Engineers As Part of the Combined Arms Reconnaissance Team

By Captain Bob Wray

The success of an offensive or defensive operation often depends directly on the success of the reconnaissance effort. This effort enables the maneuver commander to see the battlefield. Likewise, the ability of engineers to support maneuver units depends on the success of the engineer reconnaissance effort. This article describes two types of reconnaissance, and provides an overview of the combined arms planning process.

There are two basic types of engineer reconnaissance: technical and tactical. The reconnaissance missions are conducted under different threat environments, focus on different engineer-specific information requirements, and are executed and organized differently (Figure 1).

General Types of Engineer Recon Missions

Technical Recon:
- Collect engineer specific technical data on a point, area target, or route
- Normally a specified task from higher headquarters
- Conducted in a Level 1 threat environment
- May involve only engineer forces

Tactical Recon:
- Collect engineer specific information requirements on an enemy point, area target, or attack axis/route
- Implied task to support maneuver plan
- Conducted in Level 3 threat environment
- Combined arms effort: Engineer force is just part of total intelligence collection effort

Figure 1

Technical Reconnaissance

Technical reconnaissance missions focus on collecting engineer information about a target, area or route. This type of reconnaissance gathers engineer information about the target without regard to the enemy. It is usually conducted under a low level of threat and in areas physically controlled by friendly forces. The mission is normally a specified task from higher headquarters or is derived from mission analysis, and can be conducted by a pure engineer unit. A technical reconnaissance is typically conducted rear of the forward line of troops (FLOT). A combat engineer company could anticipate the following technical reconnaissance missions:

- River (unopposed river crossing)
- Engineer resource
- Bridge
- Route and road
- Landing area
- Tunnel
- Ford and ferry (unopposed)
- Water resource

The basic references for technical reconnaissance are Field Manual (FM) 5-36, *Route Reconnaissance and Classification*, FM 5-34, *Engineer Field Data*, FM 90-13, *River Crossing Operations, Technical Manual* (TM) 5-312, *Military Fixed Bridges*, TM 5-330, *Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations*, and TM 5-700, *Field Water Supply*.

Tactical Reconnaissance

Tactical reconnaissance is conducted against a target in areas where enemy contact is likely, and the reconnaissance mission is an integral part of confirming or denying the intelligence preparation of the battlefield (IPB) and developing a scheme of maneuver. These missions normally are not specified, but fall out as an implied task. Engineer forces participate in tactical reconnaissance as part of a combined arms team consisting of scouts, infantry or cavalry patrols. Tactical

reconnaissance is typically performed forward of a task force rear boundary. The combat engineer company could anticipate the following tactical reconnaissance missions:

- Enemy obstacle
- River
- Landing/pick-up zone (PZ/LZ)
- Terrain
- Choke points
- Friendly situational obstacle
- Friendly reserve obstacle (bridge demolitions, road craters, etc..)
- MOUT (building evaluations, utility facility recons)

The basic references for tactical reconnaissance are FM 5-34, *Engineer Field Data*, FM 20-32, *Mine/Countermine Operations*, FM 90-13-1, *Combined Arms Breaching Operations*, FM 5-25, *Explosives and Demolitions*, FM 7-7, *The Mechanized Infantry Platoon and Squad*, and FM 7-70, *Light Infantry Platoon/Squad*.

These two categories of engineer reconnaissance are critical to developing and training engineer squads. They provide the baseline for the tactics, techniques and procedures for each reconnaissance mission, and will help focus training and squad reconnaissance drills. The new FM 5-36, *Engineer Reconnaissance*, will reflect the two categories. The remainder of this article concentrates on tactical reconnaissance.

Engineer Tactical Recon Planning and the Estimate Process

Engineer Estimate	*Recon Planning*
Mission	Specified region tasks
Engineer battlefield assessment	Identify possible NAIs Identify recon assets available in adjacent recon efforts
Participate in IPB	Establish IRs and integrate into collection plan
Commander's guidance	Establish PIR
Mission analysis	Identify specified/implied recon missions
Develop scheme of engineer operations	Allocate recon assets to accomplish recon missions and develop tentative recon plan
Wargame and compare	Deconflict recon plan with other staff/manuever plans
Finalize plan	Integrate recon plan into order, and complete coordination

Note: Recon assets may have to deploy before estimate process is complete based on tentative NAIs and PIRs.

