TC 5-150

ENGINEER QUALIFICATION TABLES

HEADQUARTERS,
DEPARTMENT OF THE ARMY

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ENGINEER QUALIFICATION TABLES

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Preface

The purpose of this training circular (TC) is to explain the use of the Engineer Qualification Tables (EQT). The EQT are intended to assist the combat engineer battalion and the engineer regiment by providing the standard methodology required to sequentially train individuals, squads, and platoons. It encompasses the tasks required for small-unit engineer-mission success at those three levels. Since few battalions have the same equipment or mission, the commander is provided an opportunity to focus the EQT on the unit's mission by adding or deleting tasks based on the unit's mission-essential task list (METL). The EQT also provide the unit commander the ability to submit changes, along with the required resources, to the United States Army Engineer School (USAES) for documentation.

This manual is organized in a simple and common manner to parallel the infantry and armor qualification tables. This organization provides a common-sense approach to training by echelon. Individual tasks are trained and tested, followed by squad and platoon tasks. The manual provides the trainer with introductory information about the EQT concept. It expands this concept by providing a standard training scenario that can be used by all units or tailored to a specific unit. Chapter 3 provides the actual tables and the tasks that create their foundation.

Appendix A contains an English-to-metric conversion chart. Appendix B provides the unit with a method of tracking and reporting resource usage for the unit and the USAES. Appendix C provides the unit with standard matrices for tracking and reporting the qualifications of individuals, squads, and platoons. Once completed, the EQT will provide commanders clear documentation of the unit's training readiness as well as providing the engineer regiment a common training standard.

The proponent of this publication is HQ TRADOC. Send comments and recommendations on Department of the Army (DA) Form 2028 directly to Commander, USAES, ATTN: ATSE-TD-D, Fort Leonard Wood, Missouri 65473-6650.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

Chapter 1

Introduction

The EQT are designed to establish a common standard for skills that are unique to all combat engineers regardless of tables of organization and equipment (TOE) or component. These qualification tables add structure to unit training plans, articulate combat readiness, and help units compete for installation ranges and resources. The tables also assist the unit by outlining a training-readiness evaluation strategy for an individual, a squad, and a platoon. Establishing training and evaluation standards for engineer individuals, squads, and platoons allows for making efficient use of training resources, articulating readiness and, most importantly, ensuring a consistent battlefield result regardless of which engineer unit is in support.

The tables are designed to permit preliminary training, proficiency training, and qualification of engineer units. The tables begin by qualifying unit leaders to ensure that they are qualified to evaluate their soldiers on the required tasks. The tables then progress through the individual and squad, culminating with platoon qualification. The squad and platoon tables contain the foundation drills and tasks that combat engineer units must be able to accomplish in support of maneuver forces. The proficiency process supports premobilization as well as provides a means to define training readiness. The EQT can also be supported using lanes training.

This TC is organized into 12 tables that mirror the infantry and armor tables. For example, Tank Table VIII is the Intermediate Qualification Course; Engineer Table VIII is the Intermediate Proficiency Course. Both of these tables are designed as the final tables for their respective squads.

Authorizations from Department of the Army Pamphlet (DA Pam) 350-38 provide the basis of resource allocation for executing the tables. All units should be capable of executing the entire EQT using their current resource allocations. The goal of the EQT is to maximize the resources available while documenting the resources required to maintain a trained and ready force.

Engineers support maneuver units having extremely specialized missions. These missions may need to be encompassed in the EQT. A unit commander is encouraged to add drills or tasks to the EQT that will allow him to evaluate specialized missions as long as the basic tables remain the same.

Chapter 2 includes a sample scenario to assist units in executing the EQT. This scenario is not meant as an inclusive means of execution, but merely as one method of tying all the tasks into the context of a mission. Commanders are encouraged to write their own scenarios to reflect more directly their units' METL.

This TC's end state is to provide the Army with combat-ready engineer soldiers, squads, and platoons that are capable of mobilizing and deploying on short notice to fight and win.

Chapter 2

Execution Guidance

The EQT are organized to train engineer soldiers and units sequentially. They begin at the individual/crew level by qualifying all unit members on their weapons. They then qualify the unit leaders on the demolition and mine tasks they will be required to evaluate. The unit leaders then train and evaluate their soldiers on demolitions and mines. Tables V through VIII train and evaluate an engineer squad on the skills it is required to execute in support of its maneuver forces; Tables IX through XII train and evaluate an engineer platoon on the skills it will be required to execute in support of its maneuver forces. Each table builds on the previous table or group of tables.

The proficiency tables are designed to allow a commander to focus on units that may require more training to become combat ready. The proficiency tables can also be used in the event training resources become too depleted to execute the qualification tables. The proficiency tables allow a commander to articulate a unit's training status as combat ready but unqualified. A commander certifies a unit combat ready once it has completed Table VII or XI.

The qualification tables are designed to allow a unit to execute its engineer tasks in the most demanding conditions available during peacetime. The tables require a unit to execute the tasks at night with live ammunition and demolitions. A unit is combat ready and qualified once it has completed Table VIII or XII.

