live-fire exercises to allow our radars to acquire targets in the hostile mode. Using a series of FM radio retransmission vehicles and position offsets, we tracked hundreds of live rounds and rockets.

The artillerymen of 1-39 FA *Speed in Action* did a great job of working with the Div Arty and the TPS to maximize every opportunity to execute the counterfire system from sensor-to-shooter.

ROE Considerations. The ROE played a pivotal role in our counterfire battle drill. Because the Coalition Forces wanted to be seen as liberators and not conquerors, we took steps to minimize collateral damage.

Intelligence reports indicated that the Iraqis most likely would position their artillery in schoolyards and near mosques to maximize collateral damage if we fired on them and gain negative press coverage for the Coalition. Although the Law of Land Warfare legalizes the attack of civilian facilities when used for military purposes, that would mean little to the local populace if we killed a large number of innocent people, such as children or Muslim worshipers, during a "legal" counterfire mission.

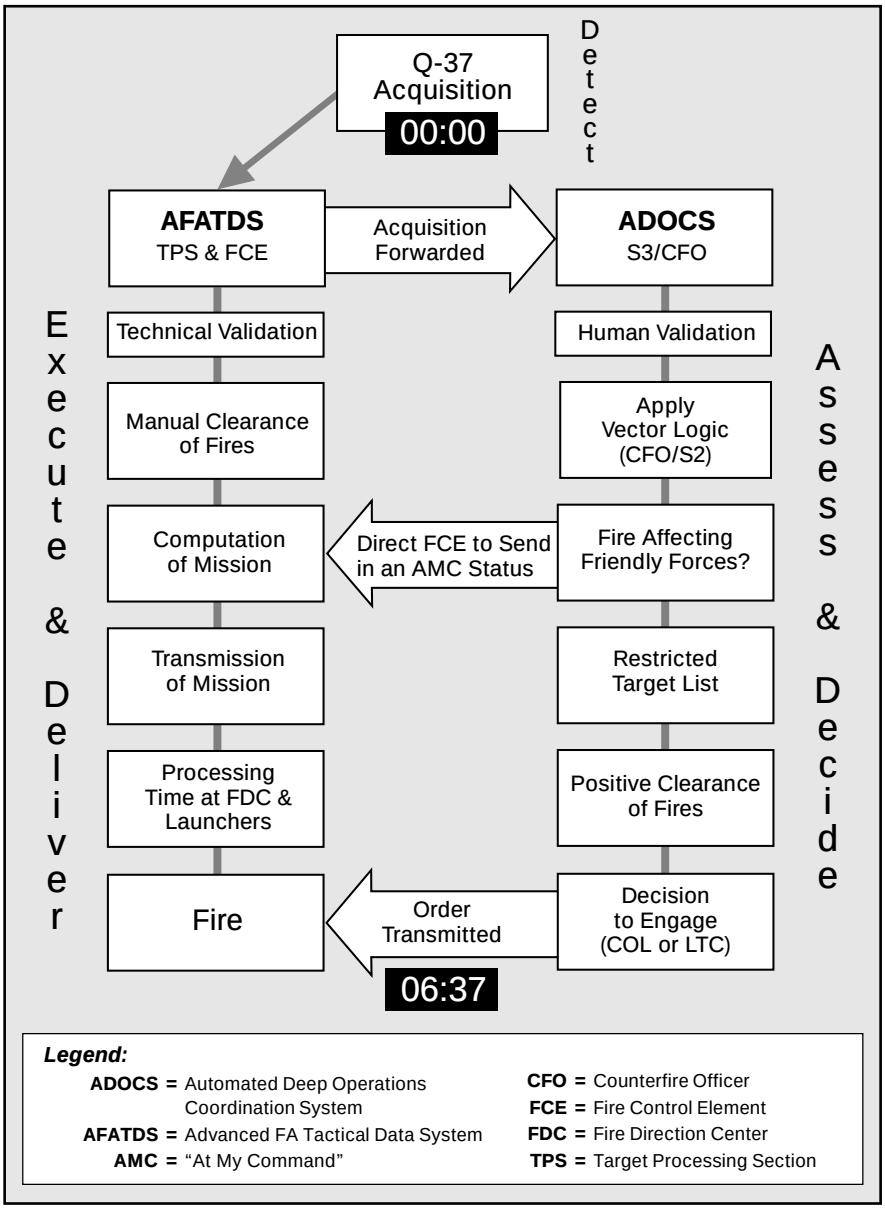
Therefore, we cleared and validated every acquisition. Enemy artillery firing in the *general direction* of Coalition troops did not guarantee a counterfire response; enemy indirect fire that was *effective* on friendly troops did guarantee an immediate and lethal response.

