



Research Product 98-14

**Direct and Lead Units in Execution of Battle
(Battlefield Function 20)
as Accomplished by an Engineer Battalion
Supporting a Heavy Brigade
Volume 2: Assessment Package**

William J. Mullen III
BDM Federal, Inc.

Martin Anderson, Robert A. Clagg, and James W. Keesling
PRC, Inc.

19980430 071

November 1997

Armored Forces Research Unit

U.S. Army Research Institute for the Behavioral and Social Sciences

Approved for public release; distribution is unlimited.

DTIC QUALITY INSPECTED 3

**U.S. ARMY RESEARCH INSTITUTE
FOR THE BEHAVIORAL AND SOCIAL SCIENCES**

A Directorate of the U.S. Total Army Personnel Command

**EDGAR M. JOHNSON
Director**

Research accomplished under contract
for the Department of the Army

BDM Federal, Inc.

Technical review by

Dorothy L. Finley, ARI AFRU
Kathleen A. Quinkert, ARI AFRU

NOTICES

FINAL DISPOSITION: This Research Product may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: This Research Product is not to be construed as an official Department of the Army position unless so designated by other documents.

DTIC QUALITY INSPECTED 3

REPORT DOCUMENTATION PAGE

1. REPORT DATE (dd-mm-yy) 1997, November		2. REPORT TYPE Final		3. DATES COVERED (from. . . to) July 1995 - July 1997	
4. TITLE AND SUBTITLE Direct and Lead Units in Execution of Battle (Battlefield Function 20) as Accomplished by an Engineer Battalion Supporting a Heavy Brigade Volume 2: Assessment Package				5a. CONTRACT OR GRANT NUMBER MDA 903-92-D-0075	
				5b. PROGRAM ELEMENT NUMBER 0602785A	
6. AUTHOR(S) William J. Mullen III (BDM), Martin S. Anderson (PRC), Robert A. Clagg (PRC), and James W. Keesling (PRC)				5c. PROJECT NUMBER A791	
				5d. TASK NUMBER 2228	
				5e. WORK UNIT NUMBER R03	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) BDM Federal, Inc. PRC, Inc. 1801 Randolph Road, S.E. 1500 PRC Drive Albuquerque, NM 87106 McLean, VA 22102				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Research Institute for the Behavioral and Social Sciences ATTN: TAPC-ARI-IK 5001 Eisenhower Avenue Alexandria, VA 22333-5600				10. MONITOR ACRONYM ARI	
				11. MONITOR REPORT NUMBER Research Product 98-14	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES Kathleen A. Quinkert, Contracting Officer's Representative					
14. ABSTRACT (<i>Maximum 200 words</i>): The purpose of the overall research program was to document the synchronization required by command and control tasks performed within the armored brigade, to include combat support and combat service support units. The immediate application of the documentation was to support developers of staff training in two related projects: Battle Staff Training System and Staff Group Trainer. The documentation was also intended to assist with the planning and execution of collective training. The documentation approach was to apply function analysis (FA) techniques for battlefield functions (BFs) in the Command and Control battlefield operating system. Thirteen FAs were developed for the brigade headquarters and four supporting units: direct support field artillery battalion, engineer battalion, forward support battalion, and air defense artillery battery. The FAs were revised through a formative evaluation process that included internal review and successive external reviews by combat training centers, proponent agencies, and a review council representing potential users of the FAs. The final products include the FAs, a user's guide, and assessment packages for the BFs. This report provides the assessment package for BF 20 as performed by the engineer battalion supporting a heavy brigade.					
15. SUBJECT TERMS Structured Training Staff Training Multiechelon Training Training Strategy Functions Analysis of Functions Command and Control					
SECURITY CLASSIFICATION OF			19. LIMITATION OF ABSTRACT Unlimited	20. NUMBER OF PAGES 124	21. RESPONSIBLE PERSON (Name and Telephone Number) Kathleen A. Quinkert (502) 624-6928/3450
16. REPORT Unclassified	17. ABSTRACT Unclassified	18. THIS PAGE Unclassified			

Research Product 98-14

**Direct and Lead Units in Execution of Battle
(Battlefield Function 20)
as Accomplished by an Engineer Battalion
Supporting a Heavy Brigade
Volume 2: Assessment Package**

William J. Mullen III

BDM Federal, Inc.

Martin Anderson, Robert A. Clagg, and James W. Keesling

PRC, Inc.

**Armored Forces Research Unit
Barbara A. Black, Chief**

U.S. Army Research Institute for the Behavioral and Social Sciences
5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

November 1997

**Army Project Number
2Q26785A791**

Education and Training Technology

Approved for public release; distribution is unlimited.

FOREWORD

One of the goals for the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is to facilitate the development of training strategies that will serve the needs of the combined arms team today and into the 21st century. The indispensable foundations, the cornerstones, for meeting this goal are solid information and data bases. One such base is a set of comprehensive descriptions of how soldiers accomplish their missions. Many task descriptions have been developed where the focus is on activities within a particular Battlefield Operating System (BOS); these are often further narrowed to one BOS element within one echelon. What have been lacking are function analyses along with task descriptions that have a broader BOS perspective; one which focuses not only on intra-BOS relationships, but also the relationships of that BOS with other BOSs in accomplishing the overall mission. It is this latter perspective which is needed, for example, to define training requirements and strategies for combined arms operations.

The assessment procedures described in this report are based on a function analysis resulting from one of three efforts conducted under the ARI project, "Innovative Tools and Techniques for Brigade and Below Staff Training (ITTBBST)." The work in this part of ITTBBST is the fifth in a series of ARI projects directed at analyzing the vertical and horizontal synchronization required by combined arms operations. All of the projects have analyzed functions, previously labeled "critical combat functions (CCFs)" and now labeled "battlefield functions (BFs)." The previous projects analyzed: all BFs performed by a heavy battalion task force; a sample of seven BFs performed by an armored brigade; and the integration of fire support BFs as performed by an armored brigade and at echelons higher than brigade. The research in this project analyzed BFs in the Command and Control BOS. Separate coordinated analyses of these BFs were performed for the armored brigade headquarters and four types of supporting units, one of which is the Engineer Battalion.

The analyses developed in the project have been used in the development of staff training in related projects within the ITTBBST program. In addition, U.S. Army Training and Doctrine Command (TRADOC) representatives have identified a variety of applications by TRADOC training and other developers as well as potentials for collective training management.

ZITA M. SIMUTIS
Technical Director

ACKNOWLEDGMENTS

The assessment package contained in this volume is based on the battlefield function analysis presented in Volume 1. That analysis benefited from considerable dedicated effort on the part of many persons. The efforts of a few of these many persons are specifically and gratefully acknowledged here. An especially key person was MG (Ret) Lon E. Maggart, Commanding General of the U.S. Army Armor Center (USAARMC). Prior to and during the conduct of this effort, he contributed greatly to definition of training needs and concepts in support of Force XXI. He saw that battlefield functional analyses could provide a valuable foundation for Force XXI training development efforts; hence, MG (Ret) Maggart strongly backed these efforts.

COL G. Patrick Ritter and LTC Marvin K. Decker, acting in accordance and agreement with MG (Ret) Maggart's vision, vigorously pursued battlefield function analysis efforts and persevered in ensuring their application to Force XXI training developments. COL Ritter, Director of Directorate of Training Development and Doctrine (DTDD) at USAARMC, and LTC Decker, Chief of DTDD's Force XXI Training Program (FXXITP) office, ensured implementation of necessary actions, and the participation of military subject matter experts and potential users of function analysis products as needed to assure quality outcomes.

Among many participants in performing the analyses themselves, and validating their integrity and validity, were members of the Directorate of Training at U.S. Army Engineer School (USAES), DTDD at USAARMC, and Operations Group at the National Training Center (NTC). Final recommendations and approval of these analyses were provided by proponents and users constituting the Force XXI Review Council. Members of the Review Council included: COL G. Patrick Ritter and LTC Marvin K. Decker, USAARMC; LTC James R. Harrison, U.S. Army Armor School (USAARMS); COL Philip Federle, USAES; LTC David M. Annen, U.S. Army Field Artillery School; LTC Larry Newman, U.S. Army Air Defense Artillery School; LTC Roger F. Murtie, National Training Center; LTC Gilbert Pearsall, Joint Readiness Training Center; COL Roger W. Jones, TRADOC Program Integration Office-Army Battle Command System; and COL Robert J. Fulcher, 29th Infantry Regiment.

The research for and preparation of this report benefited immeasurably from the assistance provided by members of the U.S. Army Research Institute. Specifically, the authors would like to acknowledge Dr. Kathy Quinkert for her continual support and guidance. As Contracting Officer's Representative, she interfaced with the FXXITP and the Army audience continually in providing program intent. Additionally, Ms. Dorothy Finley is acknowledged for serving as a peer reviewer for the product. She offered constructive comments that have improved both the content and style of the report. Also, special recognition is given to Ms. May Throne, a Consortium Research Fellow from the University of Louisville assigned to Fort Knox, and Ms. Lori Cracknell. Their never ending efforts to assist in the formal production of this report will not soon be forgotten.

**DIRECT AND LEAD UNITS IN EXECUTION OF BATTLE (BATTLEFIELD FUNCTION 20) AS ACCOMPLISHED BY AN
ENGINEER BATTALION SUPPORTING A HEAVY BRIGADE VOLUME 2: ASSESSMENT PACKAGE**

CONTENTS

	Page
INTRODUCTION	1
WORKSHEET	4
ASSESSMENT STRATEGY	7
ASSESSMENT SCALE	11
OUTCOME ASSESSMENT OBSERVATIONS AND DIAGNOSIS	12
Outcome 1 Assessment Package	12
Outcome 1 Diagnostic Aid	13
Outcome 2 Assessment Package	17
Outcome 2 Diagnostic Aid	20
Outcome 3 Assessment Package	33
Outcome 3 Diagnostic Aid	34
Outcome 4 Assessment Package	43
Outcome 4 Diagnostic Aid	45
Outcome 5 Assessment Package	60
Outcome 5 Diagnostic Aid	62
Outcome 6 Assessment Package	69
Outcome 6 Diagnostic Aid	71
Outcome 7 Assessment Package	73
Outcome 7 Diagnostic Aid	74
Outcome 8 Assessment Package	77

CONTENTS (Continued)

	Page
Outcome 8 Diagnostic Aid.....	78
PROGRAM REVIEW MEASURES OF EFFECTIVENESS	83
Table 1. Support provided to the armored brigade	84
Table 2. Operation and monitoring of communication nets	85
Table 3. Communication among staff sections, higher, adjacent, and subordinate units	86
Table 4. Updates of operations products during execution.....	89
Table 5. Locations of leaders during execution phase and succession of command or critical position.....	91
Table 6. Evaluation of tactical situation.....	93
Table 7. Tactical decision making.....	95
Table 8. Execution timelines	97
Table 9. Integration and coordination of combat, combat support, and combat service support	98
Table 10. Engineer battalion overall leadership.....	100
REFERENCES	101

APPENDIX A. ACRONYMS AND ABBREVIATIONS	A-1
--	-----

INTRODUCTION

The results of the Army Research Institute's examination of battlefield functions (BFs) relevant to a brigade combat team's combined arms operations are in a series of two volume sets. These sets cover brigade headquarters and the supporting units of air defense artillery battery, engineer battalion, field artillery battalion, and forward support battalion. Volume 1, *Function Analysis*, identifies and describes information and tasks necessary to accomplish the function. The analysis is targeted at planning and conducting collective training. Volume 2 provides an Assessment Package. It implements an assessment approach that identifies the purpose of the unit's action in relation to the function. This provides a basis for appraising the performance of the function and the outcomes resulting from it. The assessment package is intended to support the conduct of a training event, such as a field training exercise (FTX) or command post exercise (CPX). The package assists assessment planning, data collection, and using the collected data in the conduct of after action reviews (AARs). The materials assume skilled observers who can quickly identify when a unit is performing especially well or not, and, if not, the nature of the problem. Nothing in the Assessment Package can substitute for that expertise. The package adds value to two aspects of assessment. First, consistency in the assessment of multiple observers is facilitated through the consideration of the same outcomes and tasks. Second, efficiency in the assessment and AAR process is enhanced.

This assessment package is for the engineer battalion supporting a heavy brigade. It is organized to allow a commander or other observer to consider performance at several levels associated with increasingly focused questions:

- Did the unit achieve the purpose of the BF (e.g., for BF 19, to provide leadership, direction, command, and control during preparation for the battle)?
- If the purpose was not achieved, which outcomes did not occur? (e.g., Did subordinate leaders demonstrate an understanding of the critical elements of their own mission and mission essential tasks, the brigade mission, and the brigade commander's intent?)
- If an outcome did not occur or if performance was exemplary, what components of the outcome (e.g., backbriefs, rehearsals) or clusters of tasks (e.g., rehearsal tasks related to level of participation, priority of tasks, and realism) were notable strengths or weaknesses?

The tools provided in this Assessment Package include:

- **Worksheet:** This provides a means to record brief answers to each of above three questions.
- **Assessment Strategy and Assessment Scale:** The Strategy section advises where assessment personnel should be stationed to both observe performance, and review incoming information and outgoing products. The Assessment Scale can be used to assign evaluative ratings to both observations and products.
- **Outcome Assessment Observations and Diagnosis Aids:** These forms guide observers in making their evaluative ratings and then in further specifying, or diagnosing, any weakness in the observed performance.
- **Product Review Measures of Effectiveness:** These forms provide a means for collecting information regarding each of the products. They identify the products to be reviewed, which items to evaluate, and the information to be recorded.

Planning Assessment

The Assessment Strategy tool, briefly noted above, lists all outcomes that could be addressed, suggests where observers should be located, and specifies activities and products to be observed. The strategy helps commanders decide which outcomes should be addressed, guides the estimate of the number of observers and types of enemy forces required, and identifies the relevant assessment tools in the package (e.g., measures of effectiveness, outcome assessment guides, and diagnostic aids).

Conducting AARs

In assessing the training and organizing the AAR, the commander or observer progresses through three decisions. The first decision is whether the function was accomplished and if it should be addressed in the AAR. This decision is typically based on whether the unit accomplished the purpose of the function and the outcomes that support the purpose. The next level of choice is the selection of function outcomes that are appropriate for the AAR. This analysis is supported by objective measures in the Assessment Package's tables and a framework for systematic expert judgment concerning performance related to the outcome. The third level of selection concerns the specific behavior related to the outcome that was pivotal to the unit's success or failure. This selection is aided by data collected in accordance with the observation and product review guides for each component. In complex outcomes, the performance requirements are broken into components to help the commander or other observers focus their attention. In all cases, related tasks and supporting tasks are summarized to describe behavior required to achieve the outcome. Two types of measures help provide the desired consistency and efficiency.

Outcome Assessment Guides. These guides usually require the commander or observer to be present to watch the unit's actions and judge the results. Tasks and supporting tasks associated with each outcome are grouped into likely strengths or weaknesses. The guides are supported by diagnostic aids tied to the function analysis in Volume 1. The diagnostic aids list the tasks and supporting tasks that apply to the outcome components and task summaries.

Product Measures of Effectiveness. These measures help anchor the assessment with objective data. The tables associated with the measures of effectiveness should be completed for each event that covers the relevant outcomes. Over time, the measures will provide a context for showing how performance compares with other units or with previous performance by the subject unit. Many of the measures can be completed based on products, so the commander or observer does not have to view the performance. There should, however, be a mechanism in place to collect and process the information before the AAR.

WORKSHEET

MISSION _____
DATE _____
UNIT _____

Briefly state the engineer brigade and armored brigade commanders' intents for this mission in the box below.

Engineer brigade commander's intent:
Armored brigade commander's intent:

PURPOSE OF THE BF: To provide engineer support which sustains the armored brigade's ability to accomplish its mission within the engineer and armored brigade commanders' intents.

Did the battalion achieve this purpose? (Circle one) YES NO
If this performance exceeded the standard, please describe any techniques of superior performance. These are techniques that you believe should be cited in the AAR and, perhaps, relayed through lessons learned agencies to be shared with the rest of the Army.

--

WORKSHEET (Continued)

Outcome	Achieved?	Notes
<p>OUTCOME 1: Engineer battalion command posts (CPs) maintain continuous communications with higher, adjacent, and subordinate headquarters.</p>	<p>Y N</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>OUTCOME 2: The engineer battalion commander, other decision makers, and the engineer battalion staff receive, evaluate, and process timely and accurate battlefield information during mission execution.</p>	<p>Y N</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>OUTCOME 3: Tactically sound recommendations are developed and critical information is communicated by the engineer battalion staff and subordinate leaders.</p>	<p>Y N</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>OUTCOME 4: Sound (suitable, feasible, acceptable) decisions are made by the engineer battalion commander and others within the battalion.</p>	<p>Y N</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

Outcome	Achieved?	Notes
<p>OUTCOME 5: Affected units and personnel receive relevant direction, changes, and refinements to the plan in time to perform troop leading procedures (TLPs) and execute coordinated and synchronized actions.</p>	<p>Y N</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>OUTCOME 6: Subordinate leaders demonstrate an understanding of the critical elements of their missions and mission essential tasks, the engineer battalion mission, and the battalion commander's intent.</p>	<p>Y N</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>OUTCOME 7: Soldiers are motivated, disciplined, and maintain unit cohesion during the battle.</p>	<p>Y N</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>OUTCOME 8: The engineer battalion command, control, communications, and intelligence (C3I) capability is effective, survives, and is prepared for the next mission.</p>	<p>Y N</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

ASSESSMENT STRATEGY

Locations to observe unit performance and aspects of that performance relevant to assessment are suggested for each outcome. The suggested locations and focus/focuses are not meant to be an exhaustive or all inclusive list.

Outcome	Location and Focus of Assessment
<p>OUTCOME 1: Engineer battalion command posts (CPs) maintain continuous communications with higher, adjacent, and subordinate headquarters.</p>	<p>(Use Tables 2 and 3)</p> <ul style="list-style-type: none"> • With engineer battalion CPs to monitor communication to and from: brigade headquarters (HQ), adjacent units, subordinate engineer battalion units and task force (TF) engineers. • Appraise continuity of communications if engineer battalion CPs move, or if location or tempo of battle changes.
<p>OUTCOME 2: The engineer battalion commander, other decision makers, and the engineer battalion staff receive, evaluate, and process timely and accurate battlefield information during mission execution.</p>	<p>Focus is on situational awareness (seeing the battlefield), based primarily on collection and evaluation of information by the staff. (Use Tables 1, 4, and 7)</p> <ul style="list-style-type: none"> • With engineer battalion CPs to monitor gathering of information during battle. • With engineer battalion CPs to monitor evaluation of battlefield information and updating of products (templates, matrices, etc.). • Compare staff time required to evaluate information and update products to time available to keep pace with requirements of supported brigade. • With commander and other battalion decision makers to appraise availability of critical information. • Compare accuracy of information and updates to products to actual mission, enemy, terrain, troops, and time available (METT-T) (Situational Awareness: Appraise both during and after the battle).