Figure 2

Recon Planning

Combined arms engineer reconnaissance planning is conducted as an integral part of the engineer estimate. Figure 2 shows the reconnaissance planning steps and how they integrate with the engineer estimate process. The estimate process provides the foundation for developing a reconnaissance plan. However, an engineer reconnaissance mission may require engineer forces to deploy with scouts prior to completion of the estimate process. When engineer reconnaissance forces deploy early, the task force engineer must consider how he will shift the reconnaissance effort as the planning process matures.

Mission. Knowledge of the mission should automatically start to focus intelligence requirements. Deliberate attack, hasty attack, hasty defense, or movement to contact missions generally call for general intelligence targets. For example, in the offense, obstacle intelligence, mobile obstacle detachment location, terrain data, enemy survivability effort, enemy countermobility and mobility asset location, and engineer low density equipment location are intelligence requirements which can help confirm or deny the situational template.

In the subunit instructions, an engineer company could receive a specified reconnaissance mission. Characteristically, the engineer subunit mission will be a technical reconnaissance. The task force engineer needs to be aware of the maneuver unit's specified reconnaissance task, and higher headquarter's priority intelligence requirements. This article uses the deliberate attack as an example.

Engineer Battlefield Assessment. The engineer battlefield assessment [EBA] is the basis of the engineer's input into the IPB and, therefore, becomes the foundation for reconnaissance planning. During terrain analyses, the engineer and S-2 identify key and decisive terrain features whose engineer characteristics are important to the maneuver plan. The S-2 uses the higher headquarter's situational template and refines it (Figure 3). The task force engineer uses the S-2's template of the enemy location, along with other

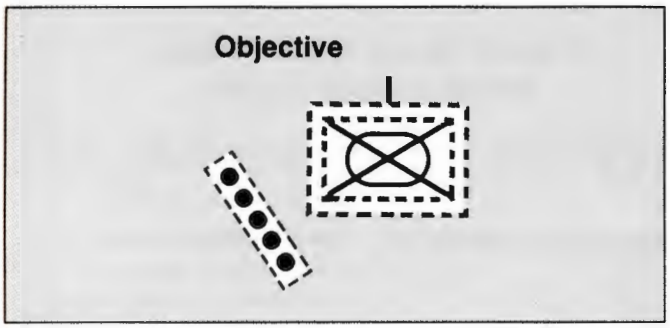


Figure 3

Recon Planning and Engineer Battlefield Assessment

Terrain and weather analyses:
- Identify key terrain features requiring engineer recon (technical or tactical)
- Focus on existing obstacles that impact on maneuver forces

Enemy M/CM/S capability and employment
- Template enemy engineer activities
- Identify possible NAI's/information requirements
- Begin to establish priorities

Friendly M/CM/S capability
- Identify friendly recon assets available
- Include engineer, maneuver, and intelligence assets
- Coordinate with adjacent engineer recon efforts
- Identify necessary recon equipment

Figure 4

Recon Planning Input to the IPB

Provide input into S-2's terrain analysis
- Determine impact existing obstacles have on avenues of approach and mobility corridors
- *Prioritize* engineer recon to confirm terrain analysis and begin recon early

Provide input into the S-2's doctrinal and situation template
- Base your input on enemy M/CM/S assessment
- Identify tentative NAI's and information requirements

Provide input into the S-2's collection plan
- S-2 and engineer develop coordinated list of NAI's and information requirements
- Ensure mutual support is planned

Figure 5

facts and assumptions, in order to template enemy mobility/countermobility/survivability capabilities (Figure 4). This procedure assists the engineer and S-2 in focusing tactical reconnaissance on specific named areas of interest (NAIs) to collect the information requirements/priority information requirements (IRs/PIRs) (Figure 5). Figure 6 shows a refined situation template with NAIs annotated. Mission-critical NAIs and PIRs can now be prioritized.

