



(Photo by CW2 Brian Boase, 101st DIVARTY PAO)

101st Division Artillery soldiers process a counterfire mission during the November 2015 Warfighter Exercise 16-02 at Fort Campbell, Kentucky.

Reinventing the Wheel

Operational Lessons Learned by the 101st Division Artillery during Two Warfighter Exercises

Maj. Travis Robison, U.S. Army

Capt. Alex Moen, U.S. Army

The U.S. Army reactivated active component division artillery (DIVARTY) units in 2014 after a ten-year hiatus. Although the DIVARTY is not a new organizational structure, its latest incarnation comes at a period when critical operational-level fires skills have atrophied. DIVARTY members now

find themselves relearning skills that were once common artillery competencies. Additionally, incorporating tactics, techniques, and procedures that operationalize technological innovations and lessons learned in combat during the past fourteen years is a learning challenge.

The 101st DIVARTY reactivated in 2014 and participated in two division-level warfighter exercises (WFXs) in one year. During these exercises, the 101st DIVARTY relearned essential skills, developed new procedures, and had the unique opportunity to re-evaluate lessons learned to identify best practices for dealing with organizational and operational challenges. This article provides a brief background of WFXs and common fires issues, outlines the context of the 101st DIVARTY's training scenarios, and summarizes four important lessons learned as best practices.

Warfighter Exercise Background and Commonly Observed Issues

WFXs are distributed, multiechelon, and multicomponent events focused on training mission command to brigade-, division-, and corps-level commanders and staffs in unified land operations scenarios.¹ These scenarios focus on mission-essential tasks and core warfighting competencies using an adjustable operating environment against a hybrid, near-peer adversary in an austere theater of operations.

The U.S. Army Combined Arms Center Mission Command Training Program (MCTP) at Fort Leavenworth, Kansas, is the principal combat training center for mission command training and hosts WFXs.² Observer/controller/trainers are subject-matter experts who coach, teach, and mentor participating staffs, while MCTP senior mentors coach commanders during the training events.

Experience has shown that MCTP trainers and mentors consistently note common issues experienced by units they observe. For example, across the warfighting functions, most issues stem from challenges associated with integrating and synchronizing division efforts at the operational level of war. Divisions typically struggle to delineate fights within the deep-close-security operational framework, to synchronize combined arms maneuver, and to effectively target. They also consistently underestimate sustainment needs and insufficiently plan protection efforts. Focusing on fires, MCTP observers frequently note that DIVARTYs labor to weight the main effort with artillery assets, conduct insufficient planning, and produce limited assessments during the decide, detect, deliver, and assess (D3A) targeting process.³

In contrast, The 101st DIVARTY minimally experienced these deficiencies during its two WFXs. This

allowed the organization to focus instead on improving its collective fires skills and developing techniques needed to support the division.

101st DIVARTY Training Scenarios

The 101st DIVARTY participated in WFXs 15-05 and 16-02. The first occurred in support of the 36th Infantry Division (Texas National Guard) less than eight months after the DIVARTY's activation. This event served as the 101st DIVARTY's validation exercise. It also provided an opportunity to test the DIVARTY's modularity by having it serve as the force fires headquarters (FFHQ) for a National Guard division in accordance with the Army Total Force initiative.⁴

DIVARTY's second exercise supported the 101st Airborne Division (Air Assault), and was the first time it fully integrated within its parent division as the FFHQ.

Both scenarios replicated a decisive-action environment in a fictional country. The primary adversary possessed near-peer capabilities (i.e., combat systems with capabilities similar to or better than our own) and presented itself as a hybrid threat combining conventional and irregular forces. Each scenario contained similar elements, such as a forward passage of lines held by host-nation forces, offensive operations, a contested river crossing, and rear-area security operations. The main differences between the scenarios centered on the impacts of terrain, the enemy's defensive capabilities, and friendly-force task organization for combat.

Overall, the similarities between the scenarios allowed the 101st DIVARTY to relearn doctrine and validate its decisive-action proficiency. Scenario differences facilitated the development of new tactics, techniques, and procedures supported by doctrine.

Key Lessons Learned

The following discussion highlights the 101st DIVARTY's four key lessons learned regarding battlefield geometry, the division counterfire fight, unmanned aircraft system (UAS) integration, and fires planning.

Battlefield geometry. Coordinating and synchronizing fires is one of a DIVARTY's primary duties as the FFHQ. Although there had been limited DIVARTY participation in WFXs since reactivation, initial MCTP observations highlighted difficulties DIVARTY and division headquarters had with

establishing, disseminating, and tracking permissive fire support coordination measures (FSCMs). These expedite, as opposed to restrict, attacking targets with fire and provide graphic control measures.⁵

These observations did not apply to the 101st DIVARTY during either of its WFX experiences because it had established and monitored FSCMs in the Advanced Field Artillery Tactical Data System and Joint Automated Deep Operations Coordination System. Instead, the primary battlefield geometry challenge resulted from the planned placement and trigger-based movement of FSCMs.

