

CHAPTER 7

OTHER OPERATIONS

I was first of all gratified to see how much had already been done by the 86th Pontoon Battalion. Working on their own behalf to get the ferry running, they had actually begun our work for us. As I surveyed the west-bank ferry site, the first of my own Company B bulldozers arrived to begin leveling the approach to conform to our own needs. Of equal importance, Captain Gene Hancock's 998th Treadway Bridge Company rolled in and got straight to work. I exchanged salutes and greetings with Captain Hancock and gave him leave to pitch right into work with his eager engineers. The general opinion throughout the 1111th (Engineer) Group was that the 998th was the best unit of its kind in the 1st Army.

Much to my surprise, as I gazed across the awesomely wide and swift Rhine, I chanced to see a bulldozer with flails clearing mines and working on the east-bank approach. I asked Captain Warren Rombaugh whose engineers they were and he proudly explained that Lieutenant Don Davis and Sergeant Bill Miller had purloined a ferry and had taken their platoon across at 0400 hours. The first unit of the 291st to cross the river had been working constantly under fire since then..

From the book, First Across The Rhine. The Story of the 291st Engineer Combat Battalion, by Colonel David E. Pergrin with Eric Hammel.

The corps conducts other operations to support both offensive and defensive operations. The corps may be required to conduct these operations in combination, sequentially and, in many cases, as part of an offensive or defensive plan. In all cases, they require special considerations during planning and execution. They are all difficult, complex, and often inherently risky. While the concept and basic goals of the operation remain constant, actual methods for their conduct will vary (due to METT-T) as they apply to each situation.

The corps engineer requires a fundamental understanding of these operations and their inherent special engineer considerations. The engineer missions involved in supporting other corps operations are essentially the same as outlined for offensive and defensive missions. Furthermore, the principles of engineer C2 still apply during planning and execution. The corps engineer and his staff use the special considerations discussed in this chapter to refine the offensive or defensive engineer mission analysis and force allocation.

LARGE-SCALE MOBILITY OPERATIONS

The corps conducts large-scale mobility operations primarily in two areas: obstacle breaching and deliberate river crossings. The doctrinal fundamentals for combined arms breaching operations (found in FM 90-13-1) and river-crossing operations (found in FM 90-13) can be applied to corps-level mobility operations. While large-scale mobility operations are normally planned in detail at the division level, corps have specific fundamental planning and resourcing responsibilities for these operations. The corps engineer and his staff are responsible for developing detailed schemes of engineer support and providing the extensive engineer forces and assets required for both missions.

LARGE-SCALE BREACHING OPERATIONS

A large-scale breach is defined as a breaching operation conducted by divisions and corps to create a penetration through a well-prepared defense and to pass follow-on divisions or corps. These operations are conducted in phases that serve to integrate them into corps and theater offensive plans. Corps-controlled breaching operations usually consist of corps-level operations using lead divisions to conduct the deliberate breach. The enemy main defensive belt is characterized as a linear area defense lacking depth at the first tactical echelon. Normally, the corps scheme of maneuver involves one or two lead divisions creating an initial penetration through which follow-on divisions or corps can pass. Lead divisions conduct either division or simultaneous brigade deliberate breaches to create the initial penetration. The focus of corps operations is to set the conditions for success, support the fight at the obstacle, and exploit lead division success to continue the attack.

Phases of a Large-Scale Breach

There are four distinct maneuver phases inherent in a large-scale breach from the corps's perspective. As with any obstacle crossing, a

large-scale breach is only a subcomponent of a larger, continuous offensive operation. The breach may be an essential task but it is not the purpose of the attack. Breaching phases assist the corps commander in more clearly delineating the tasks to be planned and executed at the corps, division, and brigade levels. The phases of a large-scale breach are to—

Ž Attack to the obstacle.

Ž Breach and assault.

- Secure the beachhead.

Ž Pass follow-on forces.

Attack to the obstacle. The corps begins the attack to the obstacle by setting the conditions for the operation's success. This is accomplished by conducting deep operations to isolate the close fight and to reduce enemy fire-support capability; providing adequate resources to the breach force; and ensuring that fundamental breach principles are applied. Deep operations serve to suppress the enemy's fire support and its ability to reinforce the first tactical echelon. These operations focus on enemy artillery groups, rocket artillery, or maneuver units. The corps applies both lethal and nonlethal fires to suppress enemy forces at the point of penetration and to further isolate and obscure the battlefield. These fires usually include artillery, attack helicopters, close air support (CAS), air interdiction (AI), EW, and PSYOP. Deception operations are used to deceive the enemy commander as to the exact time, location, and nature of the corps operation. A priority of the corps intelligence-collection plan is on the forward enemy's defenses and obstacle system. Aggressive corps ground and air reconnaissance and the use of satellite imagery provide lead divisions with timely intelligence updates on both obstacle and enemy dispositions. This phase ends as the lead divisions close with the enemy

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main defensive area and begin executing their deliberate breach.

Breach and assault. The objective of the breach-and-assault phase is to penetrate the enemy's defense with the lead divisions and to isolate the division objectives with corps and theater assets. The fight at the obstacle is entirely a division fight. The focus of the corps and theater deep operations will continue to be on isolating the breaching areas from air and ground counterattack and to continue counter-fire operations against enemy artillery. Enemy scatterable mine delivery systems are a likely PIR and are excellent HVTs for corps and theater fire-support systems. The corps engineer staff and the G2 plot likely minefield locations and delivery systems. The breach-and-assault phase ends when the divisions seize their initial objectives and eliminate enemy direct fire on the breaching sites.