Outcome	Location and Focus of Assessment
<p>OUTCOME 3: Tactically sound recommendations are developed and critical information is communicated by the engineer battalion staff and subordinate leaders.</p>	<p>Focus is the staff providing information. (Use Tables 1, 3, 4, 6, 7, and 9)</p> <ul style="list-style-type: none"> • With engineer battalion commander to appraise information and recommendations passed to engineer brigade commander and armored brigade commander. • With engineer battalion CPs to monitor development of information and recommendations for engineer commander. • Compare recommendations to actual METT-T (Situational Awareness: Appraise both during and after the battle).
<p>OUTCOME 4: Sound (suitable, feasible, acceptable) decisions are made by the engineer battalion commander and others within the battalion.</p>	<p>Focus is the commander's assessment and decision making (development of the fragmentary order (FRAGO), if needed). (Use Tables 1, 6, 7, and 9)</p> <ul style="list-style-type: none"> • With engineer battalion commander and staff to appraise (both before and after the battle): <ul style="list-style-type: none"> -- Suitability: will course of action (COA) accomplish mission and meet intent of brigade commander? -- Feasibility: does engineer battalion have means (time and physical resources) to execute COA? -- Acceptability: will COA risk unacceptable losses of personnel or equipment, or place engineer battalion in an untenable position with respect to anticipated follow-on mission(s)? • Development of FRAGO to implement decision.

Location and Focus of Assessment

Outcome

OUTCOME 5: Affected units and personnel receive relevant direction, changes, and refinements to the plan in time to perform troop leading procedures (TLPs) and execute coordinated and synchronized actions.

Focus is on issuing and disseminating FRAGOs, and units having time to implement; i.e., being/doing what is required. (Use Tables 2, 3, and 8)

- With engineer battalion staff to monitor production and dissemination of FRAGO.
- With engineer battalion subordinate units to monitor receipt of changes and refinements to plans.
- Do subordinate units have time to
 - execute required TLPs?
 - execute perform required actions?
 - synchronize actions with other units?
- Appraise support provided by engineer battalion to armored brigade.

OUTCOME 6: Subordinate leaders demonstrate an understanding of the critical elements of their missions and mission essential tasks, the engineer battalion mission, and the battalion commander's intent.

Focus is on demonstration of understanding by briefback and by executing the correct action, which can be observed by the commander. (Use Tables 1, 3, 6, and 9)

- With engineer battalion commander when:
 - (1) he meets with subordinate engineer battalion leaders to receive information and issue directions.
 - (2) he receives reports from subordinates.
- Check that engineer battalion commander is, himself, checking to ensure subordinate leaders understand their mission and the engineer battalion commander's intent and concept.
- With subordinate units to assess extent to which they execute their mission and achieve the engineer battalion commander's intent.

Location and Focus of Assessment

Outcome

<p>OUTCOME 7: Soldiers are motivated, disciplined, and maintain unit cohesion during the battle.</p>	<p>(Use Table 9)</p> <ul style="list-style-type: none"> • With engineer battalion commander to monitor use of leadership techniques. • With subordinate units to check morale, cohesion, awareness of situation among soldiers.
<p>OUTCOME 8: The engineer battalion command, control, communications, and intelligence (C3I) capability is effective, survives, and is prepared for the next mission.</p>	<p>(Use Tables 1, 2, 3, and 5)</p> <ul style="list-style-type: none"> • With engineer battalion CPs and subordinate leaders to determine if command and control (C2) capability survives • If a key C3I system becomes combat ineffective an alternative system rapidly takes its place. • If the engineer battalion commander becomes combat ineffective the succession of leadership plan is implemented effectively. • Is engineer battalion commander able to confirm that engineer battalion is prepared to continue with the next mission?

ASSESSMENT SCALE

Whenever the unit's performance must be rated with respect to an outcome, or component of an outcome, the rating should be on the scale Adequate, Marginal, Not Adequate, defined below. Whenever these ratings are required, the outcome (or component) will be framed in a box with the rating scale, as in this example:

OUTCOME 1: The engineer battalion CPs maintain continuous communications with higher, adjacent, and subordinate headquarters.	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

In each case, circle the appropriate rating, using the scale below for guidance:

Adequate	Marginal	Not Adequate
The unit can successfully achieve the outcome to standard. Outcome is achieved with no significant shortcomings.	The unit can successfully achieve the outcome with some shortcomings.	The unit cannot achieve the outcome to standard.

Two sub-sections are included with each Outcome's section to assist in the selection of an appropriate rating. These sub-sections should be used if the observer requires more information upon which to base a rating or requires precision to focus planning for training:

- 1) The first sub-section consists of assessment statements which orient the observer on observable performances related to the tasks contributing to achieving the Outcome. The assessment statements were derived by incorporating the substance of several tasks.
- 2) The second sub-section entitled Diagnostic Aid lists the tasks and subtasks supporting that particular Outcome. The diagnostic aid permits selection of specific tasks to facilitate planning future training.

Where appropriate due to complexity, some Outcomes have been divided into outcome components which are assessed separately.

OUTCOME ASSESSMENT OBSERVATIONS AND DIAGNOSIS

OUTCOME 1 ASSESSMENT

OUTCOME 1: The engineer battalion command posts (CPs) maintain continuous communications with higher, adjacent, and subordinate headquarters.

(Use Tables 2 and 3)

Assessment Statements

- The engineer battalion commander positions himself where he can best direct and lead, observe the battlefield, and synchronize operations.
- The engineer battalion commander positions himself to communicate with the armored brigade commander, adjacent units, engineer battalion subordinate commanders, the engineer battalion main CP, and supported brigade units.
- The engineer battalion CPs position themselves to enable communications with the armored brigade CPs, adjacent units, engineer battalion subordinate commanders, other engineer battalion CPs, and supported brigade units.
- If necessary, the engineer battalion CPs move by split echelon to maintain continuous communication capability.

OUTCOME 1 DIAGNOSTIC AID

OUTCOME 1: The engineer battalion command posts (CPs) maintain continuous communications with higher, adjacent, and subordinate headquarters.

Task Elements

1. **The engineer battalion commander directs and leads subordinate forces.** [Army Training and Evaluation Program (ARTEP) 5-145- Mission Training Plan (MTP); Field Manual (FM) 5-71-3, FM 71-3].
 - 1a. The engineer battalion commander provides command presence by positioning himself where he can best lead, observe the enemy and friendly situations, monitor the maneuver brigade's most important engineer event, and command and control the engineer support for the battle. Considerations: [FM 5-71-3, p. 2-1]
 - 1a1 Positions where he can physically observe and influence the engineer battalion's critical actions.
 - 1a5 Maintains communications capabilities with:
 - a) The supported maneuver brigade and engineer brigade commanders.
 - b) Subordinate commanders.
 - c) Engineer battalion command posts (CPs).
 - 1b. The engineer battalion commander directs engineer operations. [FM 5-71-3, pp. 2-1 and 2-8]
 - 1b5 Repositions and maintains communications with and control of subordinates.
 - 1b9 Integrates and coordinates engineer operations in consideration of the battlefield operating systems (BOS). [FM 5-71-3, p. 1-5]
 - g) Command and control.
 - (3) Information systems which aid command and control are selected based on updated information. [FM 5-71-3, pp. 2-23 through 2-25]
5. **Engineer battalion command posts manage and maintain command, control, and communications.** [ARTEP 5-145-MTP, Task 05-1-0018; FM 5-71-3]

- 5a. Engineer battalion CPs manage means of communicating information.
- 5a1 The engineer battalion executive officer (XO) is the "information manager" for the staff. [FM 5-71-3, p. 2-1; ARTEP 5-145-MTP, Task 5-1-0026/1, 2, and 3]
 - a) Facilitates the flow of information and communication from staff members and subordinate units.
- 5a4 Engineer battalion CPs maintain communications (frequency modulation (FM) radio and multi-channel, wire, messenger) with subordinate units, adjacent units, supported, supporting, and higher headquarters. [ARTEP 5-145-MTP, Task 5-4-0028]
 - a) The engineer battalion signal officer (SO) ensures that battalion communications systems and links (e.g., retransmission) are operational and support the commander, staff, and subordinate leaders.
 - b) The engineer battalion XO manages battalion communications, including positioning of command and control elements.
 - c) The engineer battalion SO controls signal operating instructions (SOI) issue and use.
 - d) The engineer battalion SO coordinates retransmission capabilities for the battalion.
 - e) The engineer battalion SO directs the communications section's efforts on inspecting and testing battalion communications equipment and systems.
- 5a5 Liaison officers (LNOs) provide information to the engineer battalion commander and staff, or the maneuver brigade headquarters, or the headquarters they represent, or units they are coordinating with for the engineer battalion. [FM 5-71-3, pp. 2-5 and 2-6; Jarrett, 1996]
- 5a6 All engineer battalion CPs eavesdrop on higher and adjacent unit command and operations and intelligence (O&I) nets for information. [FM 5-71-3, p. 2-26]
- 5a7 The engineer battalion S3 at the tactical (TAC) CP manages communications: [FM 5-71-3, pp. 2-5 and 2-25]
 - c) Operates and monitors communications nets.
 - (1) Engineer battalion command.
 - (2) Maneuver brigade O&I.
 - (3) Maneuver brigade command.
- 5a8 The engineer battalion XO, as the battalion second-in-command (2IC), directs the main CP operations and controls engineer actions that the commander cannot control. [FM 5-71-3, p. 2-5]
 - a) The engineer battalion XO supervises net control station (NCS) actions for the command net.

- (1) Communicates to subordinates the commander cannot reach.
 - b) The engineer battalion XO and main CP staff manage communications networks in support of counter-reconnaissance and reconnaissance and surveillance (R&S) operations in order to maintain reporting linkages for critical sources of information.
 - c) The battalion XO and main CP staff operate and monitor communications nets.
 - (1) Engineer battalion command.
 - (2) Maneuver brigade command.
 - (3) Engineer battalion administrative/logistics (A/L).
 - (4) Maneuver brigade O&I.
 - d) The engineer battalion nuclear, biological, and chemical (NBC) noncommissioned officer (NCO) manages the NBC warning and reporting system (NBCWRS) for the battalion through coordination and communication with external headquarters (engineer brigade, maneuver brigade, and adjacent units). [FM 5-71-3, pp. 2-3 and 2-4]
- 5a9 The engineer battalion rear CP.
- b) The engineer battalion headquarters and headquarters company (HHC) commander directs rear CP operations. [FM 5-71-3, p. 2-6]
 - (1) Manages the engineer battalion A/L net; maintains communications with subordinate and supporting units and headquarters.
 - (2) Monitors the tactical situation and maintains communications to ensure that it is prepared to assume the duties of the battalion main CP.
 - (3) Operates on and monitors communications nets.
 - (a) Engineer battalion command.
 - (b) Engineer battalion A/L.
 - (c) Maneuver brigade A/L
 - (4) The HHC commander is prepared to switch to cover the same nets as the engineer battalion main CP in the event the main CP is incapacitated.
 - c) The engineer battalion HHC commander directs field trains operations. [FM 5-71-3, pp. 6-2 and 6-4]
 - (1) Maintains communications through physical liaison with the maneuver brigade rear CP and the forward support battalion (FSB) CP.
 - (2) Operates on and monitors communications nets.
 - (a) Engineer battalion command.
 - (b) Engineer battalion A/L.

- 5b. Engineer battalion CPs move to maintain survivability and communications. [FM 5-71-3, pp. 2-4 through 2-6]
- 5c. Command and control of the engineer battalion are maintained during the displacement of a CP. [FM 5-71-3, pp. 2-5 and 2-6]

OUTCOME 2 ASSESSMENT

OUTCOME 2: The engineer battalion commander, other decision makers, and the engineer battalion staff receive, evaluate, and process timely and accurate battlefield information during mission execution. (Use Tables 1, 4, and 7)

Component A. The engineer battalion commander and staff members acquire accurate battlefield information during the execution of the battle.	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

Assessment Statements

- Engineer battalion CPs and staff support the mission by exchanging information with armored brigade, engineer brigade, adjacent, and supported units.
- Staff members obtain information that is critical to assisting the engineer battalion commander to synchronize the execution of the engineer battalion support of the armored brigade battle.
- Engineer battalion XO manages the flow of information through the engineer battalion main CP.
- Engineer battalion S2 (intelligence) section obtains:
 - Information that answers the commander's critical information requirements (CCIR).
 - Information related to enemy dispositions, composition, intentions.
 - Information related to engineer battalion's capability to continue to collect intelligence information.
- Engineer battalion S3 (operations) section obtains:
 - Changes to mission concept or plan from engineer battalion commander.
 - FRAGOs/warning orders (WARNOs) from division or brigade HQ.
 - Information concerning effectiveness of engineer battalion operations security (OPSEC) measures.
 - Subordinate units' situation reports (SITREPs) and graphics.
 - Information on status of mission accomplishment: Mobility status; Countermobility status; Survivability status.
 - Requests for resources from subordinate engineer battalion units.
 - Recommendations from subordinate engineer company commanders.

- Information required for confirming, refining or changing the decision support template (DST).
- Updates from the engineer battalion S1 and S4.

- Engineer battalion S1 section obtains personnel information:
 - Personnel status from engineer battalion subordinate units.
 - Personnel information from brigade S1.
 - Morale and discipline indicators from brigade special staff officers.
 - Information from brigade military police (MP) platoon leader concerning enemy prisoner(s) of war (EPW) processing and evacuation requirements.

- Engineer battalion S4 section obtains logistics information:
 - Logistics reports from engineer battalion subordinate units -- Status of supplies, equipment readiness.
 - Updates on transportation assets and movement schedules for engineer equipment and supplies.
 - Status of host nation support available.

<p>Component B. The engineer battalion staff members evaluate information and update products during the execution of the battle.</p>	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

Assessment Statements

- Engineer battalion S2 section evaluates intelligence information, identifies significant changes to the situation and updates intelligence products:
 - DST.
 - Event matrix.
 - Operational graphics.
 - Operations estimate.
 - Situation map.

- Engineer battalion S3 section evaluates operations information to ensure synchronization and updates operations control measures:
 - Current situation maps and overlays.
 - The DST (in conjunction with engineer battalion XO and commander).
 - Synchronization matrix.
 - Operations overlays for the supported brigade.
 - Engineer battalion plans map, to support future brigade operations.

- Engineer battalion S1 section evaluates personnel information, and updates S1 products:
 - Calculates probable internal medical support requirements and coordinates schedules, locations, and capabilities with supporting medical element.
 - Assesses engineer battalion preventive medicine measures for compliance with engineer battalion tactical standing operating procedures (TSOP).
 - Verifies casualty feeder reports from subordinate elements.
 - Consolidates subordinate elements' strength reports.
 - Prepares standard installation/division personnel system (SIDPERS) transactions and reports: casualty feeder reports; organization strength report.
 - Prepares personnel status (PERSTAT) report in accordance with TSOP.

- Engineer battalion S4 section evaluates information about maintenance of engineer equipment, transportation of engineer equipment and supplies and updates S4 products:
 - Percent fill of combat basic loads.
 - Adequacy of combat service support (CSS) supply assets.
 - Number and type of equipment systems on hand and operational.
 - Systems non-mission capable and projections for repair and return of essential vehicles and other equipment.
 - On-hand Class (CL)IX and prescribed load list (PLL) stockage levels.

OUTCOME 2 DIAGNOSTIC AID

OUTCOME 2: The engineer battalion commander, other decision makers, and the engineer battalion staff receive, evaluate, and process timely and accurate battlefield information during mission execution.

Task Elements

Component A. The engineer battalion CPs acquire accurate battlefield information during the execution of the battle.

1. **The engineer battalion commander directs and leads subordinate forces.** [ARTEP 5-145-MTP; FM 5-71-3, FM 71-3].
 - 1b. The engineer battalion commander directs engineer operations. [FM 5-71-3, pp. 2-1 and 2-8]
 - 1b1 Directs the battalion executive officer (XO), S3, command sergeant major (CSM), or another subordinate to positions to observe, control, and report on critical events where the commander cannot be present.
2. **Engineer battalion command posts provide communication and control.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3]
 - 2a. The engineer battalion staff acquires information.
 - 2a1 The engineer battalion staff obtains information relative to the commander's CCIR and the current situation: [ARTEP 5-145-MTP, Task 5-1-0002]
 - a) The status and locations of subordinate units.
 - b) Changes to mission, enemy, terrain, troops, and time available (METT-T).
 - c) Updates on the maneuver brigade situation from the assistant brigade engineer (ABE).
 - d) New guidance or missions from the supported maneuver brigade commander.
 - 2a2 The engineer battalion XO manages the flow of information in the engineer battalion CP and establishes a system to keep the engineer battalion commander informed. [FM 5-71-3, p. 2-1]
 - a) Routine information is communicated to the engineer battalion commander per battalion standing operating procedures (SOP). [ARTEP 5-145 MTP, Task 5-1-0026]
 - b) CCIR information is obtained from engineer battalion subordinate leaders and staff officers according to their area of responsibility; actions: [ARTEP 5-145-MTP, Tasks 5-1-0026 and 5-1-0413]

- (1) Monitor and modify battalion activities as necessary.
 - (2) Verify and, as appropriate, modify coordination between battalion and adjacent units.
 - (3) Support the commander's intent concerning mission execution.
- 2a3 The engineer battalion S2 identifies significant changes to the intelligence preparation of the battlefield (IPB). [FM 5-71-3, p. 2-2]
- a) Receives information from division engineer, ABE, and battalion staff:
 - (1) TerraBase updates from division engineer.
 - (2) Intelligence summaries (INTSUMs) and other information from ABE and higher headquarters.
 - (3) Operations security (OPSEC) reports from the engineer battalion S3, operations section, and subordinate units which contribute to analysis of battalion security posture.
 - (4) Information on current situation learned by eavesdropping on maneuver brigade and adjacent unit command and operations and intelligence (O&I) nets.
 - b) Receives information from subordinate units:
 - (1) Information from debriefing patrols and other reconnaissance (R&S) forces performing engineer battalion directed information collection activities; e.g., obstacle intelligence (OBSTINTEL).
 - (2) Spot reports, e.g., size, activity, location, unit, time, and equipment (SALUTE) from engineer battalion elements.
 - c) Receives IPB information from engineer battalion or maneuver brigade special staff officers and LNOs acquired through their "parent" units.
- 2a4 The engineer battalion S3 and operations section obtain information:
- a) Changes from the maneuver brigade commander to guidance and mission concept and requirements for information.
 - b) Maneuver brigade operations: [FM 5-71-3, pp. 2-2, 2-3, 2-5 and 2-6]
 - (1) Reports from maneuver brigade subordinate units (e.g., maneuver task forces [TFs], R&S forces, security elements):
 - (a) Enemy contact:
 - 1 Ground.
 - 2 Fires.
 - 3 Other.
 - (b) Current strength, combat power, and capabilities.
 - (2) Requests for additional resources from subordinate units.

