

Critical Integration:

The Brigade Combat Team Engineer Coordinator and Geospatial Engineering

By Captain Colleen Reiss Vermeulen

In recent years, the civilian and military use of geospatial information has become more advanced and significantly more widespread. In the Army force structure, organic geospatial engineering assets have been positioned at the brigade level. But what are engineer staff officers doing differently to fulfill their role in this changed environment?

If we step back from our on-the-ground experiences and examine how this essential engineering function is coordinated at the tactical level, the technological and organizational transformations have not been accompanied by an evolving vision of how engineer staffs integrate geospatial support to help accomplish a brigade combat team (BCT) commander's mission. The ability to leverage geospatial information and services lags far behind the technology. Instead of expanding the accessibility, efficiency, and effectiveness of geospatial support across a BCT staff and subordinate units, Army engineers often use it to accomplish the same tasks in the same way, but with a higher "wow" factor.

Importance of the BCT Engineer

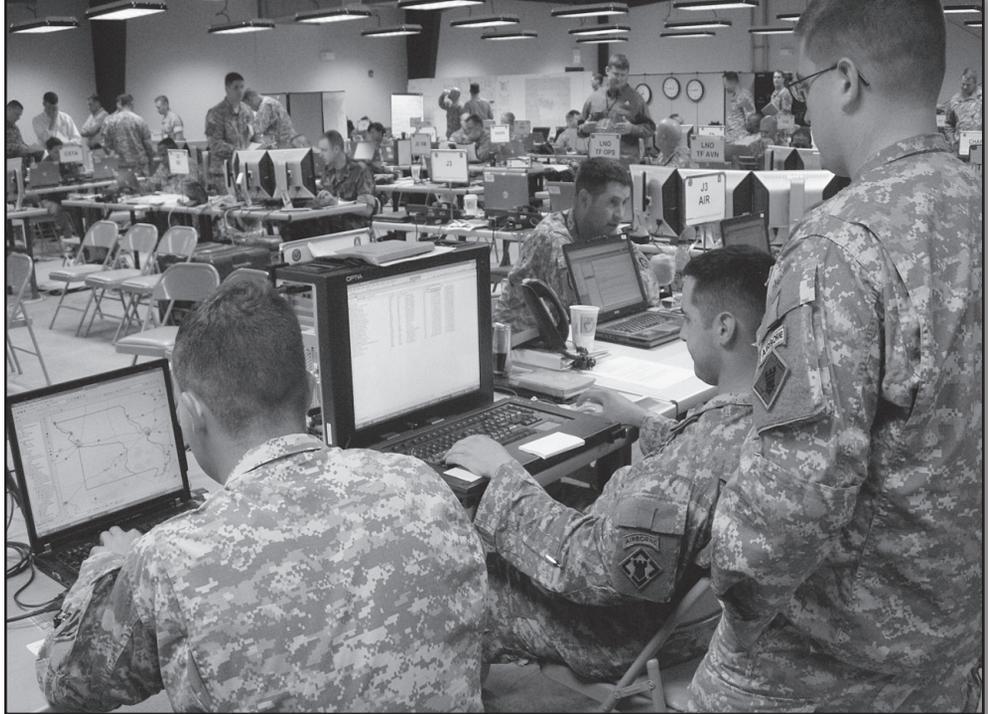
The BCT engineer coordinator occupies a critical distribution and integration point for geospatial engineering. Since the BCT is the lowest echelon in the Army with organic geospatial assets, the BCT geospatial section operations and the integration capabilities of the engineer coordinator determine if subordinate forces—from battalion staff to patrol leaders—receive timely and relevant geospatial support. Field Manual 3-34.22, *Engineer Operations—Brigade Combat Team and Below*, places this responsibility on the engineer coordinator, who "must understand the full array of engineer capabilities (combat, general, and geospatial engineering) available to the force and synchronize them to best meet the needs of the maneuver commander."¹

The Challenge

Staff engineers are responsible for coordinating geospatial support across the BCT, but this function is often neglected. The first reason is fairly obvious—a BCT engineer coordinator is busy. Engineers on a BCT staff must plan and execute a wide range of missions using organic and external engineer assets. The pressing necessity of organizing a route clearance mission to support a maneuver operation, synchronizing external bridging assets, or coordinating the construction of a combat outpost are "unavoidable" engineer tasks. If the BCT engineer staff fails to plan or execute these engineer functions, the commander certainly notices and squarely assigns blame to the engineer staffs and units. The geospatial function differs in a way that often allows engineers to gloss over it or function on "autopilot" with little perceived negative impact. For example, unlike combat or general engineering forces, geospatial analysts in a BCT are not under the direct control of an engineer commander. Instead, geospatial analysts are part of the BCT staff, often task-organized within an intelligence, geospatial intelligence, or protection section. This means that, although the BCT engineers may not have direct control of geospatial assets, the responsibility for integrating geospatial engineering throughout the entire operations process still remains. It is a responsibility centered on function, rather than command and control of assets—a different, but no less important, type of responsibility.

