

The Role of the Div Arty S2

by Captain Daniel S. Burgess, MI

In 4th Infantry Division (Mechanized) Artillery (Div Arty), Fort Hood, Texas, the S2 is a key player in the division's Battle Command Training Program (BCTP) exercises. He focuses on the enemy's artillery—usually the enemy's center of gravity.

The Div Arty S2 assesses the enemy artillery composition, disposition and strength and then tracks the artillery; co-

ordinates call-for-fire zones (CFFZs) for the division's AN/TPQ-37 Firefinder radars; and advises the S3 on positioning general support (GS) assets.

During our last division and corps BCTP Warfighter exercises, we learned several valuable lessons. These included tracking the battle on computerized maps, creating battle damage assessment (BDA) spreadsheets, linking unmanned aerial vehicle

(UAV) "lookers" to multiple-launch rocket system (MLRS) "shooters," using common sensor boundaries to synchronize radar coverage for the division and corps counterfire fight and implementing radar survivability measures.

The Div Arty S2 section established and validated tactics, techniques and procedures (TTP) for the division's standing operating procedures (SOPs) during our BCTP ramp-up and Warfighter exercises. This article outlines that TTP, which could be helpful for other Div Arty S2 sections.

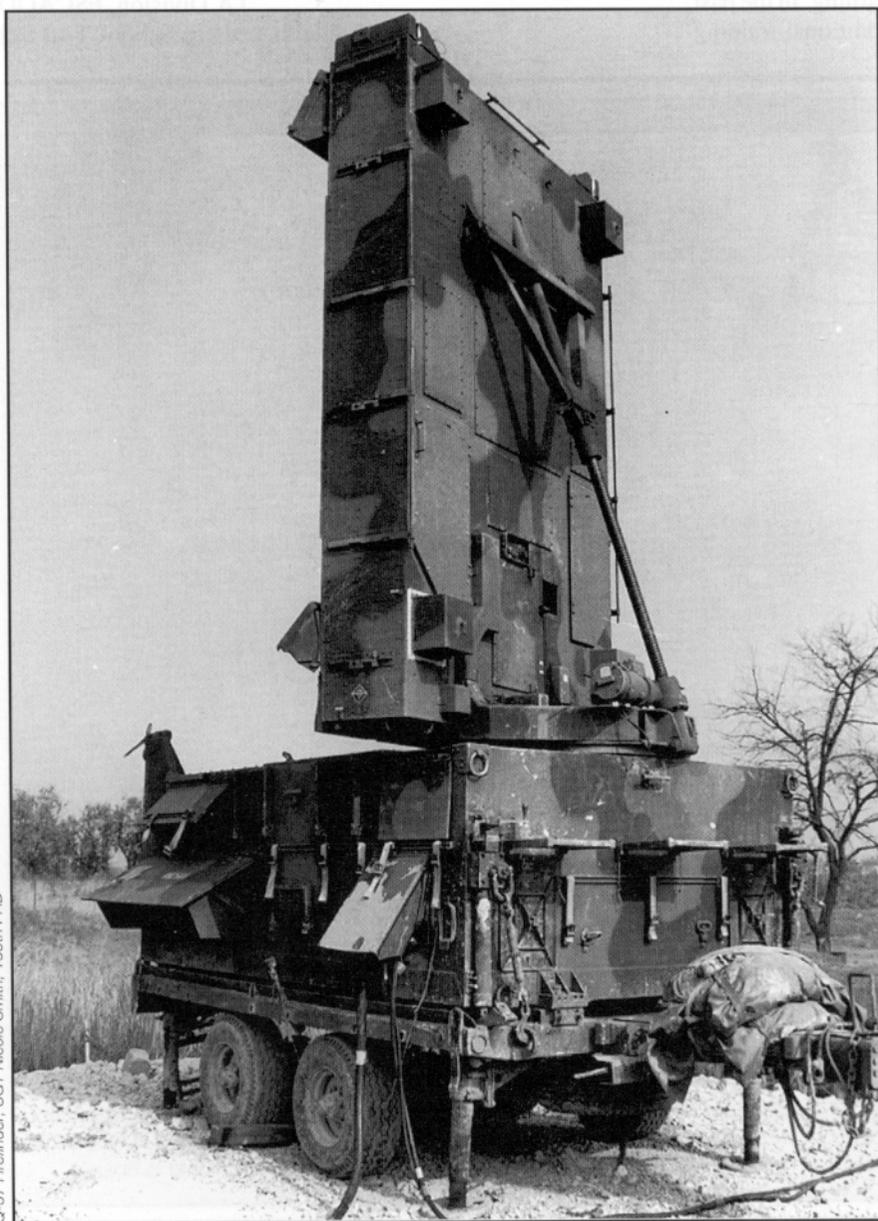
Tracking and Assessing the Enemy's Artillery

