Bosnia: Engineer Planning for Operations Other Than War

By Major David R. Brown

Events in Bosnia-Herzegovina recently provided an opportunity for the Center for Army Lessons Learned (CALL) to assess planning in an operations other than war (OOTW) environment. The CALL team consisted of TRADOC-provided intelligence, training, logistics, transportation, and engineer officers and a lawyer. The team visited seven planning headquarters: the Allied Rapid Reaction Corps, AFSOUTH/JTF HQ, USAREUR HQ, 21st TAACOM HQ, V CORPS HQ, 3rd COSCOM, and 1AD HQ.

The observations gathered at each location were a "snapshot in time." Many issues pertaining specifically to Bosnia have been resolved and some are pending resolution. The intent of this article is to provide engineers an opportunity to "wargame" their own potential solutions to these issues.

The planning requirement for engineering in OOTW missions is enormous. It includes a full range of engineer support for mobility (countermine and construction, repair and maintenance of roads, ports, rail systems, and bridges); survivability (force, facility, and humanitarian assets); sustainment (lines of communication (LOC), base camps, main supply routes (MSRs), airfields, pipelines, and utilities); and topography (specialized topographic products in multiple languages).

Of the more than 60 engineer observations made, almost all of them can be categorized into one of six broad topics: communication and reaction to constant change, prestocked materiel shortages, engineer equipment maintenance challenges, mine/countermine operations, sustainability of lines of communication, and follow-on operations. This article identifies methods to improve and simplify planning for each topic.

Communication and Reaction to Constant Change

(Or, nothing in this planning is more constant than the changes.)

Several constantly fluctuating, politically imposed limitations were placed on planners based on the changing number of personnel that could be introduced into the theater of operations. These constantly changing limits had a ripple effect on all planning efforts. Often the mission was vague. At many headquarters the mission received was: "We think we have a job to do, we are not sure what it is, but we want you to plan and train for it based on taking 'x' number of engineers."

As political limits were imposed and adjusted, senior headquarters had to adjust troop listings and the "tooth-to-tail" ratio of the engineer force package. This variable was also influenced by changes in the perceived mission (peacemaking, peace enforcement, peacekeeping, peace building) (Figure 1) in belligerent or nonbelligerent environments. This caused continual adjustments in the allowed number of engineers deploying and the ratio of combat to construction engineers.

It is not necessary to have a well defined political end state in order to conduct engineer planning.

Many engineer missions may be extrapolated based on terrain analysis and specified, implied and essential tasks, constraints and restrictions. The engineer estimate (FM 5-100, *Engineer Combat Operations*, Appendix B) can assist planners in determining engineer-specific mission statements. Mission analysis based on the "Tenets of Army Operations" (FM 100-5, *Operations*, page 2-6) and the "Principles of Operations Other Than War" (FM 100-5, *Operations*, page 13-3 or Draft FM 100-23, *Peace Operations*, page 3-3) will assist in identifying specific engineer missions. These missions will then allow planners to determine the number and types of engineer forces required. For example, at the division level engineers may be required to fix and maintain 58 bridges along main supply route (MSR) "X", with bridge "A" being the most important, bridge "Z" being the least important, and other bridge priorities being "B-Y". Planners must then determine what engineer force structure is required to do that mission. With an engineer force structure based on terrain, effects of fluctuations can be immediately identified and weighed based on cost/benefit.

Continual changes in troop limits caused generic engineer troop units to be added to or subtracted from the Time Phased Force Deployment List (TPFDL) without consideration of real world limitations. The changes in mission type caused changes in the mix of combat engineer and combat heavy units. Missions requiring engineers in low density skills (port construction, railroad repair, prime power, pipeline, well drilling and firefighting) were changed without considering call-up requirements for engineers in the Reserve Components (RC).

Planners who prepare the TPFDL must consider the availability and deployability of the specific engineer units required to accomplish the mission. During preliminary planning for Bosnia-Herzegovina, many levels of command had direct access to the TPFDL and changed it without considering the ability of the engineer forces to support their changes.