Secure the beachhead. The attacking division quickly secures the beachhead in order to expedite the passage of follow-on forces. The corps-delineated beachhead line initially serves as a limit of advance and an area to pass follow-on forces. The size of the beachhead and the location of the beachhead line are driven by the size of the follow-on force, the amount of forces required to defend the beachhead from counterattack and the location of enemy first-echelon artillery groups and reserves. The immediate concern is to clear the beachhead and eliminate all direct fires and all observed indirect fires that can affect the passage of follow-on forces. Simultaneous with securing the beachhead, the division begins establishing the necessary lane network. Reducing and marking additional lanes necessary to pass the follow-on forces, as well as to sustain forces within the beachhead, is a division-level operation. A system of traffic control within the beachhead is quickly established to support rapid and controlled movement on the lanes. This phase ends when the necessary lanes for both the forward passage and sustainment traffic are reduced, the beachhead line is se-

cure against counterattack, and organized enemy resistance within the beachhead poses little threat to the breach lanes.

Pass follow-on forces. Follow-on forces begin movement from TAAs in the rear of the breaching division to forward assembly areas (FAAs), to attack positions in the beachhead. Movement is centrally controlled by corps. As with any passage of lines, the breaching division controls movement within its sector as the in-place force. The beachhead line normally serves as the BHL for the in-place and passed units. While this phase is similar to any passage of lines, the restrictions imposed by moving on lanes through obstacles require some special traffic-control considerations. This phase ends with the completion of the forward passage of follow-on forces and the turnover of the lanes and traffic control to the corps.

Corps Commander's Responsibilities

The corps commander provides guidance and intent concerning the conduct of large-scale breaching operations. He controls the initial breach fight with lead divisions and the follow-on passage of divisions and corps. He and his key staff members may locate near the vicinity of the breach location for effective C2. He is responsible for applying the breaching tenet of intelligence; the breaching fundamentals of suppression obscuration security and reduction (SOSR); the breaching organization of support, breach and assault forces; mass; and synchronization to each echelon of planning.

Intelligence. Providing accurate, timely intelligence is critical to the success of a corps's breaching operation. This begins before the war-gaming process with the plotting of enemy unit locations in the first and second echelons, artillery locations, and the locations of obstacle systems (IPB situation template). Updated terrain products (such as current satellite imagery maps of the beachhead and the MCOO) produced by the corps topographic company and terrain teams support this intelligence effort. The corps intelligence-collection plan and

event template are developed during the war-gaming process. A portion of the collection plan is dedicated to confirming template locations. This intelligence flow is continuous up to and beyond the start of the attack. The corps collection plan also focuses on deep operations that are critical to suppressing enemy fire-support assets and reserves, thereby isolating the battlefield. Every effort is made to push intelligence down to division level and below. The breaching division and its brigades supplement this plan by developing their own collection plans and R&S plans based on the same IPB process.

Breaching fundamentals. The corps commander maintains certain SOSR responsibilities at his echelon to allow the divisions and brigades to focus on the immediate fight at the obstacle. At corps level, the principles of SOSR are the same as at lower echelons, but the scope is different. The corps uses fire support and deep operations to *suppress* the enemy's defenses and isolate the battlefield. These operations serve to disrupt defenses at the breach sites and reduce the enemy's ability to reinforce or influence the battle by using its second-echelon forces or fire-support assets. The corps *obscures* the battlefield through the use of C2 countermeasures, including EW, OPSEC, and smoke/obscurants. Deception is also a critical aspect of corps-level obscuration of the breach operation which serves to mislead the enemy commander as to the nature, time, and location of the corps operation. Corps responsibilities under the *secure* tenet are accomplished through deep operations and fire support to isolate the breach sites and protect them from enemy actions. CAS, AI, deep fires, attack helicopters, and air defense weapons are all tools available to the corps commander. Corps responsibilities to *reduce* obstacles include—

- Accepting lane handover from the forward divisions.
- Upgrading existing lanes to handle additional traffic.

- Clearing additional lanes to support the passage of follow-on forces.
- Maintaining the lane network.
- Providing movement control.

Breaching organization. The corps commander maintains certain responsibilities that assist lower-echelon support breach and assault forces to allow the lead divisions to focus on the immediate fight at the obstacle. To assist division *support forces* in eliminating the enemy's ability to interfere with the breaching operations, the corps commander provides deep-operations fire support. This fire support suppresses the enemy's defenses and reduces its ability to reinforce or influence the battle with second-echelon forces or fire-support assets. The corps obscures the battlefield through the use of C2 countermeasures, including EW and OPSEC. Deception is also a critical aspect of corps-level obscuration of the breach operation that misleads the enemy commander as to the nature, time, and location of the corps operation. The corps supports division *breach-force* missions to create lanes that enable the attacking force to pass through the obstacle and continue the attack with additional breaching assets and suppressive deep-operations fire support, along with needed obscuration. This also helps the corps to secure the breach site. To assist the breach force in reducing obstacles, the corps accepts lane handover from the forward divisions, upgrades existing lanes to handle additional traffic, clears additional lanes to support the passage of follow-on forces, maintains the lane network, and provides movement control. The corps supports division *assault-force* missions to destroy or dislodge the enemy on the obstacle's far side, primarily with suppressive deep-operations fire support.

Mass. Breaching is conducted by rapidly applying a concentrated force at a point in order to crack the obstacle and rupture the defense. Massed corps combat power is directed against

an enemy weakness. The location determined for large-scale breaching depends on a weakness in the enemy's defense where its covering fires are minimized. If the corps commander cannot find a natural weakness, he creates one by fixing the majority of the defending force and isolating a small portion of it for attack. The isolated portion is then suppressed to eliminate effective fire on division breach forces. Smoke and terrain are used to assist in isolating the force under attack. Suppression requires the corps commander to mass enough overmatching fires to achieve at least a 3:1 firepower ratio.