FREQUENCY

Tables I through VIII are designed to be conducted semiannually, while Tables IX through XII are designed to be conducted annually. A commander may increase the frequency based on his own assessment of unit training requirements. Normally, one of the squad qualification periods and the platoon qualification will occur before assuming Division Ready Force or a Combat Training Center (CTC) rotation.

EXECUTION

Tables I through IV are designed to train all members of an engineer platoon on individual/crew weapons, demolitions, and mines. The tables should be executed using standard weapons or demolition ranges according to the appropriate field manual (FM) or range standing operating procedure (SOP). Tables V through XII are designed to train an engineer squad and platoon on the drills and skills required to fight and win as engineers. These are best evaluated in a scenario, but if suitable ranges are not available, they may be

trained individually at separate ranges or training areas. In this situation, the scenario can be developed for the range or the task to be evaluated independently or the task can be evaluated outside the context of a scenario.

SCENARIO DEVELOPMENT

The following scenario is an example that may be used to encompass the drills and tasks embedded in Tables V through XII. This scenario is only one method of tying all the tasks into the context of a mission. It is based on task 5-3-0044, Support Attack on a Fortified Position. This task can be found in Army Training and Evaluation Programs (ARTEPs) 5-335-11-Mission Training Plan (MTP) and 5-025-11-MTP. Commanders are encouraged to develop a local scenario that is tactically sound for the range layout available and that more directly reflects their units' METL.

SCENARIO

Task Force (TF) Blue has received a mission to attack and seize objective Zulu as the brigade's initial main effort. The brigade and TF intelligence collection confirms that the enemy at objective Zulu is a motorized rifle company (MRC) defending from well-fortified positions. The TF Intelligence Officer (US Army) (S2) and engineer revise their template based on the available hard intelligence. TF Blue is task-organized with one light infantry company (Company A), a mechanized (mech)-heavy team (Team Mech), a tank-heavy team (Team Tank), and a heavy-light engineer team (Team Sapper).

TF Blue's commander and his staff develop several courses of action (COAs). After considerable war gaming, the commander adopts a COA as his scheme of maneuver (see Figure 2-1).

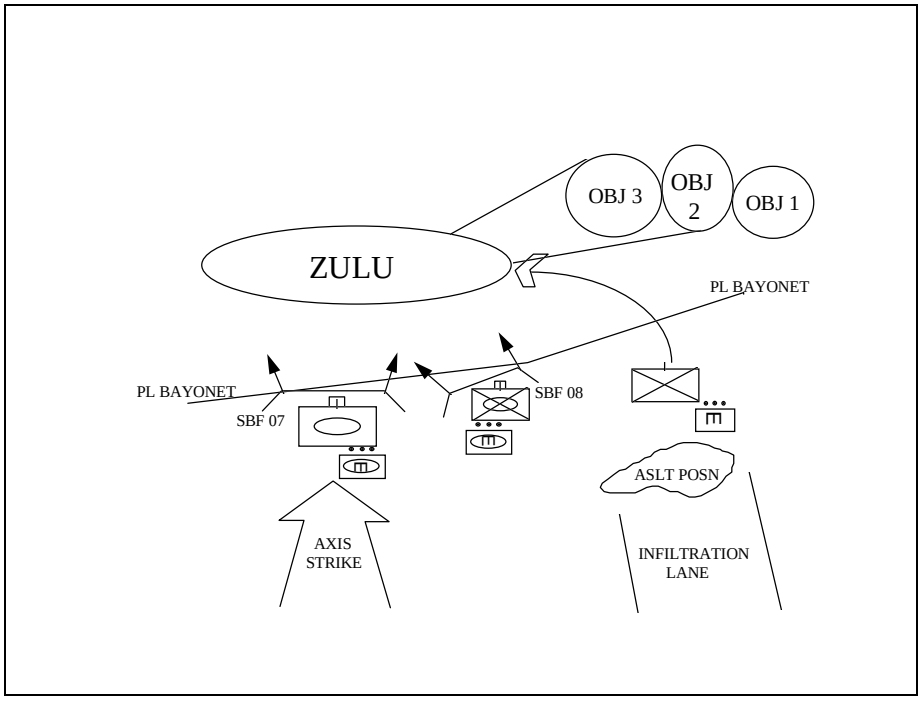

Figure 2-1. TF Blue's scheme of maneuver

TF Blue infiltrates Company A to an assault position using the infiltration lane. Teams Tank and Mech attack on Axis Strike. Team Tank occupies support-by-fire (SBF) position 07, orienting on objective 1. Team Mech occupies SBF position 08, orienting on objective 1, while company A assaults objective 1 (main effort). Team Tank shifts fires to objectives 2 and 3 as Company A crosses phase line (PL) Bayonet (see Figure 2-2).