The two most important FSCMs were the coordinated fire lines (CFLs) and fire support coordination lines (FSCLs). The former is the line beyond which the establishing headquarters may fire surface-to-surface munitions without additional coordination. Corps headquarters typically establish the latter within its area of operations to coordinate the expeditious attack of targets beyond the line by joint weapons systems. Since these FSCMs were permissive, any unit could shoot beyond them after coordinating with the establishing headquarters.

Besides their importance in facilitating fires, CFLs and FSCLs helped delineate the areas of responsibility for attacking targets (see figure). The corps “owns” the area beyond the FSCL, the area between the FSCL and CFL defines the division’s deep fight, and areas short of the CFL belong to brigade combat teams (i.e., the division’s close fight). During WFX 15-5, the 101st DIVARTY learned that these permissive control measures were too far apart if planned for based on the maximum range of conventional munitions. Planning FSCMs based on the maximum range of cannon and rocket systems inadvertently allowed the enemy to position where DIVARTY could not fire without using its limited supply of extended-range or precision munitions. As a result, doing so created safe havens in which the enemy operated with limited disruption.

Although rocket munitions such as guided multiple-launch rocket systems and Army tactical missile systems might have been available to range targets within these artificial safe havens, their limited availability and attack guidance criteria made it impractical to do so. As a result, the division had to request or “re-role” air support assets to engage enemy formations in order to continue shaping its deep fight.

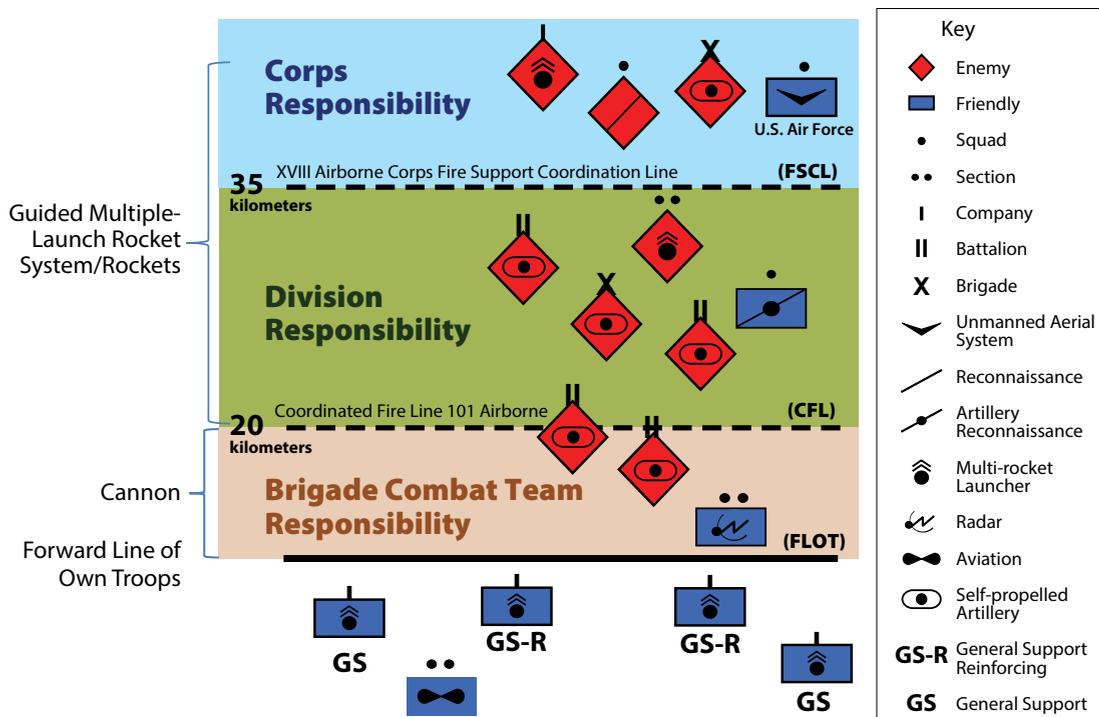
Similar issues arose when planning the CFL at the maximum range of cannon systems. Doing so forced the 101st DIVARTY to use general support fire assets in the close fight instead of to shape future operations.

CFLs should be as close as possible to the forward line of troops (FLOT). The DIVARTY planned CFLs at two-thirds of the maximum range of direct-support cannon battalions (a variation of the one-third–two-thirds rule of thumb for artillery positioning). DIVARTY also allocated general support-reinforcing assets to brigades with an enumerated number of rockets available for reinforcing fires. This allowed brigade combat teams to attack enemy formations short and long of the CFL.