The corps commander also masses his engineers and breaching equipment to assist division breach forces reducing the obstacle. Division breach forces are organized and equipped to use several different reduction techniques in case the primary technique fails. Additional reduction assets--normally fifty percent more than required--are present to handle the unexpected. These additional forces are positioned with the division breach force. Achieving necessary mass for the assault requires the division breach force to open enough lanes through the obstacle to permit rapid passage and buildup of forces on the far side. A division normally requires a minimum of twelve lanes, allowing two brigades abreast with six task forces to pass simultaneously in column while minimizing lateral movement. The tactical situation may require additional lanes to pass a larger assault force quickly through the obstacle to achieve a sufficient combat-power ratio. The principle of mass influences the selection of the corps breaching location the task organization augmenting division support, breach, and assault forces; and the integration of engineers in force movement or attack formations.

Synchronization. Breaching operations require precise synchronization of the SOSR breaching fundamentals by support, breach, and assault forces. Failure to synchronize efforts can result in rapid, devastating losses of

friendly troops in the obstacle or in the enemy's fire sack. The corps commander ensures synchronization through proper planning and force preparation. Fundamentals to achieve synchronization are—

- Ž Detailed reverse planning.
- Ž Clear subunit instructions.
- Ž Effective C2.
- A well-rehearsed force.

Corps Engineer Support

Corps engineers support large-scale breaching operations in many ways. The corps engineer assists the corps commander by providing detailed engineer estimates for the breach. Corps engineers augment division breach forces by providing them with additional assets to clear the necessary number of lanes to ensure the movement of follow-on forces through the beachhead. Normally an engineer group with several corps engineer battalions is placed in a command relationship to each breaching division in order to give it efficient C2 of all engineer forces at the breach sites. This allows division engineers to accompany assault forces as they pass through the breaches to seize beachhead objectives. Corps engineers at the breach sites widen existing lanes and create additional ones to enhance corps mobility. As the beachhead is secured and follow-on forces pass through the in-place division, control of the breach site is passed to the corps to free the in-place division for future operations. Corps engineers continue route improvement and obstacle-clearance operations. Corps engineers with assault forces are prepared to install tactical obstacles to support the defense of the beachhead, including scatterable mines. Obstacles are also used in deep operations to isolate the battlefield and delay reserves. Corps engineers enhance movement in rear areas by maintaining and improving MSRs and repairing and upgrading bridges.

RIVER-CROSSING OPERATIONS

A river crossing is a special operation in that it requires specific procedures for success because the water obstacle inhibits ground maneuver in the usual way. It demands more detailed planning and technical support than normal tactical operations. It also features specific control measures to move the force across a water obstacle. The obstacle may be a river, lake, or canal. Unlike other obstacle types, the water obstacle remains effective during and after the crossing operation.

A successful river-crossing operation is one that moves more combat assets across a river than an enemy can mass against the crossing. Deliberate river-crossing operations are normally planned and conducted by corps and divisions. At the corps level, fundamental planning (including deception) and resourcing of corps assets to the division takes place. At these echelons, a major river crossing will involve most if not all, of the assets of the organization involved. Extensive use of corps assets is required in the conduct of the operation. Divisions do not have sufficient support-force structure or capability to conduct a river-crossing operation. They cannot cross major water obstacles without corps assistance and still be expected to press the fight. The corps assigns missions and provides the necessary support and equipment. Specifically, the corps provides augmentation in the following areas:

Ž Engineer forces.

- Fire support.
- Air defense.

Ž Smoke.

- MP.
- EW.
- Attack helicopters.

Rarely will a river crossing be a specified task within the corps's mission. More often, a river crossing will be an implied task for a lead division. The corps will designate the bridgehead for an offensive river crossing and will normally depict the bridgehead graphically using a bridgehead line or a set of division objectives. The bridgehead is the area on the far bank that is to be secured to continue the offensive. It provides space for those combat CS, and critical CSS elements that are necessary for the corps to continue the attack. The bridgehead must be defensible, be large enough to maneuver and deploy the force required to continue the mission, and facilitate continuation of the operation. For divisions crossing the river and continuing the attack a shallow bridgehead of about 30 kilometers (19 miles) maybe used. If the corps intends on passing a division through the bridgehead, a deeper bridgehead of 40 to 50 kilometers (25 to 30 miles) may be required, depending on the terrain. Divisions normally assign bridgehead objectives and control movement across the river. Brigades assault across the river and secure the bridgehead as an element of a larger force.

Both corps and division headquarters anticipate and plan for river crossings in advance. Division and brigade commanders organize their forces into bridgehead, support, and breakout forces for river-crossing operations. Bridgehead forces seize and secure the bridgehead. Support forces consist of corps combat engineer battalions; corps bridge companies; light engineer diving teams; and MR EW, and chemical units. These units provide crossing means, traffic control, and obscuration. Breakout forces cross the river behind bridgehead forces and attack out of the bridgehead oriented on subsequent objectives. The division commander normally designates an assistant division commander as the crossing-force commander (CFC) to take charge of controlling the division crossing. A crossing force receives planning support from a crossing-force engineer (CFE) who is normally the commander of a corps engineer group in support of the division. He provides additional staff planners for

the CFC and coordinates engineer support to the crossing area commanders (CACs), who are normally the maneuver brigade XOs. Additional communications support is required for the engineer group to operate in both the division and corps signal networks during river crossings. The corps engineer group commands and controls all corps engineer assets supporting the river-crossing operation, including bridge companies and combat engineer battalions. It is critical for supporting corps engineers to be totally involved in all facets of the river-crossing operation from initial planning through preparation and execution. This ensures a continuity of thought and action. Division and brigade engineer staffs focus on supporting the fight through the bridgehead. Some duties and tasks of the CFE may be to—

- Coordinate engineer support to the CACs.
- Coordinate with the corps engineer brigade for additional assets.
- Ž Assist with division deception planning.
- Recommend R&S requirements to the division engineer.
- Ž Coordinate planning between crossing area engineers (CAEs) and CACs.
- Coordinate with the CFC and division engineer.
- Inform all concerned parties of any potential problem areas.
- Develop a detailed crossing schedule for the division.
- Ž Coordinate with the corps chemical officer on the use of smoke/obscurants.
- Coordinate with the corps MP brigade on traffic-control requirements.