The second reason that BCT engineer staffs do not attempt to seize the mantle of responsibility for integrating geospatial support across the staff and subordinate units lies in self-imposed perceptions of expertise. Engineer officers have come to believe that geospatial support is so technical that only specialists—those with an academic background in geospatial information—can provide good leadership in

Geospatial analysts can offer predictive analysis and problem solving when they are integrated into the routine information synthesis of a battle rhythm.



a BCT. It is important to remember that just as the lack of a civil engineering degree is not an excuse for an engineer officer to ignore coordinating construction operations, the lack of academic or technical expertise in geospatial analysis does not excuse a BCT engineer coordinator from ensuring the full integration of geospatial support into BCT operations.

Small Steps, Big Impact

These challenges are real, but the responsibility to oversee all three Army engineer functions—combat, general, and geospatial—at the BCT level is also real, and vitally important for mission success in today’s complex operational environment. We can start by focusing on high-impact techniques for integrating geospatial support that demand small commitments of time and do not require technical expertise. The responsibility of the engineer coordinator is not to do geospatial analysis—which is provided by talented geospatial information technician warrant officers and geospatial engineer enlisted Soldiers—but to integrate it into BCT operations. The engineer coordinator can make significant improvements in geospatial support at the BCT level by focusing on the following questions:

1. Is the entire unit, or just the staff, getting support?

Check the geospatial section tracking list of products or requests for information for the past month or quarter. If an overwhelming majority of the section outputs are for the intelligence or operations and training officer, subordinate units may not be receiving robust geospatial support. While the BCT intelligence and operations and training sections are important and need significant geospatial support, subordinate units can benefit greatly from visualiza-

tions for rehearsals, route studies, and more. If subordinate units are submitting requests to the BCT geospatial team and not receiving timely, relevant products, they may become frustrated and simply stop making requests. It is also possible that subordinate units, especially nonorganic ones, may not know the capabilities of the BCT geospatial assets or how to request support. Engineers should ensure that all BCT staff sections and subordinate units receive the support they request, understand the capabilities, and have an efficient method for requesting support.

Engineer Staff Officer Geospatial Support Checklist

- ✓ Subordinate units (not just the staff) receive timely geospatial support and know how to make requests from the BCT geospatial capabilities.
- ✓ Geospatial analysts have the situational awareness to provide proactive analysis to BCT decisionmaking and operational cycles.
- ✓ Analytical tools and capabilities are known and used.
- ✓ BCT staff and subordinate units can provide basic “self service” functions without using geospatial section assets.
- ✓ Staff and subordinate units can reprint the most popular and frequently requested map products using plotters.
- ✓ Geospatial data is routinely sent to higher headquarters.
- ✓ Standard operations include integrated geospatial support without a specific request.
- ✓ The geospatial section is certified as “trained” by an external geospatial analyst, warrant officer, or technician with advanced or equivalent skills and experience.

2. Is geospatial support reactive or proactive?

Investigate how consistently geospatial support is provided in response to a specific request in comparison to analyst-generated products. When engineer staffs fail to integrate geospatial support into BCT planning and decisionmaking cycles, geospatial support can become reactive, where a geospatial section only makes products that specific members of the staff or subordinate units request. While this is beneficial and responsive, it does not capture the full role of the trained geospatial analysts. Like intelligence analysts, geospatial Soldiers

must continually assess the environment and changing situation based on a commander's intent and understanding of current operations. Engineer officers can ensure that the geospatial section has a routine method, such as battle update assessment or situation report, for building situational awareness and communicating relevant geospatial information and analysis to the staff and subordinate units.

3. Are geospatial assets being used for analysis and recommendations or merely helping staffs visualize?

Products that display operational control graphics, boundaries, political regions, routes, cities, and unit locations are needed and loved by all, but these visualization products are only one part of how geospatial support can be integrated into BCT operations. Analysts can fuse multiple sources of data into geographic patterns to provide predictive analysis and incorporate the effects of the operational environment to solve problems. In addition to requesting specific products, staffs and subordinate units can be coached by engineer officers to bring questions like the following to the geospatial section:

- Based on your data, where is the best location for a patrol base?
- Where are the most likely criminal trafficking routes?

This exploits geospatial data and analysts to their fullest extent in the unit, rather than limiting it to the capabilities of those requesting products. Engineer officers are critical for facilitating this shift from viewing geospatial assets as "terrain information providers" to "analysts."

4. What self-service geospatial capabilities do staffs and subordinate units use on a regular basis?



The widespread use of plotters empowers staffs to print map products from easy-to-access, digital geospatial information.