Because the ROE had the potential to bring our counterfire battle drill to a crawl, we employed two measures to mitigate the risk. First, within seconds of receiving the acquisition, ADOCS displayed the origin and impact grids to five-meter resolution via satellite imagery. This allowed us to assess the validity of the acquisition immediately.

Second, to help the Div Arty commander or S3 determine the legality of engaging certain acquisitions, a Judge Advocate (JA) officer worked in the Div Arty TOC. He was beneficial to the Div Arty in developing ROE. The JA learned the capabilities and complexities of the counterfire radar and used that knowledge to craft the ROE in language applicable specifically to the artillery fight.

This allowed us to apply the ROE directly and streamlined our counterfire decision-making process. We didn't need to waste time guessing, interpreting or getting a case-by-case opinion to apply the ROE.

Counterfire Battle Drill. After receiving a digital artillery target intelligence: coordinates report (ATI:CDR) message from the Q-37 in both the TPS AFATDS and the CFO ADOCS, the process began on two parallel tracks. (See the figure.) The CFO processed the vector immediately to apply vector logic and classify the type of acquisition. If it was a valid artillery or rocket acquisition, we immediately checked ADOCS to see if the impact location was in proximity to friendly icons from the



3d Infantry Division Counterfire Battle Drill in Operation Iraqi Freedom. This battle drill has a parallel decision process for reactive counterfire. The average acquire-to-fire time for multiple-launch rocket system (MLRS) rockets in the 3d Division zone was six minutes and 37 seconds.

GCCS-A feed and identified who was responsible for clearing the battlespace.

Simultaneously, the FCE received the mission from the TPS. The FCE began checking the acquisition location against all known FSCM and made an initial assessment of the general range-to-target from known unit locations. If the target was obviously out of range, the FCE announced the target number to alert the CFO that it required assets not organic to the Div Arty, i.e., close air support (CAS). If the target was still possibly valid, the counterfire battle drill continued.

If the acquisition appeared to be valid or if the impact was in proximity to friendlies, the Div Arty S3 directed the FCE to send the mission to 1-39 FA in an "At My Command" status.

While these steps were continuing, the Div Arty S2 assessed and classified the type of system based on the range and enemy set. The CFO then looked at the ADOCS five-meter satellite computer imagery to examine the origin location against the NSL and terrain. This process normally took less than two minutes.

Once complete, we contacted the brigade FSO responsible for the target grid to have him initiate the clearance process. If we could use MLRS against the acquisition, we simultaneously contacted the assistant fire support coordinator (AFSCOORD) in the division TAC (DTAC) to clear the airspace of fixed- and rotary-wing aircraft along or on the launcher-target line.

We also checked the acquisition against the current coordinated fire line (CFL). We consciously cleared acquisitions that were beyond the CFL through the DTAC as well because of the many Special Operations Forces (SOF) forward of the division's maneuver brigades.

If a valid acquisition emanated from inside a town or urban area, we sent the acquisition to the brigade FSE or directly to the direct support (DS) battalion to service with cannon artillery. If it was out of range, we sent it to the DTAC AFSCOORD for prosecution with CAS.

By the time the target grid was cleared, the mission was already down to the rocket battalion, normally on the launcher. Once the target was cleared, either the Div Arty commander or S3 gave the order to fire the mission. The average counterfire mission took six minutes and 37 seconds from acquire to fire.