The Div Arty S2 plays a key role in tracking the enemy artillery. He uses radar acquisitions, the division's operations and intelligence (O&I) net combat information and the G2's order of battle database to confirm or deny the enemy artillery template and form the basis for the section's analysis. This information is battle-tracked on an all-source analysis system-remote work station (ASAS-RWS).

Battle Tracking Maps. The ASAS-RWS station operator maintains three maps on the computer: target acquisition (TA), spot report and current order of battle. On the TA map, Q-37 radar acquisitions are plotted manually. (The new version of ASAS-RWS communicates directly with the advanced Field Artillery tactical data system, AFATDS, eliminating manual plotting.) The acquisitions are color-coded by time. This allows the ASAS-RWS operator to see the sequence of artillery fires—i.e., Phase I fires by the army artillery group (AAG) or army group rocket artillery (AGRA). Additionally, the artillery template and CFFZs are managed and updated on this map.

The spot report map plots reports and combat information passed over the O&I net on the single-channel ground and airborne radio system (SINCGARS). The Div Arty S2 section depends on this map when piecing together the enemy situation—especially when mobile subscriber equipment (MSE) communications are lost.

The order of battle map is the division's current enemy situation from the all-source correlated database (ASCDB) in the analysis control element (ACE). The three maps can be overlaid on one another to improve the S2 section's analy-



Q-37 Firefinder, SGT Nicole Smith, 135th PAD

sis or used to create other situational or event templates.

These graphics help produce intelligence products for the division. The Div Arty S2 section provides graphic overlays (via ASAS-RWS), intelligence reports (INTREPs) and intelligence summaries (INTSUMs) for all major subordinate commands (MSCs), the main and tactical fire support elements (FSEs) and the ACE. Coupled with the S2 section's prediction of how the enemy will employ his artillery in the future, these products help the Div Arty commander and his staff assess the strength and disposition of the enemy's artillery.

The assessment always is discussed with the order of battle technician or the G2 at the ACE before being disseminated. This ensures continuity within intelligence channels and verifies a common picture of the battlefield with the division ACE.

Additionally, the division commander requires the Div Arty S2's graphic INTSUM be briefed at his 0600 and 1800 updates, so he can see how the enemy is using his artillery, helping him to visualize the battlefield. Artillery is usually the enemy's tactical center of gravity for the BCTP opposing force (OPFOR) and, probably, most threat armies. For the briefing, the graphic INTSUM is combined with a written artillery summary, sensory summary and conclusions paragraph.

BDA Spreadsheet. The Div Arty S2 section also produces a BDA spreadsheet for enemy artillery (see Figure 1). The S2 section accesses unobserved fire missions and gathers other BDA-related reports to produce the spreadsheet.

For unobserved fires, Q-36 and Q-37 radars generate two types of acquisitions. The first is an acquisition that comes from a specific, predesignated zone or one that violates one of the zones. The zones usually are CFFZs or critical friendly zones (CFZs). The second type of acquisition occurs when fires come from outside a predesignated zone or don't violate one of the zones.

Acquisitions coming from a CFZ or CFFZ generate calls-for-fire. After the mission is fired, an ammunition and fire unit/mission fired report (AFU;MFR) is generated to indicate the number of rockets or rounds used to attack the target.

If the acquisition comes from outside a predesignated zone or does not violate a zone, an artillery targeting intelligence/coordinates report (ATI;CDR) is gener-

ated and analyzed by the target production section (TPS) to determine whether or not to nominate the target. If the target is nominated and shot, a AFU;MFR also will be generated.

The S2 section uses an algorithmic table based on the joint munitions effectiveness manual (JMEM) to determine the damage to be assessed for fire missions. It plots the missions and assesses the damage to the nearest firing unit.

This BDA assessment is prepared and disseminated every six hours from 0700 hours on. The spreadsheet accounts for observed and unobserved MFRs, pilot reports, UAV reports and other information from assets reporting artillery BDA on the O&I net. The BDA spreadsheet is usually a conservative assessment.