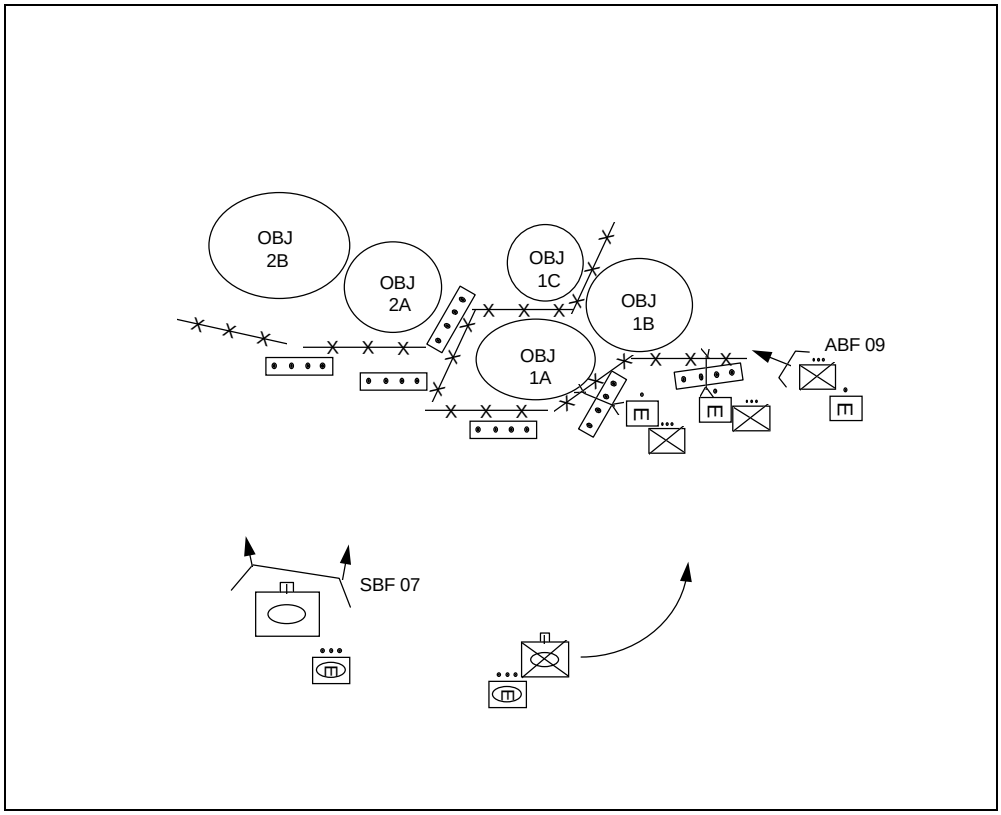

Figure 2-2. TF Blue's scheme of maneuver—Company A's breach plan

Team Mech passes through objective 1 on order (o/o) and becomes the main effort assaulting objective 2; Team Tank shifts fires to objective 3. Team Tank passes through objectives 1 and 2 o/o and seizes objective 3 (see Figure 2-3, page 2-4).

Based on the situation template (SITEMP) and the TF's scheme of maneuver, the engineer recommends organizing Company A for a breach. A light engineer platoon is attached to Company A. Teams Tank and Mech are both task-organized with a heavy engineer platoon to provide mobility along Axis Strike and to breach enemy tactical obstacles into objectives 2 and 3.

Company A's mission is to seize objective 1 to gain a foothold for the TF's attack on objective Zulu. To accomplish the mission, Company A must breach the enemy's protective obstacles, gain entry into the enemy's trench line, and defeat the motorized rifle platoon (MRP) in detail. The company commander plans to assault objectives 1A and 1B simultaneously with the 1st and 2nd platoons, respectively. This enables the commander to exploit the element of

surprise and gain rapid entry into objective 1. The 3d platoon attacks by fire and o/o through objective 1B to seize objective 1C. The commander cannot afford the delay of a deliberate breach at the protective minefields; he chooses to task-organize each of his platoons with a light engineer squad for a breach. The company's mortars will establish a firing position at PL Bayonet.