- (3) Recommendations from maneuver and other brigade subordinate commanders on changes to their plans based on their current status and projected status.
- (4) Adherence to timelines.
 - (a) Status of survivability production.
 - 1 Delivery of CL IV and CL V.
 - 2 Availability of special equipment.
 - 3 Time and effort to complete tasks.
 - (b) Status of obstacle production.
 - 1 Delivery of CL IV and CL V obstacle materials.
 - 2 Availability of special equipment.
 - 3 Time and effort to complete tasks.
 - 4 Backhaul of obstacle materials.
 - (c) Status of mobility operations
 - 1 Availability of special equipment.
 - 2 Time and effort to complete tasks.
- (5) Equipment status.
- (6) Information from eavesdropping on: [FM 5-71-3, p. 2-26]
 - (a) Supported maneuver brigade command nets.
 - 1 Orders from brigade or other commanders.
 - 2 Situation reports by maneuver battalion TF or other brigade units to brigade CPs.
 - (b) Maneuver battalion TF command nets.
- c) Engineer specific missions: [FM 5-71-3, pp. 2-1 and 2-2; field note (FN) - NTC engineer (Engr) observer-controller (OC)]
 - (1) Countermobility status:
 - (a) Obstacle construction starting and completion times from task force engineers.
 - (b) Status on delivery of CL IV and V materials or breaching materials from task forces' engineers, engineer battalion S4, and engineer battalion support platoon leader.
 - (c) Updates on adherence to obstacle construction timelines from engineers.
 - (d) Updates on family of scatterable mines (FASCAM) preparations and employment from the maneuver brigade fire support officer (FSO), ABE, and task forces' engineers.
 - (e) Updates on the location, obstacle intent, and method of construction of obstacle groups from task forces' engineers.
 - (f) Status of work in obstacle belts.

- (2) **Survivability status:**
 - (a) Position construction starting and completion times from task forces' engineers and other maneuver brigade subordinate units.
 - (b) Updates on adherence to survivability position construction timelines from task forces' engineers and other subordinate maneuver brigade units.
- (3) **Mobility status:**
 - (a) Updates on availability of engineer materials, such as gravel and concrete, from engineer companies and task forces' engineers.
 - (b) Updates on availability of engineer systems (operational, non-operational) from engineer companies and task forces' engineers.
 - (c) Updates on availability of mobility equipment organic to supported brigade maneuver units (e.g., plows, rollers, breach kits) from task force engineers.
- d) Information from other staff officers. [FM 5-71-3, pp. 2-2 and 2-3]
 - (1) Information from the engineer battalion S2 or maneuver brigade S2 which confirms or denies the engineer estimate requirements to achieve the maneuver brigade or engineer battalion commanders' intents.
 - (2) Equipment and personnel updates from the engineer battalion rear CP.
 - (3) Updates from the engineer battalion signal officer (SO) or maneuver brigade signal officer on communications links and systems.
 - (4) Reports from engineer reconnaissance units and scouts on terrain and enemy obstacles.
 - (5) Changes to maneuver task force and subordinate units' plans.
- e) Information necessary to track the DST.
- 2a5 The engineer battalion NBC NCO obtains NBC information. [FM 5-71-3, pp. 2-3 and 2-4]
 - a) Changes from the engineer battalion commander to guidance and mission concept; requirements for information.
 - b) NBC warning and reporting system (NBCWRS) updates from maneuver brigade.
 - c) Status and location updates for NBC equipment and supplies from subordinate units and the engineer battalion S4.
 - d) Status and location updates of decontamination assets from the engineer battalion S4 and decontamination unit leaders.
 - e) NBC monitoring and surveillance reports from subordinate units.
 - f) Information from the S2 which confirms or refutes estimate of NBC requirements.
 - g) Changes to engineer companies' and subordinate units' plans in terms of projected locations, decontamination requirements, and timelines.
- 2a6 The engineer battalion (BN) SO and communications section obtain information. [FM 5-71-3, p. 2-3]

- a) Changes from the engineer battalion commander to guidance and mission concept; requirements for information.
 - b) Status of communications links from engineer battalion CPs to maneuver brigade CPs.
 - c) Updates from subordinate units on communications status.
 - (1) Status of communications links from engineer battalion CPs.
 - (2) Equipment (secure and non-secure).
 - (3) Signal operating instructions (SOIs).
 - (4) Availability of subordinate unit communications personnel.
 - d) Intelligence information from the division signal battalion headquarters.
 - e) Information from the engineer battalion S2.
 - (1) Which confirms or refutes estimate communications requirements.
 - (2) Updates on enemy electronic and communication capabilities.
 - f) Information from the engineer battalion XO or S3 about changes to proposed engineer battalion CP locations and projected timelines.
 - g) Changes to engineer companies' and subordinate units' plans in terms of projected locations and timelines.
- 2a7 The engineer battalion S4 and S4 section obtain information. [FM 5-71-3, Chap 6]
- a) Status reports from subordinate units on resupply operations.
 - b) Status from the engineer battalion field trains/rear CP on:
 - (1) Reconstitution of basic loads.
 - (2) Stock piling of classes of supplies to support emergency resupply and the mission.
 - c) Medical, maintenance, transportation, and supply updates from forward support battalion (FSB) special project officer and maneuver brigade S4.
 - d) Updates on transportation assets and movement schedules from:
 - (1) Engineer battalion support platoon leader for ground assets.
 - (2) S3 for aviation assets.
- 2a8 The engineer battalion S1 and S1 section obtain information. [FM 5-71-3, Chap 6]
- a) Status reports from subordinate units for:
 - (1) Evacuation of casualties.
 - (2) Religious support.
 - (3) Personnel actions support (e.g., replacements, awards, promotions).
 - b) Enemy prisoners of war (EPW) processing and evacuation information from subordinate units and maneuver brigade military police.

- 2a9 The engineer battalion maintenance technician (BMT) obtains information on the status and positioning of maintenance assets.
[FM 5-71-3, Chap 6]
- a) Unit maintenance collection points (UMCP).
 - (1) Engineer battalion.
 - (2) Maneuver Bn TFs.
 - b) Recovery assets.
 - (1) Engineer battalion.
 - (2) Other brigade units.
 - c) Heavy equipment transporters (HETs) for equipment transfer.
- 2a10 The engineer battalion medical section sergeant obtains information on positioning, activity, and readiness of medical assets.
[FM 5-71-3, Chap 6]
- a) Forward aid stations.
 - b) Main aid stations.
 - c) Ambulances and ambulance exchange points (AXPs).
 - (1) Status of capability to receive casualties.
 - (2) Activity.
- 2a11 The engineer battalion rear CP obtains information on: [FM 5-71-3, Chap 6]
- a) Changes from the engineer battalion commander to guidance, mission concept, and requirements for information.
 - b) Changes to the enemy situation.
 - c) Information from maneuver, fire support, Army aviation, and other units directed to support rear area combat operations (RACO) operations. [FM 5-71-3, p. 6-6]
 - d) Task organization and status of combat service support (CSS) elements.
 - (1) Engineer battalion subordinate units.
 - (2) The engineer battalion combat trains command post (CTCP)/rear CP.
 - (a) Aid station(s).
 - (b) Push packages.
 - (c) Engineer battalion support platoon decontamination equipment.
 - (d) UMCP.
 - (3) The engineer battalion field trains command post (FTCP)/rear CP integration with the maneuver brigade support area (BSA).

- e) Changes to engineer companies' and subordinate units' plans in terms of projected locations and timelines.

Component B. The engineer battalion CPs evaluate information and update products during the execution of the battle.

2. **Engineer battalion command posts provide communication and control.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3]

2b. The engineer battalion staff evaluates acquired information and engineer status, updates essential products, and maintains status.

2b1 The engineer battalion S2:

- a) Evaluates intelligence information.
- b) Tracks status of reconnaissance assets. [FN - NTC Engr OC]
 - (1) Engineer.
 - (2) Scouts.
- c) Tracks the enemy. [FM 5-71-3, p. 2-2]
 - (1) OBSTINTEL and other engineer information.
 - (2) Locations (confirmed and suspected) of enemy obstacles.
 - (3) Enemy activity.
 - (a) Indications of possible intent.
 - (b) Enemy reactions to friendly battle techniques.
 - (c) Specific enemy actions triggered by friendly actions or events.
 - (4) Enemy strength and capabilities.
 - (5) Adherence to, or deviation from, postulated enemy course of action (COA).
- d) The engineer battalion S2 updates products:
 - (1) Situation template.
 - (2) Event template.
 - (3) Modified combined obstacle overlay (MCOO).

2b2 The engineer battalion S3 and operations section:

- a) Evaluate information and determine any necessary modifications to identify: [FM 5-71-3, pp. 2-8 through 2-13; FN - NTC Engr OC]
 - (1) Information which confirms or refutes IPB information which may affect achieving the engineer battalion commander's intent.
 - (2) Changes to guidance, direction, and information concerning priorities and timelines.

- (a) Deviations from timelines in minefield construction.
- (b) Impact on achieving designated obstacle group effects.
- (3) Impact of changes to the supported brigade maneuver plan on brigade's subordinate units' maneuver plans.
- (3) Compare desired engineer battalion endstates with what is possible based on current scheme of engineer operations, situation, and trends.
 - (1) Maneuver units.
 - (2) Fire support.
 - (3) Engineer support.
 - (4) CSS.
- c) The engineer battalion S3 and operations section update products.
 - (1) Status of engineer equipment.
 - (2) Obstacle graphics.
 - (3) Situation template.
 - (4) MCOO.
 - (5) Event template.
 - (6) Fire support overlay.
 - (7) Engineer execution matrix.
 - (8) DST.

- 2b3 The engineer battalion NBC section:
 - a) Evaluates information.
 - b) Updates products. [FM 5-71-3, pp. 2-3 through 2-4]
 - (1) Update NBC estimate (may or may not be in written form) and mission-oriented protective posture (MOPP) analysis.
 - (2) Enemy NBC capabilities.
 - (3) NBC equipment and supplies inventories.
 - (4) NBC overlays and graphics.

- 2b4 The engineer battalion SO and communications section:
 - a) Evaluate information.
 - b) Update communications products. [FM 5-71-3, p. 2-3]
 - (1) Update signal estimates (may or may not be in written form).
 - (2) Communications network overlay, area coverage overlay, and dead space overlay.

- (3) SOIs and secure equipment keying device codes.
- 2b5 The engineer battalion S4 and HHC commander.
- a) Evaluate information. [FM 5-71-3, Chap 6]
 - (1) Identify information which confirms or refutes IPB information which may affect achieving the engineer battalion commander's intent.
 - (2) Appraise answers to intelligence queries requested by CSS officers which could affect initial CSS plan.
 - b) Update transportation information and status. [FM 5-71-3, Chap 6]
 - (1) Transportation portion of updated CSS estimate (may or may not be in written form).
 - (2) Schedules and priorities.
 - (3) Status of supplies, equipment, and materials requiring transport.
 - (4) Availability of ground transport assets.
 - (5) Availability of air transportation assets (from engineer battalion S3).
 - (6) Logistic package (LOGPAC) convoys' organization, loads, times, and schedules.
 - (7) Transportation recovery plan and backhaul plan.
 - (8) Main supply route (MSR) and alternate supply route (ASR) traffic and route conditions.
 - (9) Transportation priorities directed by the engineer battalion commander.
 - c) Compare desired engineer battalion endstate with current supply and transportation status.
 - d) Appraise impact of adjusted subordinate units' plans on engineer battalion CSS plans.
- 2b6 The engineer battalion S4 updates supply information and status. [FM 5-71-3, Chap 6]
- a) Supply portion of updated CSS estimate (may or may not be in written form).
 - b) Combat basic loads (e.g., vehicles uploaded with CL V; vehicles topped off with CL III) and on-hand supply status of subordinate and supported units.
 - c) Configuration and location of immediate and emergency resupply (CL III and V) loads and push packages.
 - d) Supply priorities as directed by the engineer battalion commander.
 - e) Establishment and fill of stockpiles and caches.
- 2b7 The engineer battalion S4 and HHC commander update RACO information. [ARTEP 5-145-MTP, Task 5-1-0039]
- a) Threat (levels I, II, and III, from engineer battalion S2).
 - b) Base and base cluster defense plans integrated with FSB and maneuver brigade defense plans.
 - (1) Forces available for local security operations and reaction force.
 - (2) Indirect fire support.

- (a) Targets.
- (b) Observers.
- (3) Communications capabilities.

2b8 The engineer battalion S1:

- a) Evaluates information. [FM 5-71-3, Chap 6]
 - (1) Compares desired engineer battalion endstate with current personnel status.
 - (2) Identifies information which confirms or refutes IPB information which may affect achieving the engineer battalion commander's intent.
 - (3) Appraises answers to intelligence queries requested by CSS officers which could affect initial CSS plan.
 - (4) Appraises impact of adjusted plans from subordinate units on engineer battalion CSS plan.
- b) Updates personnel information. [FM 5-71-3, Chap 6]
 - (1) Personnel portion of updated CSS estimate (may or may not be in written form).
 - (2) Personnel status of subordinate and supported units.
 - (3) Casualty feeder reports.
 - (4) Reception and processing of replacements.
 - (5) Forecast of replacements.
 - (6) Personnel actions (awards, decorations, promotions, legal action).
 - (7) EPW processing and evacuation.
 - (8) Soldier morale and welfare activities.
 - (9) Personnel priorities as directed by the engineer battalion commander.

2b9 The engineer BMT.

- a) Evaluates information. [FM 5-71-3, Chap 6]
 - (1) Compares desired engineer battalion endstate with current maintenance status.
 - (2) Identifies information which confirms or refutes IPB information which may affect achieving the commander's intent.
 - (3) Appraises answers to intelligence queries requested by CSS officers which could affect initial CSS plan.
 - (4) Appraises impact of adjusted subordinate units' plans on engineer battalion CSS plan.
- b) Updates maintenance information. [FM 5-71-3, Chap 6]
 - (1) Maintenance portion of updated CSS estimates (may or may not be in written form).
 - (2) Number and type of systems on hand and operational.
 - (a) Combat.

- (b) Combat support (CS).
 - (c) CSS.
 - 1 Recovery.
 - 2 Maintenance support teams (MSTs).
 - 3 Corps maintenance teams (CMTs).
 - (3) Systems non-mission capable (NMC) and repairable.
 - (4) Timelines for repair and return of vehicles and equipment.
 - (5) On-hand CL IX, authorized stockage list (ASL), and prescribed load list (PLL) stockage levels.
 - (6) Maintenance activities performed by CMTs and MSTs, including the location of the maintenance activities.
 - (7) Maintenance priorities and guidelines as directed by the engineer battalion commander.
- 2b10 The engineer battalion medical section sergeant:
- a) Evaluates medical information. [FM 5-71-3, Chap 6]
 - (1) Compares desired engineer battalion endstate with current medical treatment and evacuation status.
 - (2) Identifies information which confirms or refutes IPB information which may affect achieving the commander's intent.
 - (3) Appraises impact of adjusted subordinate units' plans on engineer battalion medical treatment and evacuation plans.
 - b) Updates medical information. [FM 5-71-3, pp. 6-13 and 6-14]
 - (1) Medical portion of updated CSS estimates (may or may not be in written form).
 - (2) Casualty evacuation records.
 - (3) CL VIII stock availability and resupply activities.
 - (4) Availability and effectiveness of medical assets.
 - (5) Disposition and capability of engineer battalion medics TFs' and the brigade's medical support, forward aid station (FAS), main aid station (MAS), and medical/ambulance support from the FSB medical company.
 - (6) Medical priorities as directed by the engineer battalion commander.
- 2b11 Engineer battalion CPs maintain status:
- a) Engineer battalion command group/tactical command post (TAC CP) maintains/updates mission essential products: [FM 5-71-3, p. 2-5]
 - (1) Information which supports the CCIR.
 - (2) Current and projected engineer equipment status of subordinate units (e.g., green-amber-red).
 - (3) Operations and intelligence map.

- (a) Friendly situation.
 - (b) Enemy situation.
 - (c) Fire support overlay.
 - (d) Situation template overlay.
 - (e) Event template overlay.
 - (f) Modified combined obstacle overlay (MCOO).
 - (g) Obstacle graphics.
- (4) DST.
 - (5) Synchronization matrix.
 - (6) Engineer execution matrix.
- b) The engineer battalion main CP maintains and updates mission essential information: [FM 5-71-3, p. 2-5]
- (1) Operations and intelligence map.
 - (a) Operations overlay (maneuver brigade, maneuver TFs, and adjacent units).
 - (b) Enemy situation.
 - (c) Fire support overlay.
 - (d) Situation template overlay.
 - (e) Event template.
 - (f) Modified combined obstacle overlay.
 - (g) NBC overlay.
 - (h) CSS overlay.
 - (i) Obstacle graphics.
 - (2) CSS overlays and information per engineer battalion SOP.
 - (3) Intelligence information from maneuver brigade and engineer brigade.
 - (4) Status of preparation activities to ensure compliance with stated mission timelines.
 - (5) Current and projected engineer equipment status of subordinate units (e.g., green-amber-red).
 - (6) Status of engineer task organization.
 - (7) Obstacle and survivability position construction and progress as compared to timelines.
 - (8) Utilization of engineer assets and materials as compared to timelines.
 - (9) DST.
 - (10) Engineer execution matrix.
 - (11) Plans map (with overlays for future operations).
 - (12) Synchronization matrix.
 - (13) Journals/logs:

- c) The engineer battalion rear CP maintains and updates mission essential information and products: [FM 5-71-3, p. 2-6]
- (1) Current operations and intelligence map.
 - (a) Operations overlay (maneuver brigade, maneuver TFs, and adjacent units).
 - (b) Enemy situation.
 - (c) Rear operations, security, and threat overlay.
 - (d) Fire support overlay.
 - (e) Situation template overlay.
 - (f) Event template overlay.
 - (g) Modified combined obstacle overlay.
 - (h) Obstacle graphics.
 - (2) DST.
 - (3) Engineer execution matrix.
 - (4) CSS situation map and overlays.
 - (a) MSR and ASR.
 - (b) CSS locations, current and projected.
 - (c) Decontamination sites.
 - (5) Synchronization matrix.
 - (6) CSS staff journal.
 - (7) Current and projected personnel and equipment status.
 - (a) Personnel strength.
 - (b) Operational equipment strength.
 - (c) Status of supplies.
 - (d) Replacement personnel status/location.
 - (e) Damaged and NMC vehicles and equipment.
 - 1 Recovery status.
 - 2 Repair status.
 - 3 Replacement status.
 - (8) Status on location and evacuation of EPW and their equipment.
 - (9) Status on location and evacuation of displaced persons.

OUTCOME 3 ASSESSMENT

OUTCOME 3: Tactically sound recommendations are developed and critical information is communicated by the engineer battalion staff, subordinate commanders. (Use Tables 1, 3, 4, 6, 7, and 9)

Component A. Staff and subordinate leaders provide critical information.	Adequate	Marginal	Not Adequate
---	----------	----------	--------------

Assessment Statements

- The engineer battalion commander provides critical information to the armored brigade commander in his capacity as the brigade engineer.
- The engineer battalion staff responds to requests for information from the commanders or staffs of the engineer battalion, engineer brigade, and armored brigade.
- The engineer battalion staff elements send critical information to the engineer battalion commander.

Component B. Staff and subordinate commanders provide tactically sound recommendations.	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

Assessment Statements

- The engineer battalion commander provides tactically sound recommendations to the armored brigade commander in his capacity as the brigade engineer.
- Engineer battalion CPs and engineer battalion commander and staff members disseminate reports and recommendations to the engineer battalion commander and to engineer brigade and armored brigade HQ for their information and decisions.

OUTCOME 3 DIAGNOSTIC AID

OUTCOME 3: Tactically sound recommendations are developed and critical information is communicated by the engineer battalion staff, subordinate commanders.

Task elements support both Component A and Component B.