The S-2 and engineer also look at adjacent reconnaissance efforts which impact on the area of operations. Last, the engineer considers the friendly engineer capability and reviews the combined arms assets available for collecting engineer intelligence. Those usually include:

- **Scouts** - Used to recon areas in close proximity to the enemy. Scouts reconnoiter to determine enemy locations, orientations, and dispositions. Before, during, and after the battle, they report their observations and significant changes in enemy activity.
- **Ground Surveillance Radars (GSRs)** - A GSR can detect moving vehicles and personnel in open terrain at long ranges, and it can provide information on the number, location, disposition, and types of targets. Normally, GSRs are placed to cover open, high-speed approaches where early detection is critical.
- **Remote Sensor Teams (REMS)** - Like GSRs, REMS are division assets attached or placed in direct support. The REMS should be placed as far forward as possible. They are useful in covering dead space and broken terrain where observation would require more observation posts (OPs) or patrols than are available. They can also assist in detecting attempts to breach friendly obstacles and in keeping track of enemy movements after security force withdrawal.
- **Maneuver Listening/Observation Posts (LP/OPs)** - LP/OPs are used to observe or listen to the front, or in gaps between friendly positions. They provide early warning of the enemy's advance.
- **Patrols** - Patrols are conducted to cover unoccupied gaps between defensive positions. On occasion, patrols also may cover the terrain between OPs to the front. This is normally accomplished by the occupying unit during a defensive operation.
- **Engineers** - Engineers are used specifically to gain intelligence on the enemy's mobility/countermobility/ survivability operations and friendly OCOKA requirements.

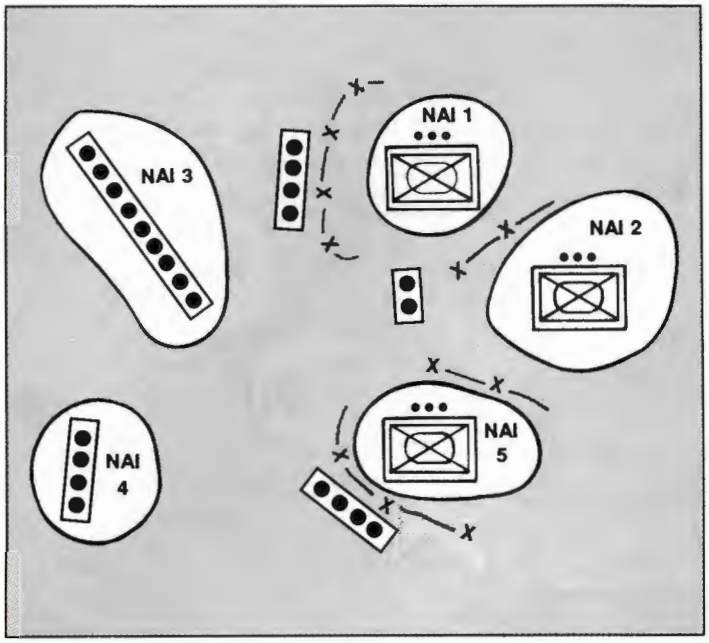


Figure 6

Recon Planning and Mission Analysis/Commander's Guidance

Identify all specified recon missions
- Based on higher's basic OPORDER
- Intelligence annex
- Engineer annex
- Higher engineer OPORDER

Identify implied engineer recon missions
- Based on EBA and IPB input
- Prioritize recon missions
- Identify recon missions that are essential tasks

Recon missions and priorities may change as maneuver plans are developed

Establish PIR based on commander's guidance

Figure 7

■ **Aerial Reconnaissance** - You must coordinate for these assets—if they are available at the battalion task force level. Imagery and photography products can compliment your intelligence collection plan. Ensure the requests for these products are submitted. On numerous occasions, the products are not "pushed" through the system. Aviation assets can be task organized to the battalion task force for specific missions. OH-58s can be requested to cover specific areas, routes or targets (Refer to FM 17-95 *Cavalry Operations*). Be sure to consider SEAD (suppression of enemy air defenses) and air superiority when planning and requesting these assets.

Commander's Guidance. The commander's guidance is given after the restated mission of the command estimate. The restated mission confirms the essential tasks expressed in the mission statement. This aids in determining and recommending PIRs to the commander. He confirms the PIRs, and the staff engineer ensures that intelligence requirements are included in his recommendation.

