CHAPTER 2
COMMAND AND CONTROL

(General) Walker knew very well that these forces could not stop a major CCF offensive. His purpose in deploying the 2d Division northeasterly was to give the ROKs moral support and prevent a disastrous ROK bugout. Meanwhile, he continued drawing plans for a deep withdrawal to a line at the Kum River.

On December 22 (1950) Walker called the engineer Pat Strong to Eighth Army's tactical CP in Seoul. He gave Strong orders to prepare for a "scorched earth" policy. He would blow up "every bridge and culvert" on the railways and highways, "every foot of railroad line, " and a huge "tidal lock" at Inchon. Strong was aghast. He viewed these orders as utterly defeatist, "the scorched earth policy of an army that would never return. " He did not have sufficient resources to rebuild these structures should Eighth Army regain the offensive. For that reason he "pleaded" with Walker to restrict demolition to "key bridges" and merely a single span in other bridges and, since the U.S. Navy controlled the seas and would deny the CCF use of Inchon, to spare the tidal lock, which would take "months" to rebuild. But Walker refused to change the order. . .

A description of the withdrawal from the Yalu River, from the book, The Forgotten War, America in Korea 1950-1953, by Clay Blair.

Corps engineer C2 is the exercise of leadership through a system of organizations, facilities, and processes that plans, directs, controls, and coordinates corps engineer operations. Effective corps engineer C2 is crucial to providing the corps commander with responsive engineer support throughout the corps's AO. It enables the corps engineer brigade commander to integrate engineer plans into future operations as well as to synchronize the effort involved in the current fight. This chapter focuses on establishing effective engineer C2 with the corps. It draws on the C2 principles and structure outlined in FMs 101-5 and 100-15.

THE CORPS ENGINEER BRIGADE COMMANDER AND HIS STAFF

COMMAND

Corps battles are the key to tactical and operational campaign success. Personal leadership is the most vital component of combat power and has the most critical impact upon the outcome of battles and campaigns. FM 101-5 describes the essential concepts of command-authority and responsibility. Commanders can delegate authority to subordinate commanders; however, they retain responsibility at all times. Command is personal, and a commander must take his role seriously. Battle command has two vital components: decision making and leadership. Commanders command one level down and monitor two levels down.

The corps engineer brigade commander provides the purpose, direction, and motivation for his soldiers to accomplish the difficult and dangerous engineer tasks that support corps operations. The brigade commander determines what his leadership team and subordinate engineer organizations need to be able to do in war, establishes or reinforces standards, and then resources and trains the corps engineer forces.

The corps engineer's role as both a brigade commander and corps special staff officer provides unique leadership challenges. The brigade commander positions himself where he can best command engineer support for the corps commander. In his role as commander, he is at the scene of the engineer main effort. He promotes command presence that enhances the morale of corps engineer forces. The brigade commander is also the corps commander's engineer special staff officer, directly accessible to the corps decision makers. He assists the corps commander by controlling the total engineer fight, anticipating problems, providing timely recommendations, and participating in initial future planning. He must balance his time commanding and controlling subordinate corps engineer units with his time needed to be with corps decision makers.

CONTROL

FM 100-5 states that commanders use control to regulate forces and functions on the battlefield in order to execute the commander's intent. A commander derives the authority to control another unit from his command responsibility. A supported unit commander, such as the maneuver division commander, has the authority to coordinate directly with supporting commanders in order to synchronize his plan and adjust its execution. The supporting commander must accomplish these tasks for the supported commander and is responsible for the internal control of his unit. Unit task organization, with designated command and support relationships, prescribes the supporting commander's authority over other commanders. Commanders can use forms of procedural controls for indirect purposes to accomplish clear, easily understood tasks. These include maneuver graphics, concepts of operation, mission orders, regulations, doctrine, and standing operating procedures (SOPs) to control subordinate units' actions. Positive controls are used for direct purposes to accomplish complex or vague tasks. These include setting times for mission accomplishment, committing reserves, and implementing changes to plans.

In advance of events, the corps commander establishes the conditions he wants to obtain at the conclusion of the battle or campaign. His concept of the operation includes his intent his vision of the end conditions, why those end conditions are necessary and how the corps will achieve those results. This concept of the corps operation provides the focus for all corps engineer operations and extends the corps commander's intent throughout the entire engineer force. All corps engineer leaders maximize decentralization of engineer support to the corps. They issue engineer orders that clearly indicate what must be done, but provide subordinates with maximum latitude as to how to get it done. They promote bold, innovative, risk taking and the immediate use of opportunities within the context of the corps engineer brigade and corps commander's intent.

The corps engineer brigade commander develops his engineer concept of the operation that provides the basis for engineer task organization, scheme of engineer support tasks to subordinate engineer units, engineer work areas, synchronization, and identification of critical collateral engineer operations. Success in the execution of the engineer concept requires the brigade commander's personal attention and perseverance, his ability to recognize the need for changes or modifications to the engineer concept, and his ability to affect the necessary changes in a timely manner. He formulates a new engineer concept or revises it whenever there is a changing corps mission or situation.

He continuously analyzes his engineer mission and maintains a continuous engineer estimate and engineer battlefield assessment (EBA), modifying his engineer concept over time as the need arises. The corps engineer visualizes the large and complex operation of his own engineer force and corps maneuver and logistics forces (as well as that of the enemy) and projects that visualization into the future. The engineer concept is sufficiently detailed so that the staff can develop the plan and specific engineer missions for subordinate engineer units so that they can take actions to support the plan, even in the absence of subsequent guidance. Several iterations may be required to clearly refine the engineer concept.

An engineer control process achieves agility by overcoming the inherent perception of engineers being "tied to the terrain. " To enhance this agility the engineer brigade commander controls subordinate engineer forces from any location on the battlefield. He provides a responsive control structure by organizing the corps engineer brigade staff, establishing engineer control facilities, and defining the engineer control process used. He effectively uses his engineer control organizations to hear, see, and understand all engineer battlefield missions within the corps. The corps engineer control system provides timely and accurate information through the use of periodic engineer situation reports (SITREPs) and other engineer battle information systems that monitor corps engineer support to the battlefield. Face-to-face discussions between the corps engineer and subordinate engineer commanders often tell much about the engineer situation. The corps engineer control system rapidly transforms the engineer brigade commander's decisions into specific directions through the corps operation order (OPORD) and engineer annex to engineer units augmenting divisions, separate brigades, and the cavalry regiment, as well as through corps engineer brigade orders to engineer units under engineer brigade control.

The corps engineer brigade commander and his staff understand the terrain and their opponent well. They know the available strategic and operational imagery products and topographic systems that provide the necessary terrain information to corps planners. The brigade commander and his staff provide recommendations to the corps commander on how to defeat various threat engineer capabilities such as bridging, breaching, and obstacle-emplacement systems.

The corps engineer brigade commander and his staff understand and are proactive with corps logistics operations. Continuous engineer input with corps logistics planners ensures that corps engineer forces are properly supported and sustained throughout campaigns and battles. In addition, extensive survivability or general engineering support to corps logistics forces is also planned and executed in a timely manner.

A well-trained, smoothly-functioning corps engineer brigade staff requires that the brigade commander develop, train, guide, and demand high standards of performance from all members of the staff in peacetime to ensure that they are properly prepared for war. This demands realistic, difficult training exercises in support of the corps, with all key engineer players present and performing their engineer functions as they would in battle. The ability to synchronize thought with the corps engineer brigade commander is more than just understanding the commander's intent. It is that single unity of thought developed through interaction with the brigade commander so that the engineer staff thoroughly understands his thought processes and how he would react in any given situation.

CORPS ENGINEER COMMAND AND CONTROL ORGANIZATION

The corps commander exercises control through the Army Battle-Command System (ABCS) from several CPs and a command group. ABCS is the battle-command system used by all tactical echelons up through the corps (see Figure 2-1 for the ABC S). The corps also provides the link between ABCS and the battle-command systems of the joint or multinational C2 systems that area part of the Army Information Systems Network (AISN) (see Figure 2-2). CPs support the corps commander by providing the structural framework to facilitate planning, directing, controlling, and coordinating the corps's operations. A separate entity called the corps command group is also formed and has specific functions and characteristics. Figure 2-3, page 2-6, graphically depicts corps and engineer CP locations.

The corps engineer brigade normally establishes a separate brigade CP under the control of the deputy brigade commander (DBC). In addition to establishing the brigade CP, corps engineer planning-and-control capability is available at each corps CP (assault, tactical, main, and rear) and is available to the corps command group as

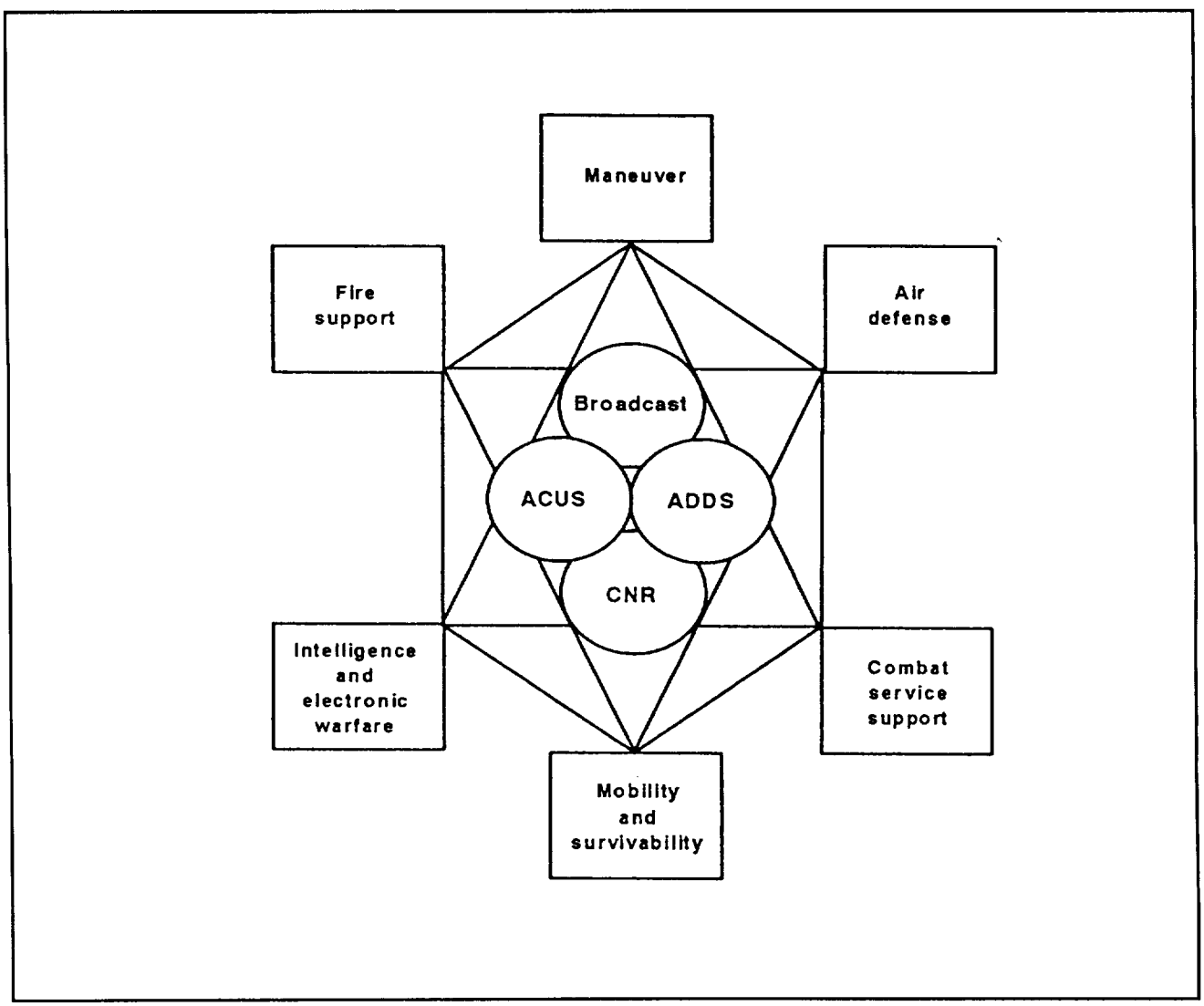


Figure 2-1. **Army** ***Battle-Command System (ABCS) architecture***

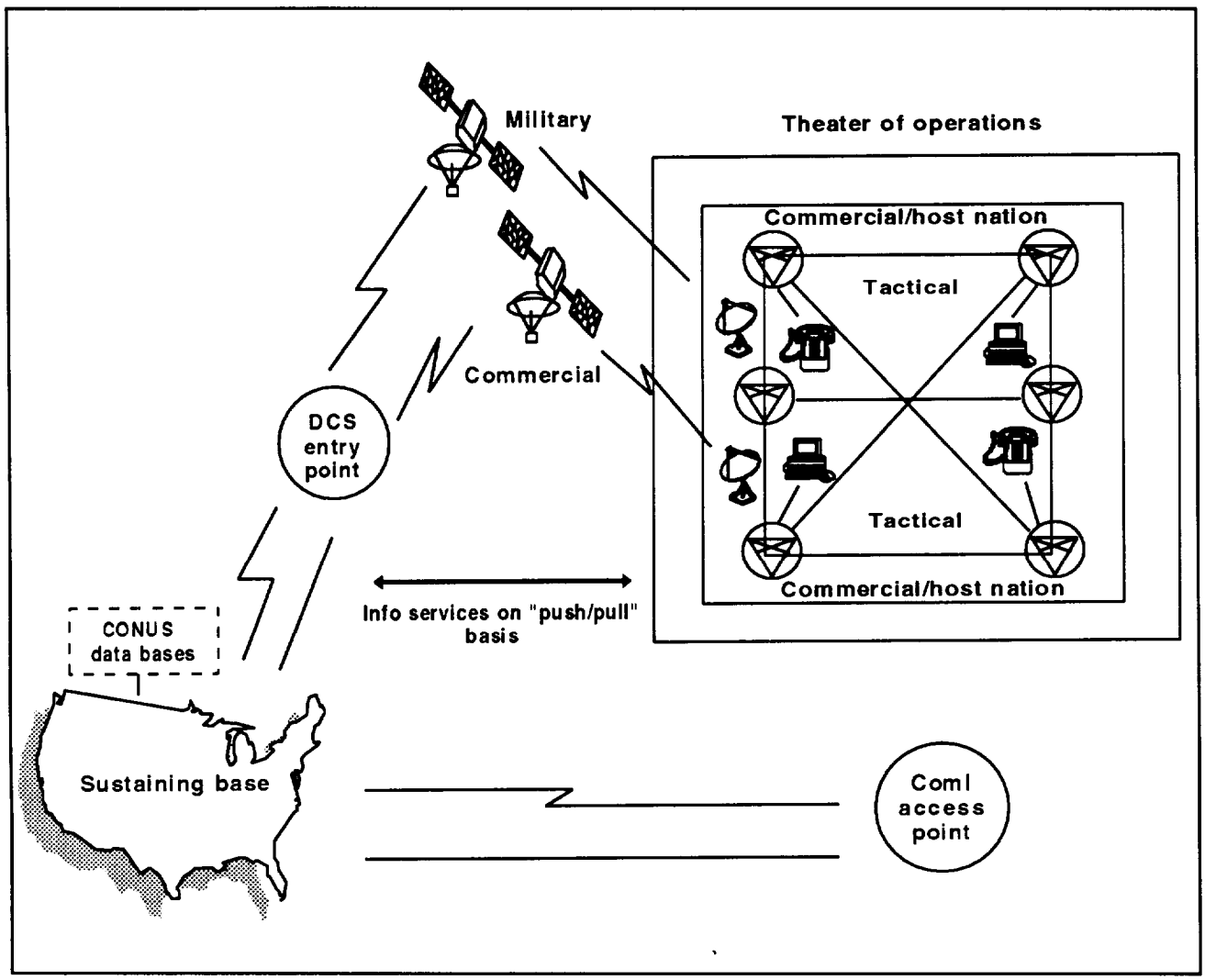


Figure 2-2. Army Information systems network

required. The corps engineer brigade has an SES element located within each corps CP. This engineer staff is under the control of the Assistant Corps Engineer (ACE), who integrates engineers into the corps planning process. The ACE provides advance warning of future corps operations through engineer channels to the corps engineer brigade headquarters and to engineer staffs at divisions, separate brigades, and the cavalry regiment. The ACE also receives current engineer force information from the organic division and separate maneuver forces. This allows the ACE to have a total picture of the overall engineer situation. The brigade CP provides current corps engineer force information to the ACE and engineer staff elements at each CP. Figure 2-4, page 2-7, shows the relationships between the brigade CP, the corps CP engineer staffs, and the brigade command group.