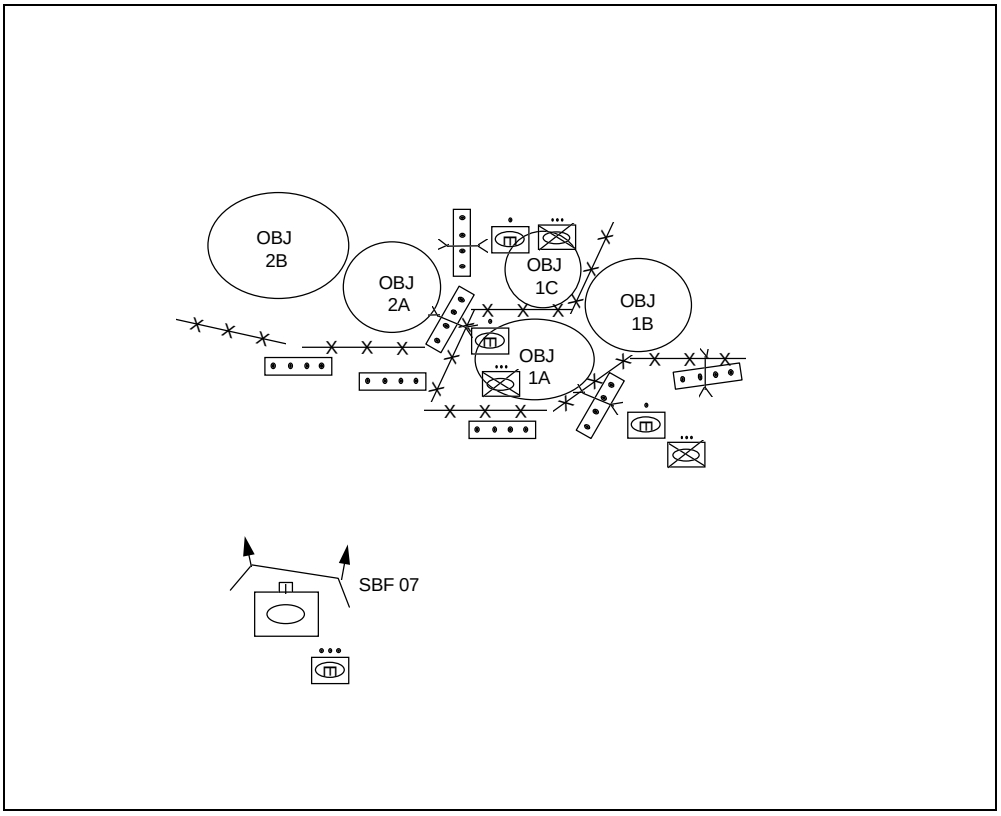

Figure 2-3. TF Blue's scheme of maneuver—Team Mech's breach plan

Company A's commander coordinates his breach plan with Teams Tank and Mech and the TF's fire-support officer (FSO). He knows that artillery fires will shift from objective 1 when he crosses PL Bayonet. The commander coordinates with the FSO for the mortars to fire a combination of high explosives (HEs) and smoke on objective 1 as artillery fires lift. These mortar fires obscure and suppress the enemy during his breach. The commander coordinates with Teams Tank and Mech to concentrate their fires on any enemy movement in objectives 2 or 3, threatening a counterattack on objective 1.

Once the attack is complete, TF Blue immediately begins preparing for the impending counterattack by the motorized rifle battalion's (MRB's) reserve. The hasty defense requires the execution of numerous obstacles along enemy key avenues of approach. The TF engineer has prepared his obstacle plan and previously coordinated with the TF Supply Officer (US Army) (S4) for delivery of prepackaged Class IV/V supplies to the designated Class IV/V supply point. The TF engineer receives a current status of the engineer strength by unit and makes any adjustments in the obstacle plan as a result of any excessive losses

to units. All engineers now return to the TF engineer's control and begin emplacing assigned obstacles. At a predesignated decision point, the TF engineer directs all engineers to occupy defensive positions within the TF and fight as engineers.

SCENARIO CONCLUSION

This scenario assists a unit in executing the squad tasks of Tables VI through VIII. For example, a light engineer squad can execute Breach an Obstacle during the attack on objective 1A. A mechanized engineer squad can execute Breach an Obstacle on objective 2A. It can also breach obstacles en route to the SBF position along Axis Strike. Units can execute Construct Wire Entanglements, Emplace a Nuisance Minefield, and Emplace a Hasty Protective Minefield Using a Modular Pack Mine System (MOPMS) in the execution of the hasty defense.

The scenario also provides the means for any unit to execute the platoon tasks in Tables X through XII. This can be completed in the same method as explained for the squad. The tasks build upon themselves by combining the squad tasks to form the platoon tasks required in Tables X through XII.

A commander may choose to evaluate Tables V and IX in at least three places during the scenario. The tables can be conducted mounted or dismounted. A unit can react to contact or ambush en route to the objective or react to contact while emplacing obstacles or executing the defense. At least one rotation of react to contact is recommended while the unit is emplacing obstacles. This an extremely vulnerable time for any engineer unit. Target arrays may be designed to fit the available ranges based on the unit's threat analysis. Targets should include a combination of armored vehicles and dismounted troops. Some typical targets might be a BMP; a BRDM, BTR, or gun truck; an antitank guided missile (ATGM); and troops.

Obstacles that are created for the units to breach should be designed as close to obstacles the unit expects to face given the current world situation. If no specific type of obstacle can be obtained, then a complex obstacle will be designed that uses wire, mines, and an antitank (AT) ditch at a minimum.

Other direct and indirect fires (such as mortars, AT weapons, and artillery) can be incorporated (live or simulated) to provide enhanced training on fire planning and calling for supporting fires.

EVALUATION GUIDANCE

The primary means of evaluating performance is the after-action review (AAR). The ultimate measure of success or failure is the same as in combat—if the unit accomplishes its mission and survives, it can be considered successful; if the unit is destroyed or is unable to achieve its mission, it is a failure. An individual, squad, or platoon that fails to use terrain properly will probably not survive the mission. If they fail to use the breaching tenets or fail to rehearse, they will probably not survive the mission. The EQT will highlight mistakes so they will not be made in combat.