The total engineer force maintains more than 70 percent of its capability in the RC. Railroad repair units are found only in the RC. Port construction, prime power and pipeline construction units are limited to one or two Active Component (AC) companies, with the remainder in the RC. The limited number of available AC combat and construction battalions would require alert and movement of CONUS-based AC or RC engineers to complete in-theater missions and provide backfill for replacement and rotation. Considerable time is required to approve the call-up of reserve forces, prepare them for deployment, and move them into a theater of operations. Many of these engineer forces will be critical to theater opening operations during the first 30-45 days of operations. The Army's ability to place these units at the critical point during the critical time is based on decisions made at least 120 days before on-the-ground operations begin.

In a fluid planning environment, all engineer planners must be able to immediately adjust their engineer force mixture. This can be achieved by categorizing the engineers as combat, combat heavy (vertical construction), combat heavy (horizontal construction), or specialized, and establishing decremental lists for each category. Once the categories are determined and decremented, any troop strength or mission change can be immediately factored, and the change in engineer capability can be identified. This removes the necessity of planning every possible task organization to the last detail.

Types of OOTW Operations

Peacemaking: The process of arranging an end to disputes and resolving issues that led to conflict, primarily through diplomacy, mediation, negotiation, or other forms of peaceful settlement, including military peace operations.

Peace Enforcement: A form of combat or armed intervention that is pursuant to international license authorizing use of military power to compel compliance.

Peacekeeping: Noncombat military operations undertaken by outside forces with the consent of all major beilligerent parties, to monitor and facilitate implementation of an existing truce.

Peace Building: Post-conflict actions to identify and support structures that would stregthen and solidify peace and avoid relapse into conflict.

- Excerpts from Draft Version 4, FM 100-23 *Peace Operations*

Figure 1

The Department of Defense must develop doctrine on theater opening operations in order to identify engineer tasks that must be completed for every OOTW operation. This doctrine would substantially reduce the necessity for "reinventing the wheel" for every operation. The Army must review the current policy of maintaining many critical engineer assets in the RC. All levels must reverse plan the availability of engineers. Units must restrict the availability of, and access to, the TPFDL and require in-progress reviews of proposed changes. Units must provide limited low-density skill cross-training for combat and combat heavy engineers. In OOTW engineering, all engineers must be cross-trained and capable of performing engineer missions beyond their "normal" scope of duties.

Prestocked Materiel Shortages

(Or, do you know what is available for prestocked class IV and bridging?)

Stocks of replacement bridging for both the Bailey and Medium Girder Bridge (MGB) are low due to shipments to Somalia and damaged bridging. In Bosnia, several critical questions relate to this issue:

- Will the bridges be repaired/replaced by imported contract labor, local contract labor, or military forces?
- Will sufficient bridging (civilian or military) be be available?
- Are sufficient engineer assets available to protect and control the bridges?

In Bosnia, multiple bridge sites have been identified for repair; many of them are critical to the joint forces' ability to establish initial lodgements and maintain LOCs. Because many bridges have been damaged or destroyed, both civilian and military bridging assets will be required. U.S. forces will have difficulty completing the anticipated bridge missions because many Bailey bridge sets were deployed to Somalia and the supply of MGB assets is limited. Only a small number of AC personnel are proficient in Bailey bridge emplacement, and most of them are senior NCOs who trained on the Bailey when it was still in AC bridge companies. Engineers without bridge experience will provide assistance in bridging. Substantial contracting of bridge work is anticipated and many contractors have already been consulted.

A review of the DOD policy and training decisions that have reduced bridging capabilities in the Army is indicated. Funding to produce and stockpile a newer generation of fixed bridging designed for more permanent (less tactical) use may be necessary. This bridging should be placeable by military or civilian labor, easily and quickly emplaced, reasonably inexpensive, and capable of handling at least Military Load Class 25 traffic. This bridging would meet the needs of anticipated humanitarian-type missions both abroad and in the United States for natural disaster relief.