Corps engineer groups also establish separate group CPs under the direction of the group executive officer (XO). The group CP provides current engineer force information to the brigade CP. The group CP is structured similar to the brigade CP.

Corps engineer battalions and companies also establish separate CPs under the direction of the battalion or company XOs.

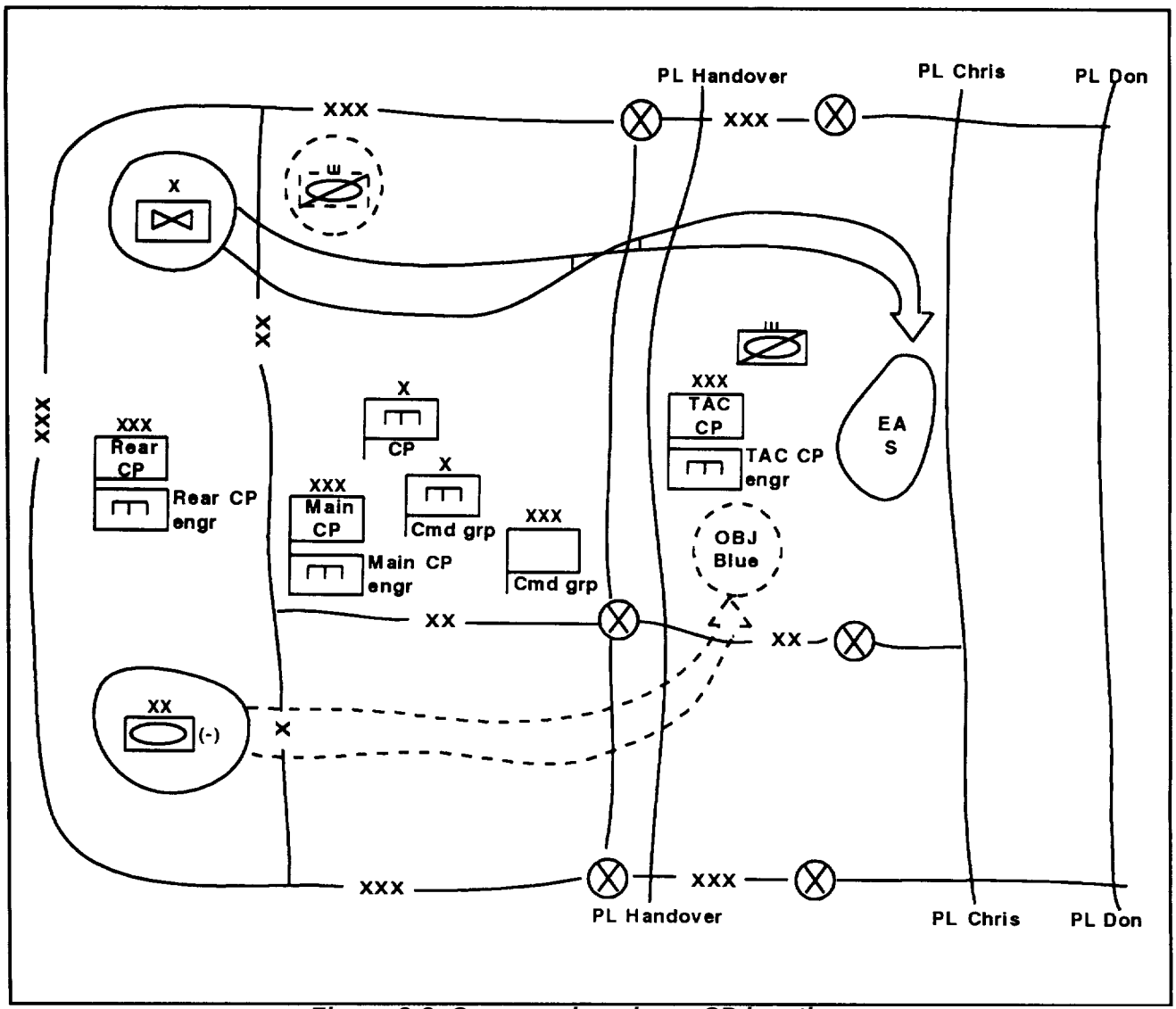


Figure 2-3. Corps and engineer CP locations

CORPS ENGINEER BRIGADE

The corps engineer brigade commander commands and controls corps engineer forces through the brigade command group and the brigade CP. Each are mutually supportive and provide timely information to the corps SES.

Corps Engineer Brigade Command Group

The corps engineer brigade forms a command group consisting of the brigade commander and those accompanying him on the battlefield. The brigade commander normally concentrates on the current engineer fight. He may locate forward with either the corps command group, the corps tactical CP, or the brigade CP. In some cases, the brigade commander may move to the decisive point of engineer operations to act as the eyes for the corps commander. The brigade commander coordinates closely and controls the engineer fight with his subordinate group and separate battalion commanders. The brigade commander may use the brigade command sergeant major (CSM) as a second set of eyes for current engineer operations. The CSM maybe positioned on a secondary engineer effort or with the brigade corn mander at the engineer main effort. The CSM

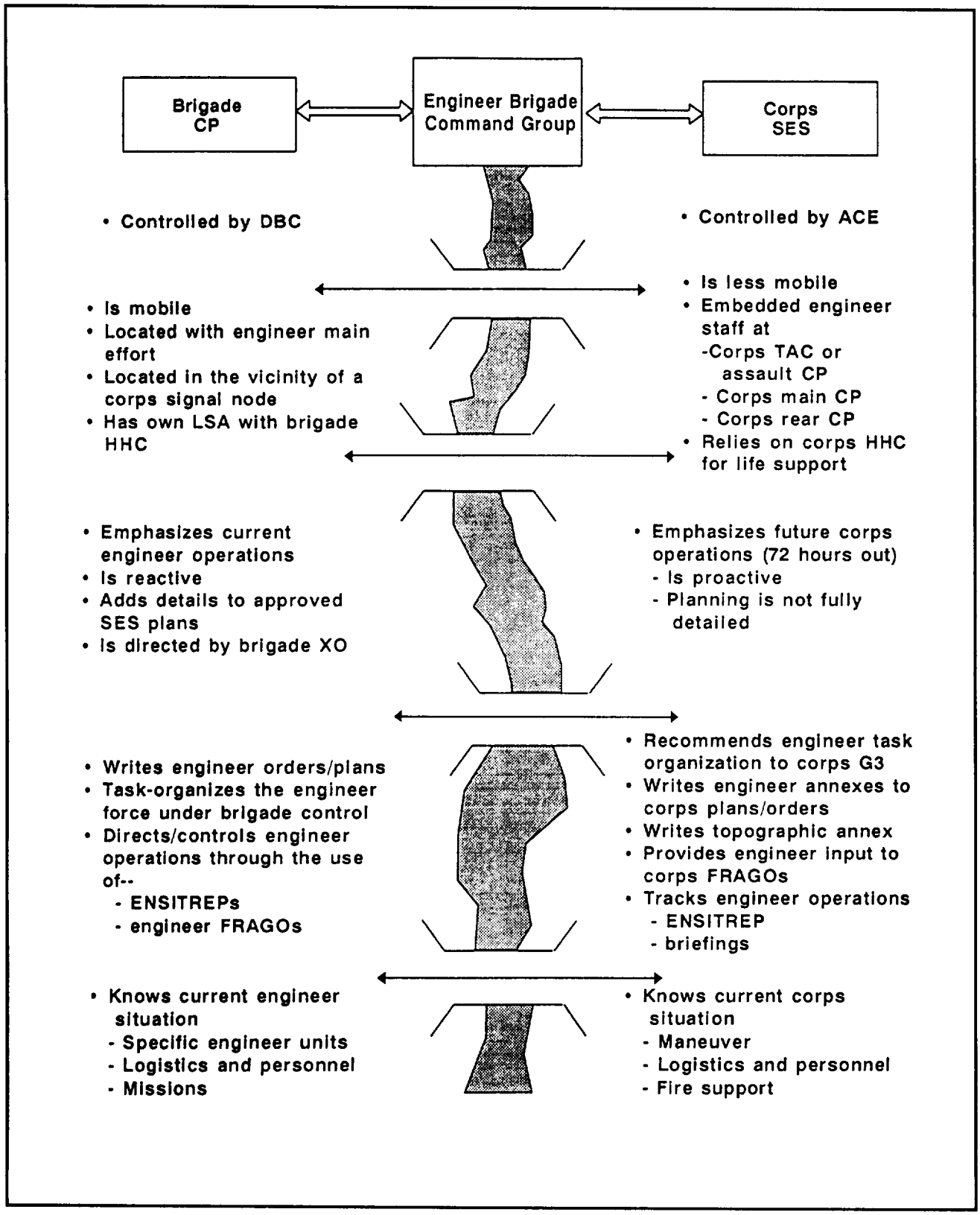


Figure 2-4. Corps engineer C2 relationships

monitors the status of engineer brigade soldiers, including their health, welfare, morale, and individual training proficiency. To be effective, both the brigade commander and the CSM require dedicated transportation and communications capabilities.

Corps Engineer Brigade Command Post

The corps engineer brigade headquarters establishes a mobile brigade CP in the vicinity of the corps engineer main effort. The brigade CP is directed by the DBC, who provides appropriate leadership, intent and guidance to the brigade CP staff. The brigade CP remains focused on current engineer operations by maintaining close coordination with corps engineer groups, separate battalions, and companies. The brigade CP consists of three elements--the corps engineer brigade tactical operations center (TOC), a signal element, and a life-support area.

Brigade TOC. Because of its size and breadth of responsibilities, the corps engineer brigade TOC has multidisciplined cells that enhance engineer coordination and synchronization. These include a current-operations cell, a plans cell, and a CSS cell. The brigade XO directs the brigade TOC.

Current-operations cell. The brigde TOC current-operations cell consists of Operations and Training Officer (US Army) (S3) personnel. Intelligence Officer (US Army) (S2) personnel, the brigade chemical officer, and representatives from the brigade Supply Officer (US Army) (S4), Adjutant (US Army) (S1), and Civil Affairs Officer (US Army) (S5). The cell's primary function is to monitor the current status of corps engineer units, including their missions, logistics, personnel, and host-nation support. The current-operations cell writes and maintains engineer brigade orders. It also maintains current threat information (including threat engineer capability). This cell works closely with the engineer staff in the corps main CP current-operations cell and maintains communications with the engineer staff at the corps assault tactical (TAC), and rear CPs. The current-operations cell also maintains continuous contact with brigade liaison officers (LOs) detailed to subordinate engineer headquarters or supported corps, joint or multinational forces and contracting agencies. The cell is responsible for brigade CP OPSEC. If, in support of corps rear operations, the corps engineer brigade commander is designated as a base cluster commander, the current-operations cell performs the additional mission of being a base cluster operations center (BCOC) for the commander. The BCOC coordinates rear-area tactical-operations support for the base cluster with the designated corps rear-area operations center (RAOC).

Plans cell. The brigade TOC plans cell consists of brigade S3 and S2 personnel and representatives from the brigade S4, S5, and S1 sections, along with liaison personnel from the corps topographic engineer company that is in DS to the corps. The plans cell writes detailed engineer plans that support approved corps plans, including construction estimates. The corps topographic company provides terrain imagery products in support of this planning. Corps EBA products and engineer reconnaissance collection plans are developed here. This cell works closely with the engineer plans cell at the corps main CP, the corps G2, and the terrain-analysis team supporting the G2.

CSS cell. The brigade TOC CSS cell consists of the brigade S4, S1, S5, chaplain, and Staff Judge Advocate (SJA) sections. The cell's primary function is to track critical engineer logistics and personnel items that support corps engineer operations. This may include critical engineer Class V demolitions and mines. Class IV supplies, critical engineer equipment shortages and maintenance, critical engineer personnel shortages, corps MSR conditions, and host-nation support. The CSS cell works closely with the corps G4, Assistant Chief of Staff, G5 (Civil Affairs)(G5) Assistant Chief of Staff, G1 (Personnel) (G1), COSCOM, and the engineer staff at the corps rear CP to resolve CSS issues. The chaplain and SJA are

considered part of the corps engineer brigade commander's personal staff and may accompany him when required.

Signal element. The corps engineer brigade communications section is responsible for connecting the brigade CP into the signal support network which includes the combat net radio (CNR), the area common user system (ACUS), the automated data distribution system (ADDS), and broadcast interface. Engineer communications systems must provide timely, accurate, secure, and reliable information flow to and from the corps engineer brigade commander, his staff, corps staff engineer elements, and higher and lower echelons. The brigade signal officer (BSO) continuously coordinates engineer signal requirements with the corps signal brigade and the corps signal officer. He is responsible for information system security (ISS) at the brigade CP. The communications section also establishes base cluster communications networks when required.

Life-support area. The corps engineer brigade HHC commander is responsible for providing secure working and living facilities for brigade CP personnel. This includes food and field services, supply and maintenance capability. The company commander is responsible for planning a tactical base defense, establishing a base defense operations center (BDOC), and interfacing with designated BCOCs and/or RAOCs. Normally, the brigade TOC is located in the vicinity of the life-support area. The company commander coordinates force protection and other security measures with the brigade TOC current-operations cell.

CORPS STAFF ENGINEER SECTION

The SES represents the corps engineer during all aspects of corps planning and execution. The SES provides embedded, timely engineer staffing support to the corps command group and each corps CP (assault, TAC, main, and rear) as required. The SES also provides timely information to the corps engineer brigade command group and the brigade CP.

Engineer Support to the Corps Command Group

The corps command group's primary purpose is to keep the corps commander informed. When separated from the corps CPS, the command group will normally consist of the corps commander and representatives from the G3, G2, and fire-support elements. The command group provides corps leadership, intent, and guidance through a small, secure, mobile CP.

The corps engineer provides representation to the command group, especially during major corps operations requiring extensive engineer support such as major river crossings, obstacle-breaching operations, and large-scale defensive preparations.