Each forward brigade normally has a DS combat engineer battalion from corps to support the crossing. The corps engineer battalion commander is normally the CAE and is responsible to the CAC and CFE for engineer crossing means and sites. He informs the CAC and CFE of changes due to technical difficulties or enemy action that render a crossing means inoperable or reduces its capacity. He commands those engineers tasked to move the force across the river obstacle; they remain at the river as the attack proceeds beyond the exit-bank objectives. The division and brigade engineers focus on supporting the lead brigades at the exit-bank intermediate, and bridgehead objectives with organic engineer units. They are not normally involved in detailed planning of the river crossing. Some duties and responsibilities of the CAE are to—

- Ž Keep the CAC informed on all aspects of the engineer operation.
- Coordinate with the CFE.
- Ž Control all corps bridge assets in his area.
- Recommend reconnaissance requirements to the CAC and coordinate execution.
- Prepare the crossing area with equipment parks, engineer regulating points, combat trails, call-forward areas, and crossing sites.
- Ž Assist the CAC in developing his crossing plan.
- Coordinate smoke/obscurant support in the crossing area.
- Coordinate traffic-control support in the crossing area.

RETROGRADE OPERATIONS

Retrograde operations are conducted when it is necessary or desirable to move in an organized and orderly way to the rear or away from the enemy. They are planned, organized movements that include delaying actions, withdrawals, and retirements. These operations may be forced or voluntary but they require the approval of the next higher commander. The corps may direct a division to conduct a retrograde operation within the corps's AO, or the corps may be directed from the theater commander to conduct a retrograde operation as part of a larger theater operation. A well-planned, organized, aggressively executed retrograde operation provides opportunities for the corps to inflict heavy damage on enemy troops and material while continuing to maintain its fighting integrity. The purpose of a retrograde operation is to preserve the corps's integrity for future operations; however, the retrograde can be conducted to—

- Disengage forces from combat.
- Avoid combat under undesirable conditions.
- Shape the battlefield, drawing the enemy into an unfavorable situation.
- Gain time without fighting a decisive engagement.
- Ž Reposition forces on more favorable terrain.
- Permit the use of a portion of the force elsewhere.
- Ž Harass, exhaust resist, and delay the enemy.
- Ž Shorten LOC and supply.
- Conform to the movements of other friendly forces.

DELAYS, WITHDRAWALS, AND RETIREMENTS

Corps retrograde operations normally include a combination of delaying actions, withdrawal operations, and retirement actions executed in conjunction with other combat operations. A delay is an operation in which the corps trades space and time to inflict maximum damage on the enemy without decisive engagement. A withdrawal is an operation in which the corps in contact withdraws to free itself for a new mission. A retirement is an operation in which a corps not in contact moves away from the enemy. These operations may occur simultaneously or they may be sequential actions. To accomplish these purposes, retrograde operations are accompanied by efforts to reduce the enemy's strength; to bring up additional forces; to concentrate forces elsewhere for an attack to prepare stronger defenses to the rear; and to maneuver the enemy into areas where he can be counterattacked.

RETROGRADE RIVER CROSSINGS

Planning and executing river crossings during retrograde operations are similar to operations discussed earlier in this chapter. The following special considerations are taken into account when planning a retrograde river crossing.

- Command and control. Command, control, and coordination are difficult in a retrograde river crossing. Delaying, defending, and supporting forces require explicit missions and tasks. Effective liaison support is required between retrograding units, the crossing-force headquarters, and supporting units.
- Deception. Deception is planned and executed to conceal the extent of the operation and the actual crossing sites to be used. Smoke/obscurants, electronic deception, and dummy sites re-

duce the enemy's capability to disrupt the crossing. OPSEC measures are required.

- **Crossing sites.** Retrograde crossing sites are initially controlled by friendly forces. They may be insufficient in number and may be attacked by enemy forces early in the operation. Planning and developing additional sites provide flexibility against this probability. Any crossing site must be protected against enemy action using security forces to counter all battalion-sized air assault or airborne insertions.

Ž **Support forces and bridging.** The corps commander attempts to pass all nonessential support forces across the river early and disperse them in locations that can support the operation. Fixed bridging equipment should be recovered early and replaced with ribbon bridging that can be recovered quickly. Other bridging equipment that cannot be recovered quickly may have to be destroyed. Existing bridges and other crossing means, such as ferries, may need to be destroyed. Close coordination with delaying forces precludes cutting off friendly forces.

RETROGRADE PLANNING

The complexity and fluidity of retrograde operations and the absolute need to synchronize the entire corps operation dictate the need for detailed, centralized planning and coordination and decentralized execution of the operation. Corps planning for retrograde operations begins with the preparation of plans for the follow-on mission. It is driven by the commander's concept of the operation and his intent. A number of key planning fundamentals receives special emphasis during the retrograde planning phase, including the following:

- **Leadership and morale.** The nature of retrograde operations involves an inherent risk of degrading the command's morale; therefore, maintaining offensive spirit is especially essential among subordinate leaders and soldiers.
- **Surveillance and reconnaissance.** Intelligence requirements for the commander are dramatically increased as forces are echeloned to the rear, and the forward combat power is subsequently reduced. Tracking the enemy situation is aggressive and accurate. The commander takes maximum action to conserve his combat power while still accomplishing his mission.
- **Mobility.** The larger the mobility differential achieved by the retrograding force over the enemy, the greater the probability of a successful retrograde operation. The corps achieves this mobility advantage by providing for corps mobility and degrading that of the enemy force.
- **Battlefield deception.** Deception is integrated into all aspects of retrograde operations to cover movements of friendly units and to enhance the possibility of surprise. Deception operations target the enemy force to cause indecision and delay enemy actions and to prevent him from concentrating combat power at a friendly weakness.
- **Liaison.** Liaison between higher, adjacent, and subordinate headquarters is critical considering the degradation of communications during large unit movements.
- **Rear operations.** Maximum efficiency of terrain management is essential during retrograde operations.