Similarly, the DIVARTY planned FSCLs based on the range of the most commonly available rocket munition type instead of extended-range or precision munitions. Both techniques denied enemy safe havens and allowed DIVARTY elements to achieve effects throughout the operational area in support of the division’s counterfire fight. Battlefield geometry also plays an important role in a DIVARTY’s ability to conduct counterfire.

Counterfire. Poorly placed FSCMs hinder effective friendly fires and magnify the impact of artillery range advantages enjoyed by WFX enemies as well as real-world enemies and adversaries. Many enemy artillery systems outrange U.S. systems, and enemies are technically capable of achieving a greater volume of fire. Both WFXs highlighted this operational reality and challenged the 101st DIVARTY’s ability to destroy, defeat, and disrupt enemy artillery systems.

A DIVARTY is its division’s counterfire headquarters, so the counterfire fight was the 101st DIVARTY’s focus during its WFXs. This mission-critical task sets the conditions for future division operations by attriting enemy indirect-fire systems before friendly maneuver forces come within range. This task has two components that become separate fire support tasks. First, reactive counterfire focuses on engaging enemy indirect fire systems following target acquisition. The 101st DIVARTY positioned its Q-37 Firefinder radar systems so they could detect surface fires between the FLOT and the FSCL. Due to the large volume of counterfire, DIVARTY split responsibility for fire mission processing. The target processing section (TPS) processed acquisitions for counterfire, while the fire control element remained focused on processing planned targets and targets of opportunity.



(Graphic by Maj. Travis Robison, U.S. Army)

Figure. Delineation of Responsibility Using Fire Support Coordination Measures

Dividing responsibility significantly improved fire mission processing times and responsiveness. The targeting officer and the S-2 (intelligence staff officer) then applied predictive battle-damage assessment to determine likely effects on the enemy that facilitated subsequent targeting, positioning, and task-organization decisions.

Second, the next counterfire task involves actively targeting enemy indirect fire systems, referred to as “proactive counterfire” in doctrine. However, since counterfire by definition is always reactive, the 101st DIVARTY opted to assign the task of “strike” or “interdiction” fires. It accomplished this task by analyzing patterns in radar acquisitions and ground-movement target indicators (GMTIs). The targeting officer and the S-2 determined what type of indirect fire system was engaging friendly forces based on the range at which the enemy fired. The S-2 mapped patterns of acquisitions and GMTI routes between firing positions to create target areas of interest (TAIs), which the division observed with UAS assets.

Once a UAS asset detected enemy artillery formations, the DIVARTY initiated fire missions against the target and conducted immediate battle-damage assessments. Strike fires that integrated UAS and dedicated

fires assets proved to be the most effective counterfire technique during both WFXs. These fires maximized the DIVARTY’s extended-range and precision-munition capabilities, while mitigating enemy range advantages.

Unmanned aircraft system integration.

Integrating UAS and fires assets into a direct sensor-to-shooter link is fast, responsive, and effective. The ability of UASs to loiter over TAIs and provide highly accurate target locations makes them ideal for leveraging advantages in precision-guided munitions against enemy indirect fire systems. UASs are also capable of providing immediate battle damage assessments to inform intelligence collection and targeting processes.

During its WFXs, the 101st DIVARTY replicated recent Russian tactics in Ukraine with similar success. The 101st DIVARTY developed techniques and procedures for integrating UASs into the counterfire fight during WFX 15-5, and it perfected dynamic retasking procedures and fire-mission processing during WFX 16-2. Both experiences proved that UAS integration in support of counterfire strike operations works.

Planning. The DIVARTY should assist in coordinating, integrating, and synchronizing the division’s



(Photo by 1st Lt. Jonathan J. Springer, U.S. Army)

Soldiers from Battery A, 2nd Battalion, 320th Field Artillery Regiment, 1st Brigade Combat Team, 101st Airborne Division, fire rounds from their M119A2 howitzer at enemy targets 13 January 2008 during Operation Fulton Harvest in the Al-Jazirah region of Iraq.

UASs during the targeting process. The DIVARTY S-2's development of TAIs based on artillery acquisitions and GMTI analysis not only informed these efforts, but it also supported the development of triggers for retasking UAS to the DIVARTY during critical phases of the counterfire fight. During these periods, the DIVARTY performed as a functional joint air-ground integration cell focused on counterfire within a defined TAI. It located targets, cleared ground and airspace, and processed fire missions against identified targets in accordance with the attack guidance matrix. DIVARTY's ability and authority to coordinate directly with corps and adjacent divisions assisted these efforts.

The primary challenge to integrating UASs is the extra steps involved in fire-mission processing. Within the 101st DIVARTY, the lethal fires section was responsible for coordinating the necessary steps. Integrating UAS and artillery during key points in the counterfire fight proved to be highly effective, and the processes developed by the 101st DIVARTY filled a void in existing doctrine regarding artillery interdiction (i.e., proactive counterfire).