Task Elements

1. **The engineer battalion commander directs and leads subordinate forces.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3].
 - 1b. The engineer battalion commander directs engineer operations. [FM 5-71-3, pp. 2-1 and 2-8]
 - 1b1 Directs the battalion executive officer (XO), S3, command sergeant major (CSM), or another subordinate to positions to observe, control, and report on critical events where the commander cannot be present.
 - 1b3 Changes subordinate unit missions.
 - 1b4 Reprioritizes engineer tasks based on unanticipated events and engineer battle losses.
 - 1b6 Directs engineer units and engineer support activities at decisive points.
 - 1b7 Requests additional assets and resources from maneuver brigade or engineer brigade.
 - 1b9 Integrates and coordinates engineer operations in consideration of the BOS. [FM 5-71-3, p. 1-5]
 - c) Mobility/survivability.
 - (1) The engineer battalion commander assesses support to overcome obstacles and enhance mobility to the maneuver brigade, and takes action or recommends adjustments as necessary. [FM 5-71-3, Chap 3]
 - (a) Priorities.
 - (b) Task organization of engineer assets.
 - (c) Times at which assets are available to maneuver units.
 - d) Fire support.

- (1) The maneuver brigade commander, the engineer battalion commander as brigade engineer, and the brigade fire support officer (FSO) assess and adjust the fire support plan to support breaching operations and to integrate obstacles and fires. [FM 5-71-3, p. 1-7]
 - (2) Artillery-delivered mine employment is coordinated. [FM 5-71-3, p. 1-8]
 - (3) Protective positions for fire support assets are prepared as required.
- g) Command and control.
- (1) The engineer battalion commander assesses the stage of execution compared to anticipated requirements and directs changes, if needed, to the units or to his staff. [FM 5-71-3, p. 1-8]
 - (2) Information about change to METT-T is directed to the engineer battalion commander, command group, and command posts (CPs) to enable effective and rapid guidance during mission execution and about future operations. [FM 5-71-3, pp. 2-4 through 2-6]
 - (3) Information systems which aid command and control are selected based on updated information. [FM 5-71-3, pp. 2-23 through 2-25]
2. **Engineer battalion command posts provide communication and control.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3]
- 2c. The engineer battalion commander and staff communicate information.
- 2c1 The engineer battalion commander communicates information.
- a) The engineer battalion commander reports CCIR and other critical information concerning the ongoing and future engineer missions along with recommendations to: [FM 5-71-3, pp. 2-8 through 2-15]
 - (1) Maneuver brigade commander.
 - (2) Maneuver brigade S3.
 - (3) Maneuver brigade XO.
 - (4) Engineer brigade commander.
 - (5) Assistant division engineer.
 - (6) Maneuver brigade subordinate commanders and leaders.
 - (7) Maneuver brigade staff officers who need the information.
 - b) The engineer battalion commander reports information concerning: [FM 5-71-3, pp. 2-23 through 2-26]
 - (1) The status and location of the engineer battalion and its subordinate units.
 - (2) The status of task completion and mission accomplishment.
 - (3) Enemy contact.
 - (4) Problems which concern mission accomplishment.

- 2c2 All engineer battalion CPs and staff disseminate information. [FM 5-71-3, pp. 2-1 through 2-6).
- a) Provide briefings to the engineer battalion commander on the status of mission preparedness and execution.
 - b) Each engineer battalion staff representative communicates critical information needed to:
 - (1) Coordinate engineer battalion actions and plans.
 - (2) Monitor the situation.
 - (3) Direct engineer battalion actions.
 - c) All engineer battalion staff officers remain alert for and ensure that critical information they receive is passed to other staff officers who require the information as soon as it is received.
 - d) Information is communicated between staff officers during shift changes on the situation. [FM 5-71-3, pp. B-1 through B-5]
 - (1) Enemy activities.
 - (2) Status of subordinate units.
 - (3) On-going actions which must be monitored and tracked.
 - (4) Timelines and suspenses which must be met.
 - (5) Planning for future missions.
- 2c3 The engineer battalion S2.
- a) The engineer battalion S2 immediately reports priority intelligence requirements (PIR) and other critical information concerning ongoing and future missions along with analysis to: [FM 5-71-3, p. 2-2]
 - (1) Engineer battalion commander.
 - (2) Engineer battalion S3.
 - (3) Engineer battalion XO.
 - (4) ABE.
 - (5) Maneuver brigade S2.
 - (6) Companies under engineer battalion control.
 - (7) Engineer battalion rear CP.
 - b) The engineer battalion S2 reports information concerning: [FM 5-71-3, p. 2-2]
 - (1) Updates to the engineer battlefield assessment (EBA).
 - (2) Updates to the situation template.
 - (3) Updates to the event template.
- 2c4 The engineer battalion S3 and operations section.

- a) Use the DST to communicate recommendations to the commander.
 - b) Report and disseminate CCIR and other critical information concerning the ongoing and future missions along with recommendations to: [ARTEP 5-145-MTP, Task 5-1-0026, subtask f; FM 5-71-3, p. 2-15]
 - (1) Engineer battalion commander.
 - (2) ABE.
 - (3) Engineer battalion XO.
 - (4) Engineer companies and other subordinate units.
 - (5) Engineer battalion rear CP.
 - (6) Maneuver brigade main CP.
 - c) The engineer battalion S3 coordinates with other units to exchange information concerning engineer operations. [FM 5-71-3, p. 2-3; ARTEP 5-145-MTP, Task 5-1-0026/6; FN-NTC Engr OCs]
 - (1) Obstacle type, location, and emplacement status to include ability to achieve designated effects of obstacle groups in brigade designated belts.
 - (2) Mobility plans (maneuver brigade, division, and other units).
 - (3) Terrain management issues with the maneuver brigade XO.
- 2c5 The engineer battalion NBC NCO.
- a) Reports CCIR and other critical information concerning ongoing and future missions along with recommendations to: [FM 5-71-3, pp. 2-3 through 2-4]
 - (1) Engineer battalion commander.
 - (2) Engineer battalion S3.
 - (3) Engineer battalion XO.
 - (4) Brigade chemical officer (CMLO).
 - b) Reports engineer battalion NBC situation and analysis of CCIR, information requirements (IR), and routine information to other engineer battalion staff sections and external headquarters/staff officers. [FM 5-71-3, pp. 2-3 through 2-4]
 - (1) Maneuver brigade and engineer brigade chemical officers.
 - (2) Engineer battalion subordinate commanders and leaders.
 - (3) Supporting NBC units (e.g., decontamination, reconnaissance).
 - (4) Engineer battalion staff officers who need the information.
 - c) Coordinates with the maneuver brigade CMLO and supporting decontamination units to confirm hasty and deliberate decontamination plans and operations. [FM 5-71-3, pp. 2-3 through 2-4]
 - d) Confirms NBC reconnaissance plans and operations, with: [FM 5-71-3, pp. 2-3 through 2-4]
 - (1) Maneuver brigade CMLO.

- (2) Engineer company commanders.
 - (3) Supporting NBC reconnaissance units.
- e) Disseminates: [FM 5-71-3, pp. 2-3 through 2-4]
- (1) Chemical activity reports.
 - (2) Updated decontamination plans.
- 2c6 The engineer Bn SO and communications section.
- a) Report CCIR and other critical information concerning the ongoing and future missions along with recommendations to: [FM 5-71-3, p. 2-3]
- (1) Engineer battalion commander.
 - (2) Engineer battalion S3.
 - (3) The engineer battalion XO.
 - (4) Maneuver brigade Bn SO.
 - (5) Division signal battalion commander.
 - (6) Engineer battalion subordinate commanders and leaders.
 - (7) Engineer battalion staff officers who need the information.
- b) Coordinate with the engineer battalion S3, adjacent units, and division signal battalion headquarters. [FM 5-71-3, p. 2-3]
- (1) Confirm allocation, locations, and capabilities of signal assets.
 - (2) Acquire signal equipment to supplement the engineer battalion CPs and subordinate units which require special communications equipment
 - (3) Deconflict terrain requirements.
- 2c7 The engineer battalion rear CP CSS officers:
- a) Report CCIR and other critical information concerning the ongoing and future missions along with recommendations to: [FM 5-71-3, Chap 6]
- (1) Engineer battalion commander.
 - (2) Engineer battalion S3.
 - (3) Engineer battalion XO.
- b) Report logistical situation and analysis of CCIR, IR, and routine information to engineer battalion staff and external sources: [FM 5-71-3, Chap 6]
- (1) The engineer battalion subordinate commanders and leaders.
 - (2) Maneuver brigade rear CP.

- (3) FSB staff.
 - (4) Engineer battalion rear CP.
 - (5) Engineer battalion staff officers who need the information.
- c) Perform coordination with maneuver brigade staff, engineer battalion staff, and engineer battalion units: [FM 5-71-3, Chap 6]
- (1) Identify additional requests for support.
 - (a) Transportation assets.
 - (b) Medical augmentation.
 - (c) Maintenance support for vehicles and weapon systems and for recovery of damaged vehicles or return of repaired vehicles.
 - (2) Coordinate the transportation of supplies and cargo through engineer battalion units.
 - (3) Coordinate routine, emergency, and critical resupply operations (e.g., delivery times, types, and quantities of supplies required).
 - (4) Coordinate receiving replacements.
 - (5) Coordinate for security and protection of CSS units operating forward.
 - (6) Request additional support for engineer battalion.
 - (a) Transportation assets.
 - (b) Medical augmentation and support.
 - (c) Support of resupply operations.
 - (d) Intermediate direct support (DS)/intermediate general support (GS) maintenance support for vehicles and weapon systems and for recovery of damaged vehicles or return of repaired vehicles.
3. **The engineer battalion commander visualizes the battlefield.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3]
- 3e. The engineer battalion commander decides whether the last order promulgated needs to be changed. [ARTEP 5-145-MTP, Task 5-1-0002/4 through 7]
- 3e2 The engineer battalion staff assists the battalion commander in his analysis of the plan by providing information. [ARTEP 5-145-MTP, Task 5-1-0002/2]
- a) Each staff officer reviews updated estimates and provides information based on queries.
 - b) Each staff officer provides input on previous COAs which could be used as the new plan without detailed COA development.

- 3e3 The engineer battalion commander initiates development of a new plan based on: [FM 5-71-3, p. 2-8]
- d) The engineer battalion staff's ability to continue to monitor and direct current battalion activities while meeting new planning and monitoring requirements.
4. **The engineer battalion commander directs changes to the operation or plan.** [ARTEP 5-145-MTP, Task 05-1-0018; FM 5-71-3 Chap 2]
- 4c. The engineer battalion commander, with staff assistance if time allows, conducts the military decision-making process (MDMP) in a time-constrained environment to modify a branch or sequel or to develop a new scheme of engineer operations. (See Engineer BF 19 for detailed explanation of the MDMP in a time-constrained environment subtasks.) [FM 5-71-3, p. 2-15]
- 4c1 When planning changes to current orders or planning for a new mission during the execution phase of the current battle, the engineer battalion commander must:
- a) Consider using the MDMP products developed during the current mission as reference points from which modifications are made.
 - (1) Weather analysis.
 - (2) Terrain analysis.
 - (3) Current "running" staff estimates.
 - (a) Brigade capabilities.
 - (b) Constraints.
 - (4) PIR, essential elements of friendly information (EEFI), and friendly forces information requirements (FFIR) requested by the engineer battalion commander.
 - h) Compute the amount of time available for planning, preparation to include rehearsal, and movement.
 - i) Consider the extent of the reconnaissance effort necessary to obtain critical information.
- 4c4 The commander may request information from the staff to support his COA development.
- a) BOS specific information from selected staff members.
 - b) Information available in products developed during the initial mission MDMP.
 - c) Input on previous COAs which could be used as the new plan without detailed COA development.
5. **Engineer battalion command posts manage and maintain command, control, and communications.** [ARTEP 5-145-MTP, Task 05-1-0018; FM 5-71-3]

- 5a. Engineer battalion CPs manage means of communicating information.
- 5a1 The engineer battalion XO is the "information manager" for the staff. [FM 5-71-3, p. 2-1; ARTEP 5-145-MTP, Task 5-1-0026/1, 2, and 3]
- b) Outlines and monitors the performance and responsibilities of the staff in processing mission information, preparation status, and the commander's information requirements.
- 5a2 The engineer battalion commander or XO employs a battle captain to manage the operations of the main CP and the operations section. The battle captain: [FM 5-71-3, p. 2-5 and p. B-3; lessons learned (LL) - CALL, News from the Front]
- a) Coordinates and integrates staff activities.
 - b) Initiates staff action as directed by the commander, XO, and S3.
 - c) Ensures through shift change briefings that all critical information concerning the engineer battalion situation, on-going actions, and future requirements is passed when shifts change.
 - d) Collects mission information from other staff members (internal and external) which impact on the engineer plan.
 - e) Collects information on and initiates planning for future operations.
 - f) Identifies critical information:
 - (1) Significant changes to friendly situation.
 - (2) Significant changes to enemy situation.
 - (3) CCIR.
- 5a3 The engineer battalion XO, or battle captain, directs staff "huddles": [FM 5-71-3, pp. 2-1 through 2-2, and p. 2-19]
- a) Ensures that each staff officer disseminates information which is relevant to the CCIR.
 - b) Appraises completeness of information.
 - c) Identifies information gaps which require additional staff work.
 - d) Identifies and directs required actions to meet the demands of the situation.
- 5a5 LNOs provide information to the engineer battalion commander and staff, or the maneuver brigade headquarters, or the headquarters they represent, or units they are coordinating with for the engineer battalion. [FM 5-71-3, pp. 2-5 and 2-6; Jarrett, 1996]
- a) Provide responses to specific questions asked of LNO.
 - b) Provide status on unit locations, activities, capabilities, status, and intentions.
 - c) Perform coordination to resolve problems.
 - (1) Inability to reach/meet with specific people or staff positions.

- 5a7 (2) Receipt of information which invalidates or should change estimates and plans.
The engineer battalion S3 at the TAC CP manages communications: [FM 5-71-3, pp. 2-5 and 2-25]
- a) Facilitates control and coordination for the commander through communication with adjacent and supporting elements.
- b) Passes processed information and keeps the commander updated on new information through concise consolidated updates by eavesdropping on:
- (1) Maneuver brigade command and operations and intelligence (O&I) nets.
- (2) Engineer battalion administrative and logistic (A/L) net.
- (3) Adjacent unit command and O&I nets.
- (4) Engineer battalion subordinate unit command nets.
- (5) Engineer brigade command and O&I nets.
- 5a8 The engineer battalion XO, as the battalion second-in-command, directs the main CP operations and controls engineer actions that the commander cannot control. [FM 5-71-3, p. 2-5]
- a) The engineer battalion XO supervises net control station (NCS) actions for the command net.
- (2) Disseminates critical new information quickly to the engineer battalion commander, staff, and subordinate/supporting headquarters.
- 5a9 The engineer battalion rear CP.
- a) The engineer battalion S4, with assistance from the S1 and HHC commander, coordinates line of communications (LOC) operations on engineer battalion, maneuver TFs', and maneuver brigade MSRs and ASRs. [FM 5-71-3, p. 2-4]
6. **The engineer battalion reorganizes and supports maneuver brigade consolidation.** [ARTEP 5-145-MTP, FM 5-71-3]
- 6d. All engineer battalion elements report personnel and equipment status. [ARTEP 5-145-MTP, Task 5-1-0026/1 and 2]
- 6e. The engineer battalion XO at the main CP reports to maneuver brigade and engineer brigade. [FM 5-71-3, p. 2-25]
- 6e1 Location.
- 6e2 Status.
- a) Engineer equipment.
- b) Class IV/V obstacle materials.
- c) Personnel.

- The engineer battalion commander conducts the military decision making process (MDMP) in a time constrained environment, if required.
- The engineer battalion commander and engineer battalion staff simultaneously monitor, plan and direct all aspects of current engineer battalion operations while developing changes to plan.
- The engineer battalion commander (with staff assistance, if required) develops new COAs.
- The engineer battalion commander selects a COA and performs a suitability-feasibility-acceptability analysis:
 - Suitable -- accomplishes the engineer battalion mission while meeting the division support command (DISCOM) and brigade commanders' intents.
 - Feasible -- There is time to execute the COA, terrain supports the plan, the engineer battalion has personnel and equipment to execute the plan, the new plan will not have adverse effects on ongoing operations or engineer battalion subordinate units.
 - Acceptable -- The plan does not unduly risk personnel, equipment, or mission accomplishment.
- The engineer battalion commander conducts mission risk assessment to ensure that conditions most likely to cause mission failure and accidents (including fratricide) have been mitigated.
 - Engineer battalion units have not been tasked beyond their capabilities.
 - Situation and rules of engagement are understood by engineer battalion members and procedural risk-reduction control measures have been implemented.
- The engineer battalion commander directs preparation and issuance of a FRAGO.

OUTCOME 4 DIAGNOSTIC AID

OUTCOME 4: Sound (suitable, feasible, acceptable) decisions are made by the engineer battalion commander and others within the battalion.

Task Elements

1. **The engineer battalion commander directs and leads subordinate forces.** [ARTEP 5-145-MTP, FM 5-71-3; FM 71-3].
 - 1b. The engineer battalion commander directs engineer operations. [FM 5-71-3, pp. 2-1 and 2-8]
 - 1b2 Avoids focusing on one event to the exclusion of the rest of the engineer operations.
 - 1b8 Employs decision aids to assist his decision-making process (DMP) and to direct battalion operations.
 - 1b9 Integrates and coordinates engineer operations in consideration of the battlefield operation system (BOS). [FM 5-71-3, p. 1-5]
 - a) Intelligence.
 - (1) Intelligence collection plan is changed as necessary to support the commander's critical information requirements (CCIR). [FM 5-71-3, p. 1-6]
 - (2) Information is analyzed to confirm, contradict, and update the intelligence preparation of the battlefield (IPB). [ARTEP 5-145-MTP, Task 5-1-0027]
 - (3) Engineer reconnaissance elements are positioned and repositioned to collect the battalion CCIR. [ARTEP 5-145-MTP, Task 5-1-0413]
 - b) Maneuver.
 - (1) For the engineer battalion operating as an engineer battalion task force (TF), the commander assesses movement and repositioning criteria to ensure that the mission can be achieved as designated. [FM 5-71-3, pp. 3-10 and 5-9]
 - (a) During movement, the engineer battalion TF reduces exposure to enemy fire.
 - (b) Movement and repositioning times are consistent with the engineer battalion TF mission.
 - (c) Compensation is made for distances and terrain factors which impact on displacement and repositioning.
 - (2) The engineer battalion commander directs changes to movement schedules when necessary. [FM 5-71-3, p. 2-1]
 - c) Mobility/survivability.