The limited supplies of prepositioned engineer class IV, bridging, and pipeline have low priority for movement into theater. Engineer prestocks of class IV items were found to be inadequate for planning OOTW missions. Military resupply demand gravitates toward "beans and bullets," and most prestock materiels support this concept. Therefore tanks, artillery, and the ammunition to support them are scheduled to go first. During OOTW missions, large supplies of tanks, artillery, and ammunition may not be needed. Instead, these missions need "up front" equipment and personnel to repair infrastructure damage and utilities, and to provide food, shelter, medical treatment, security, and sanitation for large numbers of displaced military and/or civilian personnel. These missions require rations, fuel, engineer construction materiel, and medical supplies.

Because large quantities of engineer materiel will be required for Bosnia (or any third world country), the Army must preposition engineer materiel as far forward as possible. All levels of command must understand the scope of humanitarian assistance and evaluate the requirements to establish and sustain operations. Priorities for prestocked materiels must be reviewed at the theater level. This review will determine priorities for push package resupply and troop mixtures for the total deployment package.

Engineer Equipment Maintenance Challenges

(Or, do you have a plan to support engineer equipment maintenance for everyone?)

Maintenance requirements for U.S., coalition, and contracted engineer equipment in theater will be extremely frustrating. Units will find it difficult to maintain all the types of equipment. Consider the mechanics' dilemma but limit it in this context to bulldozers. How many potential bulldozers might a heavy engineer equipment mechanic expect to see in a theater such as Bosnia? Besides the makes and models used by Army engineers, there will be those used by other DOD services as well as those used by U.S. contractors. Then add equipment used by coalition forces from four or

five countries (possibly including former WARSAW Pact countries) and their contractors, plus those used by relief organizations. Considering the various models from each country, it is easy to believe that a mechanic may be required to work on 50 types of bulldozers.

Then consider the different types of engineer equipment (graders, scrapers, loaders, etc.). If we assume 100 bulldozers of each type, a little quick math places 5000 bulldozers in theater. Assuming an optimistic 85 percent readiness rate, an estimated 750 bulldozers may need repair on any given day. And the issue of evacuation for major repairs hasn't even been addressed.

Commanders must determine what level of maintenance will be done in theater; major repairs probably will require evacuation. Engineer units must take only their best equipment—inoperable equipment or equipment with a history of being inoperable must be left behind. Units must replace all consumable service items (belts and filters) prior to deployment and stockpile replacements both in the equipment and in that secret conex every maintenance shop hides away. Operators must learn troubleshooting skills and do as much internal maintenance as possible before going to a higher level of maintenance. When deploying for an OOTW mission, double the number of spares: two spare tires may mean the difference between getting equipment back to base camp or finding it stripped along the road.

Mine/Countermine Operations

(Or, are your personnel trained in mine detection, explosive breaching, and route clearance?)

Many soldiers have little confidence in the ability of nonmetallic mine detectors to detect nonmetallic mines. During predeployment training, users of mine detectors found they had difficulty detecting and neutralizing nonmetallic mines. The threat to U.S. soldiers from mines is significant. During predeployment training in sweeping, breaching, and clearing mines, many combat engineers experienced multiple failures while trying to detect nonmetallic training versions of nonmetallic mines. The multiple sensor mechanisms, anti-handling devices, and fail-safes incorporated into the current generation of mines makes breaching of minefields with mine detectors or by probing a costly, time-consuming, and excessively dangerous method. Approximately 750,000 mines are scattered throughout Bosnia. Most of them have state-of-the-art technology, and 75 percent are anti-personnel mines scattered in unrecorded minefields. The current mine detector has difficulty detecting these mines, and manual probing methods are costly in terms of injuries.

The Army must continue effective training on the current mine detector while developing standoff and robotics capabilities to breach mines. Units should train in explosive mine removal or contract mine removal operations. All mine breaching/clearing operations must be done very slowly and carefully. Time must not be a critical factor in neutralizing mines. For the majority of mines encountered, priority should be to identify, mark, record, and report. Emphasis must be placed on exposing the minimum possible number of personnel to a mine hazard and soldiers must be constantly reinforced with the policy of not touching mines.