The battalion commander is the senior trainer in a battalion. He oversees the assessment and the AAR process. The senior evaluator should be a captain (CPT) or major (MAJ) with command experience (one per platoon). He can be

the company commander only as a last resort. He should observe leader tasks, performance, and overall task accomplishments. He will then provide the senior trainer with the evaluation results and initial assessments and conduct the AAR. The assistant evaluator will be a lieutenant (LT) or sergeant first class (SFC) with platoon experience (one per squad). He will observe squad and section tasks, dismounted and vehicle actions, as well as fire control and distribution. He will also assist with live-fire safety, provide the senior evaluator with evaluation results, and participate in the AAR process. The target controller (one per squad and two per platoon) will coordinate any target presentations, assist with live-fire safety, inform the evaluators of target engagements, and participate in the AAR.

AFTER-ACTION REVIEW

An AAR will be conducted for all tables. At a minimum, it should establish what happened, determine what was right or wrong with what happened, and determine how the task should be done differently the next time. Unsatisfactory performance by any individual or unit should be noted. A complete discussion of AARs is provided in FM 25-100, Chapter 5, and FM 25-101, Appendix G.

Chapter 3

Engineer Qualification Tables

The following tables are designed to develop and test the proficiency of individual, squad, and platoon techniques at the basic, intermediate, and advanced levels for both active and reserve components. The series of combat engineer tasks or engagements in each table are intended to duplicate typical battlefield tasks under realistic conditions, against likely situations and target arrays, and within safety and resource constraints of live-fire ranges. The tables provide guidance for qualification and requirements for elements, rating procedures, and standards. Tables are to be accomplished sequentially.

SECTION I. CONDUCT OF TABLE I—INDIVIDUAL/CREW WEAPONS QUALIFICATION

Table I is designed to train each member of a combat engineer squad on his basic weapon. These tasks develop coordination skills and provide a soldier with an opportunity to identify individual strengths and weaknesses. The crew section of Table I should be conducted with an existing crew. Table I tasks (Table 3-1) are constructed so they will support the remainder of the tables.

FREQUENCY

This table will be executed semiannually. A unit commander may increase the frequency based on his unit's mission and requirements.

EXECUTION

Given the required range, ammunition, weapons, and post and unit SOPs, each soldier will qualify on his assigned weapon as per applicable FM or technical manual (TM).

Table 3-1. Table I tasks—individual/crew weapons qualification

Tasks Trained
• Each individual qualifies with his weapon. • At least three soldiers per squad will be qualified on a minimum of three of the following weapons assigned: the M249 (squad automatic weapon [SAW]), the M60 machine gun (MG), the M240B, the M2 (.50 caliber), the Mark 19, and the AT4. • Each soldier will qualify with the hand grenade. • Tables existing for specialized equipment will be used (for example, for the combat engineer vehicle [CEV], use that table in conjunction with the EQT).

STRATEGY AND CONCEPT

All soldiers will qualify as per applicable FM/TM. The hand grenade is the only exception; 90 percent of all soldiers assigned will have successfully negotiated the grenade course (see FM 23-30) within the past 12 months. Ninety percent of all soldiers assigned will have thrown one live fragmentation hand grenade (FHG) within the past 24 months. Extensive preliminary marksmanship instruction (PMI) will be conducted before range qualification. Battalion/higher headquarters will provide the means to execute (such as the range, ammunition, and time). Soldiers will conduct all night firing by using assigned night-vision devices (NVDs). An AAR will be conducted.

REFERENCES

The following references will be used for this qualification:

- DA Pam 350-38.
- FM 23-9.
- FM 23-14.
- FM 23-25.
- FM 23-27.
- FM 23-30.
- FM 23-31.
- FM 23-35.
- FM 23-65.
- FM 23-67.
- TC 25-8.

SECTION II. CONDUCT OF TABLE II—LEADER DEMOLITION AND MINE QUALIFICATION

Table II is designed to qualify all leaders in the combat engineer platoon on demolitions and mines (Table 3-2). It is a hands-on, performance-oriented table that requires a leader to demonstrate proficiency in mine and demolition procedures. All leaders in the platoon are responsible for ensuring that they and their subordinate leaders successfully complete Table II tasks before executing tasks in Tables III and IV.

FREQUENCY

Team leaders through platoon leaders will complete Table II tasks within 180 days of assignment to the unit. All leaders will be qualified on Table II tasks annually. They must also complete Table II within a two-week period before executing Table III or IV. A unit commander may increase the frequency based on his unit's mission and requirements.

EXECUTION

All leaders will qualify on Table II tasks by executing the tasks using inert training aids. Leaders are expected to execute the tasks listed to standard.