- (1) The engineer battalion commander assesses support to overcome obstacles and enhance mobility to the maneuver brigade, and takes action or recommends adjustments as necessary. [FM 5-71-3, Chap 3]
 - (a) Priorities.
 - (b) Task organization of engineer assets.
 - (c) Times at which assets are available to maneuver units.
- (2) The engineer battalion commander assesses extent of engineer efforts and coordination required to negotiate and clear lanes through friendly obstacles to support the supported brigade's maneuver. [ARTEP 5-145-MTP, Task 5-1-0002, subtasks 2.b. (1) (b) (3) and 3.b.]
- (3) The engineer battalion commander reviews information gained from engineer reconnaissance of terrain and enemy obstacles to determine impact on the mobility plan and engineer task organization.
- (4) The engineer battalion commander updates his assessment of the engineer battalion's ability to support or conduct obstacle breaching as designated in the plan based on: [FM 5-71-3, pp. 3-1 and 3-2]
 - (a) Support force's ability to execute effective suppressive fires as planned.
 - (b) Updated information on employment of assault force(s).
 - (c) Updated information on employment of the breach force.
 - (d) New information about the status of breaching assets.
- (5) The engineer battalion commander assesses obstacle construction support to the supported brigade commander's scheme of maneuver. [FM 90-7, Chap 2]
 - (a) Obstacles are in depth throughout the sector to fix, turn, disrupt, and block the enemy and shape the battlefield.
 - (b) Obstacle construction is consistent with the projected timeline.
 - (c) Obstacle execution, gaps and lane closure signal and trigger support the concept of the operation.
 - (d) Planning is current for scatterable mines (SCATMINE) employment; coordination is made with the FSO, assistant brigade engineer (ABE), air liaison officer (ALO), and aviation liaison officer (AVLO) to determine modifications based on new information. [FM 20-32, Chap 6]
- (6) The engineer battalion commander assesses the status of survivability position preparation to determine whether the positions will be ready, based on: [FM 5-71-3, p. 4-6]
 - (a) Maintenance status of engineer equipment.
 - (b) Actual construction time consistent with planned timelines.
 - (c) Weather and soil conditions.
 - (d) Changes in priority or extent of work by supported commanders.
 - (e) Position siting by supported commanders.
- e) Air defense.

- (1) Engineer battalion operations, such as breaching and obstacle emplacement, are protected from the enemy air threat. [FM 5-71-3, p. 1-8]
 - (2) Class IV/V obstacle material sites receive protection. [FM 5-71-3, p. 1-8]
 - (3) Protective positions for air defense (AD) assets are prepared as required.
- f) Combat service support (CSS).
- (1) The engineer battalion commander assesses transportation operations to ensure compliance with his guidance and intent. [FM 5-71-3, p. 6-3]
 - (a) Required supplies and personnel are delivered to subordinate units as required. Designated and approved main supply routes (MSRs) and alternate supply routes (ASRs) are used. Assets are used to back-haul equipment or supplies in accordance with battalion priorities.
 - (b) Engineer equipment is transported to meet requirements. If not, the engineer battalion commander:
 - 1 Determines need to request additional assets to supplement the engineer battalion.
 - 2 Assesses need to change the employment of engineer battalion support platoon transportation assets.
 - 3 Identifies new priorities for the engineer battalion support platoon.
 - 4 Requests additional equipment support from division engineer (DIVEN) through the supported brigade.
 - (2) Effects of weather or enemy action on MSR and ASR are assessed; action is taken to mitigate the effects. The engineer battalion commander assesses supply operations. [FM 5-71-3, pp. 6-7 through 6-9; FN - NTC Engr OC]
 - (a) Emergency resupply activities are executed with uploaded, pre-configured Class III, Class IV, Class V push packages, and marking material.
 - (b) Priorities for resupply are changed based on new conditions or information.
 - (c) Class IV/V is on hand or programmed for delivery in time to support obstacle material operations.
 - (3) The engineer battalion commander assesses personnel operations for compliance with his guidance and intent. [FM 5-71-3, pp. 6-12 and 6-13]
 - (a) Morale and welfare support is provided as conditions permit.
 - (b) Replacement operations are performed rapidly in accordance with the commander's guidance and priorities.
 - 1 Personnel are inspected, issued equipment, and trained to ensure they are prepared for combat.
 - 2 Personnel are linked-up with units and are oriented about the battalion, situation, and mission.
 - (c) Subordinate unit personnel status is reviewed to assess the capability to perform assigned tasks and missions.

- 1 Unit strength is sufficient to accomplish assigned missions and tasks.
 - 2 Critical military occupational skill (MOS) and skills shortages are distributed to ensure that units can accomplish assigned missions and tasks.
- (4) The engineer battalion commander assesses battalion maintenance operations. [FM 5-71-3, pp. 6-9 through 6-12]
- (a) Units are brought to fully mission-capable (FMC) status according to commander's repair priority guidance.
 - (b) Maintenance, cannibalization, and controlled substitution and exchange actions are effective.
 - (c) Preventive maintenance checks and services (PMCS) are conducted during lulls in the battle.
 - (d) Maintenance support to assigned, attached, direct support (DS), and operational control (OPCON) units is conducted in accordance with the commander's guidance.
- (5) The engineer battalion commander assesses battalion medical operations for compliance with his guidance and intent. [FM 5-71-3, pp. 6-13 and 6-14; FN - NTC Engr OC]
- (a) Appraises fitness of soldiers. Directs activities performed by subordinate leaders to prevent, reduce, and combat battlefield stress to maintain personnel strength for the mission.
 - (b) Ensures that changes to the employment of engineer battalion medics and medical treatment and evacuation plans are made based on updated information.
 - 1 Medical personnel, supplies, and equipment are available and positioned to support engineer operations.
 - 2 Casualty tracking systems are effective; coordination between the S1, engineer units, and units providing medical evacuation is conducted.
 - (c) Information from FSB company (Co) C (medical) concerning availability of assets is transmitted to the engineer battalion commander.
- g) Command and control.
- (1) The engineer battalion commander assesses the levels of execution and the situation compared to anticipated requirements/endstates; he directs changes, if needed, to the units or to his staff. [FM 5-71-3, p. 1-8]
 - (2) Information about change to METT-T is directed to the engineer battalion commander, command group, and command posts (CPs) to enable effective and rapid guidance during mission execution and about future operations. [FM 5-71-3, pp. 2-4 through 2-6]
3. The engineer battalion commander visualizes the battlefield. [ARTEP 5-145-MTP, FM 5-71-3; FM 71-3]

- 3a. The engineer battalion commander updates his estimate based on his assessment of the current situation. Considerations include: (Also see Engineer BF 19, Task 3a) [FM 5-71-3, p. 2-7]
- 3a1 Mission.
- a) The brigade (Bde) and division commanders' (Cdrs') intents.
 - b) The Bde concept of the operation.
 - c) The engineer battalion mission in terms of:
 - (1) Present concept of operation.
 - (2) Comparison of the present plan to the current situation.
- 3a2 Characteristics of the area of operations.
- a) Weather.
 - b) Terrain.
- 3a3 Enemy situation.
- 3a4 Friendly situation.
- 3a5 Engineer capability relative to the enemy and relative to requirements.
- 3b. The engineer battalion commander projects the outcome of the engineer support to the current battle based on his evaluation of the current plan and the engineer battalion's situation. Considerations include: [FM 5-71-3, p. 1-8].
- 3b1 Intelligence.
- a) IPB consisting of the enemy situation and capability with threat expected when latest plan was developed.
 - b) Capability of engineer reconnaissance elements to collect required information. [ARTEP 5-145-MTP, Task 5-1-0413]
 - c) Capability of the engineer battalion to acquire requested information from other sources. [author note (AN)]
- 3b2 Maneuver.
- a) Movement and repositioning criteria support the mission. [FM 5-71-3, pp. 3-10 and 5-9]
 - (1) Reconnaissance, marking, and preparation of routes for use by subordinate units are complete or being completed in accordance with the plan. Routes or times routes are used do not conflict with movement of other elements.

- (2) Movement can be performed without exposing the engineer task force to enemy fire during disengagement and displacement.
 - (3) Movement and repositioning times can be achieved.
 - (4) Compensation is made for distances and terrain factors which impact on displacement and repositioning.
- b) For an engineer task force, movement does not conflict with other elements.
 - c) For an engineer task force, subordinate units execute branches and sequels; achieve battalion commander's intent. [FM 5-71-3, p. 1-7]
- 3b3 Mobility/survivability.
- a) Mobility support activities are implemented. [FM 5-71-3, Chap 3]
 - (1) Priorities for mobility support are achieved.
 - (2) Task organization of engineer mobility assets is accomplished in accordance with designated timelines.
 - (3) The maneuver brigade commander, the engineer battalion as the brigade engineer, and FSO adjust the fire support plan to support breaching operations.
 - (4) Engineer task organization allows the maneuver brigade to maintain mobility.
 - (5) Forces have required mobility support during repositioning.
 - (6) Friendly obstacles will not interfere with maneuver brigade mobility. [ARTEP 5-145-MTP, Task 5-1-0002/2.b. (1) (b) (3) and Task 5-1-0002/3.b.]
 - (7) Lanes support maneuver brigade mobility. [ARTEP 5-145-MTP, Task 5-1-0002/2.b. (1) (b) (3) and Task 5-1-0002/3.b.]
 - (8) The engineer battalion can perform obstacle breaching as designated in the plan. [FM 5-71-3 pp. 3-1 and 3-2]
 - (a) The support force's ability to execute effective suppressive fires.
 - (b) The assault force's capability to accomplish its mission.
 - (c) The breach force can reduce the enemy obstacles.
 - (d) The availability of breaching assets supports planned breaching operations.
 - b) Countermobility activities can be implemented. [FM 5-71-3, p. 4-7]
 - (1) Obstacle material consumption reports are accurate and consistent with projected requirements.
 - (2) Reports of minefield intention, initiation, and completion are complete and accurate.
 - (3) Obstacles support the maneuver brigade commander's scheme of maneuver. [FM 90-7, Chap 2]
 - (a) Obstacles are in depth throughout the sector to fix, turn, disrupt, and block the enemy and shape the battlefield.
 - (b) Obstacle groups are employed to accomplish the function specified by the brigade belt.
 - (c) Obstacle gap and lanes closure signals and triggers are established.

- (d) SCATMINE adjustments plans are coordinated and can be implemented to achieve the planned effects. [FM 20-32, Chap 6]
 - (e) Work in brigade designated obstacle belts is being accomplished in accordance with designated timelines. Survivability and fighting position construction taskings are completed. [FM 5-71-3, p. 4-6]
 - c) Construction times are consistent with the planning timeline.
 - (1) Weather and soil conditions permit efficient repositioning of earth moving assets.
 - (2) Priorities for position construction are adhered to.
 - (3) Protective obstacles provide close-in protection.
 - (4) Engineer battalion OPSEC, security operations, and subordinate unit local force protection operations are assessed and needed changes directed so that: [ARTEP 5-145-MTP, Task 5-2-0913]
 - (1) The engineer battalion is protected as it executes the mission.
 - (2) The enemy is denied information that provides indications of the engineer battalion commander's concept of the operation (e.g., engineer disposition and activities).
 - e) Engineer operations support transition to future operations/actions. [AN]
- 3b4 Fire support.
- a) Fire support for breaching operations is coordinated. [FM 5-71-3, p. 1-7]
 - b) Obstacles and indirect fires are integrated. [FM 5-71-3, p. 1-8]
 - c) Artillery delivered mine plan adjustments are coordinated. [FM 5-71-3, p. 1-8]
- 3b5 Air defense.
- a) Engineer battalion operations, such as breaching and obstacle emplacement, are protected from the enemy air threat. [FM 5-71-3, p. 1-8]
 - b) CL IV/V supply sites receive protection. [FM 5-71-3, p. 1-8]
- 3b6 Command and control.
- a) Mission execution requirements are met. [FM 5-71-3, p. 1-8]
 - b) Positioning of the battalion commander, command group, and CPs permits provision of effective and rapid guidance during mission execution and for future operations. [FM 5-71-3, pp. 2-4 through 2-6]
 - c) Information systems aid command and control. [FM 5-71-3, pp. 2-23 through 2-25]
 - d) Command and control measures to coordinate and synchronize engineer support during the mission are disseminated and understood. [ARTEP 5-145-MTP, Task 5-1-0018]
- 3b7 CSS.

- a) Transportation operations are executed as planned. [FM 5-71-3, p. 6-3]
 - (1) Required supplies, equipment, and personnel will be delivered to subordinate units on designated and approved MSR's and ASR's; assets are used to back-haul based on battalion priorities.
 - (2) Materials and equipment will be transported in accordance with mission requirements.
 - (a) Requirements for additional assets have been determined.
 - (b) Missions to and operations of the engineer battalion support platoon transportation assets are consistent with plans.
 - (c) New priorities for the engineer battalion support platoon have been identified.
 - (3) Impact on MSR's and ASR's by weather or enemy action have been mitigated.
- b) Supply operations result in the sustainment of the engineer battalion as planned. [FM 5-71-3, pp. 6-7 through 6-9]
 - (1) Routine resupply activities are conducted and engineer battalion units are resupplied as required.
 - (2) Emergency resupply activities meet requirements.
 - (3) Priorities for resupply are implemented and achieve desired results.
 - (4) CL IV/V obstacle material is available in required amounts at required locations and times.
 - (a) Additional Volcano reloads.
 - (b) Additional mine clearing line charge (MCLIC) reloads.
 - (5) Armored vehicle launched brigades (AVLBs).
- c) Personnel operations are conducted as planned. [FM 5-71-3, pp. 6-12 and 6-13]
 - (1) Morale and welfare support satisfies requirements.
 - (2) Replacement operations ensure that new personnel are received and assigned rapidly in accordance with the commander's guidance and priorities.
 - (a) Personnel are inspected, issued equipment, and trained (if time is available) to ensure that they are prepared for combat.
 - (b) Personnel are linked-up with units and are oriented on the battalion and unit situation.
 - (3) Engineer battalion subordinate units have trained personnel required to perform assigned tasks and mission.
 - (a) Units have sufficient personnel to accomplish assigned missions and tasks.
 - (b) Critical MOS and skills are distributed so units can accomplish assigned missions and tasks.
- d) Engineer battalion maintenance operations result in engineer equipment being mission ready. [FM 5-71-3, pp. 6-9 through 6-12]
 - (1) Engineer battalion units are brought to FMC status according to commander's repair priority guidance.
 - (2) Maintenance, cannibalization, and controlled substitution and exchange operations are effective.
 - (3) PMCS and periodic services are conducted on all vehicles and equipment.
 - (4) Maintenance support is provided to assigned, attached, DS, and OPCON units.

- e) Engineer battalion medical operations comply with guidance and intent. [FM 5-71-3, pp. 6-13 and 6-14]
 - (1) Subordinate leaders implement measures to prevent, reduce, and combat battlefield stress.
 - (2) Changes to distribution of engineer battalion medics and adjustments to treatment and medical evacuation plans result in required support.
 - (a) Medical personnel, supplies, and equipment are available and positioned as needed.
 - (b) Treatment, evacuation, and casualty tracking systems are effective.

- 3c. The engineer battalion commander anticipates future requirements and actions based on his projection of the outcome of the engineer support to the current mission. [FM 5-71-3, p. 1-8]

- 3c1 The engineer battalion commander bases anticipated future requirements and actions on: [FM 5-71-3, pp. 2-1 through 2-6]
 - a) Reports received from subordinate units.
 - b) Reports received from the engineer battalion staff.
 - c) Personal observation of the battle.
 - d) Direction and guidance from the maneuver brigade.

- 3c2 The engineer battalion commander develops information to assist him in determining future requirements and actions by: [FM 5-71-3 pp. 2-1 and 2-19]
 - a) Receiving information from the maneuver and engineer brigades' commanders, his subordinate commanders, and the battalion staff.
 - b) Updating his CCIR.
 - c) Describing effects desired on the enemy.
 - d) Assessing risk.

- 3c3 The engineer battalion commander defines his requirements and actions based on battlefield operating system factors. (Also see Engr Bn BF 19, Task 3c) [FM 5-71-3, pp. 1-5 through 1-9]
 - a) Intelligence.
 - b) Maneuver.
 - c) Mobility/survivability.
 - d) Fire support.
 - e) Air defense.
 - f) Combat service support.
 - g) Command and control.

- 3d. The engineer battalion commander informs the supported maneuver brigade commander of the results of his assessment. [FM 5-71-3, p. 2-1]
- 3d1 The engineer battalion commander's projection of engineer support to the current battle indicates the brigade commander's intent cannot be achieved.
- 3d2 The engineer battalion must receive additional assets to achieve the brigade commander's intent.
- 3d3 The engineer battalion can accomplish its mission.
- 3e. The engineer battalion commander decides whether the last order promulgated needs to be changed. [ARTEP 5-145-MTP, Task 5-1-0002/4 through 7]
- 3e1 The engineer battalion commander analyzes the plan and battalion situation, makes a decision, and initiates actions accordingly.
 - a) When the plan can be conducted without any adjustments or modifications, the battalion commander continues to direct mission execution.
 - b) When only minor modifications are necessary, the engineer battalion commander issues, or directs to be issued, FRAGOs to modify the plan.
 - c) The engineer battalion commander initiates a decision-making process when the plan is no longer valid and cannot be corrected by FRAGOs.
- 3e2 The engineer battalion staff assists the battalion commander in his analysis of the plan by providing information. [ARTEP 5-145-MTP, Task 5-1-0002/2]
 - a) Each staff officer reviews updated estimates and provides information based on queries.
 - b) Each staff officer provides input on previous COAs which could be used as the new plan without detailed COA development.
- 3e3 The engineer battalion commander initiates development of a new plan based on: [FM 5-71-3, p. 2-8]
 - a) COAs previously developed which can be modified and developed as the new plan versus developing an entirely new plan.
 - b) Time available to develop, coordinate, and implement a new plan.

- c) Engineer battalion subordinate units' capabilities to react (plan, prepare, execute) to their requirements under the new plan and task organization.
 - d) The engineer battalion staff's ability to continue to monitor and direct current battalion activities while meeting new planning and monitoring requirements.
- 3e4 The engineer battalion commander determines how to modify the military decision-making process (MDMP) based on complexity, potential probable confusion on the battlefield, and time available. [FM 101-5, Chap 4]
- a) The engineer battalion commander determines staff availability, the magnitude of change to the plan, and the amount of time available before execution.
 - b) The engineer battalion commander decides where to conduct the decision-making process and actions required to produce and disseminate the FRAGO.
4. **The engineer battalion commander directs changes to the operation or plan.** [ARTEP 5-145-MTP, Task 05-1-0018; FM 5-71-3 Chap 2]
- 4b. The engineer battalion commander develops and implements a new concept, or modifies and implements a pre-planned branch of an existing plan. [FM 5-71-3, p. 2-8]
- 4b1 The engineer battalion commander determines staff availability, the magnitude of change to the plan, and the amount of time available before execution.
- 4b2 The engineer battalion commander makes a decision whether to continue operations or have the battalion take a tactical pause.
- 4b3 The engineer battalion commander uses the MDMP in a time-constrained environment to develop a new scheme of engineer operations.
- 4c. The engineer battalion commander, with staff assistance if time allows, conducts the MDMP in a time-constrained environment to modify a branch or sequel or to develop a new scheme of engineer operations. (See engineer BF 19 for detailed explanation of the MDMP in a time-constrained environment.) [FM 5-71-3, p. 2-15]
- 4c1 When planning changes to current orders or planning for a new mission during the execution phase of the current battle, the engineer battalion commander must:

- a) Consider using the MDMP products developed during the current mission as reference points from which modifications are made.
 - (1) Weather analysis.
 - (2) Terrain analysis.
 - (3) Current "running" staff estimates.
 - (a) Brigade capabilities.
 - (b) Constraints.
 - (4) PIR, EEFI, and FFIR requested by the engineer battalion commander.
 - With his battalion staff, simultaneously monitor, plan, and direct all aspects of battalion operations (e.g., execution of the current mission, development of changes to the current plan).
- b) Anticipate the outcome of the current fight and begin considering future requirements and actions.
- c) Recognize similarities and differences between the initial plan and new requirements.
- d) Assess friendly force posture, enemy probable actions and postures, and battle space.
- e) Modify existing branches and sequels to meet new requirements.
- f) Consider personnel and unit availability.
- g) Compute the amount of time available for planning, preparation to include rehearsal, and movement.
- h) Consider the extent of the reconnaissance effort necessary to obtain critical information.
- i) The commander completes an update of his estimate:
 - a) Mission: who, what, where, when, why; higher commanders' intents?
 - b) Enemy: what is the enemy's COA, his strength, location, disposition, activity, equipment, and capability?
 - c) Terrain and weather: observation and fields of fire, cover and concealment, obstacles, key terrain, avenues of approach (OCOKA).
 - d) Troops: the commander analyzes the engineer battalion's and engineer companies' status in terms of capability relative to what he believes necessary to accomplish the mission.
 - (1) Capabilities, strengths, and weaknesses of subordinate commanders and units.
 - (2) Engineer systems and equipment.
 - (3) Disposition.
 - (4) Supplies.
 - e) Time: the engineer battalion commander determines the time available for planning, preparing, and executing the operation.