Steps in Vector Logic. Based on more than 6,000 radar acquisitions that the division processed during its Kosovo rotation, we knew that not every acquisition is valid. We learned that the Q-37 can process acquisitions accurately in the hostile mode, incoming and often outgoing acquisitions. Small-arms fire, helicopter rotor blades or even vehicular movement are enough to generate a return. To separate the "wheat from the chaff," we developed "vector logic" to validate individual acquisitions.

First, we analyzed each red (enemy) vector for range and direction. Was the aspect angle and range consistent with known enemy dispositions and capabilities? Was it a lone acquisition or part of a pattern of multiple hits? If it was a lone acquisition, we waited for a second one to classify it as a multiple hit. We did not attack single acquisitions.

Once classified as a multiple hit, the process continued. We again confirmed the vectors for consistency with respect to range and direction. Did the vectors match the tactical situation and known locations of friendly and enemy forces?

A helicopter's rotor blades can produce multiple acquisitions, but when analyzed, they appear as parallel vectors that are evenly spaced perpendicular to the aircraft's flight path. In the case of anti-aircraft artillery (AAA) fire, the vectors appear as a starburst with similar range vectors emanating from a central point that are almost always in a 1,600-mil pattern.

One of the non-doctrinal applications of our vector logic was our ability to pass information on targets down to maneuver brigade fire support officers (FSOs) for attack by *direct fire* systems. In one case, we passed the locations of AAA systems on Baghdad International Airport for maneuver to engage with direct fire. This was extremely important in building suppression of enemy air defense (SEAD) and preparatory fire plans.

The important point of this discussion is that every acquisition, whether valid or not, helps the CFO build the counterfire COP and improves the counterfire headquarters' situational understanding of the *entire* battle. It also helps the S2 build his intelligence picture of the battlefield and contributes directly to the targeting effort.

Radar Zone Management. During OIF, the 3d Div Arty did not use radar zones in the traditional manner. Because every acquisition vector required clearance by satellite imagery, we needed both the impact and origin grids provided by the ATI:CDR message format. The Priority 1 fire mission: call-for-fire (FM:CFF) message generated by a critical friendly zone (CFZ) violation does not include the impact grid—the CFO needed *both* the impact and origin to execute the battle drill.

To guarantee the intent of the CFZ, we placed graphical depictions of CFZs in ADOCS. If the vector violated any zone, we immediately prosecuted that acquisition first. The standard battle drill for any CFZ violation was similar to any normal acquisition, except that the CFO called the brigade FSO and asked if his maneuver units were reporting incoming artillery. This step also provided a good secondary check for the validity of any acquisition. In OIF, if maneuver units were receiving enemy artillery or mortar fire, it was reported immediately on both command and fire support radio nets.

Call-for-Fire Zones (CFFZs) and Artillery Target Intelligence Zones (ATIZs). Similarly, CFFZs and ATIZs were not used. In an environment where it is possible to become overwhelmed by an extraordinary volume of enemy artillery fire, these zones are important. However, after the S2's intelligence preparation of the battlefield (IPB) and our military decision-making process (MDMP), we easily managed the fight on an acquisition-by-acquisition basis.

There were times during the conflict that we did encounter large volumes of fire. Using our ROE-based counterfire drill and ADOCS, we confirmed the enemy firing unit's disposition on satellite imagery and selected the most centrally located target. We announced the target number to prosecute and continued the process from there.

Censor Zones (CZs). These are input at the radar and essentially mask all fires emanating from that area. The purpose is to allow friendly artillery and mortars to shoot from a location and not appear as hostile acquisitions. During OIF, we planned many CZs but found it difficult to activate and deactivate them in a fluid, fast-paced environment.

In one instance, 1-10 FA was unable to complete its move to a position area for artillery (PAA) due to the tactical situation. The Div Arty was out of communications with the battalion and did not know the battalion had stopped to shoot an emergency mission. 1-10 FA was not covered by a CZ, and we ac-

quired its howitzers as hostile. Positive clearance procedures, however, prevented us from engaging 1-10 FA inadvertently.

Despite using CZs, one cannot engage apparent hostile acquisitions without positive clearance.