Table 3-2. Table II tasks—leader demolition and mine qualification

Task	Task No.	Page
Place Timber-Cutting Charges	051-193-2015	3-4
Place Steel-Cutting Charges	051-193-2016	3-6
Place Breaching Charges	051-193-2017	3-8
Place Cratering Charges	051-193-2018	3-10
Clear a Misfire	051-193-2030	3-12
Direct a Mine-Clearing-Line-Charge (MICLIC) Loading Team	051-193-2081	3-14
Calculate Timber-Cutting Charges	051-193-3022	3-17
Calculate Steel-Cutting Charges	051-193-3023	3-19
Calculate Breaching Charges	051-193-3024	3-22
Calculate Explosive Requirements for Road Craters	051-193-3025	3-24
Prepare/Compile Nonnuclear Demolition Target Folder	051-193-3055	3-27

The following tasks must be completed before testing any squad or platoon members:

- Constructing a nonelectric initiating/detonating assembly.
- Priming explosives with detonating cord.
- Constructing detonating-cord connections/firing systems.
- Calculating/placing charges (normal/special cutting, breaching, and cratering).
- Clearing misfires (or nonelectric modernized demolition initiators [MDI]).
- Exhibiting mine-handling proficiency.
- Following established safety procedures.
- Performing a risk assessment.

STRATEGY AND CONCEPT

All senior leaders are responsible for ensuring that they and their subordinate leaders are tested and have passed the above tables. Platoons will maintain integrity while conducting each task. All risk and safety tables will come from each installation's regulations. (Range safety classes usually cover these areas.) An AAR will be conducted with the tester upon completion of the test.

TASK NO. 051-193-2015: PLACE TIMBER-CUTTING CHARGES

CONDITIONS

You are assigned to an engineer squad that has been given a mission to emplace/clear timber obstacles. You have been tasked to place timber-cutting charges according to the instructions provided by the noncommissioned officer in charge (NCOIC). You have been given a wooden target of standing or dressed timber, explosives, and a demolition set.

STANDARDS

You will correctly place an external, ring, abatis, and/or internal charge on standing or dressed timber or on a stump.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Use an external charge placement on timber.

a. Notch the standing timber to hold the explosive in place.

b. Place the charge in a rectangular shape, 1 to 2 inches thick and about twice as wide as it is high.

c. Place the explosive on dressed timber on the widest face so that the cut will be through the least thickness.

NOTE: The tree will fall over the charge unless it is influenced by the lean or the wind.

Step 2. Use a ring charge on standing timber.

a. Place the ring charge on trees with a diameter of 30 inches or less.

b. Place the ring charge as a band of explosives.

NOTE: The explosive must be a minimum of 1/2 inch thick for trees with a diameter of 15 inches or less and 1 inch thick for trees with a diameter of 15 to 30 inches. For trees over 30 inches, use an external timber-cutting charge.

c. Secure the explosive to the tree.

Step 3. Use an abatis charge on standing timber.

a. Place the explosive on the tree 5 feet above the ground (the tree will remain attached to the stump when it falls).

b. Place the explosive on the tree so that the tree will fall at a 45-degree angle toward the enemy.

Step 4. Use internal charge placement on an internal timber-cutting charge.

a. Place the explosive in a borehole parallel to the greatest dimension of cross section.

b. Tamp tightly with mud.

NOTE: Use C4 or dynamite because it can be molded and tamped inside the borehole. Connect the explosive to the initiator with detonating cord.

c. Place the explosive in one borehole for dimensional timber. If the charge is too large, bore a second hole 90 degrees to the left or right of the first hole, above or below at the same depth.

d. Place the explosive at the center mass of the target for round timber. If the charge is too large, bore two holes at right angles to each other. The holes should not intersect.

NOTE: If you use two boreholes, prime them separately and fire them simultaneously.

Step 5. Place charges for stump removal.

a. Take diameter measurements at points 12 to 18 inches above the ground, if possible. If stumps are smaller, take measurements at the highest point above the ground. A stump's diameter determines the amount of explosive to be used.

b. Dig a hole in the ground next to the taproot for a taproot stump. The best method is to place charges on both sides of the taproot to obtain a shearing effect.

c. Drill sloping holes for a lateral-root stump. Place the charges under the center of the stump and at a depth equal to the stump's diameter.

NOTE: If you cannot determine the root formation, assume it is the lateral type and use tamped charges for the best results.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to place the charge on the target. Specify if the target is to be an external charge, internal charge, ring charge, a charge for an abatis, or a charge for stump removal. Tell the soldier in which direction the tree should fall. If a stump-removal charge is used, tell the soldier which type of stump it is (taproot or lateral-root).

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 5-250

Related: None

TASK NO. 051-193-2016: PLACE STEEL-CUTTING CHARGES

CONDITIONS

You are assigned to an engineer squad that has been given a mission to clear steel obstacles. You have been tasked to place the steel-cutting charges according to the instructions provided by the NCOIC. You have been given a steel target, explosives, a demolition set, and instructions on desired demolition results.

STANDARDS

You will correctly place and prime ribbon, saddle, and/or diamond charges on steel beams, rails, bars, or chain.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Place ribbon charges.

a. Place the charges on structural beams less than 2 inches thick.