Engineer Support to the Corps Assault and Tactical Command Posts

During force-projection or fast-moving operations, the corps will normally deploy an assault CP with the subordinate maneuver units while the corps main and rear CPs initially remain at a fixed location (the home station, the intermediate staging base (ISB), or the corps rear area). After the corps main and rear CPs deploy forward, the assault CP normally becomes the TAC CP. The corps assault and TAC CPs focus on conducting corps close operations. Deep and rear operations are monitored only for their effect on close operations. The assault and TAC CPs are small and mobile, with reduced electronic signature. They are under the corps G3's control. They may be located well forward in the corps areas (such as in the vicinity of the main CP of a division conducting the corps's main attack) or with a counterattacking force during the defense. Integrated engineer support to the corps assault and TAC CPs are provided by an element from the corps engineer brigade headquarters' SES. This engineer cell fully integrates current corps engineer operations with current maneuver, intelligence, fire-support, aviation, ADA, chemical, and CSS operations. The cell's major functions are—

Ž Synchronizing engineer support of corps close operations.

Ž Writing engineer portions of corps warning orders (WARNO RDs) and fragmentary orders (FRAGOs) in support of corps close operations.

• Maintaining the current engineer situation and EBA information supporting corps close operations.

Ž Assessing the current engineer support to the tactical situation.

Ž Assisting in the acquisition of terrain imagery products needed to support corps close operations.

Ž Monitoring the status of engineer logistics support and updating logistics requirements for corps close operations.

Ž Providing close operation engineer situation information to the corps main CP engineer cell.

Ž Monitoring corps deep and rear operations for effects on engineer support to corps close operations.

• Tracking and consolidating current threat and friendly obstacle information and providing it to the corps main CP engineer cell.

Engineer Support to the Corps Main Command Post

The corps fights one simultaneous battle across the full range of the battlefield--deep, close, and rear. The normal organization of the corps CPs reflects these related activities. The main CP is organized, manned, and equipped to sustain awareness of the corps's total battle space. It predominately focuses on deep and future operations and monitors close and rear operations. The corps main CP synchronizes the battle-command system, providing continuity for corps operations. The main CP has a broader orientation and is more future oriented than the assault or TAC CPs. The main CP synchronizes the entire corps battle, conducts corps deep operations, and plans all future operations. It is normally located in a built-up area, if the situation permits, and is positioned in the forward portion of the corps rear area. The corps main CP is controlled by the corps chief of staff and is comprised of six cells: current operations, intelligence, plans, corps deep operations coordination cell (CDOCC), CSS, and headquarters cells.

Integrated engineer support to the main CP element is provided by elements from the SES under the direction of the ACE. The ACE remains focused on engineer support to future corps operations, maintaining close coordination between all corps CP engineer sections. The ACE is normally located at the corps main CP. Engineers are integrated into the current operations, plans, corps deep operations coordination, and intelligence cells of the main CP.

Main CP current-operations cell. The main CP current-operations cell's primary function is to synchronize current corps deep, close, and rear operations. It also controls deep maneuver operations and maintains the current corps situation. The main CP current-operations cell also allocates resources to current operations based on the corps commander's guidance; develops branches to current operations; and provides current situation information to higher, lower, and adjacent headquarters. In addition, the cell monitors close and rear operations through communications with the corps assault, TAC, and rear CPs. The bulk of the SES operations element is integrated into this cell. The major engineer functions in support of the main CP current-operations cell are to—

• Monitor the execution of current engineer orders and the status of engineer work in the corps area by maintaining

close communications with the brigade CP.

Ž Monitor the status of ongoing deliberate corps river-crossing and large-scale obstacle-breaching operations (including crossing-site conditions, emplaced bridging, and cleared-lane information). Provide this information to engineers located at the corps rear CP and the brigade CP.

Ž Write engineer portions and annexes to related current corps FRAGOs in coordination with the corps assault or TAC CP engineer element.

Ž Monitor the status of corps-directed obstacle zones, directed or reserved obstacles, denial targets, and scatterable mines employed by the corps.

Ž Monitor the current corps engineer logistics status, including tactical bridging and breaching equipment, engineer construction equipment and supplies, mines and demolitions, and map supplies. Provide this information to corps logistics planners and engineers located at the corps assault or TAC and rear CPs.

Main CP plans cell. The plans cell develops future operation plans as sequels to the current corps operation. The cell monitors the current situation for its impact on future operations and makes appropriate adjustments. It fully integrates future corps engineer operations with future maneuver, intelligence, fire-support, aviation, ADA chemical, logistics, and corps deep operations. The major engineer functions in support of the main CP plans cell are to—

• Plan engineer support to future corps deep, close, and rear operations (sequels) by developing courses of action for each; preparing engineer estimates and EBAs; determining limitations of engineer units providing future support; developing supporting engineer task organizations; recommending engineer work priorities based on the corps engineer brigade commander's and corps commander's intent; and writing appropriate engineer annexes to approved corps plans.

Ž Make available all pertinent topographic and terrain imagery products needed in planning future corps operations.

' Recommend corps-level control measures, to include obstacle zones, ORAs, directed or reserved obstacles, scatterable minefield delegation authority, and corps denial targets.

' Plan engineer support for corps tactical movements.

Ž Monitor the current corps engineer situation, the current threat engineer situation, and the ongoing EBA for its impact on future operations, and then adjust future engineer operational support plans as needed.

Ž Advise the corps engineer on the status and content of ongoing corps plans that are not approved or published and ensure that the corps engineer's intent and guidance is input into these working plans.

Ž Provide future corps operations information to engineer elements located at the corps assault, TAC, and rear CPs along with the brigade CP plans cell as required.

' Coordinate approved future plans with requisite theater engineer planning staffs.

' Review subordinate engineer orders and plans for compliance with the corps en-

gineer's intent and corps engineer brigade plans and orders.

Main CP CDOCC. The key to fighting simultaneously in depth is a battle-command organization that can synchronize all available means to simultaneously conduct deep, close, and rear operations. To ensure unity of effort, a single organization within the main CP, the CDOCC, is responsible for the employment of all aspects according to the commander's guidance. The CDOCC is permanently manned, as a minimum, by G3 plans, electronic warfare (EW), fire support, intelligence, and Army airspace command and control (A2C2) representatives. Additional representatives, such as the corps engineer, psychological operations (PSYOP), air defense, and air liaison, are brought in as required. The CDOCC coordinates deep operations for the corps, interfacing with the joint targeting coordination board and the corps targeting cell to provide linkage to joint and organic fires. After the commander assigns decisive points for attack by subordinate headquarters, the cell monitors and coordinates the execution of corps deep operations. The major engineer functions in support of the CDOCC are to—

- Determine high-payoff countermobility targets for nomination in support of corps deep operations.
- Monitor the employment of deep air- and artillery-delivered scatterable mines, including self-destruct times and footprint locations.
- Recommend and coordinate the employment of corps-directed artillery and air-delivered scatterable minefield in support of current corps operations.
- Synchronize corps fire support with current large-scale corps engineer operations such as river crossings, large-scale breaching, and obstacle-emplacement.
- Determine mobility and survivability requirements to support corps field artillery brigade and aviation brigade operations and movements.

Main CP intelligence cell. The main CP intelligence cell requests, collects, and analyzes threat, terrain, and weather information from all sources in order to produce and distribute combat intelligence. It conducts continuous IPB to support planning for future operations and to use as the basis for target development. As part of the deep-targeting process, the main CP intelligence cell implements the corps intelligence-collection plan and notifies the main CP fire-support and current operations cells when HVTs are detected and tracked. A topographic engineering officer from the SES is normally located in the main CP intelligence cell. His major engineer functions in support of the cell are to—

- Advise corps main CP personnel on the effective use of terrain.
- Provide weather and terrain analyses and terrain products that assist in the corps IPB process and the identification of NAIs and TAIs for corps deep operations.
- Coordinate corps topographic support requirements for surveying, terrain analysis, and reproduction with the theater topographic battalion.
- Task and prioritize the work effort of the DS corps topographic company.
- Coordinate the collection of battlefield terrain information with the corps G2/G3.
- Evaluate the availability of standard and nonstandard maps and terrain-analysis data bases covering the corps's AO. Where shortfalls exist, he determines specific requirements and coordinates the collection and creation of nec-

essary data to build the corps topographic data base.

- Prepare the topographic operations annex for corps plans and orders.

Ž Coordinate the support of two corps terrain-analysis teams from the corps topographic company; one in GS to the corps and the other in DS to the corps G2/G3.

Engineer Support to the Corps Rear Command Post

The corps rear CP conducts corps rear operations with the corps deputy commanding general (DCG) being responsible for the conduct of corps rear operations. The DCG commands and controls those units that are task organized to conduct rear operations, when required. This C2 function synchronizes rear security operations, terrain management within the corps rear area, sustainment of the corps, control of administrative moves, ADC, and other associated functions in the corps rear area.

The corps rear CP contains three components: a headquarters, an operations cell, and a CSS cell. The rear CP is normally located in close proximity to the COSCOM CP for security, life support, and ease of coordination, but both CPs are separate and distinct.

Integrated engineer support to the corps rear CP is provided by an element from the SES of the corps engineer brigade headquarters. Engineers integrate themselves into each cell of the corps rear CP as required.

Rear CP headquarters. The headquarters is composed of the DCG, his personal staff, and other personnel as designated. The corps deputy chief of staff is normally designated as the corps rear CP chief of staff to control rear CP operations. Engineer support to the headquarters provides rear engineer information, as required, through informal information and decision briefings.

Rear CP operations cell. The rear CP operations cell exercises staff responsibility for terrain management and security functions. It monitors the corps close and deep operations in order to assume control, if required, and to ensure that rear operations are responding to current and future corps requirements. The rear CP operations cell has three sections: intelligence, operations, and terrain management.

Engineers are integrated into each section, providing needed ADC expertise and obtaining needed imagery products for rear terrain management. In addition, engineers monitor the status of foreign/host-nation and contracting support for real estate acquisition and construction equipment and supplies. They also maintain the status of large-scale construction operations. They provide this information to the corps G4 and G5, the COSCOM, theater engineer planners, corps main CP engineer elements, and the corps engineer brigade S5. Engineers closely coordinate with the corps RTOC concerning base cluster defense requirements.

Rear CP CSS cell. The CSS cell consists of personnel from the corps G1, Adjutant General (AG), G4, G5, and other staff offices charged with the planning and execution of personnel and logistical operations for the corps. The CSS cell synchronizes corps sustainment operations and plans movements throughout the corps rear area. Engineers monitor the status of general engineering missions along with conditions of MSRs throughout the corps rear area. Engineers also coordinate closely with the corps movement control center (MCC) and MP to facilitate battlefield circulation.

CORPS ENGINEER GROUP

The corps engineer group C2 organization is similar to that of the corps engineer brigade CP. Depending on METT-T, corps engineer groups may be task organized in GS on an area basis in the corps rear, or they may be in a command or support relationship to a division,

separate brigade, or cavalry regiment. Because of these wide-ranging possibilities of missions, the engineer group C2 organization must remain flexible and mobile in order to provide responsive engineer information flow and direction. The engineer group C2 organization can be described in terms of the engineer group command group and three CPs: a main CP (group main CP), a tactical CP (group TAC CP), and a rear CP (group rear CP).

Corps Engineer Group Command Group

The engineer group forms a command group that consists of the group commander and those accompanying him on the battlefield. The group commander normally concentrates on the current engineer fight. He may locate forwar with a forward corps engineer battalion conducting the engineer main effort or at the group main CP. In some cases, the group commander may move to the decisive point of engineer operations to act as the eyes for the corps engineer brigade commander. The group commander coordinates closely and controls the engineer fight with his subordinate battalion and separate company commanders. He may use the group CSM as a second set of eyes on the current engineer operations. The CSM may be positioned on a secondary engineer effort or with the group commander at the engineer main effort. The CSM monitors the status of engineer group soldiers, including their health, welfare, morale, and individual training proficiency. To be effective, both the group commander and the CSM require dedicated transportation and communications capabilities.

Corps Engineer Group Command Posts

The corps engineer group normally establishes one CP, the group main CP. However, METT-T may dictate the need for the engineer group to establish a TAC or rear CP out of group assets.

Corps engineer group main CP. The engineer group headquarters establishes a mobile group main CP in the vicinity of the engineer group main effort. The group main CP is directed by the engineer group XO. When the group commander is not located at the group main CP, the XO provides appropriate leadership, intent, and guidance to the group CP staff The group main CP consists of three elements: the engineer group TOC, a signal element, and a life-support area.

Group TOC. Because of its size and breadth of responsibilities, the group TOC has multidisciplined cells that enhance engineer coordination and synchronization. These cells include the group main CP current-operations cell, plans cell, and CSS cell.

Current-operations cell. The group TOC current-operations cell consists of group S3 and S2 personnel, the group chemical officer, and rep resentatives from the group S4 and S1. The cell's primary function is to monitor the current status of corps engineer group units, including their missions, logistics, personnel, and host-nation support. The current operations cell writes and maintains corps engineer group orders. It also maintains current threat information (including threat engineer capability). This cell works closely with the engineer staff in the corps engineer brigade CP current-operations cell, subordinate engineer unit CP personnel, LOs detailed from the corps engineer brigade, and supported maneuver forces. The current-operations cell also maintains continuous contact with group LOs detailed to subordinate engineer units or supported corps maneuver forces. The cell is responsible for group CP OPSEC. If, in support of corps rear operations, the corps engineer group commander is designated as a base cluster commander, the current-operations cell performs the additional mission of being a BCOC for the commander. The BCOC coordinates rear-area tactical-operations support for the base cluster with the designated corps RAOC.

Plans cell. The group TOC plans cell consists of group S3 and S2 personnel and representatives from the group S4 and S1 sections. The plans

cell writes detailed engineer group plans, including construction estimates, and develops EBA products and engineer reconnaissance collection plans. This cell works closely with the engineer plans cell at the corps engineer brigade CP, the brigade S2, and subordinate engineer units.

CSS cell. The group TOC CSS cell consists of the group S4, the engineer equipment maintenance officer (EEMO), S1, and chaplain sections. The cell's primary function is to track critical engineer logistics and personnel items that support corps engineer group operations. This may include critical engineer Class V demolitions and mines, Class IV supplies, critical engineer equipment shortages and maintenance, critical engineer personnel shortages, MSR conditions, and host-nation support. The CSS cell works closely with the corps engineer brigade S1, S4, and S5; subordinate engineer CSS staff elements; and COSCOM support units. The chaplain is considered part of the corps engineer group commander's personal staff and may accompany him when required.

Signal element. The engineer group communications section is responsible for connecting the group main CP and, if established, a group TAC CP into the signal support network, including the CNR, the ACUS, the ADDS, and broadcast interface. Engineer communications systems must provide timely, accurate, secure, and reliable information flow to and from the corps engineer group commander, his staff, the brigade CP subordinate engineer unit CPs, and supported maneuver forces, when required. The group signal officer continuously coordinates engineer signal requirements with the corps engineer BSO. The group signal officer is responsible for ISS at the group CP. The communications section also establishes base cluster communications networks when required.

Life support area. The engineer group HHC commander is responsible for providing secure working and living facilities for group main CP personnel. This includes food service, supply, and maintenance capability. The company commander is responsible for planning a tactical base defense, establishing a BDOC, and interfacing with designated BCOCs and/or RAOCs. Normally, the group TOC is located near the life-support area. The company commander coordinates force protection and other security measures with the group TOC current-operations cell.