Mission Analysis. Recon tasks identified in the IPB process and R&S (reconnaissance and surveillance) planning are included in the mission analysis. The engineer considers all engineer recon missions given by higher headquarters as specified tasks. These tasks are usually technical recon missions. The engineer also identifies implied technical and tactical recon missions as implied missions. Mission-critical technical and tactical engineer recon missions are identified as essential tasks and become the main effort in recon planning and force allocation.

A word of caution: engineer recon mission priorities may change as maneuver plans are developed and refined, or they may change as the situation changes (Figure 7). Time analysis of the command estimate might drive specific NAIs to be more important than others. Mission analysis provides the framework for a reconnaissance and surveillance plan with NAIs, targeted areas of interests (TAIs) and PIRs.

Develop Scheme of Engineer Operations. The scheme of engineer operations is developed concurrently with the maneuver course of action. Figure 8 shows a generic offensive scheme of maneuver. Engineer recon efforts are included in the development of a scheme of engineer operations. The engineer analyzes the recon tasks that have been identified and looks at where they occur on the battlefield. He knows the assets available from his EBA analysis, and so allocates the engineer forces necessary to accomplish the recon task. Normally, an engineer squad is capable of reconnoitering one target at a time. Large targets may require an entire platoon.

In some cases, using non-engineer intelligence collection assets is more appropriate. Scouts, patrols, GSRs and aviation recon efforts may be tasked to collect engineer IRs in coordination with the S-2. The engineer will then task organize engineer assets allocated to the recon effort based on the type reconnaissance and the type of force commanding and controlling the recon effort. As a rule of thumb, engineer forces conducting technical recons remain task organized under engineer