Ž Logistics operations. Logistics support challenges are intensified by the requirement to move logistics bases while still sustaining the corps.

CORPS ENGINEER SUPPORT

The corps engineer contributes to corps retrograde operations by working with the corps staff to focus intelligence-collection efforts on key information requirements. These requirements indicate enemy strengths, weaknesses, and intentions. The corps engineer staff assists the corps G2 cell in analyzing combat intelligence, particularly enemy engineer activities (for example, a delaying division may report a concentration of low-density breaching assets indicating the location of the enemy's main effort). The corps engineer staff also assists in developing high-value targeting for corps deep-strike assets (for example, he may plot the location and employment of enemy assault bridges, recommend their location as a PIR, and recommend their destruction as an HVT).

Corps engineer support to corps retrograde operations is crucial. The engineer's dominant role is achieving superior mobility over the enemy. Engineers at all levels focus on increasing the mobility differential between the retrograding corps and the enemy force. Corps engineers accomplish this by improving routes, constructing combat trails, repairing or replacing destroyed or underclass bridges, breaching minefield and other obstacles, and clearing routes of damaged or destroyed vehicles. As part of degrading enemy mobility, corps engineers supplement covering-force and rear-guard-force engineers by installing obstacles to disrupt or block enemy movement and to allow friendly forces to break contact and not become decisively engaged. Corps engineers in rear areas emplace obstacles for subsequent defensive positions for the covering force and rear-guard forces. Priority is given to using point obstacles. Control and execution of corps reserve demolition obstacles are essential. To protect the force, corps engineers augment covering-force and rear-guard-force engineers by assisting in the preparation of protective fortifications for combat vehicles. Engineers in rear areas prepare subsequent positions.

RELIEF IN PLACE

A relief in place is a combat operation in which all or part of a corps in a combat area is replaced by another corps. It is normally ordered when the relieved unit is either in a hasty or deliberate defense. The relieving unit usually assumes the same defensive responsibilities and initially deploys the same as the relieved corps.

CONSIDERATIONS

Key considerations in planning and executing a relief in place are—

- **Secrecy.** Because of the inherent vulnerabilities created by a relief in place, the operation is concealed from the en-

emy as long as possible. Deception and OPSEC are all-important from the outset.

- **Speed.** Relief-in-place operations are extremely vulnerable to enemy spoiling attacks once they begin. Unnecessary delays during the execution are avoided to prevent giving the enemy time to acquire, target, and mass fires on the relief.
- **Control.** Intermingling of forces places increased demands on corps C2, particularly if enemy contact is made during the relief in place.

CORPS ENGINEER SUPPORT

Corps engineers contribute most to the relief in place by assisting the corps in achieving speed and control. As the two corps G3s collocate to develop the maneuver plan for the relief in place, the collocated corps engineer staffs develop a tied scheme of engineer operations. Both corps engineer staffs fully understand the scope of the mission, including the defensive plan and the concept for the relief in place, in order to determine engineer tasks needed to maintain speed and control.

Mobility Support

Both staffs recommend engineer task organizations that provide in-stride mobility operations to brigades moving to, through, and from friendly defensive positions. A review of the relieved unit's defensive plan overlaid with the relief-in-place concept is conducted. The routes and avenues for entering and exiting units are clearly identified and marked, with mobility requirements being determined for each route. The relieved corps has the responsibility to fully prepare the routes through its AO. The relieved corps engineer staff allocates mobility resources to assist in preparing these routes for movement. Additionally, both corps engineer staffs ensure their respective corps have the capability to conduct in-stride breaching operations in the event lanes are closed during movement.

Obstacle Turnover

The relieved corps engineer staff consolidates and provides obstacle locations, configuration, and composition to the relieving unit. The two corps engineer staffs develop detailed plans for the turnover of corps reserve demolition obstacles, corps obstacle zones, and planned ORAs. When developing the obstacle-turnover plan, the relieved corps engineer staff requires detailed and current status on the obstacle belts and zones in his AO. They receive updated obstacle reports from all subordinate units and compile a complete list of all individual obstacles emplaced in the corps area and updates the corps obstacle overlay. This information is then passed to the relieving corps engineer staff. Both staffs determine the details of how existing corps reserve demolition obstacles or those obstacles being emplaced will be exchanged. The presence of engineer LOs at every echelon of the relieving unit down to the maneuver company or team level is critical to the speed and control of obstacle turnover. Upon linkup, the engineer LOs from the relieving units become thoroughly familiar with the existing obstacles, including the direct- and indirect-fire control measures integrated with the obstacles. The engineer LO also assists the relieving maneuver commander in integrating obstacles into his defense plan and improving unit defenses against subsequent enemy attacks.

PASSAGE OF LINES

A passage of lines is an operation in which one force moves through another. A passage of lines can be conducted forward or rearward. The corps as a whole may participate in a passage of lines as the passing or stationary force. Additionally corps offensive and defensive operations often include passage of lines involving subordinate units. An example of a corps forward passage of lines is when a corps, as an operational or theater reserve, conducts a counterattack through friendly forces in contact

with the enemy. An example of a rearward passage of lines is when a corps-controlled covering force passes through and transfers combat responsibility to MBA divisions.