4c3 The engineer battalion commander conducts a quick mission analysis by:

- a) Analyzing the brigade and division commanders' intents.
- b) Considering the current situation and information.
- c) Determining the engineer battalion's mission and required endstate to accomplish the mission.
- d) Whether the engineer battalion has the assets and resources to execute the new scheme of engineer operations.
- e) Analyzing the maneuver brigade commander's COA.
- f) Comparing the desired endstate for the engineer battalion with the anticipated maneuver brigade endstate.

4c4 The commander may request information from the staff to support his COA development.

- a) BOS specific information from selected staff members.
- b) Information available in products developed during the initial mission MDMP.
- c) Input on previous COAs which could be used as the new plan without detailed COA development.

4c5 Engineer battalion commander describes his revised concept and COA to his staff. [FM 5-71-3, p. 2-19, B14, B15]

a) The engineer battalion commander develops and explicitly expresses:

- (1) His intent and desired endstate.
- (2) Scheme of engineer operations (SOEO).
 - (a) Priorities of engineer support.
 - (b) Concept for SCATMINEs.
- (3) Enemy COA(s) to consider.
- (4) CCIR.
- (5) Limitations.
- (6) Risk.
- (7) Maneuver brigade COA.

b) If time is available, engineer battalion staff:

- (1) Develops details on COA provided by the commander.
- (2) Develops branches and sequels to the selected COA which adhere to the commander's guidance.

4c6 The engineer battalion commander performs a suitability-feasibility-acceptability analysis of the new plan. The commander performs the analysis by himself or with staff assistance. [FM 5-71-3, pp. 2-10 through 2-13]

a) Suitability factors, which include:

- (1) New concept accomplishes the mission.

- (2) New concept meets maneuver brigade and engineer battalion commander's intent.

b) Feasibility factors, which include:

- (1) Time to execute the plan(s) as designed.
 - (a) Duration of events.
 - (b) Time and distance factors for movement.
 - (2) There is sufficient ground space to accomplish the plan(s) as designed.
 - (a) Roads and terrain support the plan.
 - (b) Depth of action.
 - (c) Adequate ground space.
 - (3) Engineer battalion has the means to execute the plan(s) as designed.
 - (a) Engineer battalion engineer assets versus the enemy engineers' capability (force ratios).
 - (b) The engineer battalion has the special equipment and personnel to accomplish the mission (e.g., bridging equipment, mine clearing, etc.)
 - (c) Impact on other, on-going actions is acceptable.
 - (d) Subordinate units have required capabilities.
 - (e) Task organization can be altered as required.
- c) Acceptability factors, which include:
 - (1) Achieves the desired endstate.
 - (2) Mission success is not at significant risk of failure.
 - (3) Hazards to soldiers, equipment, and supplies are within acceptable limits.
- 4c7 The engineer battalion commander quickly compares COAs (if more than one).
 - 4c8 The engineer battalion commander selects a COA and announces his decision to key engineer battalion staff members.
 - 4c9 Conditions most likely to cause mission failure and accidents (including fratricide) are mitigated.
 - a) Engineer battalion units have been tasked within their capabilities.
 - b) Procedural and positive risk-reduction control and safety measures have been implemented.
 - 4c10 The engineer battalion commander reviews his initial CCIR to determine: [FM 5-71-3, p. 2-19]
 - a) Validity of initial CCIR.
 - b) New CCIR required to provide the engineer battalion commander with the information needed to make decisions about the plan.

- 4f. The engineer battalion XO at the main CP coordinates the new plan internally and with higher and adjacent units. [FM 5-71-3, p. 2-5]
- 4f4 The engineer battalion staff understands the battalion commander's concept and takes action necessary to coordinate and integrate the FRAGO. (See engineer BF 20, Task 2a, b, and c.)
- 6. **The engineer battalion reorganizes and supports maneuver brigade consolidation.** [ARTEP 5-145-MTP; FM 5-71-3]
- 6c. The engineer battalion commander assesses status and capability of the engineer battalion and makes changes to battalion priorities. [FM 5-71-3, p. 1-8]
- 6c1 Intelligence collection.
- 6c2 Engineer operations.
- 6c3 Personnel replacement.
- 6c4 Supply.
- 6c5 Medical support.
- 6c6 Maintenance support.

OUTCOME 5 ASSESSMENT

OUTCOME 5: Affected units and personnel receive relevant direction, changes, and refinements to the plan in time to perform troop leading procedures and execute coordinated and synchronized actions. (Use Tables 2, 3, and 8)

Component A. Engineer battalion staff issues WARNOs and FRAGOs.	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

Assessment Statements

- The engineer battalion commander and/or staff issue WARNOs to alert engineer battalion staff members and engineer battalion subordinate elements that the plan will be changed.
- The engineer battalion issues a complete engineer battalion FRAGO which contains:
 - a) Mission statement.
 - b) Commander's intent and concept of the operation.
 - c) Pertinent extracts taken from more detailed orders.
 - d) Task organization, if modified.
 - e) Control measures that promote initiative, synchronization, and agility while minimizing exposure to fratricide.
 - f) Changes to existing orders.
- If time does not permit the publication of a written FRAGO the engineer battalion commander will direct the engineer battalion S3 to publish an overlay with critical information, or issue a verbal order to the key leaders.
- The engineer battalion staff coordinates internally and externally (e.g., with the supported brigade) to coordinate and integrate the FRAGO.

<p>Component B. Engineer battalion commander and staff direct execution of engineer battalion support to the armored brigade.</p>	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

Assessment Statements

- The engineer battalion commander coordinates and integrates support of tactical operations to focus engineer actions on decisive points to support armored brigade commander's intent.
- Subordinate unit movements are conducted so that units are on time and at the right place to achieve intended results.
- Engineer battalion provides required support to the armored brigade.

OUTCOME 5 DIAGNOSTIC AID

OUTCOME 5: Affected units and personnel receive relevant direction, changes, and refinements to the plan in time to perform troop leading procedures and execute coordinated and synchronized actions.

Task Elements

Component A. Engineer battalion staff issues WARNOs and FRAGOs.

4. **The engineer battalion commander directs changes to the operation or plan.** [ARTEP 5-145-MTP, Task 05-1-0018; FM 5-71-3 Chap 2]
- 4a. **The engineer battalion commander and/or staff issue WARNOs which contain:** [FM 5-71-3 Chap 2]
 - 4a1 Enemy and friendly situations.
 - 4a2 The brigade and division missions.
 - 4a3 The brigade and division commanders' intents.
 - 4a4 The engineer battalion commander's intent.
 - 4a5 Changes to the task organization.
 - 4a6 Earliest time of movement for subordinate units.
 - 4a7 Orders for preliminary action, such as assigning engineer tasks, moving to linkup points.
 - 4a8 Administrative and logistic information.
 - 4a9 Time and place for orders group assembly.
 - 4d. **The engineer battalion commander directs preparation of a FRAGO.** [ARTEP 5-145-MTP, Task 5-1-0002/6.]

- 4d1 The engineer battalion commander provides guidance to the staff to prepare supporting documents: [FM 5-71-3, pp. D-11 through D-19]
- a) Graphics.
 - b) DST.
 - c) Engineer execution matrix.
 - d) MCOO.
 - e) Situation and event templates.
- 4d2 The engineer battalion commander may direct the engineer battalion staff to prepare the FRAGO. [ARTEP 5-145-MTP, Task 5-1-0007]
- a) The engineer battalion XO manages and supervises internal and external coordination by the staff to synchronize plan refinements.
 - b) The engineer battalion staff takes prompt action to accomplish the guidance given by the commander.
 - (1) Publishes refinements to orders, and planning and execution products such as DST, engineer execution matrix, and obstacle overlay.
 - (2) Initiates requests to higher and adjacent units for additional support.
 - c) The engineer battalion staff at the main CP refines plans, facilitates planning for future operations, identifies and corrects problems identified during subordinate unit preparations, and coordinates additional support from maneuver brigade or division engineer.
- 4d3 The engineer battalion staff develops FRAGOs reflecting changes to the initial plan for the engineer battalion commander's approval: [ARTEP 5-145-MTP, Task 5-1-0018, subtask 4.d.(2)(a)]
- a) Graphics and control measures for the operation.
 - b) DST and engineer execution matrix.
 - c) Obstacle overlay.
 - d) Communications plan.
 - e) CSS.
- 4e. The engineer battalion commander approves FRAGOs and directs members of the staff to issue FRAGOs based on his approval or in compliance with his guidance. [FM 5-71-3, p. 2-23]
- 4e1 Complete FRAGOs are issued which contain: [FM 5-71-3, pp. 2-23 and D-12]

- a) Mission statement.
 - b) Commander's intent and concept of the operation.
 - c) Pertinent extracts taken from more detailed orders.
 - d) Task organization, if modified.
 - e) Control measures that promote initiative, synchronization, and agility while minimizing exposure to fratricide.
 - f) Timely changes to existing orders.
- 4f. The engineer battalion XO at the main CP coordinates the new plan internally and with higher and adjacent units. [FM 5-71-3, p. 2-5]
- 4f1 The XO must inform subordinate units of outdated/superseded orders and products that have been superseded by the FRAGO.
- 4f2 The XO, in coordination with ABE, must analyze current FRAGO in light of current maneuver brigade, engineer brigade, adjacent units' operations orders (OPORDs) to preclude conflict.
- 4f3 The XO supervises the battalion staff actions necessary to assist the engineer battalion commander to synchronize current engineer operations.
- Component B. Engineer battalion staff directs execution of engineer battalion support to the supported brigade.**
1. **The engineer battalion commander directs and leads subordinate forces.** [ARTEP 5-145-MTP; FM 5-71-3, FM 71-3]
- 1b. The engineer battalion commander directs engineer operations. [FM 5-71-3, pp. 2-1 and 2-8]
- 1b1 Directs the battalion executive officer (XO), S3, command sergeant major (CSM), or another subordinate to positions to observe, control, and report on critical events where the commander cannot be present.
- 1b3 Changes subordinate unit missions.
- 1b4 Reprioritizes engineer tasks based on unanticipated events and engineer battle losses.
- 1b6 Directs engineer units and engineer support activities at decisive points.

- 1b9 Integrates and coordinates engineer operations in consideration of the BOS. [FM 5-71-3, p. 1-5]
- b) Maneuver.
 - (2) The engineer battalion commander directs changes to movement schedules when necessary. [FM 5-71-3, p. 2-1]
- f) Combat service support (CSS).
 - (1) The engineer battalion commander assesses transportation operations to ensure compliance with his guidance and intent. [FM 5-71-3, p. 6-3]
 - (b) Engineer equipment is transported to meet requirements. If not, the engineer battalion commander:
 - 4 Requests additional equipment support from division engineer (DIVEN) through the supported brigade.
- g) Command and control.
 - (1) The engineer battalion commander assesses the levels of execution and the situation compared to anticipated requirements/endstates; he directs changes, if needed, to the units or to his staff. [FM 5-71-3, p. 1-8]
 - (2) Information about change to METT-T is directed to the engineer battalion commander, command group, and command posts (CPs) to enable effective and rapid guidance during mission execution and about future operations. [FM 5-71-3, pp. 2-4 through 2-6]
 - (3) Information systems which aid command and control are selected based on updated information. [FM 5-71-3, pp. 2-23 through 2-25]
- 1d. Engineer battalion staff members supervise subordinate elements' execution of tasks within the purview of their responsibilities and authority as established by the engineer battalion commander. [FM 5-71-3, p. 2-23]
- 1d1 Standing operating procedures (SOP).
- 1d2 Designated by the engineer battalion commander for the mission.
- 2. **Engineer battalion command posts provide communication and control.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3]
- 2c. The engineer battalion commander and staff communicate information.
- 2c4 The engineer battalion S3 and operations section.
 - c) The engineer battalion S3 coordinates with other units to exchange information concerning engineer operations. [FM 5-71-3, p. 2-3; ARTEP 5-145-MTP, Task 5-1-0026/6; FN-NTC Engr OCs]

- 2c5 The engineer battalion NBC NCO.
 - c) Coordinates with the maneuver brigade CMLO and supporting decontamination units to confirm hasty and deliberate decontamination plans and operations. [FM 5-71-3, pp. 2-3 through 2-4]
- 2c6 The engineer Bn SO and communications section.
 - b) Coordinate with the engineer battalion S3, adjacent units, and division signal battalion headquarters. [FM 5-71-3, p. 2-3]
- 2c7 The engineer battalion rear CP CSS officers:
 - c) Perform coordination with maneuver brigade staff, engineer battalion staff, and engineer battalion units. [FM 5-71-3, Chap 6]
 - d) Engineer battalion S4 coordinates with the engineer battalion S3 and engineer battalion units to deconflict terrain requirements and projected locations.
 - e) Engineer battalion S4 coordinates the transportation of engineer battalion supplies and cargo through adjacent units.
 - f) Engineer battalion S4 coordinates routine, emergency, and critical resupply of the engineer battalion (e.g., delivery times, types, and quantities of supplies required).
 - g) Engineer battalion S1 processes engineer battalion replacements.
 - h) Engineer battalion S1 tracks evacuation of engineer battalion personnel and casualties.
 - i) Engineer battalion S1 processes awards, decorations, promotions, and legal actions of engineer battalion personnel.
 - j) Engineer battalion CSS officers provide information to the engineer battalion S2 to support engineer battalion IPB/EBA. [FM 5-71-3, pp. 2-16 and 2-17]
- 6. **The engineer battalion reorganizes and supports maneuver brigade consolidation.** [ARTEP 5-145-MTP, FM 5-71-3]
 - 6a. The engineer battalion supports brigade consolidation with engineer operations. [FM 5-71-3, Chap 3]
 - 6a1 Engineer companies are tasked to provide countermobility support to task forces as they consolidate.
 - 6a2 Engineer companies are tasked to provide mobility support to task forces as they consolidate.
 - 6a3 Engineer companies are tasked to provide survivability support to task forces as they consolidate.
 - 6b. The engineer battalion reorganizes. [FM 5-71-3, Chap 6]

- 6b1 Link up points for resupply and for evacuation of personnel and equipment are provided by the rear CP.
- 6b2 FRAGOs are issued implementing the engineer battalion reorganization and support to maneuver brigade consolidation.
- 6b3 Key leader positions are filled through transfer of personnel.
- 6f. The engineer battalion rear CP coordinates and executes actions to: [FM 5-71-3, p. 2-6; FN-NTC Engr OCs]
- 6f1 Replace key leaders and critical personnel and reestablish the chain of command.
- 6f2 Treat and evacuate all casualties.
- 6f3 Recover/repair/evacuate all inoperative equipment.
- 6f4 Resupply and cross-level CL II, III, and V to minimum basic loads to all engineer vehicles.
a) Engineer companies also cross-level CL III and V to minimum basic loads to all engineer vehicles.
b) Basic loads of CL III, V, and IX are replenished through LOGPACs.
- 6f5 Evacuate all EPWs, captured documents, and equipment.
- 6f6 Redistribute personnel and equipment as needed.
- 6f7 Account for all personnel.
- 6f8 Process replacements.
- 6f9 Weapons system replacement operations (WSRO) with engineer brigade S4:
a) Armored combat earthmover (ACE).
b) Armored vehicle launched bridge (AVLB).
c) Small emplacement excavator (SEE).
d) Volcano.
e) Mine clearing line charge (MICLIC).

- f) D7 Dozers.
- 6g. The engineer battalion main CP coordinates and monitors actions to: [FM 5-71-3, p. 2-5]
 - 6g1 Reconfigure task organization for the next mission.
 - 6g2 Return attachments to parent units.
 - 6g3 Receive engineer battalion elements detached from other units.
 - 6g4 Reconfigure companies.

OUTCOME 6 ASSESSMENT

OUTCOME 6: Subordinate leaders demonstrate an understanding of the critical elements of their own missions and mission essential tasks, the engineer battalion mission, and the battalion commander's intent. (Use Tables 1, 3, 6, and 9)

<p>Component A. Subordinate leaders demonstrate an understanding of their mission and mission essential tasks, the engineer battalion mission, and the engineer battalion commander's intent via briefbacks.</p>				
---	--	--	--	--

Not Adequate

Marginal

Adequate

Assessment Statements

- The engineer battalion commander meets with subordinate engineer battalion commanders and leaders to receive information and issue directions.
- The engineer battalion commander conducts a confirmation brief of a FRAGO (or otherwise receives a briefback) with key battalion leaders to ensure common understanding of the plan and roles of each engineer battalion unit.
- The engineer battalion commander evaluates reports from subordinates for their understanding of his intent, concept of operation, and their missions.
- The engineer battalion XO conducts a confirmation brief with the engineer battalion staff.

<p>Component B. Subordinate leaders demonstrate an understanding of their mission and mission essential tasks, the engineer battalion mission, and engineer battalion commander's intent via their actions.</p>	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

Assessment Statements

- The engineer battalion command section monitors compliance of subordinate elements' implementation with commander's decisions, directives, and instructions.
- The engineer battalion XO monitors all engineer battalion staff actions for conformity to the engineer battalion commander's guidance.

OUTCOME 6 DIAGNOSTIC AID

OUTCOME 6: Subordinate leaders demonstrate an understanding of the critical elements of their own missions and mission essential tasks, the engineer battalion mission and the engineer battalion commander's intent.

Task Elements

Component A. Subordinate leaders demonstrate an understanding of their own missions and mission essential tasks, and the engineer battalion mission and engineer battalion commander's intent via briefbacks.

4. **The engineer battalion commander directs changes to the operation or plan.** [ARTEP 5-145-MTP, Task 05-1-0018; FM 5-71-3, Chap 2]
- 4e. The engineer battalion commander approves FRAGOs and directs members of the staff to issue FRAGOs based on his approval or in compliance with his guidance. [FM 5-71-3, p. 2-23]
- 4e2 The engineer battalion commander conducts confirmation briefings with subordinate commanders to ensure they understand the changes to plans and orders. [FM 5-71-3, p. 2-23]

Component B. Subordinate leaders demonstrate an understanding of their own missions and mission essential tasks, and the engineer battalion mission and engineer battalion commander's intent via their actions.