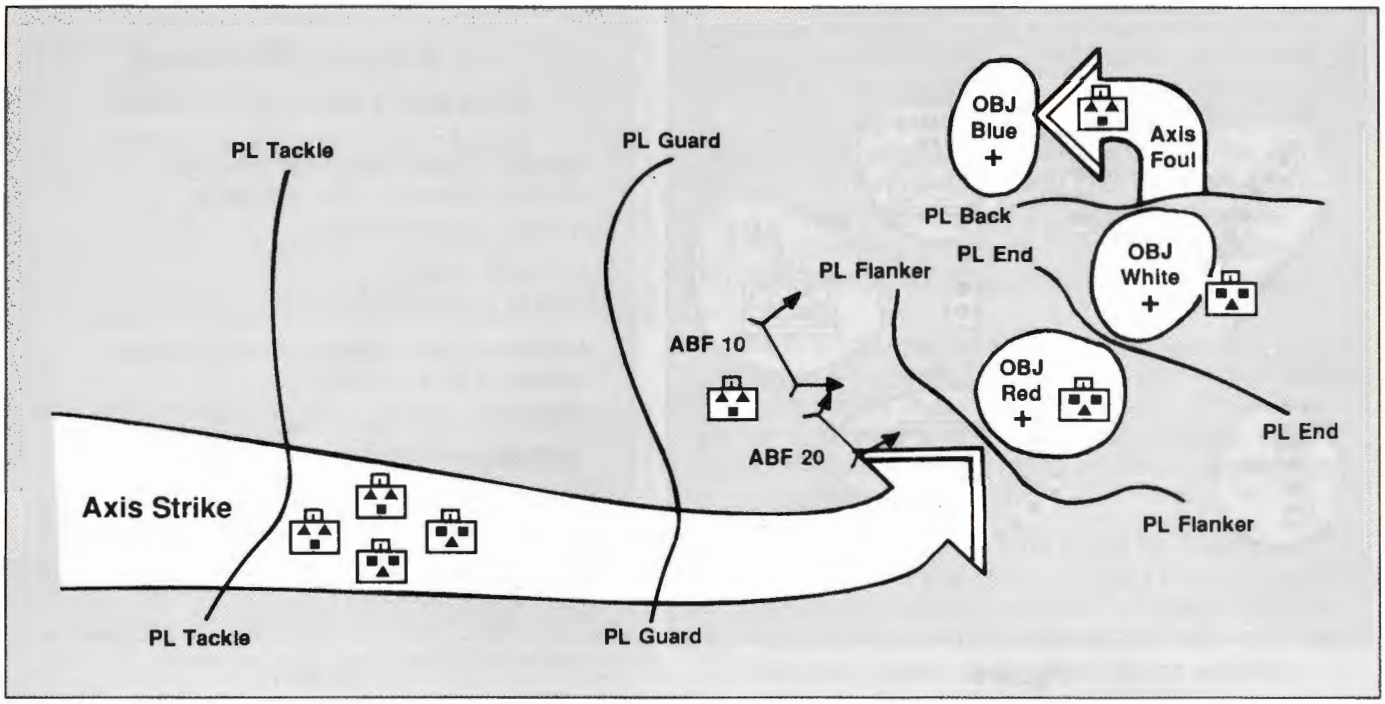


Figure 8

headquarters. Engineer forces conducting tactical recons are task organized as attached to a maneuver headquarters—usually the task force or battalion scouts. The engineer integrates engineer recon forces, missions, and priorities into the total scheme of engineer operations.

Engineers are trained to conduct obstacle and fortification reconnaissance to evaluate the technical nature of these works. Scouts and infantry also conduct obstacle reconnaissance, and are experts in tactical maneuver and reconnaissance. Maneuver unit recon assets are normally better than an engineer squad at collecting information in NAIs that are close to the enemy location. However, increasing engineer recon training can compensate for this. For example, in support of an offense operation, engineers would focus on the NAIs covering the enemy's tactical obstacles, while the scouts would focus on the NAIs covering the enemy's weapon systems and protective obstacles.

Finalize The Engineer Recon Plan

Assign specific NAIs, IR/PIR to subordinate units

Integrate engineer recon effort into BDE/TF OPORDER (R&S plan)

Coordinate recon routes with other staff members and unit commanders

Brief engineer recon effort at the OPORDER

Develop engineer recon tracking/command and control systems

Specify how hard intelligence will be disseminated

- By whom
- To whom
- Where
- When
- Using what means (radio, FAX, courier)

Figure 9

Wargame and Refine. The engineer always participates in the wargaming process. Wargaming offers the engineer an excellent opportunity to look at his recon effort in the context of the maneuver plan and other recon efforts. It helps him identify weaknesses in his recon plan. As the maneuver plan is wargamed, the engineer should consider how well his recon plan has provided the information needed to successfully execute the maneuver plan. As a result, the engineer may identify the need for additional NAIs and IRs. He also looks for conflicts such as recon assets that are operating in an area of indirect preparatory fires.

Finalize Plan. In coordination with the TF S-3, S-2, and commander, the engineer finalizes his recon plan. Engineer forces participating in the recon effort are given specific NAIs and IRs as sub unit instructions in the engineer company OPORD (Figure 9). If the reconnaissance assets have already moved out, their plan must be updated and the commander's intent given to the recon elements. This critical point is often overlooked. If the reconnaissance units know the commander's intent,