PLANNING

Successful passages of lines are characterized by detailed, centralized planning and decentralized execution. The passing of control between passing and in-place corps or the corps's

subordinate units is one of the key considerations in any passage of lines. The commanders of the corps involved establish a mutually agreed-upon event that triggers the passage of control. Once control is passed, the passing corps exercises tactical control (TACON) over the in-place corps until all of its forces are beyond the direct-fire range of the in-place forward divisions. However, during a rearward passage of lines, control is passed from the rearward passing unit to the in-place corps unit. Forces in the rearward-passing corps come under TACON of the in-place corps once they are committed to the passage routes or corridors. Whether conducting a forward or rearward passage, the in-place corps has the responsibility to provide mobility for the passing unit along cleared routes or corridors through its sector.

CORPS ENGINEER SUPPORT

The corps engineer and his staff thoroughly understand when engineer fictional and unit control is passed, the disposition of engineer forces, and engineer missions at the time of passage. Close coordination and joint planning between corps engineer staffs are critical to the success of the passage of lines. When control is passed between corps, the corresponding corps engineer brigade commander may assume TACON of all engineer forces of the passing or in-place corps. The corps engineer brigade commander can then task engineers of the adjacent corps based on immediate requirements during passage. This is critical in the forward passage of lines, since it affords the passing corps engineer brigade commander with a means of accomplishing unforeseen engineer tasks with minimal impact on engineer support to the subsequent attack.

Collocated Corps Engineer Staff Planning

The corps engineer staffs of both passing and passed corps collocate during the planning and execution of the passage of lines. They focus initially on exchanging information including individual obstacle locations and routes

through the sector. This information also includes the details and execution criteria for corps-directed reserve demolition targets and situational obstacles. The passing corps engineer staff then ensures dissemination of the information to subordinates through coordination with the G3 and instructions in the corps OFORD, engineer annex and overlays. C2 of both passed and passing corps engineer units during the passage of lines transfers to the corps exercising TACON. The corps engineer staff of the corps with TACON facilitates control of engineer units during planning and execution of the passage by having an accurate status of all engineer assets, activities, and obstacle control measures in the sector.

in-Place Corps Engineer Execution

The in-place corps engineer staff conducts a complete analysis of the passage-of-lines concept of operations. The in-place corps normally tasks subordinate maneuver units to prepare the passage routes or corridors. The in-place corps engineer staff recommends a task organization of engineer forces to the divisions, separate brigades, and cavalry regiment based on assets needed to clear assigned routes and corridors. Clearing operations are conducted prior to the initiation of the passage. Additionally the in-place corps engineer staff plans the closure of lanes through obstacles, if required, once the passage is complete.

Passing Corps Engineer Execution

The passing corps engineer staff task-organizes corps engineer assets to assist in-stride breaching operations prior to the passage of lines. This ensures rapid support for mobility operations and continuation of the passage in the event a route is shut down during the mission. Creating lanes through the in-place corps's obstacles requires permission from the corps exercising TACON. Authority to reduce friendly obstacles in response to an immediate tactical situation may be given to the corps's subordinate units. This authority is included in the coordinating instructions of the corps

order. Under all circumstances, this action is reported to the passed unit so that the obstacle can be repaired. The passing corps engineer

staff closely monitors the passage during execution to advise both corps commanders on the impact of such occurrences.

ENCIRCLED FRIENDLY-FORCE OPERATIONS

From the corps's perspective, encirclement is of concern whether it pertains to all or a portion of the corps. A unit is considered encircled when all ground routes of evacuation and reinforcement have been cut off by enemy action. A unit may become encircled when it is—

- Ordered to remain in a strong position on key terrain to deny the enemy passage through a vital choke point following an enemy breakthrough.
- Given a mission of becoming encircled as part of a larger plan.
- Cut off from friendly forces unintentionally through its own maneuver, errors, exhaustion, or other cause.

CORPS COMMANDER RESPONSIBILITIES

Once encircled, the corps commander basically has three options: breakout defend, or exfiltrate. The decision to breakout to the rear or to continue the attack deep, defend encircled, or exfiltrate must be made promptly and executed with resolve. The longer a force remains encircled, the more depleted it becomes and the more organized and stronger the containing enemy becomes. The decision on which option to take will be based on the intent or orders of the higher commander. Prior to conducting any of these options, the corps commander reestablishes an effective chain of command, develops a viable perimeter defense to preserve what forces are available, and plans subsequent operations. In order to reorganize and consolidate forces effectively in the encircled AO, the corps commander—

- Establishes security.

- Reestablishes communications with higher headquarters and within units.
- Continues to employ intelligence assets to assess the immediate threat and ongoing enemy rear operations.
- Establishes a reserve.
- Reorganizes fire and logistics support.
- Limits vulnerability to NBC weapons.
- Maintains morale.
- Continues improving the defense.

CORPS ENGINEER SUPPORT

Corps engineers will play a very important role in any of the options selected. A thorough understanding of the operation and input into the planning process by the corps engineer SW is essential. Of significance to engineers will be the conservation of corps breaching, bridging, and obstacle-emplacement equipment Class III POL; Class IV materials; and Class V mines and demolitions. As resupply will probably be sporadic, disciplined use of available resources will be paramount. While encircled, corps engineer units assist greatly in improving the encircled force's defense, reducing vulnerability to fires, and providing mobility assets to reconnaissance forces.

BREAKOUT OPERATIONS

The attack to breakout requires that the corps maintain a simultaneous defense in other areas of the perimeter. To do this, the corps commander must—

- Ž Deceive the enemy.
- Exploit gaps and weaknesses.
- Ž Exploit limited visibility.
- Ž Organize the breakout force with necessary attack and guard components.
- Ž Coordinate internal and external supporting attacks.
- Ž Concentrate overwhelming combat power at the breakout point.
- Ž Provide for forces left behind.
- Prepare for linkup operations.