Sustainability of Lines of Communication

(Or, have you used the terrain rather than troop limits to plan force sustainment?)

Engineer units may expect extreme difficulty in sustaining lines of communication (roads, railroads, airfields, canals) in Bosnia, in either a belligerent or nonbelligerent environment. Terrain and mission analyses indicate that massive amounts of logistical support will be required to support an operation in Bosnia. Conservative estimates reflect a requirement to use the roads, railroads, airfields, and canals at full capacity to support operations. Interdiction of any of these routes during relief operations would strain all other routes and may cause bottlenecks at ports and airfields both inside and outside the area of operations. Terrain analysis of area maps shows multiple tunnels (road and rail) easy to destroy; bridges (road and rail) easy to drop; steep, winding roads with no bypass easy to crater; canals easy to block; and airfields that could be easily denied to heavy, strategic aircraft. Sabotage and interdiction are both easy and likely.

In Bosnia and most other potential OOTW mission areas, engineers should be perceived as a humanitarian force, in the country to provide humanitarian assistance to a starving and demoralized population. Engineers must complete projects that both support the deployed forces and benefit the country and the people. Ideally, operations that benefit the people are preferred over combat-related operations. To achieve these objectives, planners must consider circular, one-way routes that facilitate movement of materials inland. Additionally, engineers must move heavy construction materials and equipment into theater early. A few days spent widening and repairing road and rail networks will

expedite future operations. Sufficient engineer forces must be deployed at all levels to complete the mission.

Follow-on Operations

(Or, now that we are finally here, what do we do?)

There were discussions at all levels to determine in-theater infrastructure repair requirements and who would do the work. Higher echelons made plans for lower echelon engineers, but the lower level engineers knew little about the requirements. Multiple plans were developed to contract substantial amounts of bridge and road work. In some cases, military operations were contingent upon the ability of private contractors to repair and construct bridges and roads. Plans did not address the engineer forces' need to construct facilities for refugee bed-down and sustainment. Engineer forces in support of maneuver forces were tasked to breach obstacles and minefields but no follow-on engineer units were identified to clear obstacles beyond the hasty breach. Responsibility for rapid runway repair and airfield damage repair was not established.

The civilian command structure must determine the conditions for entry into operations (belligerent or nonbelligerent and type of operation). In essence, they must answer the "million dollar question" asked by all planners and described in Draft FM 100-23, *Peace Operations*, (page 2-3) as the commander's dilemma (Figure 2). The task force commander can then establish and prioritize engineer missions, and the task force engineer can assign work sectors (by capability) to allies and joint or separate services.

If there is contradictory guidance, engineer planners must make assumptions based on the terrain and plan accordingly.

In planning OOTW missions, engineer planners will face many other issues, such as:

- Effects of the drawdown on engineer forces
- Compartmentalization of planning changes and information
- Rotation of in-theater forces
- Training in sustainment capabilities
- Crisis and deliberate planning methods

Commander's Dilemma

- The commander must be able to accurately assess his mission as one entailing combat, not entailing combat, or one in which combat is probable.
- The commander must know if he is to be partial or impartial to the belligerent parties, or to which parties partiality exists.
- Without such fundamental understanding, it is impossible to appropriately structure forces or plan for and conduct operations, and difficult to develop military objectives to achieve the desired political end state.

- Excerpts from Draft Version 4, FM 100-23 *Peace Operations*

Figure 2

- Maps
- Airfield matting
- Use of LOGCAP
- Cross-leveling of planning
- Environmental pollution restrictions

Summary

Engineer planners for OOTW missions face difficult challenges. In planning for a potential operation in Bosnia, all military personnel, regardless of their branch of service or country of origin, must be clearly dedicated to completing the planning mission to the best of their ability. The recommendations in this article are presented to facilitate planning efforts for Bosnia or other scenarios, and to strengthen U.S. Army engineer support for future OOTW scenarios.

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For additional observations related to Bosnia preplanning, send a blank 3.5 inch, high density disk to: Commandant, U.S. Army Engineer School, ATTN: ATSE-T-CE-V, Fort Leonard Wood, Missouri 65473.