The graphical intelligence summary and BDA spreadsheet provide input to several divisional agencies. They support deep targeting and show the Div Arty commander and his staff a pattern of enemy fires over time. The INTSUMs help the ACE with its overall assessment of the enemy, and the BDA helps everyone understand the enemy artillery's strength.

UAV—Looker to Shooter. Another concept the division successfully experimented with during its corps Warfighter exercise was placing a division UAV under the operational control (OPCON) of the Div Arty. This OPCON relationship enabled the division to find long-range, high-payoff targets (HPTs) quickly. However, when we linked the looker with a shooter, we had problems ensuring the shooter was in range of what the looker saw.

The Div Arty S2 coordinated with the 1st Brigade S2 to establish the flight pattern of the UAV missions. The Div Arty S2 determines the location of the enemy artillery units based on information from the Q-37 radar, his situational template and the enemy's order of battle.

First, the Q-37 gives a rough estimate of the type of system firing (i.e., mortar, medium/light cannon/rockets, or heavy artillery) and an impact prediction of that system's munition. In other words, the S2 plots the acquisition and impact-predict grids. The distance between the grids determines the range of the system that fired. Based on acquisitions,

1st Tactical Echelon						
(23d Infantry Div)						
1st RAG	Start	Current	23d DAG	Start	Current	
82-mm Mortar	19	15	M1974 (152-mm)	13	6	
120-mm Mortar	13	10	M1975 (130-mm)*	13	12	
107-mm MRL	6	5	BM21 (122-mm)	13	10	
M1977 (122-mm)	13	11	M1981 (122-mm)	13	13	
M1974 (152-mm)*	13	7				
			% Strength			57%
% Strength		53%				
2d RAG	Start	Current	3d RAG	Start	Current	
82-mm Mortar	19	17	82-mm Mortar	19	13	
120-mm Mortar	13	12	120-mm Mortar	13	10	
107-mm MRL	6	0	107-mm MRL	6	0	
M1977 (122-mm)	13	11	M1977 (122-mm)	13	0	
M1974 (152-mm)*	13	13	M1974 (152-mm)*	13	13	
% Strength		59%	% Strength			40%

*Not organic to the unit.

Legend:
 DAG = Divisional Artillery Group
 MRL = Multiple Rocket Launcher
 RAG = Regimental Artillery Group

Figure 1: Enemy Artillery Battle Damage Assessment (BDA) Spreadsheet. The S2 section assesses unobserved fire missions from Firefinder radar acquisitions and gathers other BDA-related reports to produce this spreadsheet on the enemy's artillery.

impact predicts and knowledge of the order of battle, the S2 can determine the type and echelon of the artillery system firing. This is important because some enemy artillery systems yield higher payoff values than others.

The Div Arty S2 then works up a set of grids upon which to focus the UAV. In one of our exercises, the UAV flew first to the template of the divisional artillery group (DAG) (assessed at eight percent strength) and then deeper to look at the corps artillery group (CAG).

Upon reaching the DAG grids, the UAV only found burning trucks. This made sense, given the DAG's estimated strength, but we wanted to fly the mission to target any remaining BM-21s in the DAG and confirm the BDA. Within minutes of reaching the CAG area, the UAV found a battery of 240-mm multiple rocket launchers (MRLs), then a battalion, then the rest of the artillery *brigade*. Unfortunately, these targets were out of range of our division's shooters—MRLS.

The targets were sent to corps as Army tactical missile system (ATACMS) nominations. Minutes passed without engagement. Finally after about 25 minutes, ATACMS hit one of the five targets.

The delay was due to the care taken to use the limited number of ATACMS to best advantage. The ATACMS' controlled supply rate (CSR) is so low that the missiles only can be used to attack the most threatening targets. Furthermore, a certain percentage of the missiles must be held in reserve to fire suppression of enemy air defense (SEAD) targets for the corps' next deep attack.

This situation created a dilemma. The targets clearly met the criteria in the attack guidance matrix (AGM) but could not be fired because of the quantity of ATACMS issued to corps. By not shooting these targets, the enemy artillery posed a significant threat to US forces within the range fan.

However, even if the corps had fired all the ATACMS, there might not have been enough missiles to destroy all of the HPTs the UAV found; then corps wouldn't have had any missiles to shoot SEAD for the deep attack.

Valuable lessons were learned from this experience.

- We depend on ATACMS; quantities issued during the exercises are not adequate.