Corps engineer group TAC CP. The engineer group commander determines the need for forming a group TAC CP based on METT-T. For example, a group TAC CP may be needed to command and control engineer support to an attacking light division, providing forward engineer command and staff presence. The group TOC provides the nucleus of personnel to form a group TAC CP under the group S3's control. Vehicles and communications systems needed to forma group TAC CP are taken from organic engineer group equipment. The group TAC CP must be as maneuverable and survivable as the supported force, and it must be able to communicate the necessary engineer information to higher, lower, and adjacent echelons in a timely manner.

Engineer group rear CP. The engineer group commander determines the need for forming a group rear CP based on METT-T. For example, a group rear C P may be located in the vicinity of the division support command (DISCOM) to control engineer logistics support from the corps. The group TOC CSS cell provides the nucleus of personnel to work in the group rear CP under the group S4's control. Vehicles and communications systems needed to form a group rear CP are taken from organic engineer group equipment. The group rear CP must be as maneuverable and survivable as the supported force, and it must be able to communicate the necessary engineer information to higher, lower, and adjacent echelons in a timely manner.

Engineer Group Command and Control Special Employment Considerations

The engineer group normally employs the C2 organization described previously. There are

several circumstances which may modify the way the engineer group conducts its C2 mission. A few of these are described in the following paragraphs, including C2 of corps engineer support to a division and C2 of large-scale mobility or construction operations.

Group C2 of corps engineer support to a division. Light divisions have austere organic engineer capability. Because of this, they are normally augmented by a corps engineer group that commands and controls several corps engineer battalions and separate engineer companies. In most cases, armored and mechanized divisions have an organic engineer brigade that can adequately control corps engineer unite operating in the division area. An engineer group may be task organized to an armored or mechanized division in order to control specific engineer missions such as large-scale mobility operations. An engineer group may also be required when the number of task-organized corps engineer units to the division exceeds the division engineer brigade's C2 capability. When an engineer group is task organized by METT-T to control corps engineer support to a division, several key considerations must be made, including—

- How will the engineer group commander work with, and possibly for, the division engineer?
- Will the engineer group receive missions through the Assistant Division Engineer (ADE) staff and division G3, or will it be tasked directly by the division engineer brigade or battalion S3?
- Ž Will EWLs be established, defining the areas where corps engineers will work in the division area?
- Will division engineers be task organized in a mix with corps engineers?
- ' Will any portion or all of division engineer unit battalions be placed under the control of the engineer group?
- Ž Will the engineer group need to form a group TAC CP? If so, where will it and the group main CP be located?
- ' Does the group have high precedence assigned to its communications links supporting the division?
- ' How long will the engineer group be supporting the division?
- ' What command and support relationships are to be used for the engineer group and subordinate corps engineer units?
- ' What communications and other equipment support will the engineer group need to provide adequate C2 interface with the division?
- ' What are engineer LO requirements?
- ' What logistics control considerations are needed to support an engineer group and its subordinate units in the division area?

An engineer group may provide the manpower to staff a light division rear CP due to austere organic capability The following should be considered:

- What is the relationship between the engineer group, the assistant division commander for support (ADC-S), the division G4, and the DISCOM commander?
- How long will the engineer group be supporting the light division rear CP?
- Who will control ongoing corps engineer support missions to the light division?

Group C2 of engineer support to large-Scale mobility operations. Corps engineer groups are especially suited to control the massive engineer support required of large-scale mobility operations such as obstacle breaching and deliberate river crossings as described in FMs 90-13 and 90-13-1. The engineer group can provide positive control of engineer units and equipment during these operations. When an engineer group is task organized by METT-T to command and control corps engineer support to large-scale obstacle-breaching or deliberate river-crossing operations, several key considerations must be made, including—

- Will the engineer group be task-organized as part of the maneuver crossing force?
- Will the engineer group accompany the maneuver force following the crossing?
- Will the engineer group commander be the crossing-force engineer?
- Will the engineer group need to form a group TAC CP?
- Will the engineer group remain in GS to the corps, providing crossing support on an area basis to all units passing through the crossing area?
- Will the engineer group commander serve as the crossing-area engineer?
- What is the relationship between the group commander and engineers crossing with the maneuver force?
- Where should the group TAG and main CPs be located for maximum control of the engineer forces in the crossing area?
- Does the group have high precedence assigned to its communications links supporting the crossing?
- How long will the engineer group be supporting the crossing?
- What command and support relationships are to be used for the engineer group and subordinate corps engineer units?
- What are engineer LO requirements?
- What engineer control measures are needed throughout the crossing area?
- How much engineer group C2 will be needed during crossing rehearsals?
- What communications and other equipment support will the engineer group need to provide adequate C2 interface with the crossing force and follow-on forces?
- What C2 logistics considerations are needed to support the corps engineer group and subordinate units in the crossing area?

Group C2 of large-scale construction operations. Engineer groups are especially suited to control the massive engineer support required for large-scale construction operations in the corps area such as forward logistics bases, airfields, and so forth. The engineer group can provide positive control of engineer units and equipment during these operations. When an engineer group is task organized by METT-T to command and control corps engineer support to large-scale construction operations, several key considerations must be made, including—

- Will the engineer group need augmentation from theater engineers for construction management, contracting, and real estate acquisition capability?
- Will the engineer group remain in GS to the corps for an extended period of time? If not, how will the group pass ongoing

construction missions to follow-on theater engineer forces?

- How will the engineer group acquire host-nation construction support? What are liaison requirements?
- Does the group have high precedence assigned to its communications links supporting the construction effort?

CORPS ENGINEER BATTALION

Corps engineer battalions (mechanized, wheeled, airborne, and light) may be task organized in various ways, including providing GS to the corps on an area basis, along an MSR, or supporting logistics bases in the corps rear; supporting forward maneuver brigades and the cavalry regiment in a DS, operational control (OPCON), or attached status; or controlling separate engineer companies, theater engineer teams, and detachments. Because of these wide-ranging possibilities of missions, the corps engineer battalion C2 organization must remain flexible and mobile to provide responsive engineer information flow and direction. The corps engineer battalion C2 organization can be described in terms of the corps engineer battalion command group and corps engineer battalion CPs. Each maybe separated or collocated depending on METT-T.

Corps Engineer Battalion Command Group

The corps engineer battalion forms a command group consisting of the battalion commander and those accompanying him on the battlefield. The battalion commander normally concentrates on the current engineer fight. He may locate forward with a forward corps engineer company conducting the engineer main effort or at the battalion main CP. In some cases, he may move to the decisive point of engineer operations to act as the eyes for the corps engineer group or brigade commander. The battalion commander coordinates closely and controls the engineer fight with his subordinate company commanders.

The battalion commander uses the battalion CSM as a second set of eyes on current engineer operations. The CSM maybe positioned on a secondary engineer battalion effort or with the battalion commander at the engineer battalion main effort. The CSM monitors the status of engineer battalion soldiers, including their health, welfare, morale, and individual training proficiency. Both the battalion commander and the CSM require dedicated transportation and communications capabilities.

Corps Engineer Battalion Command Posts

Based on METT-T the corps engineer battalion may establish one or all of the three types of CPs (main, TAC, and rear).

Battalion main CP. The corps engineer battalion establishes a main CP in the vicinity of the engineer battalion main effort. The main CP is directed by the engineer battalion XO. When the battalion commander is not located at the battalion main CP, the XO provides appropriate leadership, intent, and guidance to the battalion main CP staff. The battalion main CP staff consists of the following battalion personnel: the XO, the S3, the assistant S3, the operations sergeant, the S2, the intelligence sergeant, the chemical noncommissioned officer (NCO), the S4, and a representative from the S1. The main CP's primary function is to monitor the current status of corps engineer battalion missions, logistics, and personnel. The main CP staff writes and maintains corps engineer battalion orders. It also maintains current threat information (including threat engineer capability) and executes EBA products and engineer reconnaissance collection plans and is responsible for CP OPSEC. The main CP staff works closely with the engineer staff in the corps engineer group main CP, supported maneuver CPs, and subordinate engineer unit CP personnel. It also maintains continuous contact with battalion LOs detailed to subordinate engineer units or supported corps maneuver forces. If, in support of corps rear operations, the corps engineer battalion

commander is designated as a base cluster commander, the operations cell performs the additional mission of being a BCOC for the commander. The BCOC coordinates rear-area tactical-operations support for the base cluster with the designated corps RAOC.

The corps engineer battalion communications section is responsible for connecting the battalion main CP, battalion rear CP and, if established, the battalion TAC CP into the signal support network, including the CNR, the ACUS, the ADDS, and broadcast interface. Engineer communications systems must provide timely accurate, secure, and reliable information flow to and from the corps engineer battalion commander, the battalion staff at each CP, the group main CG subordinate engineer unit CPs, and supported maneuver forces, when required. The battalion signal officer continuously coordinates engineer signal requirements with the corps engineer group signal officer and is responsible for ISS at each CP. The communications section also establishes base cluster communications networks when required.

Battalion TAC CP. The corps engineer battalion commander determines the need for forming a battalion TAC CP based on METT-T. For example, a battalion TAC CP maybe needed to command and control engineer support to a division maneuver brigade, separate maneuver brigade, or cavalry regiment, providing forward engineer command and staff presence. The battalion TOC provides the nucleus of personnel to work in the battalion TAC CP under the battalion S3's control. Other personnel that may be required at the TAC CP include the battalion S2 and the signal officer. Battalion TAC CP vehicles and communications systems must be compatible with the maneuver force being supported. A secure communications three-net capability is required (higher, lower, and supported).

Battalion rear CP. A battalion rear CP is formed to control engineer logistics support from the corps, It maybe located in the vicinity of a brigade forward support battalion (FSB) headquarters or in the vicinity of a COSCOM supply point Depending on METT-T T, the battalion rear CP may collocate with the battalion main CP. The battalion rear CP must be as maneuverable and survivable as the supported force, and it must be able to communicate the necessary administrative and logistics engineer information to higher, lower, and adjacent echelons in a timely manner. The battalion rear CP is under the HHC commander's control and consists of the EEMO, S1, S4 representative, surgeon, and chaplain. The battalion rear CP's primary function is to track critical engineer logistics and personnel items that support corps engineer battalion operations. This may include critical engineer Class V demolitions and mines, Class IV supplies, critical engineer equipment shortages and maintenance, critical engineer personnel shortages, MSR conditions, and host-nation support. The battalion rear CP works closely with the corps engineer group CSS cell, subordinate engineer CSS staff elements, and COSCOM support units. The chaplain is considered part of the corps engineer battalion commander's personal staff and may accompany him when required. The battalion surgeon supervises battalion medical-support operations. The HHC commander provides food-service, supply and maintenance support to each CP. He is also responsible for planning a rear base defense, establishing a BDOC, and interfacing with designated BCOCs and/or RAOCs. The company commander also coordinates force protection and other security measures for the battalion rear CP.

Command and Control of Corps Engineer Battalion Support to a Division, Division Brigade, Separate Brigade, or Cavalry Regiment

Light divisions, separate maneuver brigades, and cavalry regiments have austere organic engineer capability Even armored or mechanized divisions with an organic engineer brigade do not possess all of the engineer capability they need. Any of these may be reinforced

by corps engineer battalions. When a corps engineer battalion is task organized by METT-T to support a division, division brigade, separate corps brigade, or cavalry regiment, several key considerations must be made, including—

- How will the engineer battalion commander work with and possibly for the division, brigade, or regimental engineer? Which one will be the division, brigade, or regimental engineer?
- Will the engineer battalion receive missions through the maneuver unit G3/S3, or will it be tasked directly by the organic engineer staff?
- Will EWLs be established, defining the areas where corps engineers will work in the division, brigade, or regimental area?
- Will division, brigade, or regimental engineers be task organized in a mix with corps engineers?
- Will any portion of the division, brigade, or regimental engineers be placed under the corps engineer battalion's control?
- Will the engineer battalion need to form a battalion TAC CP? If so, where will it and the battalion main CP be located?
- Does the battalion have high precedence assigned to its communications links while operating in the division, brigade, or cavalry regiment area?

Ž How long will the engineer battalion be supporting the division, brigade, or regiment?

- What command and support relationships are to be used for the engineer battalion and subordinate corps engineer units?
- What communications and other equipment support will the engineer battalion need to adequately provide C2 interface with the division, brigade or regiment?

Ž What logistics control considerations are needed to support a corps engineer battalion in the division, brigade, or cavalry regiment area?

CORPS ENGINEER COMPANY

Corps engineer companies (line, bridge, LE, and CSE) may be task organized in various ways, including providing GS to the corps on an area basis, along an MSR, at river-crossing sites, or supporting logistics bases in the corps rear; supporting forward maneuver brigades and cavalry regiments in a DS, OPCON, or attached status; or being attached to corps or division engineer battalions. Because of these wide-ranging possibilities of missions, the corps engineer company C2 organization must remain flexible and mobile to provide responsive engineer information flow and direction. The corps engineer company C2 organization can be described in terms of the company command group, a company CP and a unit trains element. Each may be separated or collocated, depending on METT-T.

Corps Engineer Company Command Group

The corps engineer company forms a command group consisting of the company commander and those accompanying him on the battlefield. The company commander normally concentrates on the current engineer fight. He may locate forward with a forward corps engineer platoon or section conducting the engineer main effort or at the company CP. In some cases, the company commander may move to the decisive point of engineer operations to act as the eyes for the corps engineer battalion, group, or brigade commander. The company commander coordinates closely and controls the engineer fight with his subordinate platoon and section leaders.

The company first sergeant (1SG) remains focused on the sustainment of current engineer operations. He is normally located with the company CP but may be located at the unit trains element, if established, or a corps CSS location. The company 1SG maintains close coordination with platoon and section sergeants, the engineer battalion S4, and supported maneuver S4s. Both the company commander and the company 1SG may move to the company CP during critical times during current engineer operations to provide guidance and control to unforeseen events. The company commander also uses the company 1SG as a second set of eyes on current engineer operations. The 1SG may be positioned at a secondary engineer company effort or with the company commander at the engineer company main effort. The 1SG monitors the status of engineer company soldiers, including their health, welfare, morale, and individual training proficiency. Both the company commander and the 1SG require dedicated transportation and communications capabilities.

Corps Engineer Company Command Post

The corps engineer company headquarters establishes a mobile company CP in the vicinity of the engineer company main effort. The company CP is normally directed by the engineer company XO or operations sergeant. When the company commander is not located at the company CP, the XO provides appropriate leadership, intent, and guidance to the company CP staff.

Company CP personnel consist of the following company personnel: the XO, the operations sergeant, the chemical sergeant, and representatives from the supply and maintenance sections. The company CP's primary function is to monitor the current status of corps engineer company missions, logistics, and personnel. The company CP writes and maintains company orders. It also maintains current threat information (including threat engineer capability) and executes EBA products, engineerreconnaissancecollectionplans, and OPSEC procedures. The company CP works closely with higher engineer headquarters, supported maneuver CPs, and subordinate platoons and sections leaders. It also maintains continuous contact with LOs detailed from higher engineer headquarters or supported corps maneuver forces. If, in support of corps rear operations, the corps engineer company commander is designated as a base commander, the company CP performs the additional mission of being a BDOC for the commander. The BDOC coordinates rear-area tactical-operations support for the base with the designated BCOC and corps RAOC.