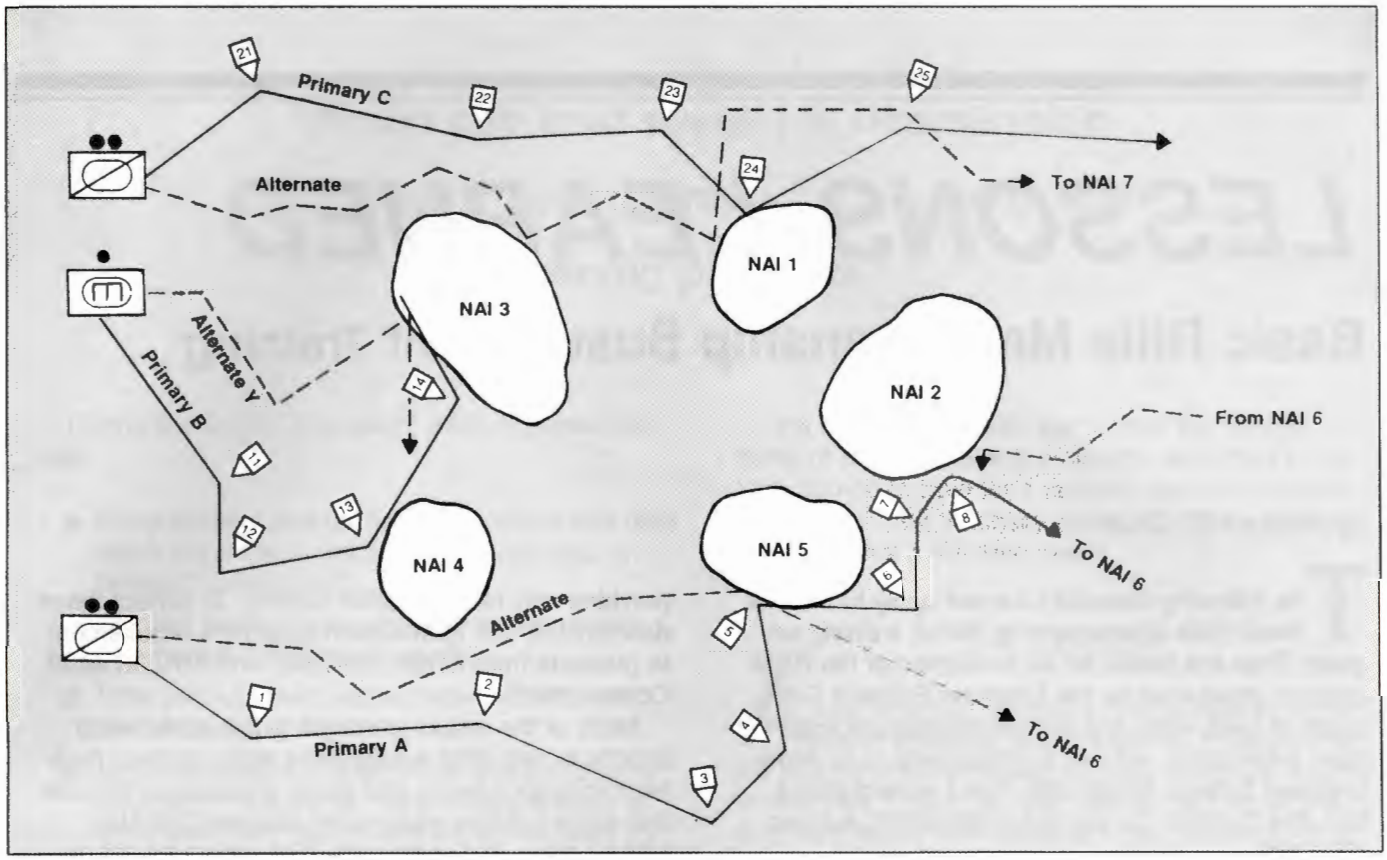


Figure 10

they will be better prepared to demonstrate the appropriate initiative to help the commander.

The staff engineer makes every effort to coordinate with other TF staff members and maneuver commanders. He ensures that engineer reconnaissance assets are given the appropriate NAIs, command and control, and logistics. It's important that the engineer brief his recon plan (as part of the TF plan) at the TF operations order (OPORD) to ensure that the plan is disseminated. As the engineer recon plan is finalized, the engineer must consider how he will track the progress of the recon effort, receive reports, and, if necessary, shift the recon focus. He must not only focus on his engineers, but on the total combined arms reconnaissance effort as well. The scout platoon leader integrates the engineers into his movement and develops his own movement plan (Figure 10).

Summary

This article has been limited to the engineer's planning process and his responsibilities as part of a combined arms staff. Combined arms reconnaissance planning should not be viewed as a check to block activity—the R&S plan confirms or denies the situation template. After the intelligence reports are received, the template is updated and refined and the S-2 and engineer develop new NAIs. As for all staff engineer planning, the engineer estimate provides the basic framework for engineer reconnaissance operations. After staff planning, engineer reconnaissance leaders must conduct standard troop leading procedures.

Engineers are a critical part of the combined arms reconnaissance effort, and must be proficient in recon operations and planning. Engineer leaders should take note, and make sure their units are trained up to the mission.

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