- UAVs OPCON to the Div Arty S2 work, but we have to anticipate and plan

for looker/shooter linkages. For example, an artillery raid could have been planned and executed to service the planned target areas and provide this linkage.

- The division should consider this type of OPCON relationship as an option—perhaps with brigade UAVs.

Keeping the Q-37s in the Counterfire Fight

Synchronizing the division and corps counterfire fight is integral to destroying the enemy's artillery. During our last Warfighter, III (US) Corps positioned an FA brigade and a TA detachment (TAD) in the division's sector.

This created several challenges for the Div Arty. First, the Div Arty had to manage four Q-37 radars in a division-sized zone. Second, we had to keep the corps MLRS forward in zone to range enemy artillery HPTs.

Common Sensor Boundary (CSB). To reduce the duplication of target acquisitions, the Div Arty and corps artillery used CSBs by designating a line to define boundaries in which CFFZs are planned and established. (See Figure 2.) Brigade CSBs allowed Q-36 radars and DS battalions to focus on enemy mortars and regimental artillery groups (RAGs) approximately eight to 10 kilometers from the forward line of own troops (FLOT). The divisional CSB enabled the division to focus on killing the DAG, while the corps CSB allowed the corps to attack targets beyond 20 kilometers with MLRS.

Due to the tempo of the battle, we found this relatively easy to execute in the defense but very difficult in the offense. During offensive operations,

all counterbattery and mortar radars in a division's zone must be under centralized control. This allows the division to synchronize the movement and positioning of corps and division radars, provide continuous radar coverage during moves and support a single counterfire plan. In doing so, CFZs and CFFZs quickly can be deconflicted.

We also learned that on a nonlinear battlefield, radars must be reoriented to acquire enemy artillery firing cross-boundary or away from the direction of attack. We learned this from an enemy salient that created an L-shaped defense. The artillery that supported the southwestern-most enemy division fired almost due east into the division zone. Some of these acquisitions were missed because of the radars' orientation. Battle tracking and cross talk between the S2 and TPS is critical to avoid this orientation problem.

Radar Survivability. The corps and division counterfire fights were successful mainly due to the radars' survivability. Five factors helped the radars stay in the fight: an effective cueing schedule, engineer support, the use of smoke, survivability moves, providing a security force and the use of dummy radars.

The cueing schedule initially was based on the Div Arty S2's assessment of the electronic intelligence (ELINT) threat. The cueing guidelines we followed are listed in Figure 3.

We coordinated with the engineer brigade to provide primary and alternate dug-in radar positions before crossing our line of departure (LD). The Div Arty lost two Q-37 radars during our ramp-up exercise due to indirect fires called in by enemy special purpose forces (SPF). The lesson we learned was to dig in the radars and enhance their survivability.

In the defense, we provided a smoke screen for the dug-in radars, denying the enemy ground and aerial observation. We also used smoke in the offense to obscure the radars' frequent displacements. The radar sections conducted survivability moves based on total accumulated cueing time, enemy contact (direct and indirect fires) and before and after beginning morning nautical twilight (BMNT) and end (of) evening nautical twilight (EENT).

Another important key to survivability was the use of a dedicated security element to protect the radar from ground and air attack. The division provided a

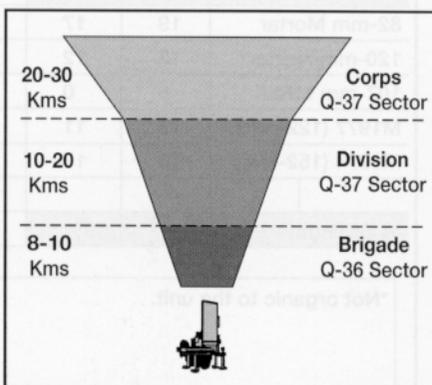


Figure 2: Common Sensor Boundary (CSB). The CSBs designate boundaries in which the various levels plan and establish call-for-fire zones (CFFZs).

Threat	On-Time	Off-Time	Cue-Time in Position
High	15 Seconds	30 Seconds	10 Minutes
Medium	40 Seconds	20 Seconds	30 Minutes
Low	50 Seconds	10 Seconds	8 Hours

Figure 3: Guidelines for Cueing. This cueing schedule initially was based on the Div Arty S2's assessment of the electronic intelligence (ELINT) threat.