Location Averaging and Auto Censoring. Q-37 radars have the means to reduce large volumes of acquisitions by using location averaging and auto censoring; these are useful tools when there is a threat of being overwhelmed by acquisitions. However, these tools are dangerous when nearly every enemy artillery system is chemically capable—a high volume of acquisitions impacting in a similar area is the prime indicator of a chemical strike.

In at least one case, the enemy fired from the same location we previously engaged. We were not sure if we missed the first time or if he re-manned the guns. If the auto-censoring function had been employed, we might not have caught the enemy the second time.

For these reasons, we did not use the location averaging or auto censoring options in the radars.

Common Sensor Boundaries (CSBs). One tool used to diminish target duplication and unnecessary ammunition expenditure is a CSB. This is a valid tool if the CFO has visibility on both the Q-36 and Q-37 counterfire picture. Unfortunately, as a division, we did not generate a combined counterfire COP because of the extended distances involved and the range limitations of the FM radio. Had we used a CSB, we might have ignored enemy acquisitions emanating from a brigade zone without confirmation of whether or not the DS battalion's Q-36 acquired it.

During OIF, the enemy indirect systems were widely dispersed and rarely in templated locations. For example, a Q-36 oriented 0300 may miss a valid hostile acquisition originating from 4800, but a Q-37 located behind the Q-36 could easily pick it up because of its longer range and wider range fan.

Our solution was to pass Div Arty targets acquired in brigade areas to the appropriate brigade FSE. The brigade FSO normally cleared the mission and requested immediate Div Arty engagement.

Q-36 and Q-37 Performance. When the radars were fully mission-capable (FMC), they were *brilliant*. The Q-37s enjoyed improved cross-country trafficability. Never once were the radars out of position or unable to occupy because of mobility issues. Their performance was exceptional, and their ability to acquire the enemy indirect systems was unmatched.

Keeping the radars operational, however, was difficult. We started the war with two Q-36s and one Q-37 FMC. The essential repair parts stockage list (ERPSL) was inadequate for extended combat operations. Even when the card or part we needed was present, there was no guarantee it was serviceable. Both Q-37s were not mission-capable (NMC) at one time or another.

Only the resourcefulness and experience of the crews and mechanics, who often resorted to non-doctrinal repair techniques, guaranteed the operational status of our radars.

Recommendations. In retrospect, we recommend several changes to facilitate future counterfire operations.

First, assign the TPS to HHB, Div Arty rather than to the TAB in the MLRS battalion. This will facilitate the training and cohesiveness of the section.

Second, the heavy Div Arty needs one additional Q-36 and two additional Q-37 radars. The operational readiness rates and operational maneuver require more radar coverage than two Q-37s can provide for a heavy mechanized division. An additional Q-36 will provide a redundant capability for DS battalions and the divisional cavalry squadron when it is committed.

Third, the heavy Div Arty needs a C^2 platform for on the move and short halts, especially to process counterfire missions. The ability to process and prosecute a digital counterfire fight on the move will increase the flexibility and lethality of the heavy Div Arty.

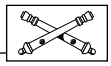
Fourth, units should only use CAS for counterfire when the acquisition is beyond artillery range or there are collateral damage concerns.

Of the many lessons during OIF, we learned that artillery in the counterfire role is the best killer of enemy artillery. With few exceptions, CAS was ineffective for counterfire. The most significant factor keeping CAS from being a more effective counterfire asset is that the USAF does not consider Q-36/Q-37 radar acquisitions as a source of positive identification (PID). Even when CAS was on station, it took time for pilots to acquire the target. Operations at night and during inclement weather further complicated positive visual acquisition problems.

Finally, to make the most of joint fires assets in future operations, we recommend joint fires guidelines specify that counterfire radar acquisitions meet the PID requirement in the USAF special instructions (SPINS).

Conclusion. The 3d Infantry Div Arty takes pride in the fact that no *Marne* soldiers were lost to enemy indirect fire. Division-level counterfire operations were not the Div Arty's only task but clearly our most important. We used every asset available and applied non-doctrinal concepts when necessary to achieve the desired results.