- Place the C-shaped charge to cut the web and half of the top and bottom flanges.
- Place the offset-flange charge so that one edge is opposite the center of the C-shaped charge (this will cut the flange's other side).

b. Place the charges on I-beams at least 2 inches thick, but less than 3 inches.

- Place the C-shaped charge to cut the web and half of the top and bottom flanges.
- Place the offset-flange charge so that one edge is opposite an edge of the C-shaped charge (this will cut the other side of the flange).

c. Use only C4 or sheet explosives for ribbon charges.

d. Prime charges using equal lengths of detonating cord with MDI shock-tube assemblies attached.

e. Prime the C-shaped charge in the center and the flange charge on its outer edge. Ensure that opposing charges are never directly opposite each other (neutralizing the explosive effect).

Step 2. Place the explosive on rails.

a. Place the explosive on railroad frogs, crossovers, and switches.

b. Use trinitrotoluene (TNT) or an explosive with a higher relative effectiveness (RE) factor.

c. Use 1/2 pound for rails less than 5 inches high and 1 pound for rails 5 inches high or more.

Step 3. Place saddle charges (cross-fracture method).

a. Place charges on round, square, or rectangular milled-steel bars up to 8 inches in diameter or 8 inches square.

b. Prime the charges at the apex of the long axis.

Step 4. Place diamond charges.

a. Place charges on round, square, or rectangular high-carbon steel or steel-alloy bars up to 8 inches in diameter or 8 inches square.

b. Place the charges in a diamond shape, 1 inch thick, with the short axis equal to one-half the bar's circumference.

NOTE: It is extremely difficult to place charges around corners of square or rectangular bars.

c. Wrap the explosive completely around the target so the ends of the long axis touch. (It may be necessary to slightly increase the charges' dimensions to accomplish this.) If necessary, tape the charges to the target to ensure complete contact.

d. Prime the charges at each end of the short axis and detonate simultaneously.

Step 5. Place the explosive on a steel chain.

a. Use one charge if the explosive is long enough to bridge both sides of the link or large enough to fit snugly between the two lengths.

b. Use two charges—one on each side—for large chains. Prime both charges so they will detonate simultaneously.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier what type of target, charges, and explosives to be used. Tell the soldier to place the explosive on the target and prime it.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 5-250

Related: None

TASK NO. 051-193-2017: PLACE BREACHING CHARGES

CONDITIONS

You are assigned to an engineer squad that has been given a mission to emplace/clear obstacles by breaching. You have been tasked to place the breaching charges according to the instructions provided by the NCOIC. You have been given a concrete target, explosives, a demolition set, and instructions on the desired demolition results.

STANDARDS

You will correctly place the charges on the target being breached.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Place breaching charges for the destruction of piers, walls, abutments, or slabs.

a. Place charges against either side of the target (above, at, or below ground level).

b. Tamp all charges with damp soil or filled sandbags equal to or greater than the breaching radius (the target's thickness).

c. Ensure that charges submerged in water are at a depth equal to or greater than the breaching radius.

d. Place the explosive in the shape of a flat square, with the flat side against the target (this will transmit the maximum destructive shock into the target).

e. Use "triple-nickel-forty" for abutments 5 feet thick or less, placing 40 pounds of explosive in holes 5 feet deep, 5 feet apart, and 5 feet from the open face of the abutment.

f. Use breaching charges in contact with the back of the abutment for abutments over 5 feet thick. Use the abutment's thickness as the breaching radius. Attempt to place charges at least 3 feet below the bridge seat (where the bridge's superstructure sits on the abutment).

g. Place a row of breaching charges for abutments over 20 feet high. Place a row of breaching charges at the base of the abutment, on the gap side, in addition to the charges specified in steps 1e and 1f. Fire all charges simultaneously.

Step 2. Place counterforce charges on small cubical or columnar concrete and masonry targets 4 feet or less in thickness and width.

NOTE: Use C4 or sheet explosives only.

a. Divide the amount of explosives in half and place them opposite each other.

b. Prime the charges separately but detonate them simultaneously.

c. Place the charges flush against the target sides.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier the type of target to be breached, the type and amount of explosive to be used, and any measurement or other information which may influence charge placement. Tell the soldier to place the breaching charge on the designated target.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 5-250

Related: None

TASK NO. 051-193-2018: PLACE CRATERING CHARGES

CONDITIONS

You are a member of an engineer squad with a mission to emplace road craters. You have been tasked to place the cratering charges according to the instructions provided by the NCOIC. You have been given a road section or avenue of approach, explosives, a demolition set, and instructions on the desired demolition results.

STANDARDS

You will correctly place cratering charges to make a hasty, deliberate, or relieved-face road crater.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Use explosives to breach hard-surface pavements. Concrete should not be breached at expansion joints because of the shattering effect.

a. Space charges the same distance that the boreholes are to be placed.

b. Place 1 pound of TNT or an explosive with a higher RE factor for each 2 inches of pavement thickness. Tamp charges with wet earth or filled sandbags twice as thick as the pavement.

c. Use a shaped charge to blast a small-diameter hole through the pavement into the subgrade.