In support of breakout operations, the corps engineer staff plans for—

- Ž Installing obstacles in depth to support a shrinking perimeter.
- Ž Constructing strong points and battle positions.
- Eliminating obstacles in the breakout corridor.
- Ž Maintaining evacuation routes.
- Ž Clearing drop zones for resupply.
- Ž Destroying excess ammunition and equipment.
- Supporting the breakout force with breaching, bridging, and flank obstacle-emplacements.
- Ž Conducting decontamination operations, including exit routes.
- Ž Conducting reconnaissance of exit routes.

- Supporting feints or demonstrations as part of deception.

ENCIRCLED DEFENSE

Encircled corps forces may be required to maintain and defend their positions. The corps commander considers the following:

- The mission of unit and higher headquarters.
- The terrain available for defense.
- Ž The availability of reinforcements or relief of the force before the enemy can eliminate it.
- The mobility differential of the enemy forces being greater allowing the enemy to destroy corps forces during a breakout attempt.

If the encircled force decides or is ordered to defend in place, corps engineers could be expected to—

- Provide mobility assets to reconnaissance forces.
- Continue to improve the defense by emplacing obstacles and constructing fighting positions and battle positions in depth.
- Maintain aerial resupply areas.
- Destroy excess supplies and equipment if the situation demands it.
- Perform other survivability missions as resources allow.

EXFILTRATION

If the corps is ordered to exfiltrate its encircled position, it will do so through the movement of small units over multiple routes. The paramount consideration of this operation is se-

crecy and stealth. Corps engineers may be used for--

- Construction and maintenance of combat trails and roads.
- Dust control.

Ž Reconnaissance of multiple exit routes.

Ž Destruction of excess supplies and equipment after the force has evacuated.

ENCIRCLED ENEMY FORCES

Encirclement operations are conducted to cause enemy forces to lose freedom of maneuver by denying them the capability to defend or delay in an organized manner. Additionally encircling operations seek to cut off evacuation and reinforcement routes.

The principles in developing encirclement operations are deception, rapid and sudden penetration and swift exploitation in combination with persistent frontal attacks. Deception is necessary so that the breakthrough and further exploitation may be a complete surprise to the enemy. Additionally the attack is executed such that enemy units attacked are not just defeated, but destroyed by fires alone or with fire and maneuver. The enveloping forces must be able to exploit success quickly and without stopping. Their strength enables them to quickly destroy on-coming reserves as well as inflict the defeat of forces being bypassed.

Corps engineers are deeply involved in the encirclement-operations planning process at all levels of command. This ensures the availability of engineer support required at the correct time and place in the operation. Mechanized corps engineer battalions are well suited to support the encircling maneuver forces. These could be followed by wheeled corps engineer battalions to do the follow-on tasks that are not

maneuver speed intensive. Corps bridge companies and CSE companies may also fill engineer requirements during an encirclement. Corps engineer missions during an encirclement may include—

- Obstacle emplacement to keep encircled forces confined and to prevent potential linkup by reserves.
- Route maintenance to ensure a steady flow of logistics to the encircling force.
- Assistance with decontamination operations.
- Obstacle removal to support the encircling force.
- Possible river-crossing operations.
- Support of maneuver forces in the attack.
- Ž Preparation of LAPES for aerial resupply.
- Ž Establishment of EPW compounds or holding areas.
- Participation in deception operations.

LARGE-SCALE UNIT MOVEMENT

Heavy corps, divisions, and brigades are powerful weapons in any kind of conflict as long as they have the space to move and concentrate

quickly in fast-developing situations. They can only go where the road nets or cross-country conditions allow them to march and maneuver

on multiple routes and avenues of approach. Commanders fully understand the magnitude and importance of corps-sized movements. These movements will be successful when based on anticipation and prior planning, command involvement at all levels, and ruthless discipline. Movements are considered to be either administrative or tactical, based on the likelihood of enemy contact. No matter what type of move occurs, detailed planning is involved by all participants with the G4, COSCOM, and CMCC. The movement of typical heavy corps having 25,000 vehicles can last from hours to days depending on the weather, the number of routes used, and METT-T.

Corps engineers play an important role in large unit movements. Besides moving themselves, they must also support the operation from the concept until after the movement has been completed. This responsibility falls mainly on corps engineer units so that organic division separate brigade, and cavalry regiment engineers may remain in their respective formations and be ready to support their maneuver unit operations at any time.

The corps engineer and his rear CP staff work closely with the G4, COSCOM, and CMCC to integrate engineer support with these types of movements. In a corps-sized movement, corps engineers could be expected to perform the following functions:

Ž Route reconnaissance and classification.

- Preliminary route maintenance and upgrade, including turn outs for narrow roads.

- Upgrade or construction of lateral routes.
- Establishment of refugee holding areas along the routes.
- Ž Upgrade of bridges and culverts to withstand corps loads.
- Preplacement of construction materials and equipment along the route to speed repairs.
- Ž Mine and obstacle clearance.
- Ž Construction of forward logistics bases prior to the movement.

During the movement, corps engineers position themselves at intervals along the route for—

- Assistance in clearing routes of refugee and stranded vehicles.
- Ž Performing emergency road and bridge repairs.
- Recovering disabled military vehicles.
- Dust control.
- Chemical decontamination support.

Once the movement has been completed, corps engineers quickly bring the used routes up to military standard to ensure that follow-on forces and logistics can move forward without delay to support the corps in its mission.