The corps engineer company communications section is responsible for connecting the company CP into the signal support network including the CNR, the ACUS, the ADDS, and broadcast interface. Engineer communications systems must provide timely, accurate, secure, and reliable information flow to and from the company commander, company CP, unit trains element, higher engineer headquarters, subordinate platoons and sections, and supported maneuver forces, when required. The company communications sergeant continuously coordinates engineer signal requirements with the higher engineer communications personnel and is responsible for ISS at the company CP. The communications section also establishes base defense communications networks when required.

Unit Trains Element

The corps engineer company may form a unit trains element to control engineer logistics support from the corps or to establish an engineer equipment park or construction supply point. The unit trains element is normally collocated with the company CP. However, depending on METT-T, the unit trains element may be formed in the vicinity of a COSCOM supply or maintenance point or with an engineer battalion rear CP. The unit trains element must be able to communicate the neces-

sary engineer information to higher, lower, and adjacent echelons in a timely manner. It is under the 1SG's control and consists of the company supply and maintenance sections, The unit trains element's primary function is to track and provide critical engineer logistics and personnel items that support corps engineer company operations. This includes arming, fueling, feeding, and maintaining operations. The unit trains element works closely with higher engineer headquarters' S4 sections, subordinate platoon and section sergeants, and COSCOM support units. If required, the unit trains may be split between a field trains and combat trains.

CORPS ENGINEER PLANNING PROCESS

The corps uses the standard tactical decision-making process described in FM 101-5 to support the corps commander's activities and to achieve the desired results. As stated in FM 101-5, tactical decision making, as a form of problem solving, is a dynamic, multidimensional process. Tactical decision makers must be flexible, allowing decisions about current operations to occur simultaneously with plans and decisions concerning future operations. Tactical decision making at the corps occurs within the context of the eight troop-leading procedures (TLPs) and encompasses the estimate of the situation and IPB processes. The eight TLP steps are—

1. Receive or perceive a mission.
2. Issue a WARNORD.
3. Make a tentative plan.
4. Initiate movement.
5. Reconnoiter.
6. Complete the plan.
7. Issue the order.
8. Supervise and refine.

Figure 2-5 shows the relationships between TLPs, the estimate of the situation, and the IPB. The corps uses the three standard tactical decision-making processes described in FM 101-5: deliberate, combat, and quick. The corps commander chooses the process to be used based on the time available and his staff's experience (see Figure 2-6, page 2-24). Figure 2-7, page 2-25, shows the continuous nature of the process and the time relationship of the activities that constitute the corps's deliberate decision-making process. The times shown are based on a 72-hour proactive, intuitive-driven, and predictive corps planning cycle.

ENGINEER ESTIMATE

The corps engineer uses the engineer-estimate process to assist decision making by the corps commander. The engineer estimate is a staff estimate process. It is the primary tool for facilitating engineer planning and the early integration of mobility, countermobility, survivability, general, and topographic engineering considerations into the estimate of the situation and the corps plan. The engineer estimate drives the coordination between the corps engineer brigade staff and the corps staff. The engineer estimate process is a methodical series of activities that engineer commanders and their staffs use to examine engineer battlefield support possibilities in parallel with the corps planning process. These standard, logical, and effective thought processes enhance the commander's and staffs abilities to develop, select and implement effective courses of action. The engineer estimate also drives the timely development of necessary engineer instructions through the corps order or engineer annex to maneuver forces and through engineer orders to corps engineer units. The engineer-estimate process is simply an exten-

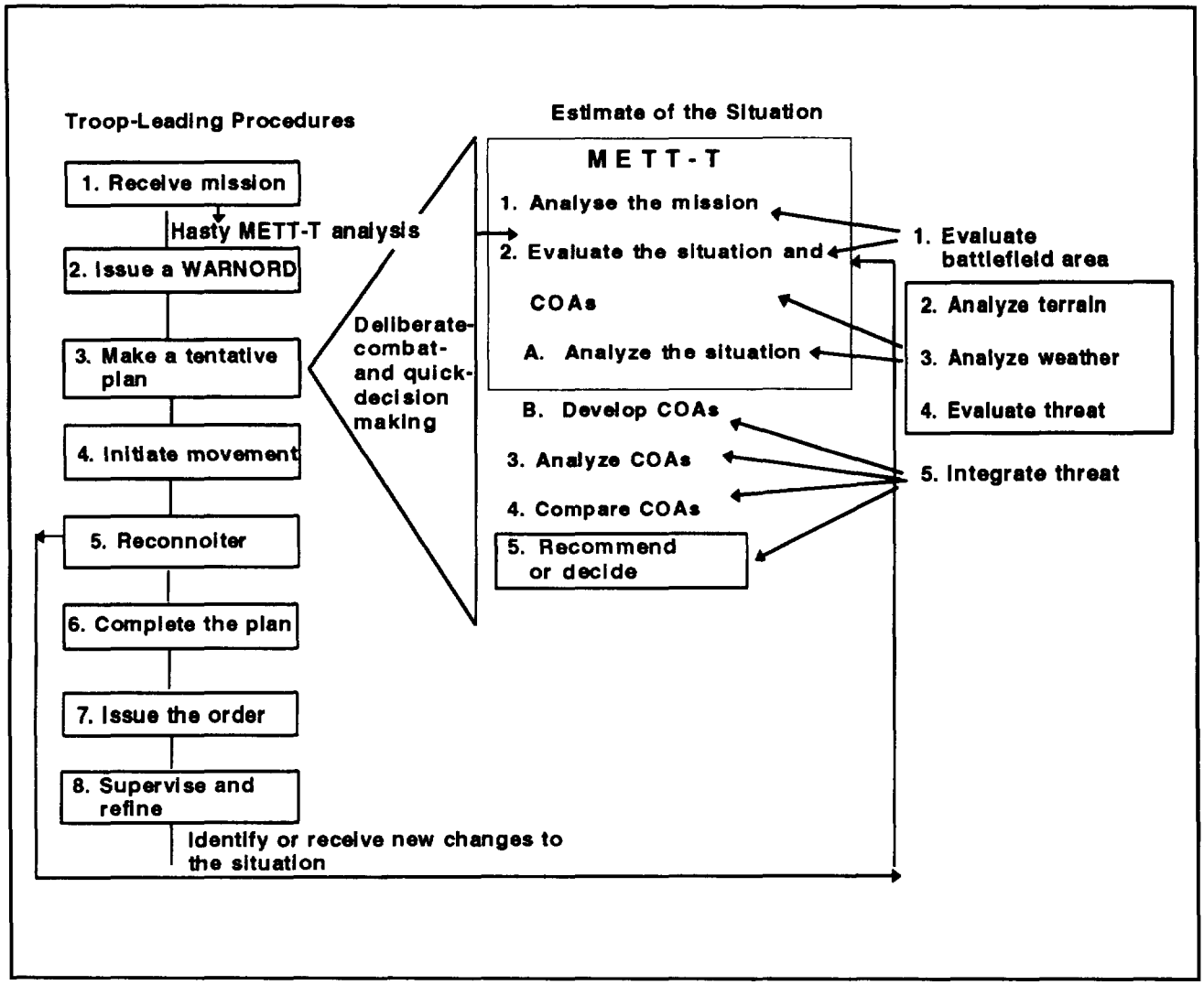


Figure 2-5. Relationship between TLPs, the estimate of the situation, and IPB

sion of the corps tactical decision-making process. For the corps to receive timely and effective engineer support, engineers must be fully integrated throughout the corps planning process. The steps of the tactical decision-making process, using the corps estimate of the situation and the engineer estimate, are shown in Figure 2-8, page 2-26. The arrows show which steps have two-way input as well as where the engineer estimate relies heavily upon the estimate of the situation for information. The corps engineer staff must understand all aspects of the corps plan. In particular, it must thoroughly understand the commander's intent and concept for maneuver, fire support, and engineers. While the engineer-estimate process-outlines specific steps, it is a flexible process with each step being continuously refined based on changes in the current situation and future missions. Appendix B contains a more detailed discussion of the engineer estimate.

CORPS PLANS AND ORDERS

A critical by-product of the engineer estimate is the integration of engineer missions and instructions into the base corps plan or order, engineer annex, and engineer unit orders and plans.