1. **The engineer battalion commander directs and leads subordinate forces.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3].
 - 1b. The engineer battalion commander directs engineer operations. [FM 5-71-3, pp. 2-1 and 2-8]
 - 1b1 Directs the battalion executive officer (XO), S3, command sergeant major (CSM), or another subordinate to positions to observe, control, and report on critical events where the commander cannot be present.
 - 1d. Engineer battalion staff members supervise subordinate elements' execution of tasks within the purview of their responsibilities and authority as established by the engineer battalion commander. [FM 5-71-3, p. 2-23]

1d2 Designated by the engineer battalion commander for the mission.

OUTCOME 7 ASSESSMENT

OUTCOME 7: Soldiers are motivated, disciplined, and maintain unit cohesion during the battle. (Use Table 9)

Component A. Engineer battalion commander and staff take actions to promote discipline and motivation.	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

Assessment Statements

- The engineer battalion commander reassures subordinates by a calm manner.
- The engineer battalion commander gives precise and simple orders.
- The engineer battalion commander checks to see that orders are carried out.
- The engineer battalion commander keeps soldiers informed of the situation and makes personal contact with the soldiers.
- The engineer battalion staff monitors status of unit discipline and morale; informs commander of problems.

Component B. Engineer battalion units and soldiers exhibit discipline and motivation; units perform cohesively.	Adequate	Marginal	Not Adequate
---	----------	----------	--------------

Assessment Statements

- Soldiers execute orders effectively.
- Subordinate units perform as a team under pressure of battle.

OUTCOME 7 DIAGNOSTIC AID

OUTCOME 7: Soldiers are motivated, disciplined, and maintain unit cohesion during the battle.

The task elements address Component A. Assessment of Component B is based on observations of manner of performance.

Task Elements

Component A: Engineer battalion commander and staff take actions to promote discipline and motivation.

1. **The engineer battalion commander directs and leads subordinate forces.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3].

1a. The engineer battalion commander provides command presence by positioning himself where he can best lead, observe the enemy and friendly situations, monitor the maneuver brigade's most important engineer event, and command and control the engineer support for the battle. Considerations: [FM 5-71-3, p. 2-1]

1a1 Positions where he can physically observe and influence the engineer battalion's critical actions.

1b. The engineer battalion commander directs engineer operations. [FM 5-71-3, pp. 2-1 and 2-8]

1b1 Directs the battalion executive officer (XO), S3, command sergeant major (CSM), or another subordinate to positions to observe, control, and report on critical events where the commander cannot be present.

1c. The engineer battalion commander exercises leadership to maintain unit cohesion and discipline. [FM 5-71-3, p. 1-8]

1c1 Reassures subordinates by a calm manner.

1c2 Acts decisively.

1c3 Gives precise, simple orders.

1c4 Checks that orders are executed.

- 1c5 Verifies subordinate commanders' cross-talk on the engineer battalion command net to:
 - a) Coordinate efforts.
 - b) Provide mutual support.
 - c) Integrate efforts.
 - d) Prevent fratricide.
 - e) Keep updated on the situation.

- 1c6 Keeps soldiers informed of the situation and makes personal contact with soldiers to increase morale. [FM 5-71-3, p. 1-8]

- 1c7 Observes subordinates for indications of shortfalls in performance and manner of performance.

- 1c8 Monitors subordinates and self for leadership degradation due to physical and mental stress of battle. [ARTEP 5-145-MTP, Task 5-2-1023; LL - CALL Newsletter No. 90-8, p. 25]
 - a) The engineer battalion commander monitors his own physical and mental state and gets rest.
 - b) The engineer battalion XO monitors the engineer battalion commander's physical and mental states and recommends rest periods.
 - c) The engineer battalion commander ensures that subordinate commanders are rested and prepared for battle.

- 1c9 Recognizes achievement and effort.

- 1c10 The engineer battalion CSM assists in maintaining unit discipline and morale. [FM 5-71-3, p. 2-2; LL - CALL: NCO Lessons Learned]

- 1d. Engineer battalion staff members supervise subordinate elements' execution of tasks within the purview of their responsibilities and authority as established by the engineer battalion commander. [FM 5-71-3, p. 2-23]

- 1d1 Standing operating procedures (SOP).

- 1d2 Designated by the engineer battalion commander for the mission.

- 2. **Engineer battalion command posts provide communication and control.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3]

2b. The engineer battalion staff evaluates acquired information and engineer status, updates essential products, and maintains status.

2b8 The engineer battalion S1:

- b) Updates personnel information. [FM 5-71-3, Chap 6]
 - (4) Reception and processing of replacements.
 - (6) Personnel actions (awards, decorations, promotions, legal action).
 - (8) Soldier morale and welfare activities.

2c. The engineer battalion commander and staff communicate information.

2c7 The engineer battalion rear CP CSS officers:

- g) Engineer battalion S1 processes engineer battalion replacements.
- h) Engineer battalion S1 tracks evacuation of engineer battalion personnel and casualties.
- i) Engineer battalion S1 processes awards, decorations, promotions, and legal actions of engineer battalion personnel.

Component B. Engineer battalion units and soldiers exhibit discipline and motivation; units perform cohesively.

There is no diagnostic aid for Component B. Observations should be made of the state of discipline, motivation, and cohesion throughout the battalion.

OUTCOME 8 ASSESSMENT

OUTCOME 8: The engineer battalion command, control, and intelligence (C3I) capability is effective, survives, and is prepared for the next mission.

(Use Tables 1, 2, 3, and 5)

Not Adequate

Marginal

Adequate

Assessment Statements

- The engineer battalion CPs take actions (e.g., reposition) to enhance survivability.
- If an engineer battalion CP is lost (damaged, destroyed, captured, unable to communicate), survivors move to an alternate CP which has assumed control of the functions of the CP that was lost.
- If needed, succession of command is implemented as per the engineer battalion plan or TSOP.
- At change of mission, the engineer battalion commander confirms that the engineer battalion is prepared to continue the mission.

OUTCOME 8 DIAGNOSTIC AID

OUTCOME 8: The engineer battalion command, control, and intelligence (C3I) capability is effective, survives, and is prepared for the next mission.

Task Elements

1. **The engineer battalion commander directs and leads subordinate forces.** [ARTEP 5-145-MTP; FM 5-71-3; FM 71-3].
 - 1a. The engineer battalion commander provides command presence by positioning himself where he can best lead, observe the enemy and friendly situations, monitor the maneuver brigade's most important engineer event, and command and control the engineer support for the battle. Considerations: [FM 5-71-3, p. 2-1]
 - 1a1 Positions where he can physically observe and influence the engineer battalion's critical actions.
 - 1a2 Retains the freedom to move.
 - 1a3 Avoids personal direct combat.
 - 1a4 Employs measures to enhance survivability:
 - a) Avoids unnecessary risk.
 - b) Uses available cover and concealment.
 - c) Frequently changes position.
 - 1a5 Maintains communications capabilities with:
 - a) The supported maneuver brigade and engineer brigade commanders.
 - b) Subordinate commanders.
 - c) Engineer battalion command posts (CPs).
5. **Engineer battalion command posts manage and maintain command, control, and communications.** [ARTEP 5-145-MTP, Task 05-1-0018; FM 5-71-3]
 - 5a. Engineer battalion CPs manage means of communicating information.

- 5a1 The engineer battalion XO is the "information manager" for the staff. [FM 5-71-3, p. 2-1; ARTEP 5-145-MTP, Task 5-1-0026/1, 2, and 3]
- a) Facilitates the flow of information and communication from staff members and subordinate units.
- 5a4 Engineer battalion CPs maintain communications (FM radio and multi-channel, wire, messenger) with subordinate units, adjacent units, supported, supporting, and higher headquarters. [ARTEP 5-145-MTP, Task 5-4-0028]
- a) The engineer battalion SO ensures that battalion communications systems and links (e.g., retransmission) are operational and support the commander, staff, and subordinate leaders.
 - b) The engineer battalion XO manages battalion communications, including positioning of command and control elements.
 - c) The engineer battalion SO controls SOI issue and use.
 - d) The engineer battalion SO coordinates retransmission capabilities for the battalion.
 - e) The engineer battalion SO directs the communications section's efforts on inspecting and testing battalion communications equipment and systems.
- 5a5 LNOs provide information to the engineer battalion commander and staff, or the maneuver brigade headquarters, or the headquarters they represent, or units they are coordinating with for the engineer battalion. [FM 5-71-3, pp. 2-5 and 2-6; Jarrett, 1996]
- 5b. Engineer battalion CPs move to maintain survivability and communications. [FM 5-71-3, pp. 2-4 through 2-6]
- 5b1 CP officer-in-charge (OIC) organizes two echelons.
- 5b2 The first echelon moves to the new CP site.
- a) First echelon uses a covered and concealed route.
 - b) First echelon arrives at new site and establishes communications with all engineer battalion elements and higher headquarters.
- 5b3 CP at new location starts operations.
- a) Communications are established.
 - b) Maps and overlays are updated.
 - c) Operations journal is updated with significant events.

- d) Sections and personnel in the CP are updated on critical events that occurred while the CP was moving.
 - e) CP identifies itself as operational and reassumes its command and control functions.
- 5b4 Once CP is established at new site, the second echelon breaks down its equipment and moves to the new CP site.
- 5c. Command and control of the engineer battalion are maintained during the displacement of a CP. [FM 5-71-3, pp. 2-5 and 2-6]
- 5c1 When the engineer battalion command group and tactical (TAC) CP move, the main CP assumes the command group and TAC CP functions.
- 5c2 When the main CP moves, the TAC CP assumes the main CP functions.
- 5c3 When the rear CP moves, the main CP assumes the rear CP functions.
- 5d. The engineer battalion reestablishes command, control, and communications (C3) operations in the event of a CP's destruction or loss of contact. [FM 5-71-3, pp. 2-4 through 2-6; LL - CALL Bulletin No. 4]
- 5d1 Engineer battalion subordinate, maneuver brigade, and engineer brigade commanders are informed of loss and re-establishment of an engineer battalion CP. [FM 5-71-3, pp. 2-23 through 2-26]
- a) Frequencies being used by the re-established engineer battalion command post.
 - b) Location of the new battalion CP and key leaders.
 - c) Identity of the engineer battalion commander (if command group is lost) or officer-in-charge of CP (if CP is lost).
- 5d2 When the engineer battalion command group and TAC CP are out of action, the main CP assumes command group and TAC CP functions. [FM 5-71-3, p. 2-5]
- a) Synchronize the engineer battalion's assets in support of the close battle.
 - b) Control close operations.
 - c) Reconstitute engineer battalion command group.
 - (1) Obtain replacement of essential equipment (e.g., use what the battalion has on hand, and/or request replacements from maneuver brigade or engineer brigade on a high priority basis).
 - (2) Obtain replacements for key personnel losses to the staff (e.g., S3).
 - (a) Key personnel functions are continued without a break in the engineer battalion operations tempo.
 - 1 Command and control of the engineer battalion are maintained.

- 2 Communications are maintained with higher headquarters.
 - (b) As time permits, permanent replacements for key personnel are obtained.
- 5d3 When the engineer battalion main CP is rendered combat ineffective, surviving staff members move to alternate main CP (either the ABE section or the rear CP) and resume main CP functions: [FM 5-71-3, pp. 2-5 through 2-6]
- a) Reestablish the engineer battalion net control station.
 - b) Monitor the tactical situation.
 - c) Manage engineer assets.
 - d) Serve as the alternate TAC CP or command group.
 - e) Keep higher headquarters and adjacent units informed of the situation.
- 5d4 When the engineer battalion rear CP is out of action, the main CP assumes the rear CP functions: [FM 5-71-3, pp. 2-5 and 2-6]
- a) Plan and coordinate sustainment for tactical operations.
 - b) Control rear operations.
- 5e. Succession of command. [FM 5-71-3, p. D-17]
- 5e1 When the engineer battalion commander is lost, command is assumed by a subordinate:
- a) Who is in position to direct the battle immediately.
 - b) Who has been designated in advance.
- 5e2 The engineer battalion XO repositions as soon as possible to take command.
6. **The engineer battalion reorganizes and supports maneuver brigade consolidation.** [ARTEP 5-145-MTP; FM 5-71-3]
- 6h. The engineer battalion commander confirms that the engineer battalion is prepared to continue the mission. Confirmation criteria include: [AN]
- 6h1 All engineer battalion elements report successful completion of reorganization and consolidation.
- 6h2 The engineer battalion XO reports that all engineer battalion C3 systems and CPs are fully operational.
- 6h3 The engineer battalion S2 reports that all intelligence systems are fully operational.

- 6h4 The engineer battalion S3 reports status of all engineer systems in terms of fully mission capable, or estimates of repair time for those that are not.
- 6h5 The engineer battalion S1 reports that key leaders and critical personnel have been replaced and the battalion strength is adequate to continue successful mission accomplishment.
- 6h6 The engineer battalion S4 reports status of recovery/repair/evacuation of equipment and the extent that the maintenance and supply systems will support future operations.

PROGRAM REVIEW MEASURES OF EFFECTIVENESS

The following tables and questions examine various aspects of directing and leading units in battle. Table 1 is concerned with the engineer battalion's mission execution (mobility, countermobility, survivability, engineer Bn TF operations). Table 2 is about the operation and monitoring of communications nets. Table 3 provides a place to record whether all critical information was communicated among staff sections, key leaders, and headquarters of higher, adjacent and subordinate units. Table 4 is about the updating of operations products during execution. Table 5 is about where leaders were positioned, and provides a place to note any key leaders who were rendered combat ineffective, and whether the succession plan was executed effectively. Table 6 is about the evaluation of the tactical situation by the commander and staff. Table 7 asks about tactical decision making. Table 8 is about time management. Table 9 is concerned with the integration and coordination of elements of combat power available to the engineer battalion. Table 10 addresses the commander's overall leadership.

Table 1. Support provided to the armored brigade.

The following table is designed to capture the result of the engineer battalion commander's direction and leadership manifested in terms of support to the armored brigade. Focus is on the command and control battlefield operating system (BOS) as opposed to other BOS, e.g., CSS (example: a supply failure could be the result of a maneuver unit's failure to select a drop off point in proximity to an engineer work site, which would be a TF mobility/survivability BOS or TF command and control BOS issue). Also, when assessing the results of direction and leadership, care must be taken to attribute direct responsibility to the appropriate echelon of command. For example, slow recovery of disabled vehicles during an attack could be the result of a bad forecast of requirements by a TF commander or a map reading deficiency of the TF BMT; neither of those deficiencies would directly involve the engineer battalion commander and neither would affect engineer battalion training planning. Indicate by circling "Yes" or "No" if the engineer battalion commander's direction and leadership resulted in the provision of engineer support in accordance with the brigade commander's intent. Record additional information about the circumstances in the space following the table.

Engineer battalion mission (as appropriate)	Deep battle?	Close battle?	Rear battle?	Consolidation & reorganization?
Mobility operations	Yes	No	Yes	No
Counter mobility operations	Yes	No	Yes	No
Survivability operations	Yes	No	Yes	No
Engr Bn TF operations	Yes	No	Yes	No

Add details as appropriate concerning mission accomplishment:

Table 2. Operation and monitoring of communications nets.

Leave the block unmarked if communication was maintained to a degree that all information was transmitted and received. If non-critical information was lost because of interruptions in communication, enter an "M" (for marginal performance). If critical information was not received, tag the incident by entering a number in sequence (1, 2, 3,....) and then indicate below the table the nature of the critical information that was not received (use METT-T factors to describe this information).

Communication Nets	TAC CP	Main CP	Rear CP
Engineer battalion command			
Armored brigade command			
Armored brigade operations and intelligence (O&I)			
Engineer battalion administrative and logistics (A/L)			

Briefly describe incidents of information not received (what METT-T information was not received and what happened because of this failure to communicate the information):

Table 3. Communication among staff sections, higher, adjacent, and subordinate units.

Complete this table by tagging each incident in which critical information was NOT communicated from one element to another. Engineer Bn key personnel are indicated in the horizontal row at the top of the table. Listed vertically in the left column are the same positions followed by key personnel external to the battalion. Each occurrence of failure to communicate should be given an identification number on the chart for reference purposes. Insert the identifying number (in sequence: 1, 2, 3,...) in the appropriate cell. Following the table is space for notes on the nature of the problem. EXAMPLES OF USE: a) If in the first incident of failure to communicate during an exercise, the Bn S2 had failed to inform the Bn commander and the Bn S3 about change to enemy capabilities, the observer would annotate "1" in the cells at the intersection of the S2 vertical column and the horizontal row for the Bn commander and the Bn S3. In the foregoing example, the observer might also record at the end of the table, "1: Bn S2 did not appear to recognize significance of movement forward of enemy smoke generator unit." b) If the second incident of failure to communicate was that the Engr Bn S4 had not provided information to an engineer company commander, the observer would annotate "2" in the cell at the intersection of the Bn S4 column and the engineer company's row. The clarifying note would show "2: Bn S4 failed to provide warning information about emergency supply of Class IV to TF ____." c) If in a third incident, the Engr Bn S3 had failed to communicate with the Bn HHC about a support matter, the observer would annotate "3" at the intersection of the engineer Bn S3 vertical column and the Bn HHC row. The clarifying note at the bottom of the table might show, "3: Bn S3 radio problem prevented timely transmission of information about a decontamination site opening at Grid ____." d) If the fifth incident was the inability of the Engr Bde S3 to provide information on additional support to the Bn S3, the observer would annotate "5" in the cell formed at the intersection of the Engr Bde S3 row and the Bn S3's column. The note might reflect "5: Additional bulldozers arrived without warning. Unknown at this time why Engr Bde S3 failed to inform Bn S3."

Table 3. (Continued)

	Engr Bn Cdr	Engr Bn CSM	Engr Bn S1	Engr Bn S2	Engr Bn S3	Engr Bn S4	Engr Bn BMT	Engr Bn XO	Engr Bn Bn SO	Engr Co A Cdr	Engr Co B Cdr	Engr Co C Cdr	HHC Cdr
Internal communication:													
Engr Bn Cdr													
Engr Bn CSM													
Engr Bn S1													
Engr Bn S2													
Engr Bn S3													
Engr Bn S4													
Engr Bn BMT													
Engr Bn XO													
Engr Bn Bn SO													
Engr Co A Cdr													
Engr Co B Cdr													
Engr Co C Cdr													
HHC Cdr													
Maneuver or CS elements													
OPCON or attached (as appropriate)													
External communications:													
Armored Bde Cdr													
Armored Bde S1													
Armored Bde S2													
Armored Bde S3													
Armored Bde S4													
Armored Bde ABE													
Armored Bde FSO/fire support element (FSE)													
FSB Support Ops.													

Table 3. (Continued)

	Engr Bn Cdr	Engr Bn CSM	Engr Bn S1	Engr Bn S2	Engr Bn S3	Engr Bn S4	Engr Bn BMT	Engr Bn XO	Engr Bn Bn SO	Engr Co A Cdr	Engr Co B Cdr	Engr Co C Cdr	HHC Cdr
DIVEN/ Engr Bde Cdr													
Engr Bde XO													
Engr Bde S3													
External communications: (cont'd)													
Supporting Engr Units													
Adjacent Units													
Other Units													

Tag incidents with a number. Briefly describe incidents of information not received (what METT-T information was not received and what happened because of this failure to communicate the information):

Table 4. Updates of operations products during execution.