Bradley fighting vehicle section for each radar section. The Bradley section maintained elements three to six kilometers from the radar to provide a roving perimeter defense. The Bradleys proved invaluable in discovering SPF probes that could have targeted the radars. Also, during movement, the Bradleys reconnoitered and secured new areas.

We also received a radar deception element comprised of two mock radars from corps artillery. These "dummy" radars produced no electronic signal. We positioned them approximately three to five kilometers forward of the real radar locations. Both dummy radars were targeted and destroyed during the

division and corps Warfighter exercises. Although we were unable to confirm the specific reason for the OPFOR's targeting of them, it's likely the OPFOR thought they were radars.

No Q-37 radars were lost to SPF targeting or by direct ground attack. The combination of our five survivability measures enabled the division to protect these high-value assets used so successfully in the reactive counterfire mode.

The Div Arty S2 plays a vital role in assessing and tracking the enemy artillery. He must develop information to help commanders and their staffs "see" and share a common picture of the battle-

field for further actions against the enemy's center of gravity—his artillery.



Captain Daniel S. Burgess, Military Intelligence, until recently, was the S2 for the 4th Infantry Division (Mechanized) Artillery, Fort Hood, Texas, where he participated in four division and corps Battle Command Training Program Warfighter exercises. Currently, he is the Assistant S3 of the 4th Division's 104th Military Intelligence Battalion. Also at Fort Hood, he served as the III Corps Targeting Officer, 303d Military Intelligence Battalion. Captain Burgess served as the S2 for the 5th Battalion, 21st Infantry, part of the 7th Infantry Division (Light) at Fort Ord, California, and for the 3d Battalion, 20th Field Artillery, 41st Field Artillery Brigade, V Corps Artillery, Germany. He is a graduate of the Field Artillery Officer Basic Course and Targeting Course at Fort Sill, Oklahoma; the Military Intelligence Advanced Course at Fort Huachuca, Arizona; and the Combined Arms and Services Staff School, Fort Leavenworth, Kansas.

New Joint Targeting School Classes and Mobile Training Teams Available



Although the six-step joint targeting process is similar to the Army's four-step decide-detect-deliver-assess targeting process, the joint steps are considerably more complex. To learn more about the joint targeting process, fire supporters can attend the newly formed five-week Joint Targeting School (JTS) at the Fleet Combat Training Center-Atlantic, Dam Neck, Virginia.

The mission of the JTS is to provide formal joint targeting training for Department of Defense (DoD) mid-career operations and intelligence personnel destined for either joint targeting positions in unified commands, on the Joint Staff or in other defense agencies; or service-specific targeting positions that will be involved in joint targeting operations in times of crisis. Sponsored by the US Atlantic Command (USACOM) J-7, JTS will ensure targeting personnel have a common knowledge of joint targeting terms and tactics, techniques and procedures (TPP).

In 1992, the Senate encouraged the formation of the Joint Targeting School to address the shortfalls in joint targeting strategies, interoperability and standardization revealed during Operation Desert Storm. After more than three years of interservice negotiations and course development, the first JTS class graduated in early 1996.

The school's curriculum applies to corps fire support personnel who could serve as part of a joint task force (JTF) or army force (ARFOR) headquarters. It also is useful for division fire support personnel who will be leveraging and integrating attack and acquisition assets from other service components to support the commander's concept of operations.

Attendance at JTS is open to NCOs, warrant officers and officers. The academic standards are high. The level of difficulty of the classroom instruction is equivalent to the Combined Arms and Services Staff School (CAS³) at Fort Leavenworth, Kansas. Attendees should

be well grounded in the targeting process used by their respective services.

Although quotas for the course are allocated by services and unified commands, personnel interested in attending a class should feel free to call for seats as late as a week before the class start-date when all seats will be filled, regardless of quotas. The following are the dates of JTS classes remaining in this FY: 28 April to 30 May; 12 May to 13 June; 11 August to 12 September; and 25 August to 26 September.

JTS also offers mobile training teams (MTTs) for home-station training at corps- and division-level headquarters that could serve as JTFs or ARFORs. The MTTs offer up to two weeks of instruction on the joint targeting process and other joint topics. The headquarters arranging for the MTT can tailor its course's contents and length, based on its mission.

To arrange for an MTT or attendance at JTS, call the school's Quota Control Coordinator Chief Yeoman Greg Begley at DSN 433-0276/0277/0271 or commercial (757) 433-0276/0277/0271. The JTS FAX number is 0280 and works with both DSN and commercial prefixes

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