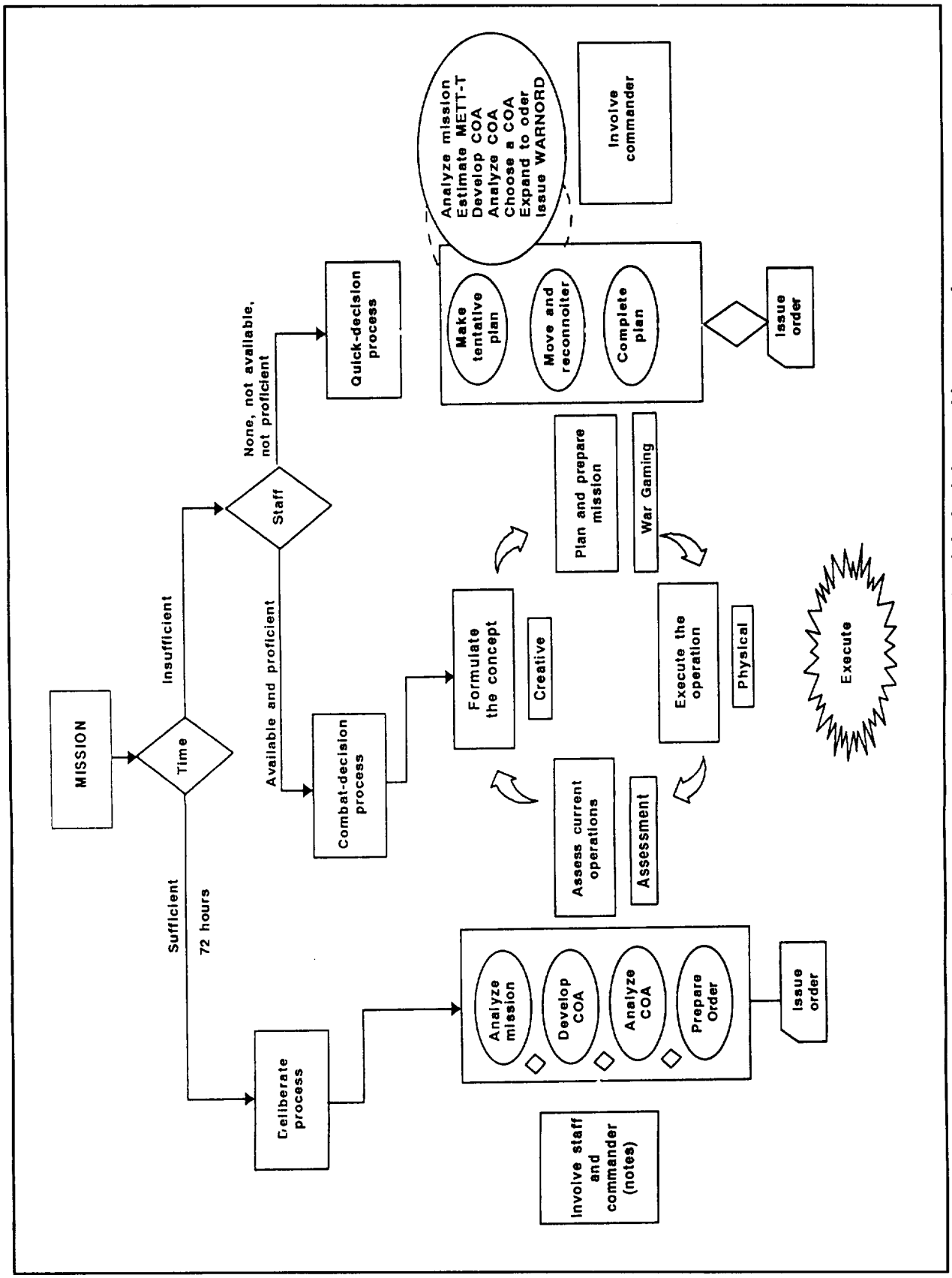


Figure 2-6. Corps deliberate, combat, and quick decision-making procedures

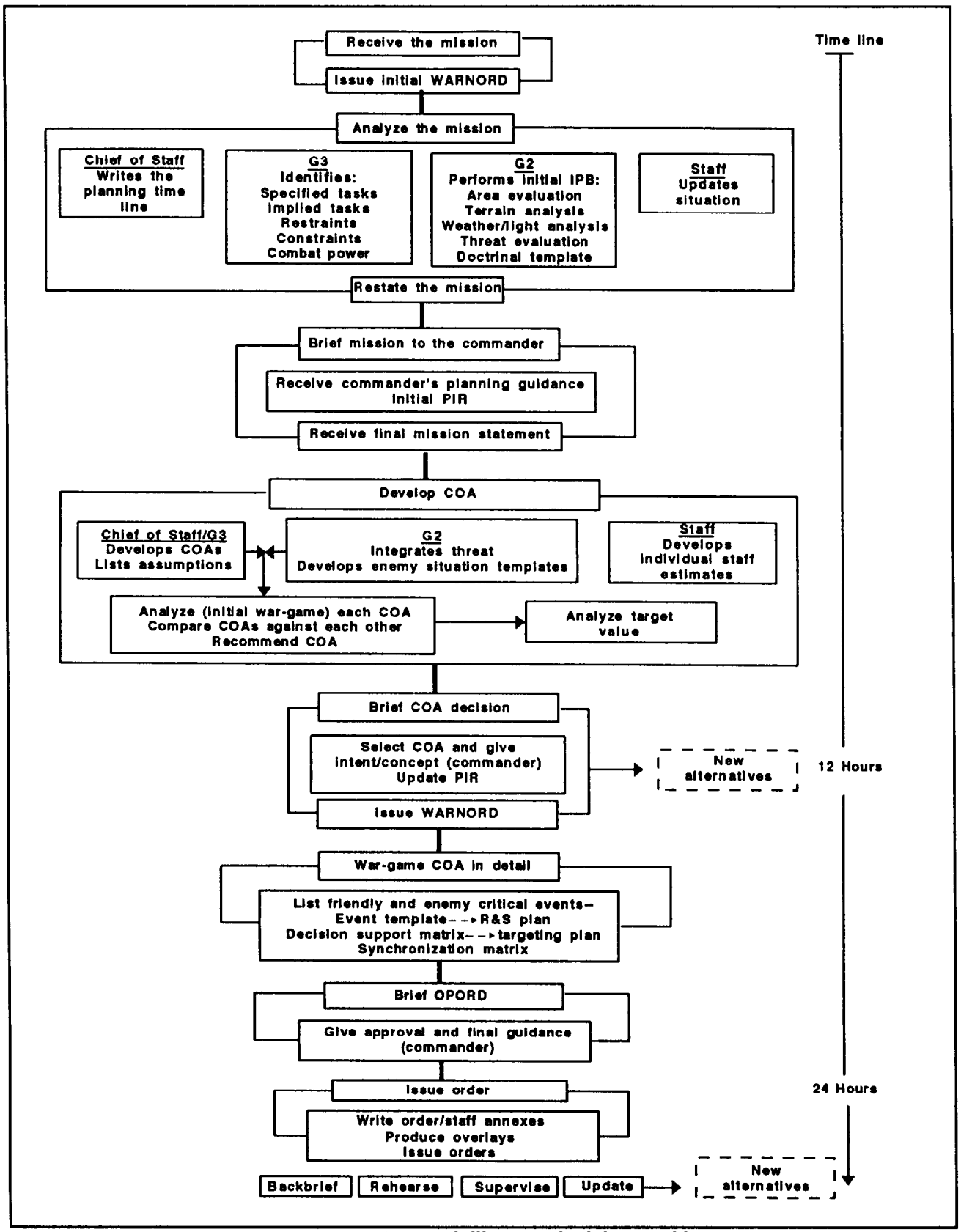


Figure 2-7. Corps deliberate decision making

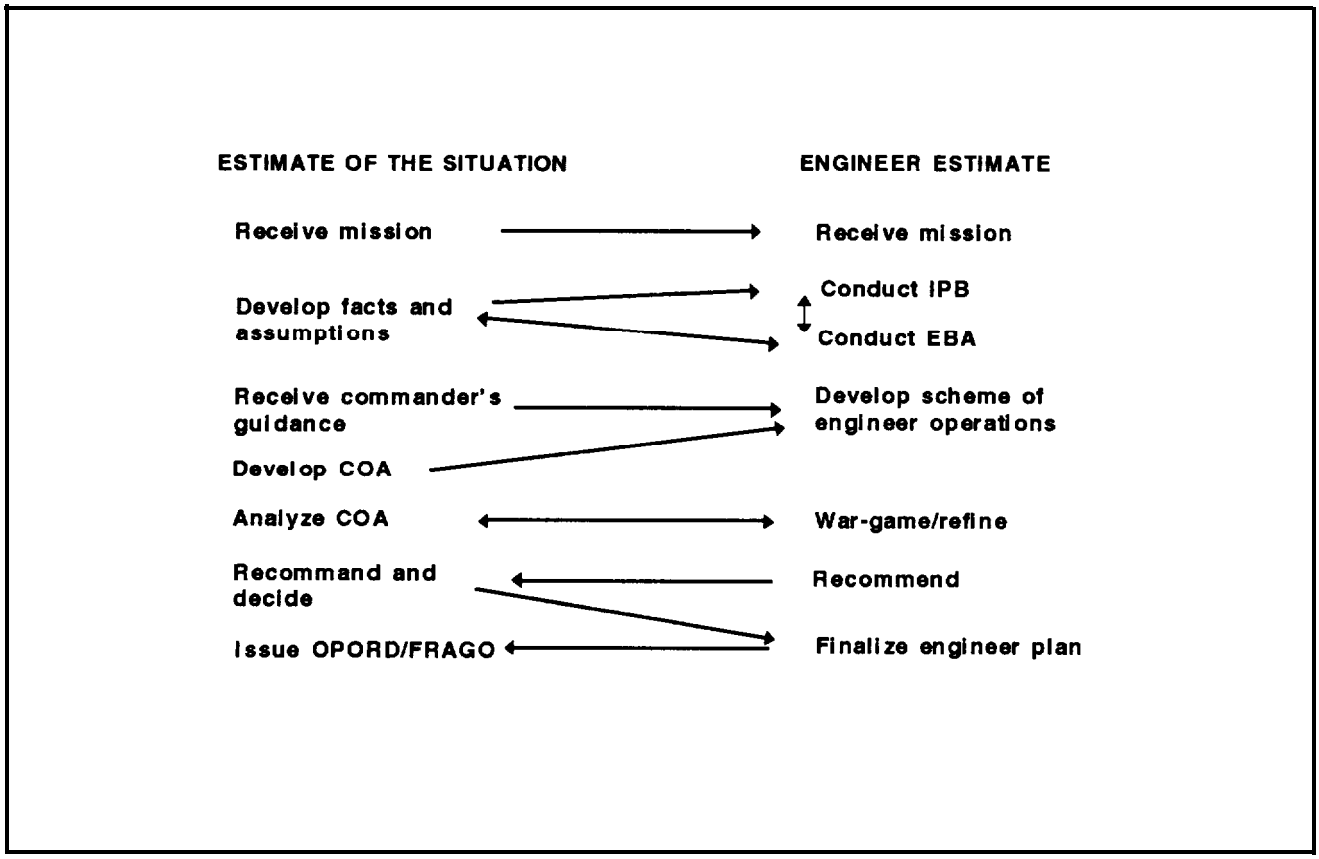


***Figure** 2-8. Estimate of the situation and the engineer estimate*

Engineer Information Needed in the Corps Plan or Order

The SES ensures that engineer missions and instructions that are critical to the success of the corps mission are included in the appropriate sections of the corps base plans or orders. This information should not be consolidated in the engineer annex because it tends to obscure critical engineer information and instructions from division, separate brigade, and cavalry regiment commanders. The engineer annex is not used to duplicate this information, but to expand the information and assign specific tasks to corps units.

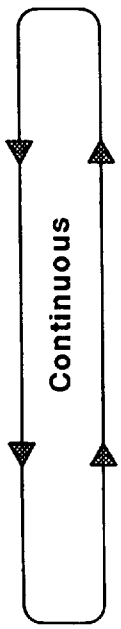
For example, if a deliberate breach through threat obstacles is critical to the corps plan it will appear as a critical task to the breaching division. Likewise, the execution of Air Force-delivered scatterable mines in support of deep-attack targeting may be included in a corps FRAGO. Instructions contrary to tactical SOPS would be included in coordinating instructions of the base plan. The commander's concept of the operation could also include the scheme of engineer support to the corps plan The engineer priority of effort and support found under the execution (engineer) paragraph also supports the corps commander's concept of the operation.

The engineer-estimate process identifies the critical engineer information and mission-essential tasks needed for inclusion in the base order. Table 2-1 illustrates how key components of the engineer-estimate process drive engineer input into the corps base order.

Engineer Annex to the Corps Plan or Order

Corps plans or orders have a detailed engineer annex attached that contains critical engineer

Table 2-1. Engineer input to the corps OPORD



Engineer Estimate	Input	Corps OPORD Paragraph
Conduct IPB/EBA	Critical aspects of the terrain and enemy engineer activity impacting on the maneuver plan	1. Situation a. Enemy Forces Intel Annex
Analyze mission	Mission-essential engineer tasks assigned to maneuver units or separate engineers	3. Execution b. Maneuver Units c. Combat Support Units
Develop scheme of engineer operations	Concept of engineer operations to support corps plan Task organization of engineer forces and command/support relationships Allocation of engineer mission resources to maneuver units Graphic control measures needed for obstacle control, river-crossing, and large-scale breaching operations	3. Execution a.(6) Engineer Task Organization 4. Service Support CSS Annex Overlays: Operations Engineer CSS
War-game and refine	Additional coordinating instructions to maneuver units needed to synchronize engineer effort	3. Execution d. Coordinating Instructions
Recommend course of action	None	None
Finalize engineer plan	Special engineer supply considerations Special engineer C2 arrangements	4. Service Supoprt 5. Command and Signal

information and engineer-specific instructions that are either too voluminous or not appropriate for inclusion in the corps base order or plan. The corps engineer annex is written by the SES and assists the division, separate brigade, or cavalry regiment staff engineers; the corps engineer brigade; and the COSCOM. The annex may take the form of written instructions, matrices, overlays, or a combination of these. Appendix A discusses the engineer annex's format and content in more detail. Sample matrices and overlays are also provided. Table 2-2, page 2-28, illustrates how the engineer annex's content is derived from information found in the engineer estimate.

Topographic Annex to the Corps Plan or Order

The corps prepares a topographic annex to all contingency plans (CONPLANs), operation plans (OPLANs), and/or OPORDs. This annex provides the direction needed by the corps's subordinate elements to obtain support from topographic units and guidance for the employ-

Table 2-2. Engineer annex content and engineer estimate

Engineer Annex Format	Content	Engineer Estimate
Task Organization	Task organization of engineer units--includes who they support and in what command/support relationship (must track with base order)	Scheme of engineer operations • Force allocation • Task organization
1. Situation a. Enemy Forces	Aspects of the weather, terrain, and enemy activities that significantly impact on engineer missions	Intelligence preparation of the battlefield
b. Friendly Forces	Missions and plans of higher and adjacent engineers that impact on the plan	Engineer battlefield assessment • Terrain • Enemy engineer capability
c. Attachments and Detachments	Changes in task organization that occur during the execution	Higher HQs' OPORD and engineer annex
2. Mission	Mission statement of supported unit	Restated mission from supported unit
3. Execution a. Scheme of engineer operations (1) Obstacles (2) Situational obstacles	Concept of engineer operations to support maneuver plan Details on use of obstacles and scatterable mines	Scheme of engineer operations Scheme of engineer operations
b. Subunit instructions	Missions to engineer units • task organized to divisions • under corps troops	Mission analysis
c. Coordinating instructions	Instructions common to two or more engineer units	Refinement and war gaming of engineer plan
4. Service Support a. Command-regulated supplies b. Class IV/V supplies c. Transportation d. Health services e. Personnel support	Allocation of engineer mission resources Method of mission sustainment Method of unit sustainment	Scheme of engineer operations Allocation of resources Finalization of engineer plan
5. Command and Signal	Location of engineer CPs Special C2 arrangements Required reports	Finalization of engineer plan

ment of those units. The format for the topographic annex is shown in Appendix A. This format is the same as that used by the unified and specified (U&S) commands, which is Annex M (MC&G) of the Joint Services Operations Plans (JSOPs). Note that all the references in this appendix refer to a general OPORD. Proper preparation of the annex demands detailed identification and definition of all requirements for topographic products and services, whether provided by the DMA or field units. The preparation of the topographic annex is not limited to topographic products, but applies to any products and services in the MC&G field which are required to support the command's CONPLANs, OPLANs, and/or OPORDs.

CORPS ENGINEER SYNCHRONIZATION

Effective synchronization of corps engineer activities and plans with the corps's operational and tactical warfare components is critical for campaign and battle success. The corps develops and uses a DST and a synchronization matrix as a "playbook" for each operational and tactical warfare component. The IPB process is the basis for the DST and synchronization matrix. Time-phased templates depicting enemy situations at critical terrain features and or/events throughout the corps's AO are developed from the IPB process. Using these templates and the corps commander's intent, the corps staff identifies and enters decision points or events on the DST and synchronization matrix Significant enemy or friendly events may be designated as decision points. As OPLANs are developed, the staff develops the DST and the synchronization matrix by identifying major execution options during war-gaming. Specific and detailed options are then developed for every decision point. Options are formulated by each staff section responsible for each of the operational or tactical warfare components. Specific options listed on the DST and synchronization matrix become the battle plan. Many of the battle plan options maybe contradictory and/or complementary. When an option is executed, the responsible staff section implements and supervises the specific details of that option. The G3 and the corps commander review the battle plan with the staff to approve specific phases. They specify which option will be executed based on the situation and which option will be implemented on order. The product of the review is a coordinated DST and the synchronization matrix. The ACE ensures that engineer functions are properly synchronized during war gaming with each corps DST and synchronization matrix component as required.

The engineer brigade staff synchronizes corps engineer unit operations support in much the same manner. Using the corps commander's intent and concept of the operation, the brigade staff develops specific and detailed engineer support options for every phase of the operation. Options are war-gamed by each staff section. Specific options are listed on the engineer synchronization matrix becoming the engineer support plan. The S3 and the engineer brigade commander review the engineer support plan with the staff to approve specific phases. They specify which option will be executed based on the situation and which option will be implemented on order. When an option is executed, the responsible staff section implements and supervises the specific details of that option. The product of the review is a coordinated synchronization matrix and graphic engineer DST. A copy of each is provided to subordinate corps engineer headquarters and the SES. The DST and the synchronization matrix can be effectively used to write appropriate engineer orders or plans and to formulate corps engineer task organizations. A sample engineer DST and the synchronization matrix are shown in Figures 2-9 and 2-10, pages 2-30 and 2-31.

CORPS ENGINEER TASK ORGANIZATION

'Risk-organizing corps engineer forces is a critical step in the engineer C2 process. Because of the difficulty of moving corps engineer forces quickly on the battlefield, it is critical that en-