One tank company commander summarized the effectiveness of the 3d Division's counterfire effort when he said, "I don't know what a Q-37 radar is, but whatever you guys are doing, *keep* doing it!" *Marne Thunder!*



Warrant Officer Three Brian L. Borer, until recently, was the Counterfire Officer (CFO) for the 3d Infantry Division (Mechanized), Fort Stewart, Georgia, and deployed with the division in Operation Iraqi Freedom. Currently, he is an Instructor in the 131A Warrant Officer Basic and Advanced Courses at the Field Artillery School, Fort Sill, Oklahoma. He also was the CFO/Targeting Officer in the 3d Division as part of Task Force Falcon in Kosovo during Kosovo Forces (KFOR), Rotation 3A. His previous experience includes serving twice as a Brigade Targeting Officer while assigned to the 2d Battalion, 17th Field Artillery, part of the 2d Infantry Division in Korea, and the 1st Battalion, 9th Field Artillery, 3d Infantry Division. He was a Q-36 and Q-37 Radar Technician with the 3d Infantry Division, deploying for two rotations to the National Training Center (NTC), Fort Irwin, California, and two to Kuwait for Operation Intrinsic Action.

Lieutenant Colonel Noel T. Nicolle is the 3d Infantry Division Deputy Fire Support Coordinator (DFSCOORD) and, until recently, the Division Artillery S3, deployed for OIF. Previous assignments include serving as the Fire Support Officer (FSO) for 3d Brigade and S3 for 1st Battalion, 10th Field Artillery, both in the 3d Infantry Division; Small Group Instructor at the Field Artillery Captain's Career Course at the Field Artillery School, Fort Sill; and an Observer/Controller for the Mechanized Task Force Trainers and Fire Support Trainers at the NTC. He commanded B Battery, 4th Battalion, 27th Field Artillery (Multiple-Launch Rocket System), 41st Field Artillery Brigade in Germany. He holds an MA in History from Louisiana State University.

Force Protection for Baghdad International Airport

By Captain Kevin J. Podmore

This article is about 3d Infantry Division (Mechanized) Artillery (Div Arty) stability and support operations (SASO) at Baghdad International Airport from the end of major combat operations on 10 May 2003 until the Div Arty redeployed to Fort Stewart, Georgia, in August.

As we go to press, the level of conflict in Iraq has escalated into low-intensity conflict with units facing daily ambushes, infiltrations and deliberate attacks.

This article provides tactics, techniques and procedures (TTPs) for executing SASO in a more peaceful post-war, nation-building environment than exists in Iraq today.

Editor

After successfully attacking Saddam Hussein's regime, the 3d Div Arty transitioned immediately from high-intensity conflict to SASO. Consequently, FA units performed a variety of nontraditional missions. At the end of hostilities, the division headquarters tasked the Div Arty to plan and execute force protection for Baghdad International Airport. Soldiers in the Div Arty shifted their focus from destroying the enemy to protecting fellow soldiers.

The Area of Operations (AO). Baghdad International Airport, about 10 miles south of Baghdad, is Iraq's primary civilian hub for international flights. It has two runways. Passenger services continued up until three days before the beginning of hostilities in Operation Iraqi Freedom (OIF). The city of Abu Gharyb (population of about 750,000) is located approximately one kilometer north of the airport.

Small farming villages flank the airfield to the west and south. East of the airport are a number of Special Republican Guards barracks and one of Saddam Hussein's Presidential Palaces. Highway 10, which is a four-lane divided highway, leads directly from the airfield to downtown Baghdad and is the major avenue of approach for vehicle traffic entering and exiting the airport.

Task Organization. The Div Arty task organization for SASO consisted of Headquarters and Headquarters Battery (HHB), Div Arty; 1st Battalion, 39th Field Artillery (1-39 FA) multiple-launch rocket system (MLRS); and 1st Battalion, 3d Air Defense Artillery (1-3 AD). Due to the change in its tactical mission, the division no longer needed MLRS or air defense. Both 1-39 FA and 1-3 AD were in unique positions as the security force for Baghdad International Airport with the Div Arty headquarters as the command and control node.

