



The Survey Experience During Operation Iraqi Freedom

By First Lieutenant Vilen Ayvazov and Captain Aaron Wolf

In March 2003, the survey platoon of the 320th Engineer Company received orders to deploy to the Central Command (CENTCOM) area of operations and support Operation Iraqi Freedom. As the only V Corps geodetic survey element, the platoon was called to complete a very unique mission for an Army that depends on absolute positioning and the Global Positioning System (GPS) for fighting a high-technology war. The platoon deployed as a three-squad element, ready to support field artillery in the combat support role and the aviation assets in the airfield safety survey role. The platoon deployed a noncommissioned officer (NCO) with the company advance party, whose primary mission was to initiate survey planning and integrate assets early into the fight. Once the company main body arrived in theater, the platoon was tasked to immediately send a survey field enhancement module (SFEM) into the V Corps 41st Field Artillery Brigade (FAB). Once stability operations began, the surveyors switched missions to complete the geodetic safety surveys of the major airfields to be used by V Corps or coalition forces.

Geodetic Surveys

The SFEM's mission was to emplace horizontal and vertical survey control points (SCPs) in support of deployable weapon systems. The emplacement of benchmarks allowed artillery to receive exact positioning before firing, allowing for greater accuracy of fires, less ordnance

expended, and less collateral damage. The key to the SFEM's initial success was the planning and early deployment of the platoon leader with the company advance party. The company main body, with the survey platoon, arrived in theater on the first day of the ground war (28 March 2003). Coordination with the V Corps artillery staff officers emphasized the possibility and importance of the SFEM's abilities. Once the equipment arrived, the SFEM completed precombat checks, then convoyed north and linked up with the 41st Field Artillery Brigade. The first lesson learned was getting the geodetic surveyors into the theater early enough to allow additional planning, coordination, and linkup with the supported artillery. Because the deployment timeline did not allow the company to arrive any earlier, it was good to have at least one surveyor on the ground early.

Once the platoon linked with the 41st FAB south of An Najaf, the SFEM began a baseline for a third-order network (a third-order point provides an 8-digit grid coordinate). With the completion of the baseline, the artillery surveyors extended control with their own systems. One of the most memorable events was the battle at An Najaf where the artillery fired more than 20 missiles a day for three days. At this point the platoon was divided into three separate elements, which supported two subordinate battalions along with the brigade. The lesson learned was that the platoon needed to be flexible to support several units. Unfortunately, the element did not have enough

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE SEP 2004		2. REPORT TYPE		3. DATES COVERED 00-00-2004 to 00-00-2004	
4. TITLE AND SUBTITLE The Survey Experience During Operation Iraqi Freedom				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Engineer School,14010 MSCoE Loop BLDG 3201, Suite 2661,Fort Leonard Wood,MO,65473-8702				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

transportation or life support; therefore, the soldiers had to count on the support of the artillery for more than Class I supplies.

The most important we lesson learned from the mission was the necessity for speed. The cannons might be called to move at any moment (day or night). The SFEM had to be flexible to break camp and push out with the tactical road march to the next location and then immediately start tracking satellites to permit the artillery surveyors to extend control to allow greater accuracy.

Airfield Safety Surveys

Once the company arrived at Balad Airfield to collocate with the V Corps rear area, the SFEM initiated a Ron Brown safety survey of the landing strips at Balad, Tikrit, and Mosul. On 3 April 1996, an aircraft carrying Secretary of Commerce Brown crashed near Dubrovnik, Croatia. In response, then Secretary of Defense William J. Perry issued two directives relating to flight safety: install GPSs on military aircraft for flight safety, and require all military aircraft to fly Department of Defense (DOD) instrument approach procedures. The Ron Brown Airfield Initiative (RBAI) began after his death and the issuance of the Secretary of Defense directives. Critical aeronautical information needed to satisfy the directives is provided by the airfield initiative.

As the only survey asset in the European Command, the platoon was very experienced at planning, coordinating, and executing airfield survey missions. The basic survey was conducted in five phases: control points, topography, obstructions, picture points, and drafting. The platoon had

completed three airfields to date (Balad, Tikrit, and Mosul). Each airstrip provided unique challenges, teaching the platoon to be innovative.

- Balad Airfield, located at the corps rear north of Baghdad, was the first airfield and the largest to be surveyed by the platoon. The surveyors learned to emplace SCPs from tops of the larger hanger-bunkers, which allowed better observation and lowered the number of temporary points that were required from areas that could be observed.
- Tikrit Northwest Airfield, known as Al Sahra, was occupied by the 4th Brigade, 4th Infantry Division. The lesson learned from this operation was that coordination with other engineer forces was essential in obtaining unexploded ordnance (UXO) information. The airfield was littered with UXO, making planning and mission analysis of the platoon more critical. The platoon had to capture survey points without entering the off-limits areas.
- Mosul Airport, located on the southern outskirts of Iraq's most northern city, was occupied by the 101st Airborne Division (Air Assault). To date, this was the smallest, busiest landing strip. The platoon learned the importance of constant coordination with the air operations staff. During the busiest parts of the day, the platoon would work for 30 minutes, stop for a landing aircraft, and then resume the survey once more.

An important part of the mission was the transfer of data to and from the National Geospatial-Intelligence Agency (NGA), a critical partner and recipient of the data. It was essential for the platoon to have access to powerful computer systems for




A member of the SFEM sets up an antenna on a runway at Balad Airfield to conduct a Ron Brown safety survey. The survey helped provide a safer environment during airfield operations.

transferring information; however, this was sometimes difficult, because the company did not have its own systems. NGA was very fast at processing the critical data, ensuring that the platoon did not have to wait.

Final Thoughts

Although the platoon conducted many airfield surveys at its home station in Germany, it did not have to compete with either the desert environment or busy military usage of airfields as it did in Iraq. The platoon learned many new techniques while working in the austere desert environment, as well as while working around the active airfield operations to complete their survey. Fortunately, the equipment was well constructed, and it protected the instruments from water; the sand was not a major concern for the operation.

The survey platoon was a unique asset within V Corps. It provided direct survey control to the artillery unit and a safety survey for the airfields. Without the platoon's expertise, the artillery would not have been as accurate and the aviation

assets would have been at a greater risk. The platoon learned several lessons as it integrated as part of a combined arms team. The surveyors gained valuable military occupational specialty experience from Operation Iraqi Freedom. 

First Lieutenant Ayvazov is the 565th Engineer Battalion maintenance officer. He previously served as a platoon leader for the 502d Engineer Company (MRB) and as survey platoon leader of the 320th Engineer Company during the Operation Iraqi Freedom ground war.

Captain Wolf is the company commander of the 320th Engineer Company (Topographic), 130th Engineer Brigade. He previously served as the brigade maintenance officer, 130th Engineer Brigade; the regimental engineer, 1-4 Infantry (OPFOR); a platoon trainer for the Engineer Officer Basic Course, 554th Engineer Battalion; and platoon leader, 19th Engineer Battalion. Captain Wolf holds a bachelor's in cartography from the University of Wisconsin-Stevens Point and a master's in engineering management from the University of Missouri-Rolla.