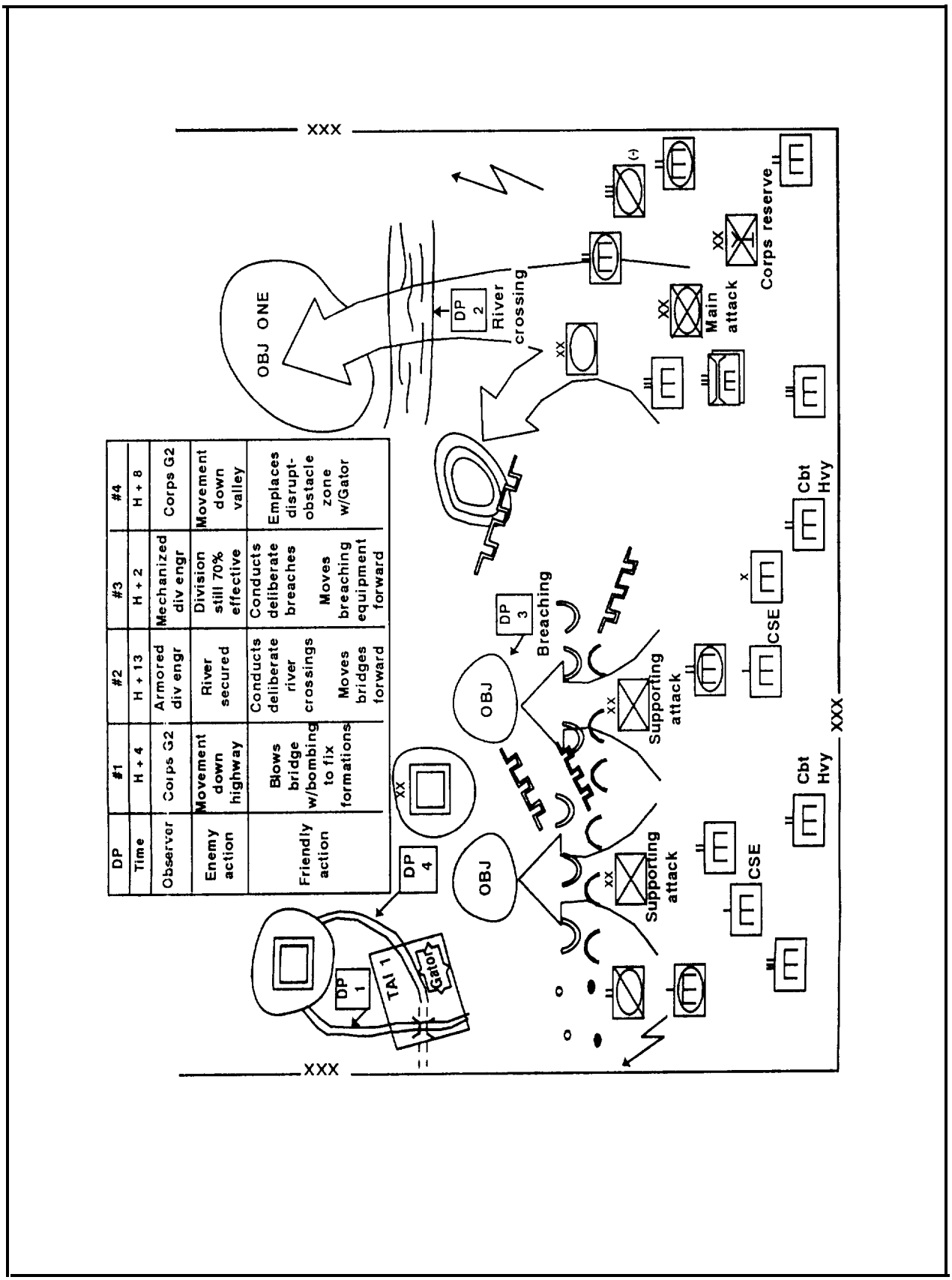


Figure 2-9. Engineer decision support template

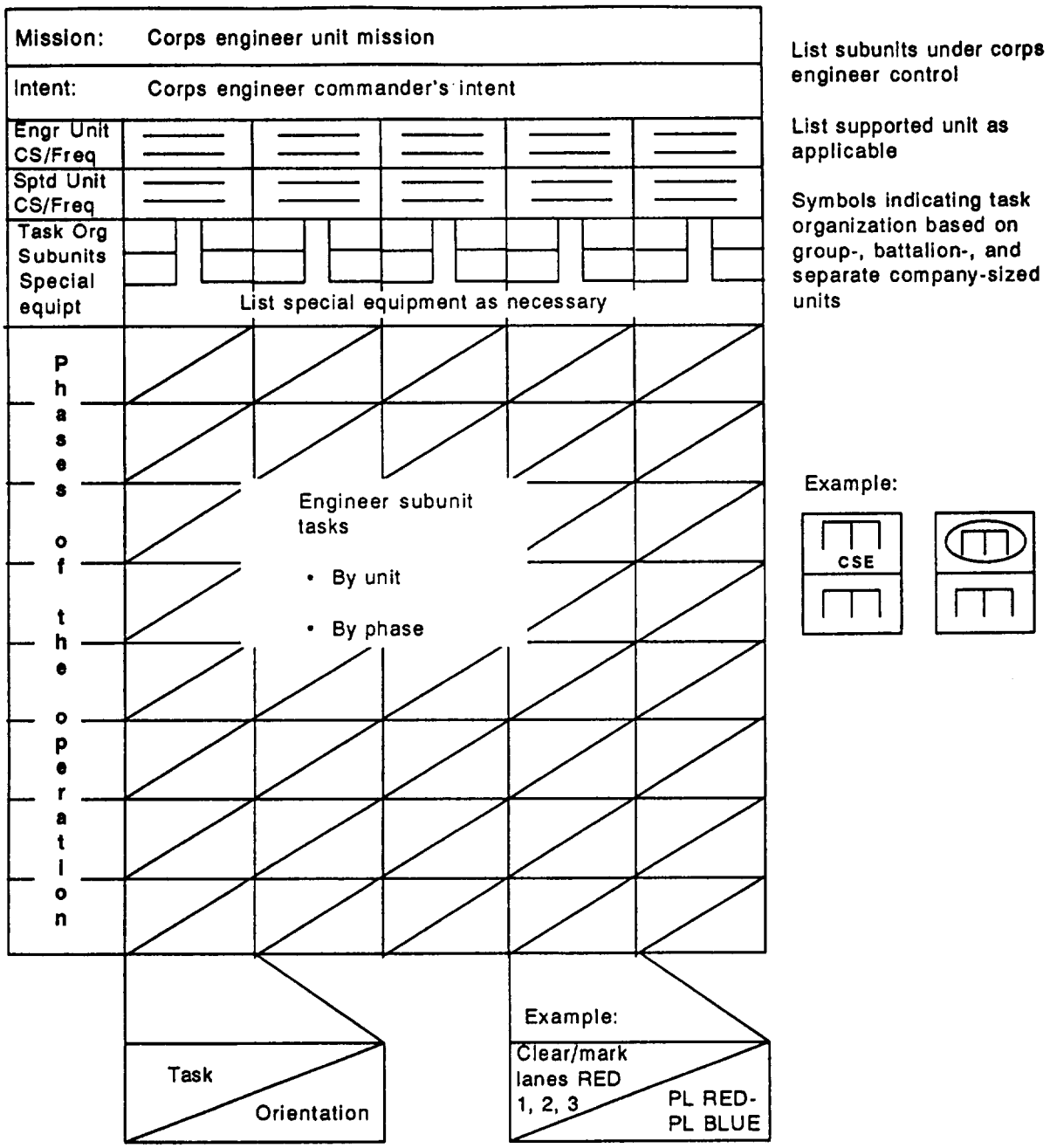


Figure 2-10. Engineer synchronlzation matrix

gineers are adequately task-organized to support the corps plan on a continual basis with minimal follow-on changes, Engineer task-organization changes may be generated from a change to the corps plan or major changes in a subordinate corps engineer unit status. All corps engineer task-organization changes must be closely synchronized between the SES and corps engineer brigade staff and be approved by the corps G3 or corps commander.

ENGINEER COMMAND AND SUPPORT RELATIONSHIPS

As part of the task-organization process, it is critical to identify the proper command-and-support relationships of corps engineer forces. Table 2-3 describes the employment of engineer command and support relationships. Each situation is unique and requires its own solution. Whatever the relationship, engineer commanders are always responsible for the technical correctness of all tasks undertaken by their subordinate elements. The following should be considered when identifying command and support relationships of corps engineer forces:

Command Relationships

Command authority over corps engineer units is given to a maneuver commander when he needs responsive corps engineer forces that are immediately available to him. The command relationship can be attachment, OPCON, or operational command (OPCOM).

Attachment. An attachment is appropriate when a maneuver commander needs task-organization or direct-command authority over corps engineer units and when time, distance, or communications prevent the parent corps engineer headquarters from providing adequate logistical support, Attached corps engineer units may be further task-organized by the maneuver headquarters. Examples of attachments include attaching a mechanized corps engineer battalion to a cavalry regiment during corps covering-force operations or attaching a light corps engineer battalion to a deploying airborne or air assault division during initial force-projection operations. When placing corps engineer forces in an attached command relationship, the following should be considered:

- How long will the attached command relationship last? What decision criteria exist to return the corps engineer unit back to its parent headquarters? Consider an attachment of corps engineer units by phase of the operation, until certain objectives are met, or for specific tasks. Reconstituting formerly attached corps engineer units will normally take time to reform the unit back under the parent engineer control.
- What logistics support will not be provided by the maneuver unit that the parent engineer headquarters may have to support? (For example, engineer equipment repair parts, some Class IV/V supplies, and so forth.) Attached corps engineer units may need accompanying corps logistics elements.
- What engineer reporting requirements still exist to the parent engineer headquarters after affecting the attached command relationship? These reports are normally passed through maneuver channels to the division engineer and then passed to the parent corps engineer headquarters.

OPCON. OPCON is appropriate when a maneuver commander needs task-organization or direct command authority over corps engineer units but logistical support can be provided by the parent corps engineer headquarters. OPCON corps engineer units may be further task organized by the maneuver headquarters. An example is placing OPCON of corps engineer battalions to a division for corps offensive op erations, allowing further engineer task-organization by maneuver forces as required. When placing corps engineer forces in an

Table 2-3. Command and support relationships

	Support Relationships		Command Relationships	
An engineer element with a relationship of --	Direct support	General support	OPCON/OPCOM	Attached/assigned
Is commanded by --	Parent unit (note 2)	Parent unit (note 2)	Supported unit	Supported unit
Maintains liaison and communications with--	Supported and parent units	Supported and parent units	Supported and parent units	Supported unit
May be task-organized by--	Parent unit	Parent unit	Supported unit	Supported unit
Can be--	Dedicated support to a particular unit, May be given task or area assignments	Used only to support the parent force as a whole, May be given task or area assignments	Placed OPCON/OPCOM to other engineer/ maneuver units; made DS to divisions, brigades, or task forces; or retained GS	Further attached OPCON/OPCOM or DS to divisions, brigades, or task forces or retained GS
Responds to support requests from--	Supported unit	Parent unit	Supported unit	Supported unit
Has work priority established by--	Supported unit	Supported unit	Supported unit	Supported unit
Has spare work effort available to--	Parent unit	Parent unit	Supported unit	Supported unit
Forwards requests for additional support through--	Parent unit	Parent unit	Supported unit	Supported unit
Receives logistical support from--	Parent unit	Parent unit	Parent unit (note 1)	Supported unit (note 1)
Sends reports to--	Supported unit; information to parent unit	Parent unit	Supported unit; information to parent unit	Supported unit; information to parent unit

Notes

1. When attached, the engineer element is provided administrative/logistics support, When placed OPCON/OPCOM, the supporting unit provides support in the common classes of supply to the maximum extent possible.

2. It is possible that units will receive additional engineer support without a command relationship (for example, the support relationship of DS to the division).

3. Regardless of the type of relationship, activities of engineer units working in an area are under the staff supervision of the area engineer.

4. The supported unit, regardless of the command/support relationship, is to furnish engineer materials to support engineer operations.

OPCON command relationship, the following should be considered:

- How long will the OPCON relationship last? What decision criteria exist to return the corps engineer unit back to its parent headquarters? OPCON is normally used for short-duration operations. Consider OPCON of corps engineer units by phase of the operation, until certain objectives are met, or for specific tasks. Reconstituting former OPCON corps engineer units will not take as much time as if they had been attached.
- What logistics support will be provided by the maneuver unit that the parent engineer headquarters may not be able to support? (For example, common classes of supply, rations, fuel, water, and so forth.) OPCON corps engineer units will need accompanying corps logistics elements.

Ž What engineer reporting requirements still exist to the parent engineer headquarters after affecting the OPCON command relationship? These reports are normally passed through maneuver channels to the division engineer and then passed to the parent corps engineer headquarters.

OPCOM. OPCOM is appropriate when a corps engineer unit supports another service or coalition force during joint and multinational operations. In this case, OPCOM is synonymous with OPCON concerning command, administrative, and logistics responsibilities. OPCOM is used when the joint or multinational commander needs task-organization or direct-command authority over Army corps engineer units but the parent Army corps engineer headquarters can provide logistical sup port OPCOM corps engineer units maybe further task-organized by the joint or multinational maneuver headquarters. An example is placing an Army combat heavy engineer battalion under OPCOM of a Marine division headquarters for general engineering missions in a joint force-projection theater, allowing further engineer task organization by joint forces as required. When placing corps engineer forces in an OPCOM relationship, the following should be considered:

Ž How long will the OPCOM relationship last? What decision criteria exist to return the corps engineer unit back to its parent headquarters? OPCOM is normally used for short-duration operations. Consider OPCOM of corps engineer units by phase of the operation, until certain objectives are met, or for specific tasks. Reconstituting former OPCOM corps engineer units will not take as much time as if they had been attached.

- What logistics support will be provided by the joint or multinational unit that the parent engineer headquarters may not be able to support? (For example, common classes of supply, rations, fuel, water, and so forth.) O PCOM corps engineer units will need accompanying Army corps logistics elements.
- What engineer reporting requirements still exist to the parent engineer headquarters after affecting the OPCOM relationship? These reports are normally passed through joint or multinational command channels to the parent Army corps engineer headquarters.

Ž What engineer LO requirements exist?

Support Relationships

Support relationships retain corps engineer command, administrative, and logistical responsibilities with the parent corps engineer unit .The corps engineer unit commander organizes his unit and suballocates tasks in a manner he determines will most effectively

meet the needs of the supported commander. Engineer support relationships include DS and GS.

Direct support. ADS relationship is appropriate when the supported unit requires responsive engineer support but does not require task-organization authority. The parent corps engineer headquarters provides logistical support DS corps engineer units may be further task-organized by the parent engineer headquarters. The parent corps engineer headquarters may task the DS engineer unit with additional corps missions if time and resources permit Under the DS relationship, the priority of corps engineer work is with the supported unit. An example of DS is the placement of an engineer group in DS to a division for large-scale breaching or river-crossing operation support, allowing further engineer task organization by engineers as required. Direct engineer support is normally provided on a task basis or on an area basis. The EWL is often used to denote the area covered under the DS mission. The EWL is a coordinated boundary and its location is usually determined by the supported units. DS engineer support and the use of the EWL should be considered when a change of the subordinate rear boundary is expected. This reduces the transfer of missions between the supported unit and the corps engineer. When placing corps engineer forces in a DS relationship, the following should be considered:

- How long will the DS relationship last? What decision criteria exist to return the corps engineer unit back to its parent headquarters? Consider DS of corps engineer units by phase of the operation, until certain objectives are met, or for specific tasks.Reconstituting former DS corps engineer units will not take as much time as if they had been attached or OPCON.
- What logistics support will be provided by the supported unit that the parent engineer headquarters may not be able to support? (For example, common classes of supply, rations, fuel, water, and so forth.) DS corps engineer units will need accompanying corps logistics elements,
- What engineer reporting requirements still exist to the parent engineer headquarters after affecting the DS relationship? These reports are normally passed through maneuver channels to the parent corps engineer headquarters.

General support. A GS relationship is appropriate when the higher headquarters requires central control and flexibility in employing corps engineer resources. The parent corps engineer headquarters provides logistical support. Under the GS relationship, the priority of corps engineer work is with the supported unit. An example of GS is the placement of an engineer group in GS to the corps rear area to control corps general engineering operations.

CORPS ENGINEER ORDERS AND PLANS

All commanders must issue timely clear, and concise orders that give purpose and direction to subordinate planning, preparation and execution. Corps engineer commanders issue orders to subordinate units to execute the scheme of engineer support to corps close, deep, and rear operations, based on developed plans. Orders translate the corps's scheme of engineer operations into clear and concise engineer missions. They combine the concept of corps engineer support with engineer unit-specific plans needed to accomplish engineer missions, sustain the engineer force, and ensure unity of engineer effort. The corps engineer brigade commander uses both corps orders and engineer unit orders to provide the necessary engineer C2 for the corps commander. The engineer-estimate process and tactical decision-making process again drive the insertion of

engineer information in corps orders and the development of engineer unit orders.

The corps engineer brigade commander retains functional control of corps engineer units sup porting divisions, separate brigades, and the cavalry regiment by assigning specific tasks and missions in corps orders and annexes. Regardless of command and support relationships, the brigade commander must still provide the corps commander with functional control over the engineer effort within divisions, separate brigades, and the cavalry regiment to ensure unity of effort. He may issue WARNORDs to task-organized corps engineer forces in order to focus future planning and preparation of upcoming corps missions. He may also require periodic SITREPs from task-organized corps engineer forces to ascertain ongoing combat readiness status. The bottom line is that the corps engineer brigade commander is responsible to the corps commander to ensure unity of engineer effort through functional control of task-organized corps engineer forces.

The corps engineer brigade commander exercises a high level of both unit and functional control over assigned corps engineer unite not task-organized to divisions, separate brigades, and the cavalry regiment. He and his subordinate commanders directly issue the full range of engineer unit orders that are absolutely essential to ensuring that subordinate units understand how their missions support the maneuver plan and mesh with the corps engineer plan. The intent behind engineer orders is to focus subordinate engineer planning and preparation effort. They facilitate subordinate engineer integration and responsiveness to the corps's rapid decision cycle. There are three types of unit orders: the WARNORD, the OPLAN and OPORD, and the FRAGO.