Employing these battalions for SASO had advantages and disadvantages. While 1-39 FA had ample personnel to perform its mission, it lacked the high-mobility multipurpose wheeled vehicles (HMMWVs) and armored fighting vehicles to provide maximum protection at entry and exit control points (ECPs). Concurrently, 1-3 AD had an abundance of M6 Bradley Linebackers but lacked dismounted soldiers. To solve these problems, Div Arty cross-leveled personnel and vehicles to provide enough soldiers and armored vehicles at each ECP.

Before executing the force protection mission, the Div Arty established the Force Protection Operations Cell (FPOC) for Baghdad International Airport. The Div Arty mission was to command and control all airport force protection operations, coordinate with outside agencies for assistance and supplies, work in conjunction with the US Air Force security forces to secure the airport's two runways and interact with tenant units regarding force protection issues.

Also, the Div Arty found that a close working relationship with the airport's "Mayor's" Cell paid big dividends. The Mayor's Cell consisted of several Army and Air Force engineer units. Their tasks were to evaluate and rebuild the airport's infrastructure, restore utilities and coordinate space for units arriving at the airport.

The Div Arty began Baghdad International Airport force protection operations on 13 April by manning the four ECPs and conducting roving patrols along the perimeter.

The Threat and Security Operations. Before the Div Arty assumed force protection responsibilities, the 1st Brigade Combat Team (BCT) with elements from the 101st Airborne Division (Air Assault) had been securing Baghdad International Airport. Both units reported little activity along the perimeter besides sporadic gunfire in the distance. At first, the biggest threats to the Div Arty's mission were people looking for food and looters operating at night.

The Div Arty's initial task was to familiarize itself with what was left of the airport perimeter. A 14-foot wall bordering one of Saddam Hussein's Presidential Palaces flanked the eastern portion of the airport. Despite minor damage, the eastern wall was structurally sound.

The western portion of the airport was extremely porous and more difficult to secure. The wall along that portion did not fare well during the war and offered little protection, if any, to units that eventually would move into the area. The Div Arty executed a strongpoint defense in this area and constructed battle positions with interlocking fields of fire to protect the western perimeter.

One critical task in developing the perimeter was to identify the location of future ECPs. The Div Arty had to consider where most military traffic would enter and exit as well as which roads civilians and contractors would be permitted access to when they eventually returned to Baghdad International Airport. The Div Arty decided on four ECPs: two ECPs for military traffic and two for civilian/contractor traffic.

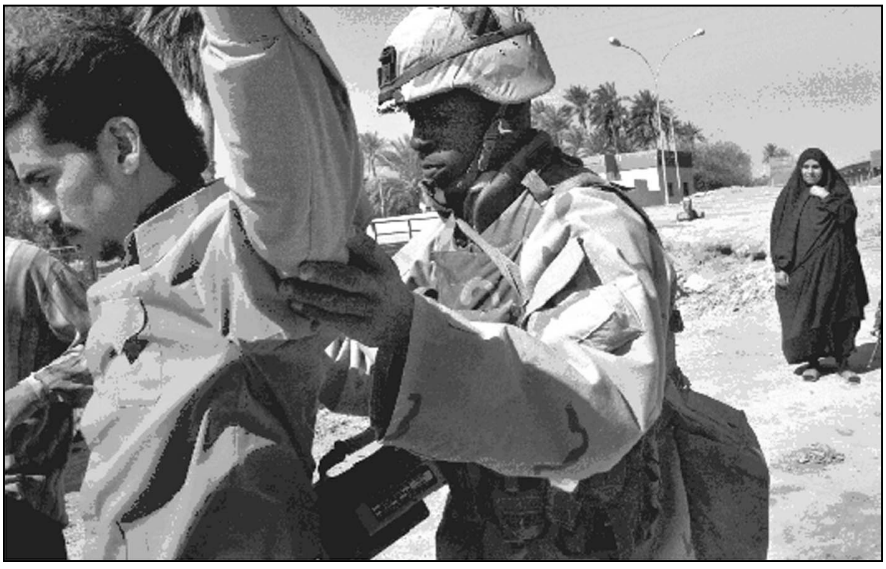
During the initial assessment of the AO, the Div Arty discovered many ammunition caches and areas strewn with unexploded ordnance (UXO). Due to the sheer numbers of caches and UXO in the airport, clearing these sites was secondary to developing the overall security of the airport.

