

The Engineer Officer as Battalion S-2

By Major Charles L. Toomey

The lack of solid engineer reconnaissance has the potential of turning battlefield success into sudden defeat. At the very least, it will result in the unnecessary loss of lives, equipment, and/or time.

Engineer intelligence is a critical part of Intelligence Preparation of the Battlefield (IPB). This article is directed toward officers serving as S-2s in combat engineer battalions that provide direct or general support for maneuver divisions. It advocates an expanded intelligence role for these officers.

Too often, junior officers assigned as S-2s are limited in their effectiveness because they lack a full understanding of their special role in the combined arms arena.

The engineer battalion S-2 often finds himself torn between two distinct duties. On one hand, he is the engineer battalion's security officer, primarily responsible for security matters within the unit. On occasion, when a field exercise requires it, he may be called upon to do some engineer reconnaissance planning for short-term missions. On the other hand, he serves as the intelligence officer for the division engineer. In this role, the S-2 collects and forwards data that may be relevant to both engineer and maneuver elements in the division's area of operations.

Being the intelligence officer for

the division engineer is the more difficult of the two duties. The job demands experience, a passion for detail, and a broad vision that goes beyond the limits of the battalion's garrison activities or field exercises.

And it is a duty that, unfulfilled, can contribute to diminished combat effectiveness for the division.

A good example of the consequences resulting from an inadequate engineer intelligence network was the 24th Infantry Division's breakout from Korea's Pusan Perimeter in September 1950. The operation required crossing the Nakdong River, a formidable obstacle ranging from 300 to 600 feet wide and three to 18 feet deep. The Nakdong was not a particularly difficult crossing for the engineers, provided that they could obtain the necessary bridging equipment.

But there was a serious problem with the engineers' estimate for the operation. Engineer planners had concentrated their attention almost entirely on the Nakdong River, and had overlooked the Kumho River, which had to be crossed before the division's assault crossing of the Nakdong.

Heavy rains had swamped the area just prior to the scheduled assault, and fording sites on the Kumho had turned into raging, nearly impassable torrents. The engineers finally succeeded in crossing elements of the division, but only after the operations order had been

drastically changed and the unit had been significantly delayed.

Today, the majority of the S-2's time should be spent preparing the battalion (and thus the division) for war. Of course, some S-2s are now muttering to themselves "...the peace-time requirements for physical security, personnel clearances, key control, and other areas will be the things that eat my lunch if I don't do them well."

True, those things are within the S-2's area of staff responsibility. But, it must be remembered that company executive officers, first sergeants, platoon leaders, and company commanders (preferably in that order) should worry about those matters on a daily basis and work the fixes for problem areas.

S-2s should teach those leaders what they need to know about security matters, monitor the battalion's security status, and help the unit leaders when they really need it.

Two types of engineer battalions drive my thinking for S-2 responsibilities: Units that are forward deployed, and units that have contingency missions (usually CONUS-based).

Forward-Deployed Battalions

Forward-deployed battalions generally have well defined missions in an assigned sector. Although they may be close to the ground on which they would fight, their

engineer intelligence needs are not diminished. Regular adjustments to the unit's mission, aggravated by the usual personnel turnovers, require constant training, reconnaissance, and planning updates.

Each S-2 should prepare detailed handbooks for specific engineer-related areas of interest, including:

Processed construction materials. Note locations for sized lumber, large steel members, crushed gravel, precast concrete, geo-textile sheeting, wire, and cut timber. Make notes as to their general availability during a yearly cycle—some inventories may experience cyclical shortages based on the local economy and supply and demand.

Locations of forests and other expedient engineering materials. Locate potential sources for field engineering and construction materials. Identify types of wood, average diameter of trees, average spacing, and degree of accessibility (i.e., near major highway or good internal trail network). Note both active and closed quarries. Include equipment that could be used to improvise float bridging or rafts, including existing commercial facilities. Identify locations of heavy-load railroad flatcars for possible expedient Class 60 bridging.

Construction equipment. Identify possible sources of locally owned equipment, from hand shovels to cranes. Work through the division staff for approved host nation support. If indigenous construction equipment differs greatly from

ours, prepare English-language instructions and/or labeling decals to install on control panels.

Highways and roads. Standard route reconnaissance information applies, but critical points along routes susceptible to interdiction should have, as a minimum, planned bypasses and estimates of the materials and time required to place the primary route back into operation. Include railroad data and ground lines of communication in this category.

Bridges. Examine in detail every bridge along primary and alternate routes within the area of operations. Information for each bridge should include its dimensions and load classification. In the event those bridges are destroyed, prepare sketches of bypass routes to replacement bridge

sites. Tabulate estimates of materials and time required to reopen main bridges, including figures for each method of repair (from field expedient construction to standard fixed or float bridging). Also, estimate the materials and time required to reinforce low-strength bridges and increase their load classifications.

Airfields. Include data on airfield width, usable length, runway orientation, pavement (thickness, type, soil, asphalt, concrete, matting), taxiways, parking and loading areas, and on-site material-handling equipment. Estimate the number of aircraft operations per day (takeoffs and landings) and capability for handling personnel and equipment. Sketch land-use areas around the airfield, including traffic flow into

Photo by Phil Howell



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and out of loading support areas.

The battalion S-2 can assist in unit deployment training by producing video tapes of planned routes. Videos can be either a complete route, from garrison through a start point to a release point, or be through expected trouble areas only.

To film the route, travel during daylight at wheeled-convoy speed and keep the volume turned off. Later, dub over the tape with information regarding constrictions, gradients, place-names, grid locations, and critical tactical information about the surrounding terrain, i.e. "Vehicles at this point can be engaged by direct fire from Hill 233 at 2 o'clock".