This table is intended to show whether each CP maintained accurate and current operations products. Products listed may be employed by the battalion headquarters to update and collate information so that appropriate actions may be taken to conduct a synchronized battle. Some of these items are not required by doctrine or unit TSOP, so circle "N/A" if the item was not required by the TSOP or the particular CP. If the item was required, then circle "Yes" if it was continually updated to be complete, accurate, and current, or "No" if it wasn't. On the following page, briefly state the consequences of any inaccurate or out-dated information reflected on a particular product. (There may be no consequences or impact in some instances.)

Operations Products	Command Group	TAC CP	Main CP	Rear CP
Operations overlay (Engr Bn, Bde, and adjacent units)	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Obstacle graphics	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Situation template overlay	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Event template overlay	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Modified combined obstacle overlay (MCOO)	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Fire support overlay	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Decision support template (DST)	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Synchronization matrix	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Engineer execution matrix	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Situation posted on appropriate maps	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Timeline	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
CSS overlay/map	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
NBC overlay	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Rear operations overlay	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Plans map (with overlays for future operations)	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No
Other _____	N/A Yes No	N/A Yes No	N/A Yes No	N/A Yes No

Table 5. Locations of leaders during execution phase and succession of command or critical position.

Parts a and b of the table were designed to capture whether leaders were at appropriate locations during the critical events of mission execution. Five sections make up this measure. Describe the key events and the leader's location by filling in the blanks. Then, circle "Yes" or "No" in each box to record whether the leaders were positioned to exercise C2. Parts c, d, and e are concerned with continuity of command and control.

a.	Were leaders in appropriate position to exercise command and control of the event?				
	Engineer battalion commander	Engineer battalion S3	Engineer battalion XO	Other _____	Other _____
Key event during execution: (Fill in events and locations, as needed.)					
1. Start of mission (e.g., line of departure (LD))	Yes No	Yes No	Yes No	Yes No	Yes No
2.	Yes No	Yes No	Yes No	Yes No	Yes No
3.	Yes No	Yes No	Yes No	Yes No	Yes No
4.	Yes No	Yes No	Yes No	Yes No	Yes No
5.	Yes No	Yes No	Yes No	Yes No	Yes No

b. Briefly remark on any consequences for the conduct of the battle due to key leaders not being in position at critical events:

Table 5. (Continued)

c. If engineer battalion Cdr, or the S3, or XO was rendered ineffective during execution, indicate the key event ongoing at that time.

Key event and time:

Engineer battalion Cdr _____; S3 _____; XO _____; Other _____.

d. Briefly indicate the reason for the leader being rendered ineffective (e.g., loss of communication, vehicle disabled, leader wounded, killed, captured, became lost).

Reason for becoming ineffective:

Engineer battalion Cdr _____; S3 _____; XO _____; Other _____.

e. Determine if the succession of command procedure was executed effectively. Enter the time of each event in the first three columns. Circle "Yes" or "No" to indicate whether the succession was executed effectively.

Succession of command executed effectively:

Leader	Time successor notified:	Time successor took command:	Time successor able to exercise control:	Was succession executed effectively?
Engr Bn commander				Yes No
Engr Bn S3				Yes No
Engr Bn XO				Yes No
Other				Yes No

Notes:

Table 6. Evaluation of tactical situation.

This table elaborates on the evaluation of information and decision-making processes of the engineer battalion commander and staff during execution of the battle. Possible factors that the commander should include in his estimate are listed by METT-T. It may be necessary to add other factors. The first rating is whether the commander and staff had an accurate perception of each factor when they issued their orders (OPORD or FRAGO). The second rating concerns whether the factor actually changed as a result of battle preparations or during execution of battle. The third column addresses whether the change was detected. The fourth column calls for an observer judgment about whether the response was or was not appropriate.

Factors	Were Bn Cdr and staff estimates based on accurate perceptions of the situation when orders were issued?	Did the situation change?	Was the change detected?	Was reaction to change appropriate?
Mission				
Armored brigade commander's intent	Yes No	Yes No	0 1 2 3	Yes No
Engineer brigade commander's intent	Yes No	Yes No	0 1 2 3	Yes No
Engineer battalion commander's intent	Yes No	Yes No	0 1 2 3	Yes No
Armored brigade concept of operation	Yes No	Yes No	0 1 2 3	Yes No
Engineer battalion mission	Yes No	Yes No	0 1 2 3	Yes No
Engineer task organization	Yes No	Yes No	0 1 2 3	Yes No
Other--	Yes No	Yes No	0 1 2 3	Yes No
Enemy Situation				
Engineer capabilities	Yes No	Yes No	0 1 2 3	Yes No
Activities	Yes No	Yes No	0 1 2 3	Yes No
Strength	Yes No	Yes No	0 1 2 3	Yes No
Locations	Yes No	Yes No	0 1 2 3	Yes No
Probable COAs	Yes No	Yes No	0 1 2 3	Yes No
Other--	Yes No	Yes No	0 1 2 3	Yes No

Table 6. (Continued)

Factors	Were Bn Cdr and staff estimates based on accurate perceptions of the situation when orders were issued?	Did the situation change?	Was the change detected?	Was reaction to change appropriate?
Friendly Troops Location and Status				
Disposition and locations of brigade units	Yes No	Yes No	0 1 2 3	Yes No
Disposition, locations, and status of engineer equipment and personnel	Yes No	Yes No	0 1 2 3	Yes No
Status of Class III, IV, and V for engineer units	Yes No	Yes No	0 1 2 3	Yes No
Status of obstacle, lane, and position preparation for brigade units	Yes No	Yes No	0 1 2 3	Yes No
Other--	Yes No	Yes No	0 1 2 3	Yes No
Terrain (Area of Operations)				
Weather effects on visibility	Yes No	Yes No	0 1 2 3	Yes No
Weather effects on movement	Yes No	Yes No	0 1 2 3	Yes No
Weather effects on construction of obstacles and positions	Yes No	Yes No	0 1 2 3	Yes No
Terrain effects on movement	Yes No	Yes No	0 1 2 3	Yes No
Terrain effects on construction of obstacles and positions	Yes No	Yes No	0 1 2 3	Yes No
Other terrain factors--	Yes No	Yes No	0 1 2 3	Yes No
Time				
Time to coordinate missions	Yes No	Yes No	0 1 2 3	Yes No
Time for movement/repositioning engineer assets	Yes No	Yes No	0 1 2 3	Yes No
Times for planned events	Yes No	Yes No	0 1 2 3	Yes No
Other--	Yes No	Yes No	0 1 2 3	Yes No
Commander's overall assessment of METT-T				
Engineer battalion is able to execute mission	Yes No	Yes No	0 1 2 3	Yes No

Table 7. Tactical decision making.

The following table is about the tactical decisions made during the execution of the battle. During the course of the battle, there will be one or more key events or changes in METT-T that will cause the engineer battalion commander to make tactical decisions (which include altering the current plan or continuing to follow the plan as originally developed). These key events should be noted, and the tactical decision should be appraised in terms of:

- the quality of the recommendations made to the commander, and
- the quality of the selected course of action (COA).

Tactically sound recommendations are consistent with the actual METT-T and will produce positive results. Other criteria of tactical soundness are that the commander receives all critical information, has enough time to make a decision, and has enough time to transmit it to subordinates in time for them to carry out the desired actions. When examining either the old COA or a newly developed COA, determine whether it also met the following criteria:

- Suitable:** Will accomplish the mission and meet the intents of the armored brigade and engineer brigade commanders.
- Feasible:** Battalion has the time, means, and physical resources to execute the COA.
- Acceptable:** COA does not unduly risk personnel, equipment, or mission accomplishment.
- Rapid enough:** Commander's decision is made and disseminated in time to permit units to carry out the desired actions.

Key decision point:	Staff recommendations		Engineer battalion commander's decision			
	Tactically sound?	To Cdr in time?	Suitable?	Feasible?	Acceptable?	Rapid enough?
	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No

Table 8. Execution timelines.

Enter the date and time that each sequence (Cdr's decision, issuance of WARNO, receipt of FRAGO, receipt of FRAGOs) occurred within context of current battle. The WARNOs and FRAGOs may be oral versus written. If a decision was made, but no WARNO was issued, leave that column blank. If a WARNO was issued, but no FRAGO was issued, leave that column blank. Columns are provided to record times units received their orders. Use more than one row to record different times. If a FRAGO was issued and a subordinate unit(s) was not able to execute the required action, describe circumstances in the space following the table. If a WARNO was issued, but no FRAGO was issued and the unit did not initiate any action implied by the WARNO, leave the FRAGO columns and last column blank.

Engr Bn Cdr decision:	WARNO issued:	Time of receipt of WARNO by affected units:	FRAGO issued:	Effective time for task execution by units:	Time of receipt of FRAGO by units required to execute tasks:
Date/Time:	Date/Time: Unit: Date/Time:	Unit: Date/Time:	Date/Time:	Date/Time:	Unit: Date/Time:
Date/Time:	Date/Time:	Unit: Date/Time:	Date/Time:	Date/Time:	Unit: Date/Time:
Date/Time:	Date/Time:	Unit: Date/Time:	Date/Time:	Date/Time:	Unit: Date/Time:
Date/Time:	Date/Time:	Unit: Date/Time:	Date/Time:	Date/Time:	Unit: Date/Time:

Use the space below to record appropriate details.

Table 9. Integration and coordination of combat, combat support, and combat service support.

Intent of this table is to record the Engr Bn commander's and staff's ability before the battle to integrate and coordinate the elements of combat power represented by combat, combat support, and combat service support capabilities available to the Engr Bn. "Integrated" and "coordinated" mean that the activities of the available elements of combat power were effectively planned for so that each can be brought to bear on the battlefield at the appropriate times. The results of integration and coordination will be that the elements of combat power are available to influence the mission accomplishment as envisioned by the Engr Bn commander. The commander's and staff's actions during the execution phase must cause these elements of combat power to be deconflicted vertically, horizontally, and within the BOS to ensure that they are brought together in a harmonious order or relationship during the battle. (Subsequent to this integration and coordination, the brigade commander will synchronize the capabilities of all of the elements of the brigade combat team.) Circle the response appropriate for the integration and coordination for each element of combat power. For those elements of combat power listed in the table but not available to the Engr Bn, the observer should circle "N/A".

Considerations	Integrated and Coordinated?
Intelligence, e.g.: <ul style="list-style-type: none"> • Engineer reconnaissance in TF areas of operations (AOs) • Information acquisition 	Yes N/A No
Fire Support, e.g.: <ul style="list-style-type: none"> • Fires planning for engineer work sites, breaches • FASCAM planning • Obstacle locations and targets 	Yes N/A No
Command and Control, e.g.: <ul style="list-style-type: none"> • Communication networks • Retransmission equipment positioning • CPs' locations • Locations of Bn Cdr (demands of Engr Bn command vs. Bde Engr) 	Yes N/A No

Table 9. (Continued)

Considerations	Integrated and Coordinated?
<p>Command and Control, e.g.: (cont'd)</p> <ul style="list-style-type: none"> • Rehearsals' schedules • Attachments and detachments • LNOs • Hand-off of completed obstacles 	<p>Yes N/A</p> <p>No</p>
<p>Mobility and Survivability, e.g.:</p> <ul style="list-style-type: none"> • Mobility operations: <ul style="list-style-type: none"> • Smoke • Counter-mobility operations: <ul style="list-style-type: none"> • Obstacle siting • Initiation of obstacles • Survivability operations: <ul style="list-style-type: none"> • Type positions • Decontamination sites 	<p>Yes N/A</p> <p>No</p>
<p>Air Defense, e.g.:</p> <ul style="list-style-type: none"> • Air defense artillery (ADA) protection • Small arms for air defense (SAFAD) 	<p>Yes N/A</p> <p>No</p>
<p>Combat Service Support, e.g.:</p> <ul style="list-style-type: none"> • Delivery of CL IVN (barrier) • Casualty evacuation • Recovery and repair of equipment • Emergency resupply 	<p>Yes N/A</p> <p>No</p>

Table 10. Engineer battalion overall leadership.

This table is designed to capture aspects of the engineer battalion commander's leadership during mission preparation. Process statements are used to describe an aspect of the planning process. A numerical scale is included to identify the degree of proficiency to which the process was accomplished. Circling "1" on the scale means the task was not accomplished; "2" and "3" are provided to differentiate between extremes.) Circling "2" means the task was poorly accomplished; "3" indicates the task was accomplished but requires training. Circling "4" means the task was performed in accordance with (IAW) doctrine. The paragraphs under the process statements are "anchors" to guide the assessor when determining whether the process statements were accomplished. The "anchors" are not meant to be all inclusive.

Engineer battalion commander was not receptive to new information.	1	2	3	4	Engineer battalion commander sought and accepted new information.
Engineer battalion commander guidance and directives to staff had too little or too much detail.	1	2	3	4	Engineer battalion commander gave the staff the guidance and directives they needed.
Engineer battalion commander did not integrate and coordinate M/CM/S operations at critical points that were Engr Bn responsibilities, or overwatch and advise commanders as appropriate, those Engr operations for which he was not directly responsible.	1	2	3	4	Engineer battalion commander integrated and coordinated engineer battalion M/CM/S and provided appropriate advice to engineer operations throughout the brigade operations at critical points.
Engineer battalion commander did not keep soldiers informed of the current situation.	1	2	3	4	Engineer battalion commander kept soldiers informed of the current situation.
Engineer battalion commander did not share hardships and dangers of his soldiers.	1	2	3	4	Engineer battalion commander did share hardships and dangers of his soldiers.
Engineer battalion commander did not ensure that soldiers had the opportunity to rest and eat as conditions permitted.	1	2	3	4	Engineer battalion commander ensured that soldiers had the opportunity to rest and eat as conditions permitted.
Engineer battalion commander did not check to see that his orders were carried out.	1	2	3	4	Engineer battalion commander checked to see that his orders were carried out.

REFERENCES

Field Manuals (FMs)

- 5-71-3 Brigade Engineer Combat Operations (Armored), October 1995
- 20-32 Mine/Countermine Operations, 30 September 1992
- 71-3 Armored and Mechanized Infantry Brigade, January 1996
- 90-7 Combined Arms Obstacle Integration, 29 September 1994
- 101-5 Command and Control for Commanders and Staff, "Final Draft", August 1993

Army Training and Evaluation Program (ARTEPs)

- 5-145-MTP Mission Training Plan for the Headquarters and Headquarters Company, Engineer Battalion, Heavy Division/Corps, October 1989

Lessons Learned Bulletins

- CALL Bulletin No. 4: Command and Control System, February 1987
- CALL, News From the Front, April 1994
- CALL, Non Commissioned Officers (NCO) Lessons Learned, October 1989
- CALL Newsletter No. 90-8: Winning in the Desert II, September 1990

Battlefield Function Function Analyses

Jarrett, P. A. (1996). Task analysis of a mobility and survivability critical combat function as accomplished by a brigade (ARI Research Report 97-04). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Clagg, R. A., Anderson, M. S., and Quinkert K. A. (In preparation) Direct and lead units during preparation for the battle (Battlefield Function 19) as accomplished by an engineer battalion supporting a heavy brigade volume 1: Function analysis (ARI Research Product). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Anderson, M., Clagg, R. A., and Quinkert, K. A. (In preparation) Direct and lead units in execution of battle (Battlefield Function 20) as accomplished by an engineer battalion supporting a heavy brigade volume 1: Function analysis (ARI Research Product). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Appendix A

ACRONYMS AND ABBREVIATIONS

1SG	first sergeant
2IC	second in command
AAR	after action review
ABE	assistant brigade engineer
AD	air defense
ADA	air defense artillery
A/L	administrative/logistics
AN	author note
AO	area of operations
ARI	U.S. Army Research Institute for the Behavioral and Social Sciences
ARTEP	Army Training and Evaluation Program
ASL	authorized stockage list
ASR	available supply rate; alternate supply route
AVLO	aviation liason officer
AWOL	absent without leave
BCBL	Battle Command Battle Laboratory
Bde	brigade
BF	battlefield function
BMT	battalion maintenance technician
Bn	battalion

BOS	battlefield operating system(s)
BSA	brigade support area
C3	command, control, and communications
CCF	critical combat function
CCIR	commander's critical information requirements
Cdr	commander
CL	Class
CL III	petroleum, oils, lubricants
CL IV	construction and barrier material
CL V	ammunition
CL VIII	medical material
CL IX	repair parts and components
CMLO	chemical officer
Co	company
COA	course of action
COMSEC	communications security
CP	command post
CPX	command post exercise
CS	combat support
CSM	command sergeant major
CSS	combat service support
CTC	Combat Training Center

DS	direct support
DST	decision support template
DTDD	Directorate of Training and Development Doctrine
EBA	engineer battlefield assessment
EEFI	essential elements of friendly information
Engr	engineer
EPW	enemy prisoner of war
EW	electronic warfare
FA	function analysis; field artillery
FASCAM	family of scatterable mines
FFIR	friendly forces information requirements
FIST	fire integration support team
FM	field manual
FN	field note
FRAGO	fragmentary order
FSB	forward support battalion
FSE	fire support element
FSO	fire support officer
FTX	field training exercise
FXXITP	Force XXI Training Program
HHC	headquarters and headquarters company
HQ	headquarters

IAW	in accordance with
IPB	intelligence preparation of the battlefield
IR	information requirements
ITTBBST	Innovative Tools and Techniques for Brigade and Below Staff Training
LL	lessons learned
LNO	liaison officer
M/CM/S	mobility/countermobility/survivability
MCOO	modified combined obstacle overlay
MDMP	military decision-making process
METT-T	mission, enemy, terrain, troops, and time available
MIJI	meaconing, interference, jamming, and intrusion
MOPP	mission oriented protective posture
MOS	military occupational specialty
MQS	military qualification standards
M/S	mobility/survivability
MSR	main supply route
MTP	mission training plan
NAI	named area of interest
NBC	nuclear, biological, and chemical
NMC	non-mission capable
NTC	National Training Center

OBSTINTEL	obstacle intelligence
OC	observer-controller
OCOKA	observation and fields of fire, cover and concealment, obstacles, key terrain, and avenues of approach
O&I	operations and intelligence
OPFOR	opposing force
OPORD	operations order
Ops	operations
OPSEC	operations security
Pam	Pamphlet
PIR	priority intelligence requirement
PLL	prescribed load list
R&S	reconnaissance and surveillance
RACO	rear area combat operations
S1	Adjutant/Personnel Officer, Brigade and Battalion Staff
S2	Intelligence Officer, Brigade and Battalion Staff
S3	Operations and Training Officer, Brigade and Battalion Staff
S4	Supply/Logistics Officer, Brigade and Battalion Staff
SAFAD	small arms for air defense
SCATMINE	scatterable mine
SO	signal officer

SOEO	scheme of engineer operations
SOI	signal operations instructions
SOP	standing operating procedure
TAC	tactical
TAI	target area of interest
TEWT	tactical exercise without troops
TF	task force
TOE	table of organization and equipment
TRADOC	U.S. Army Training and Doctrine Command
TSOP	tactical standing operating procedures
USAARMC	U.S. Army Armor Center
USAARMS	U.S. Army Armor School
USAES	U.S. Army Engineer School
WARNO	warning order
XO	executive officer