As time passed, the Div Arty received more barrier material and, with the assistance of the military police (MPs), started to upgrade ECP defenses. Some of the upgrades included improving traffic serpentines, adding several portable lighting systems and constructing improved bunkers for soldiers manning the gates.

The first major test the Div Arty faced was the return of Iraqi civilians who lived in a village on the airport proper before the war. The civil affairs (CA) team operating in the zone informed the villagers the Army was prepared to let them return to their homes. This would not have been a problem if the CA team had notified the Div Arty. Instead, nearly 200 people arrived in buses and cars demanding they return to their homes.

At the same time, looters who had been coming onto the Baghdad International Airport grounds before the Div Arty assumed the force protection mission were attempting to exit in pick up trucks filled with appliances and electronics. The villagers began to scream *Ali-Baba* (thief in Arabic) and identified the individuals as criminals who did not live in the village. Altercations broke out, and the looters were apprehended and turned into the MP detention center.

After consulting the division headquarters and coordinating with the CA team, the families eventually were allowed back to their homes. One stipulation was they had to have an Iraqi Airways identification card (ID) or a Saddam International Airport identification card to gain entry to Baghdad International Airport. The airline and airport IDs were a short-term fix until the Div Arty could establish a system to identify these individuals and help determine if they were still loyal to Saddam's regime and posed a threat to daily operations at the airport.



The first major test the Div Arty faced was the return of Iraqi civilians who lived in a village on the airport proper before the war.

1-39 FA was tasked to oversee the village and, eventually, took a census of the village. The battalion developed new identification cards, renumbered the houses and established a vehicle registration system in the village.

1-39 FA's initiatives accomplished two things. Primarily, 1-39 FA quickly could identify villagers as they approached their ECP. Second, 1-39 FA gave the villagers a sense of belonging and a reason to work toward restoring normalcy in their daily lives.

Unfortunately, the airport villagers were not the Div Arty's only concern. Many "hot spots" sprang up as time went on.

One area was just outside of ECP1, which served as the main gate for Baghdad International Airport. Approximately one kilometer east of the ECP1 is an overpass that crosses over Highway 8 leading into the airport. The area was a gathering place for military-aged males. This congregation led us to believe the Iraqis were gathering intelligence and observing convoys moving on and off Baghdad International Airport.

Because they were not breaking any laws, the Div Arty did not detain them. Instead, the Div Arty developed a plan to run them off. The first step was to eliminate all brush and foliage for about 700 meters east of the ECP that bordered the highway. This improved observation and fields of fire for the security forces manning the ECP.

The Div Arty also conducted "Thunder Runs" in conjunction with the quick reaction force (QRF). The QRF consisted of two M1A1 Abrams main battle tanks and two M2 Bradley fighting vehicles (BFVs). These vehicles belonged to the assault command post security force that was task organized to the Div Arty. On a Thunder Run, the QRF drove to the overpass, stopped, set up a hasty perimeter and waited until the crowds dispersed.

This show-of-force was extremely effective in dispersing crowds. Upon the arrival of US tanks and BFVs, many of the Iraqis would wave white flags in a sign of submission.

The QRF executed Thunder Runs several times within two to three hours and always achieved optimal results; the crowd dispersed and traffic flowed freely on and off the airport.

As the situation matured, the Div Arty worked closely with Air Force security forces to provide perimeter security while the Air Force was responsible for aircraft and runway security. The biggest challenge was direct communications between the two services. The Div Arty overcame this challenge by signing for a single-channel, handheld Motorola radio that enabled access to the base defense operations cell that served as the command and control node for Air Force security forces.

Another challenge was controlling the access of local construction vehicles and personnel onto the airport. These personnel were repairing the airport's two runways. But before establishing any type of agreement, the Air Force had nearly 100 trucks a day arriving at ECP4, which was responsible for vehicle inspection. Vehicle inspections became impossible due to the increasing heat and the number of trucks per day at the gate. In the end, the Army continued to man ECP4, which became a service entrance, while the Air Force searched and escorted the Iraqi construction vehicles on and off the airport.