Many years ago, hosting a network of files and posting up-to-date announcements on an Internet or intranet site was the realm of computer programmers. Today, with programs such as Microsoft Sharepoint™, almost every member of a unit staff can create a useful page for storing, editing, and exchanging digital information. The ability to use geospatial information has also evolved, and staff engineers can integrate geospatial support into operations by empowering other staff and subordinate units to perform self-service geospatial tasks independently. The engineer coordinator can play a key role in introducing programs such as GeoPDF® to the staff and leveraging the geospatial section to provide ready-to-import data in an easily accessible network location. The most challenging aspect of putting entry level geospatial applications to work finding the data, not using the interface, as most staff members are comfortable exploring new software. By providing an entry level program and the relevant data to the staff and subordinate units, the BCT geospatial section can be more efficient, devoting limited resources to analysis and products that only they have the capabilities to generate.

5. Are the same completed geospatial products requested repeatedly?

If the geospatial section tracking list of completed products contains many separate requests for the same product, then the section productivity for analyzing and developing new specialized products is being greatly reduced. In an environment where many staff sections have access to plotters, staffs can print additional or updated copies of popular products without a request to the geospatial section. Engineer officers can make this possible by ensuring that a digital product repository or "library" of products for the BCT is created in a shared folder or on a network

Web site. The geospatial section can update this library with preformatted digital copies (such as portable document format [PDF] versions) of completed products, thus enabling network users to print copies of the frequently requested unit products.

6. Is the next higher geospatial section getting updates?

One of the roles of a BCT geospatial section is to provide updates to the unit portion of the theater geospatial database through higher echelon geospatial forces. When BCTs do not feed valuable geospatial data higher, the information that a section collects will not serve other units that are conducting operations in the area or units that may need the data in the future. Engineer staff officers must oversee this integrative function by finding out when the next higher headquarters geospatial section wants updates, what features it is collecting, and what file structure is used. Most importantly, the engineer staff must ensure that the geospatial section does not become entirely focused on current operations and fails to send the data up to higher headquarters.

7. Are geospatial products part of standard operations?

When geospatial support becomes integrated into the routines of a BCT, staffs and subordinate units receive support without asking. For example, patrol or convoy pre-briefings should always include relevant geospatial information; a leader should not have to make a request. Mission debriefings should include questions about discrepancies between on-the-ground observations and geospatial products or maps provided. Similarly, a unit intelligence summary should regularly include geospatial intelligence. For the BCT engineer coordinator, integrating geospatial support into the battle rhythm and standard operations of the BCT pays significant dividends as the presence of geospatial information enables those outside the engineer section to integrate it into their planning and operations.

8. Are we trained? What are we doing to train?

Geospatial analysts require individual and collective training and validation exercises, just like the rest of the BCT staff. As the integrator of geospatial support, engineer officers must provide the oversight and coordination

assistance necessary to help a unit geospatial section grow professionally. The role of staff engineer is not to be the subject matter expert, but to coordinate for external support to train and validate a BCT geospatial section in its collective tasks and to move the analysts toward an even higher level of professional competency. Some sources for accomplishing this include—

- The National Geospatial-Intelligence Agency National Geospatial-Intelligence College.
- The Deputy Chief of Staff, Intelligence, Army Foundry Intelligence Training Program.
- Local technical colleges.
- Geospatial warrant officers from other units or echelons.

Start Somewhere

This list is not intended to be exhaustive, but it is a realistic starting point for all staff engineers. Engineer officers have a responsibility for integrating geospatial support into their units, even if that does not entail direct control of the geospatial section. Engineer officers have that capability, since advanced technical expertise is not required to take an active role in planning and integrating geospatial support throughout BCT operations. Small steps make a large impact in this critical field, and the time for every engineer coordinator to start assessing geospatial support in his or her BCT is now. 

Endnote:

¹Field Manual 3-34.22, *Engineer Operations—Brigade Combat Team and Below*, 2 November 2009.

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(Clear the Way, continued from page 2)

great Nation. The Best Sapper Competition culminates on Saturday morning; and the Army Engineer Association will then host an Awards Luncheon, where we will recognize the winners of the Itschner, Grizzly, Van Aultre, Outstanding Warrant Officer, and Outstanding Civilian awards. Finally, we will honor our award recipients and will present the Gold deFleury to this year's winners. You can find the latest information on ENFORCE at <https://www.wood.army.mil/enforce_2012>.

We need to see you at ENFORCE, and we need to harness your minds and experiences as we shape our Engineer force for the future of our Nation. We have a packed agenda that will allow us to come together and celebrate the accomplishments and sacrifices of our units who are engaged in combat, and it will allow us to visualize the new operational environment as we build our Regiment to meet the challenges that come with it—just as we have done since 1775.

Essays!