LINKUP OPERATIONS

The corps may be required to conduct a linkup with another force as part of a larger theater-directed operation, or it may be required to direct a linkup of subordinate units as a phase of a larger corps operation. Corps linkup operations may be conducted when—

- Maneuver forces are attacking on separate but converging axes.
- An advancing force reaches an objective area previously seized or occupied by

amphibious, airborne, air assault, or special operations forces.

- It is necessary to complete the encirclement of an enemy force or during the breakout of an encircled force.

Ž A counterattack moves in the vicinity of a stationary friendly force.

Corps engineer forces engaged in linkup operations provide needed mobility and countermobility support prior to the linkup. Following linkup, corps engineers prepare for subsequent mission support. The corps engineer and his staff integrate engineer support into all linkup operations plans. Key planning considerations include—

- Providing needed topographic and terrain-analysis products showing converging force routes and corridors along with the linkup objective area.
- Establishing engineer command or support relationships between the converging forces both during and after completion of the linkup.

Ž Establishing obstacle control measures needed with both converging forces to ensure safe passage routes and corridors.

- Updating the obstacle emplacement status of both converging forces, including corps-directed tactical obstacles and reserve demolition obstacles.
- Ensuring the availability of mobility assets needed to conduct in-stride breaches for both converging forces, along with needed countermobility and survivability assets for a hasty defense in the linkup area.
- Ensuring the availability of follow-on mission engineer support requirements after the linkup has been affected.
- Ensuring the availability of engineer liaison requirements for both converging forces to ensure effective coordination prior to and during the linkup.

Ž Constructing or improving linkup points and passage routes.

RECONSTITUTION

FM 100-9 defines reconstitution as an extraordinary action that commanders plan and implement to restore units to a desired level of combat effectiveness commensurate with mission requirements and available resources. Reconstitution transcends normal day-to-day sustainment activities, with the status of a unit being key to initiating reconstitution. Three major elements are part of reconstitution reorganization assessment and regeneration.

REORGANIZATION

Reorganization is the action of shifting resources within a degraded unit to increase its combat effectiveness. All subordinate corps

commanders conduct reorganization. They reorganize before considering regeneration. Reorganization may be immediate or deliberate, depending on time and resources available. It includes cross-leveling of equipment and personnel; matching operational weapons systems with crews; and forming composite units. Normal logistics operations continue through the reorganization process.

Corps engineer units are prepared to conduct internal reorganization operations as required during combat operations. Corps engineer companies reorganize platoons; corps engineer battalions reorganize companies and platoons; corps engineer groups reorganize battalions and separate companies; and the corps engi-

neer brigade reorganizes groups, battalions, and separate companies.

ASSESSMENT

Assessment measures a unit's capability to perform its mission. The unit commander continually assesses his unit before, during, and after operations. If he determines that the unit is no longer mission capable, even after reorganization, he notifies his higher commander. Higher headquarters can either change the mission of the unit to match its degraded capability or remove it from combat. External elements may also assess the unit after it disengages with a more thorough evaluation to determine regeneration needs and resources available.

Corps engineer commanders and their staffs continually assess the mission-capable status of their units and develop change-of-mission or regeneration plans for corps engineer units supporting close maneuver operations that may quickly become mission incapable. Other corps engineer units that become mission incapable report this information as quickly as possible to the corps engineer staff for resolution.

REGENERATION

Regeneration of corps engineer units is the rebuilding of those units. It requires large-scale replacement of engineer personnel, equipment, and supplies. These replacements may require further reorganization. Corps engineer unit regeneration also involves reestablishing or re-

placing the engineer chain of command and conducting engineer mission-essential training to get the regenerated engineer unit to standard with its new soldiers and equipment.

Other corps engineer units that are not being regenerated can support corps regeneration efforts with personnel, equipment and training support. The corps engineer and his staff work closely with the corps G3 and G4 in determining the following engineer support requirements:

- Recommending the allocation and redistribution of engineer units, personnel, and equipment.
- Participating in regeneration site and terrain reconnaissance and the site selection process.
- Ž Preparing, constructing, and maintaining regeneration sites, facilities, training areas, and access and egress routes. This includes identifying and procuring needed Class IV construction material requirements.
- Ž Developing corps engineer staff requirements and structure for the corps regeneration task force (RTF).
- Ž Providing engineers for additional regeneration site force protection, mobility, countermobility, and area damage-control support.

LARGE-SCALE DECONTAMINATION OPERATIONS

The threat of weapons of mass destruction on the battlefield cannot be overlooked. This threat knows no boundaries; it is not just limited to high-intensity conflicts fought by large armies. Many small nations now possess NBC weapons that can be delivered into a corps's AO. The potential of large-scale contamination of equipment, personnel, and terrain must not be overlooked. Most units have some de-

gree of decontamination capability but for larger operations many more assets are required.

The corps engineer and his staff coordinate engineer support requirements with the corps chemical officer for large-scale decontamination operations prior to, if possible, enemy NBC strikes. Reconnaissance of possible decontami-

nation sites is conducted, followed by deliberate planning of support at identified locations. During combat operations, the corps engineer staff closely monitors the NBC status in order to anticipate future support requirements. Corps engineer units are well suited to respond to this situation. There are many functions engineers may perform in support of decontamination operations prior to and after NBC strikes. Some of these are—

- Ž Identifying and developing water sources.
- Developing large decontamination stations, including constructing road networks, decontaminating terrain, build-

ing sumps and pits, hauling supplies and water, and maintaining routes to the site.

- Conducting route decontamination on both hard- and loose-surface roads.
- Conducting airfield decontamination of runways, parking areas, and routes.

Most corps engineer units are equipped to handle all or part of these tasks. The wheeled corps engineer battalion, combat heavy engineer battalion, and CSE company have bulldozers, graders, loaders, heavy trucks, and water distributors that can support most decontamination operations.