Special Forces and 3ID soldiers, including the commander of 1-3 AD, LTC Mark Garrell (center facing the camera), work together to establish the Abu Ghurayb city council.

The Div Arty would not have been as successful in its force protection mission without the assistance of the engineers and MPs. The engineer liaison officer (LNO), who was assigned to the Div Arty before the war, directed many projects, such as repairing holes in the perimeter wall, clearing brush and foliage, razing damaged and unsafe buildings, and clearing UXO.

The MPs proved invaluable in ECP construction and perimeter security. The 709th MP Battalion commander conducted a vulnerability threat assessment of the airport's perimeter and checkpoints. The assessment yielded a wealth of information and allowed the Div Arty to upgrade perimeter defenses and ECP security.

Major Challenges. While the mission was an overall success, the Div Arty faced three major challenges while serving as the Baghdad International Airport security force. The first was the lack of training on force protection procedures (vehicle and personnel searches) and the lack of force protection equipment (search wands and vehicle inspection mirrors). Force protection is inherent to major operations, but US Forces rarely train on it.

One recommendation to enhance the force protection posture of the Army while continuing to hone warfighting skills is to incorporate basic force protection tasks into quarterly common task training (CTT). Soldiers could train to set up a hasty checkpoint or roadblock during combat or peacekeeping operations.

Additionally, soldiers need the right equipment to perform these tasks. Search wands and detection mirrors should be added to the battalion's modified table of organization and equipment (MTOE). As OIF proved, tasks formerly considered jobs for the infantrymen and MPs are performed by soldiers in many military occupational specialties (MOS).

The second major hurdle was the lack of Class IV material, such as concertina wire and Hesco bastions used to build barriers. While some of this material was available at the division support area about 30 kilometers south of the airport, the quantity needed and capacity to haul it were severely lacking. Eventually, the Div Arty received a copious amount of barrier and construction material, but these materials needed to have been a priority for movement north to support securing many post-conflict headquarters and troop concentration areas.

Finally, the most difficult challenge the Div Arty faced was working with the non-governmental organizations (NGOs) and the Office of Reconstruction and Humanitarian Assistance (ORHA), later renamed the Coalition Provisional Authority (CPA). Many of these NGOs flew into Baghdad International Airport and met their relief convoys outside of the airport.

The Div Arty had to determine procedures to allow these people entrance to the airport. Despite photographing each person and documenting his/her passport, many of these relief workers came from countries (Sudan, Yemen and Syria) that have been accused of supporting terrorism. The Div Arty assumed that ORHA would take over this task, but this never happened.

ORHA was a challenge for the Div Arty in several ways. On more than one occasion, ORHA wanted to have local civilians return to the airport to begin cleaning and repairing airport facilities, but they had no plan for monitoring them. Ultimately, the task for securing them and their work areas fell on the Div Arty, which was already stretched to the breaking point. Better interagency cooperation and information flow would have resolved a number of the NGO problems we encountered.

In the end, the Div Arty adapted to its ever-changing environment and protected Baghdad International Airport, handing over a secure operating environment to the 1st Armored Division Artillery.

Operation Iraqi Freedom is one model of combat in the contemporary operating environment. The Army, and especially the artillery with our organizational skills and communications and haul equipment, will be part of SASO after major combat ceases. The Army needs to train for that and establish better communications with and procedures for working SASO with other services and organizations.

After all, when US/Coalition major combat operations cease, who else will be able to do it?

Captain Kevin J. Podmore is the 3d Infantry Division (Mechanized) Artillery Plans Officer and deployed to Operation Iraqi Freedom (OIF); he also served as the Force Protection Officer during the initial civil-military phase of OIF. In his tour with the 1st Battalion, 7th Field Artillery, 1st Infantry Division (Mechanized) in Schweinfurt, Germany, he served as the Fire Support Officer for B Company, 1st Battalion, 18th Infantry; Battalion Adjutant; Battalion Ammunition Officer; and Paladin Platoon Leader. He is a graduate of the Combined Arms and Services Staff School (CAS^3) at Fort Leavenworth, Kansas