Route videos can be used as training aids for newly assigned drivers and leaders. You may even make points by sharing the film with the maneuver unit supported by your battalion.

Finally, forward-deployed divisions may be ordered out of their assigned sector. The engineer S-2 should expect such a possibility and begin collecting and preparing axis-of-advance intelligence (versus route intelligence) to assist in the planning and movement of the division. Knowledge of friendly engineer capabilities along any given axis of advance is especially critical. Minute detail is not important until a general direction is provided, but initial data and a recommendation by the division engineer may influence that decision.

Contingency Battalions

The S-2 of a contingency battalion can use the preceding ideas to help prepare the unit—and the division—for action upon arrival in the mission area. The major difference is the number of possible missions and, thus, the number of workbooks needed. The best method for organization seems to be either by country or objective area.

Let's take another look at some of the major preparation areas al-

ready mentioned. We will add details for the specific needs of the contingency battalion:

Processed construction materials. In addition to the items already mentioned, determine electrical voltage in the objective area (110 or 220 volts.) Do soil conditions require special types of cement? Is there water for dust control and construction, and water for consumption by friendly forces? These are just a few questions that need to be answered before deployment.

Construction equipment. Insufficient construction equipment in the objective area can be a real war-stopper. Conservative estimates for engineer equipment needs should drive the force structure, but there is no guarantee that all of the organic equipment will make it in. Find out the types of in-country construction equipment that exist in the contingency area. It takes real intelligence work to keep this type of information updated.

Each contingency engineer battalion S-2 should subscribe to professional engineer journals that keep the civilian construction industry apprised of what is going on throughout the world. *Engineering News Record* is an excellent example. You may find that some indigenous equipment in the objective area may also be distributed by local commercial firms near your stateside base. Plan to use local equipment dealers for emergency training and briefings and as possible sources for resupply of parts and accessories. You may be able to plan regular familiarization training sessions for your equipment operators with local firms that are sustaining members of the Society of American Military Engineers.

With all of the possible missions that a contingency engineer battalion may have, it is obvious that the S-2 will have a difficult time keeping up with the latest engineer-related developments in each mission area. He needs help.

Other officers in the battalion can provide assistance. The battalion commander may appoint unit officers as foreign area project officers. These lieutenants and captains (or majors, if they have experience in a specific area) may be assigned a specific mission area to monitor. That officer would keep the S-2 informed of all developments in the region that could affect the battalion's ability to meet its contingency mission. Selected officers would, for example, scan commercial publications for news of the opening of new airports, desalinization plants, or the status of highway construction in other countries.

A side benefit of such research is the expanded professional development of the officers involved. Officers who are trained to observe and track such engineer-related developments in the world will be better leaders for it somewhere down the road.

Common Ground

Several points on engineer intelligence responsibilities have common ground for both forward-deployed and contingency battalions:

Learn to work with your own battalion staff. The S-4 needs to be involved in the indigenous Class IV issues; the maintenance officer in the equipment issues, and both the S-3 and the ADE in problems and issues involving terrain, operations, and training.

Find out who to talk to on the division staff in addition to the G-2. For instance, the G-5 can help you prepare indigenous labor workforce estimates. Use the ADE and his staff to run interference for you at division and corps levels on engineer intelligence issues that may be outside the G-2's area of interest.

Develop close working relationships with the S-2s of other maneuver battalions and brigades. It's important that all engineer S-2s support each other and develop an engineer intelligence network.



Photo by Phil Howell

S-2s of forward-deployed engineer battalions should prepare detailed handbooks for their assigned sector and axis of advance to include all bridges along primary and alternate routes.

Maintain an engineer intelligence collection plan as part of your "battle book," or individual contingency OPLAN. Identify what needs to be known, by what time it needs to be known, and how it will be collected. Consider every intelligence and collection asset available to the division (from intelligence battalion equipment to infantry battalion scout platoons, to engineer reconnaissance patrols). Continually coordinate your engineer intelligence collection plan with the G-2's collection plan for the division; they should support and complement each other.

Become an expert in the request procedures for aerial imagery. Learn how to read, in detail, aerial photographs for pure engineer intelligence.

Develop programs for reconnaissance training in coordination with the S-3. Although our engineer sergeants' primary recon tasks remain sapper-related (bridges, highways, rivers, etc.), we must emphasize that all reconnaissance performed within a division's area of operations is tactical in nature.

For example, when a squad

checks out a road, they should ask such questions as: "...can friendly movement be observed along this road from that hill...," or "...could this be a possible anti-tank ambush site?" The I9D soldiers' manuals provide a good foundation on tactical reconnaissance.

Coordinate training programs on how to identify types of enemy formations by noting specific vehicle types and their function. Engineer platoons operating in front of, or among, friendly maneuver units automatically become intelligence collectors. They should be trained to distinguish between a regimental advance guard and the main body of a regiment by virtue of equipment, tactics, and time of arrival on the battlefield. This difficult task requires a high level of professional dedication. As the S-2, you need to work with the S-3 to ensure that appropriate training is available.

Being the S-2 of an engineer battalion is not an easy job when the duty is properly executed. In particular, the position's inherent responsibility to serve as the division engineer's intelligence of-

ficer is a complex business that requires careful thought, considerable effort, persistence, and patience.

The collection and assessment of raw data that later becomes usable engineer intelligence is a process that cannot be accomplished by one S-2 during a single period in a battalion's history. It is the product of a continuing process of dedication and vigilance whose merits may not be immediately apparent.

But someday, the payback in critical engineer intelligence may prove invaluable.

Just ask the soldiers who had to wait by the banks of the Kumho River in 1950.



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