MCTP observers routinely note that poor fires planning results in insufficient support to the

ground scheme of maneuver.⁶ In contrast, the 101st DIVARTY's experiences at WFXs 15-05 and 16-02 highlighted the value of detailed plans, and the unit received recognition for expertly meeting doctrinal fires planning requirements.

The key to the unit's success was the implementation of a plans synchronization meeting for fires planning aligned with division planning horizons. The 101st DIVARTY plans synchronization meeting enabled the staff to conduct field artillery planning that synchronized efforts across all warfighting functions. As the maneuver headquarters, the division was responsible for fire-support planning and the DIVARTY was responsible for fires planning to support the scheme of maneuver.

The DIVARTY's planning framework created and facilitated a link between the division and DIVARTY staffs. Current doctrine does not clearly define this link, so DIVARTY's implementation of this framework helped delineate the specified and implied responsibilities of each organization.

The division target working group, enabled by the staff, used the D3A targeting process to facilitate fire support planning that developed fire support tasks (FSTs), a high-payoff target list and target

synchronization matrix, an information collection plan, and target refinements. The 101st DIVARTY staff conducted fires planning that developed a synchronized plan that achieved assigned FSTs.

During the plans synchronization meeting, operations planners, staff-section representatives, and participating brigade fire support officers refined FSTs into field artillery tasks, developed courses of action for artillery and radar positioning, determined effects and requirements, synchronized sustainment, and assigned planning responsibilities to direct-support artillery battalions. In addition to developing field artillery tasks and other supporting planning requirements, another output of the meeting was recommendations for target refinement, the high-payoff target list, and airspace control measures submitted into the division targetting process.

Once the DIVARTY began operations, planners in the synchronization meeting identified enemy artillery positions and planned coordinated attacks against those locations. The plans section developed a system to perform course-of-action development, war-gaming, and

target refinement for the next five days of the air-tasking order cycle, with inputs from the entire DIVARTY staff.

The plans staff transitioned efforts to current operations using a detailed transition brief twenty-four to thirty-six hours before planned execution. Proactive coordination between plans and current operations staffs aided the 101st DIVARTY's ability to execute a rapid decision-making and synchronization process, which enabled the DIVARTY commander and staff to adjust plans as operational changes developed.

The 101st DIVARTY did not experience the majority of commonly noted fires-related issues during two WFXs. Instead, the organization had an invaluable opportunity to relearn fires skills needed to support the division at the operational level of war. The DIVARTY also developed new procedures for dealing with systemic organizational and operational challenges. The 101st DIVARTY's lessons learned regarding battlefield geometry, the division counterfire fight, UAS integration, and fires planning were critical to preparing the organization for success in future decisive action conflicts. ■

Biographies

Maj. Travis Robison, U.S. Army, is the deputy commander of the 101st Division Artillery (Air Assault). He earned a BA in political science from the University of Colorado, an MPA from the University of Montana, and an MMOAS from the U.S. Air Force Air Command & Staff College. He was recently selected as an Advanced Strategic Planning & Policy Program fellow. His military experience includes assignments in Germany, Kosovo, South Korea, the United States, Iraq, and Afghanistan.

Capt. Alex Moen is the plans officer for the 101st Division Artillery (Air Assault). He has a BA in political science from Texas A&M University and is completing an MBA from Arizona State University. His military experience includes assignments in the United States, Iraq, and Afghanistan.

Notes

1. United States Army Combined Arms Center (CAC), *Mission Command Training Program (MCTP) Overview Brief*, Mission Command Training Program website (10 March 2016), accessed 28 April 2016, https://combinedarmscenter.army.mil/orgs/cact/MCTP/Front_Page/MCTP_CMD_Brief.pdf (login required).

2. Army Regulation 350-50, *Combat Training Center Program* (Washington, DC: U.S. Government Printing Office, 3 April 2013), 2, accessed 28 April 2016, http://armypubs.army.mil/epubs/pdf/r350_50.pdf.

3. CAC, MCTP Overview Brief, 18.

4. John McHugh, Army directive 2012-08 (Army Total Force Policy), 4 September 2012, accessed 16 May 2016, http://www.apd.army.mil/pdf/files/ad2012_08.pdf.

5. CAC, *MCTP Overview Brief*, 17.

6. Edward T. Bohnemann, *MCTP Trends in a Decisive Action Warfighter Exercise*, Mission Command Training Program website (2014), 29, accessed 28 April 2016, <https://combinedarmscenter.army.mil/orgs/cact/MCTP/Documents/MCTP%20Trends%20in%20a%20Decisive%20Action%20WFX.pdf> (login required).