Warning Order

The corps engineer brigade commander issues a WARNORD to his subordinates, including task-organized corps engineer units, when a FRAGO is developed by the corps staff or when he perceives significant changes to the corps plan. The WARNORD is essential to initiatingsubordinateplanningandpreparation. It should be as detailed as possible, based on the corps's mission and information available. It should include any likely changes in task organization with a no-earlier-than move time identified. This facilitates planning any necessary engineer force consolidation and required unit sustainment operations. The WARNORD is also used by the receiving engineer unit to initiate internal planning. Appendix A provides the format for a WARNORD and provides examples.

Operations Plan and Operations Order

The corps engineer brigade commander issues an OPLAN or OPORD at the outset of an operation or when the corps mission changes so much that the initial OPLAN or OPORD is no longer useful as a foundation. Engineer OPLANs and OPORDs focus the corps engineer force on the mission, effect the necessary task organization, assign unit missions (including on-order and be-prepared missions), and establish the necessary service support structure. They also provide subordinate commanders with the corps engineer brigade commander's intent and concept of engineer support operations, giving subordinate engineer commanders the necessary freedom of action while retaining unity of effort. The corps engineer brigade OPLAN or OPORD serves as a base document from which the brigade commander can adjust as the situation develops by the use of FRAGOs. When a corps mission changes drastically and the engineer brigade OPLAN or OPORD is no longer a solid base document the engineer brigade staff produces a new OPLAN or OPORD and issues it to affected subordinate engineer units. Appendix A provides the format for OPORDs and provides some examples.

Fragmentary Order

The FRAGO allows the corps engineer brigade commander to modify the current OPLAN or OPORD quickly based on changes in the situation. The FRAGO only outlines changes; all other instructions in the base OPLAN or OPORD remain in effect A FRAGO has no set format or content; it is modified to meet the needs of the situation. The FRAGO can be used to change any part of the base OPLAN or OPORD. Normally, the corps engineer brigade commander uses the FRAGO when there is an immediate tactical requirement to adjust engineer task organization or the scheme of engineer operations, or to submit missions. With few exceptions, task-organized corps engineer units do not execute the FRAGO until coordination has occurred with the supported commander. Appendix A provides a sample format for a FRAGO.

CORPS ENGINEER INFORMATION REQUIREMENTS

Corps engineer commanders must receive timely and accurate battlefield information in order to affect future engineer support plans. Several means of gathering this necessary information is used by engineer commanders. They include personal reconnaissance, visits with subordinate engineer units, periodic staff briefings and updates, and periodic reports transmitted through the corps signal system or delivered by courier. All of these provide information to the commander so that he can decide whether to continue with the current engineer support plan, change to a branch plan, or drop the current plan completely and make a new one. To allow the corps engineer commanders to be at critical points on the battlefield to gather information, it is imperative that adequate transportation and communications capability be available to them.

Personal Reconnaissance

The best information corps engineer commanders can receive is what they can actually see and hear through personal reconnaissance of ongoing engineer support missions. By observing engineer operations, commanders can immediately assess the cause and effect of corps engineer support plans. A danger lies in relying totally upon personal reconnaissance for decision making, as it is just a snapshot in time and space, not showing the overall dynamics involved in the corps fight.

Visits With Subordinate Units

Through discussions with subordinate units, corps engineer commanders gather fairly timely and accurate engineer operational and logistical information. This is especially critical with corps engineer units that are task-organized to divisions, separate brigades, and the cavalry regiment.

Periodic Staff Briefings and Updates

Corps engineer commanders continually receive briefings from higher headquarters staffs and their own engineer staff concerning threat, maneuver, engineer, and logistical support information. This information is normally not as timely as personal reconnaissance or visits with subordinate engineer units, but it provides a broader perspective of corps engineer support to the battlefield. The briefing forum provides a setting for the corps engineer commander to explain his intent and concept of engineer support to the corps. Any changes to the current plan are explained in detail. Decisions are often made during these briefings by the commander, so it is critical that key engineer staff and subordinate engineer unit commanders be present.

Transmitted Reports

Periodic reports transmitted through the corps signal system or by courier provide critical information to both the brigade commander and his staff. Standard reporting formats of key engineer information requirements help determine trends in engineer support, allowing the brigade commander to make decisions based on

higher quality information (see Appendix C for a template of standard corps engineer report formats). Corps engineer force information that is transmitted to the corps engineer brigade headquarters and SESs can be described in four general types: engineer operations and intelligence information, engineer logistics and personnel information, corps operations and intelligence information, and corps logistics and personnel information.

Engineer operations and intelligence information flow. Figure 2-11 shows engineer operations and intelligence information flow. This information includes such things as DA Form 1355 minefield reports, intelligence spot reports (SPOTRE Ps), engineer situation reports (ENSITREPs), NBC reports, and so on. Two paths are used by corps engineer forces assigned to the corps engineer brigade and task-organized corps engineer forces supporting divisions, separate brigades, and the cavalry regiment. The paths work both ways, with the majority of information flowing from corps engineer units to the brigade CP and corps SES. The managers of this information

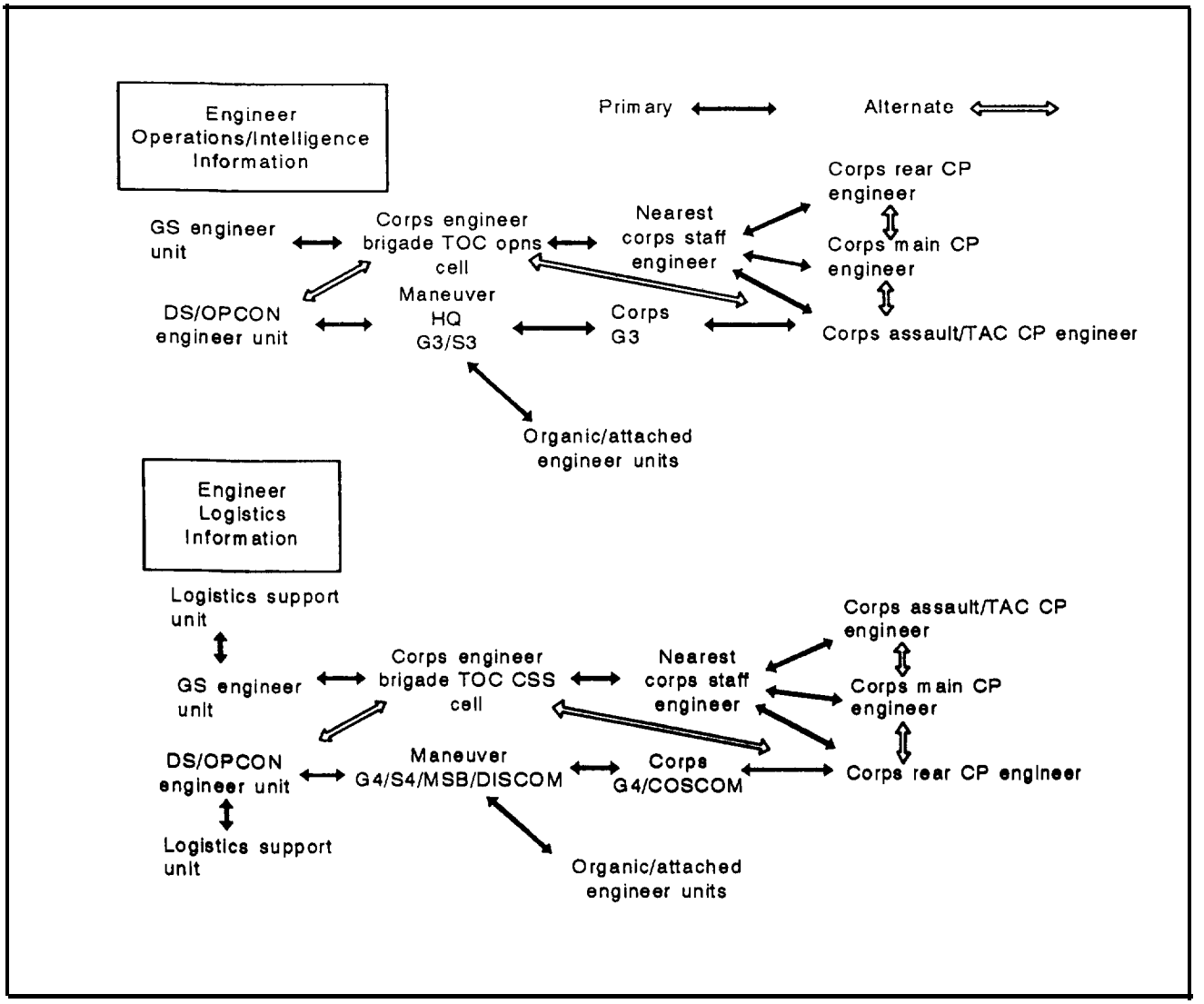


Figure 2-11. Corps engineer information flow

include the engineer brigade operations staff personnel at the brigade CP and the corps assault or TAC CP. In some cases, information coming in from task-organized forces may be timelier than that coming in from assigned engineers, due to easier access to corps signal systems. The corps SES will receive this information faster than the brigade CP. In reverse, the brigade CP will receive information faster from assigned engineers than the SES. For the brigade commander to retain functional control, task-organized corps engineer units should develop a way to transmit operational and intelligence information directly to the brigade CP.

Engineer logistics and personnel information flow. Figure 2-11 also shows engineer logistics and personnel information flow. This information includes such things as daily logistics status reports (LOGSTATs), casualty feeder reports, awards, and so on. Two paths are used by corps engineer forces assigned to the corps engineer brigade and task-organized corps engineer forces supporting divisions, separate brigades, and cavalry regiments. The path works both ways, with the majority of information flowing from corps engineer units to the brigade CP and SES. The managers of this information include the engineer brigade logistics staff sections at the brigade CP and the corps rear CP. Again, engineer information coming in from task-organized forces may be timelier than that coming from assigned engineers, due to easier access to corps signal systems. Task-organized corps engineer units should also develop a way to transmit logistics and personnel information directly to the brigade CP.

Corps operations and intelligence information. Figure 2-12, page 2-40, shows corps operations and intelligence information flow. This information includes such things as intelligence summaries (INTSUMs), maneuver overlays, FRAGOs, chemical downwind messages and so on. Again, two paths are used by corps engineer forces assigned to the corps engineer brigade and task-organized corps engineer forces supporting divisions, separate brigades, and cavalry regiments. The paths work both ways, with the majority of information flowing from the corps G2/G3 through the brigade CP, SES, and maneuver CPs to corps engineer units. The managers of this information include the engineer brigade operations staff personnel at the brigade CP and the corps TAC CP. In some cases, information coming in from maneuver CPs may be timelier for task-organized engineers than assigned engineers, due to direct access to corps information at the maneuver CP. The corps SES will receive this information faster than the brigade CP.

Corps logistics and personnel information flow. Figure 2-12 also shows corps logistics and personnel information flow. This information may include such things as corps ammunition controlled supply rates (CSRs), personnel replacement rates, supply-point locations, and so on. Again, two paths are used by corps engineer forces assigned to the corps engineer brigade and task-organized corps engineer forces supporting divisions, separate brigades, and cavalry regiments. The paths work both ways, with the majority of information flowing from the corps G4/COSCOM through the brigade CP, SES, and maneuver CPs to corps engineer units. The managers of this information include the engineer brigade logistics staff personnel at the brigade CP and the corps rear CP. In some cases, information coming in from maneuver CPs may be timelier for task-organized engineers than for assigned engineers, due to direct access to corps information at the maneuver CP. The corps SES will normally receive this information faster than the brigade CP.

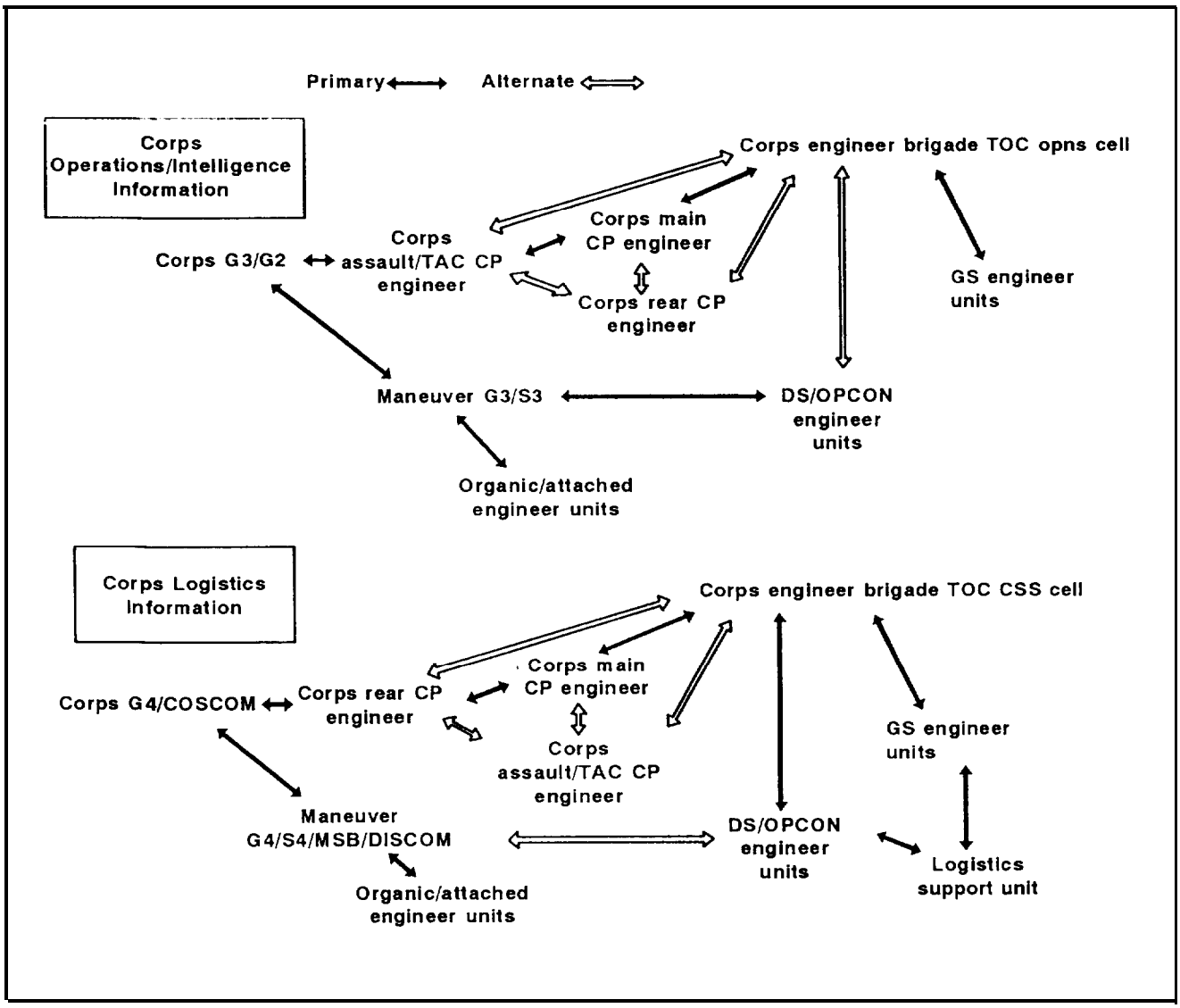


Figure 2-12. Corps information flow