Step 2. Construct boreholes for cratering charges by digging or by using standard-shaped charges.

NOTE: Boreholes can be enlarged by using additional explosives. Ensure that the borehole has cooled before placing more explosives in the hole.

Step 3. Place explosives to construct a hasty road crater at a 45-degree angle diagonally across the road.

a. Dig all boreholes the same depth (at least 5 feet), at a 45-degree angle, and spaced 5 feet center to center with 10 pounds of explosives per foot of depth per borehole.

b. Dual prime all charges, connecting them with detonating cord.

Step 4. Place explosives to construct a deliberate road crater at a 45-degree angle diagonally across the road.

a. Dig the boreholes 5 feet apart, center to center, in line across the roadway.

b. Dig the end holes 7 feet deep and alternately dig the other holes 5 and 7 feet deep.

NOTE: The end holes must be 7 feet deep; do not dig two 5-foot holes next to each other.

c. Place 80 pounds of explosives in the 7-foot boreholes and 40 pounds in the 5-foot holes.

d. Dual prime all charges.

NOTE: When using the 40-pound cratering charge for dual priming, place a 1-pound block of TNT on the side of the charge.

e. Tamp all holes with suitable material.

Step 5. Place explosives to construct a relieved-face road crater.

a. Construct two rows of boreholes at a 45-degree angle diagonally across the road and 8 feet apart on dirt- or gravel-surfaced roads. Space the boreholes on 7-foot centers.

b. Construct two rows of boreholes 12 feet apart on hard-surfaced roads.

c. Stagger the boreholes in the row on the enemy's side relative to the holes on the friendly side.

d. Construct one less borehole in the enemy's row than in the friendly's row.

e. Construct the boreholes in the friendly's row 5 feet deep with 40 pounds of explosives in each hole.

f. Construct the boreholes in the enemy's row 4 feet deep with 30 pounds of explosives in each hole.

g. Prime the charges in each row separately.

h. Cover the detonating-cord firing system of the friendly's row with 6 inches of dirt. This prevents the detonating cord from being cut when the enemy's row is detonated 1/2 to 1 1/2 seconds before the friendly's.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to place cratering charges on the target selected. (The trainer may select any of the types of cratering charges in the task steps and performance measures.)

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 5-250

Related: None

TASK NO. 051-193-2030: CLEAR A MISFIRE

CONDITIONS

You are given an electric/a nonelectric initiating system that has failed to detonate the charge, detonating cord, a time fuse, fuse igniters, explosives, a demolition set, and hand tools.

STANDARDS

You will wait 30 minutes after a misfire occurs before moving downrange to investigate the misfire. However, if the misfire is a single, electrically primed, untamped charge, you can investigate immediately. After waiting the required time, you and the officer in charge (OIC) must investigate the misfired system and, if possible, determine the cause of the misfire. You will clear the misfired charge by—

- Attaching a new detonating assembly to the detonating cord that was used to prime the misfired charge.
- Placing and detonating a 2-pound charge within 1 foot of a tamped misfired charge.
- Placing a 1-pound charge next to an untamped misfired charge.
- Correcting breaks, shorts, or equipment malfunctions in electric detonating assemblies.

You will observe all safety precautions to avoid injury to personnel.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Wait the required time and watch for the following signs before moving downrange to investigate the misfire:

a. Wait 30 minutes before moving downrange to investigate the misfire. However, if the misfired charge is electrically primed, above ground, and not dual primed, investigate it immediately.

b. Wait until smoke or fire coming from the charge's location clears before moving downrange.

c. Investigate as much of the MDI firing assembly as possible without leaving the firing point.

Step 2. Investigate to determine the cause and corrective action to take.

NOTE: DO NOT move either the blasting cap or the misfired cap.

- Nonelectrical firing system and MDI.
  - — Check all igniters and the time fuse to determine if one of them did not burn.
  - — Check the blasting cap's location to determine if the priming was inadequate.

NOTE: If the blasting cap detonated but did not initiate other shock tubes or the charge, priming was inadequate.

- System with detonating cord. Locate the primed end of the detonating cord to determine if the blasting cap detonated but failed to initiate the cord or if the fault is in the initiating assembly.

NOTE: Check for misfires after multiple charges have been detonated to ensure that all charges detonated.

Step 3. Clear misfired charges.

a. Clear tamped charges.

- Attempt to explode misfired charges that have no more than 1 foot of tamping by detonating a new 2-pound charge placed directly on top of the tamping.
- Remove the tamping of misfired charges that have more than 1 foot of tamping by using wooden or nonmetallic tools within 1 foot either above or beside the charge. Detonate a new 2-pound charge placed on the tamping.

b. Untamped charges. Detonate a 1-pound charge placed next to the misfired charge.

c. Correct equipment faults found in electrical detonating assemblies by replacing equipment and/or repairing breaks and insulating shorts.

d. Attach new detonating assemblies to detonating-cord main lines and/or branch lines at least 6 inches from the cut end of the cord.

NOTE: If detonating cord continually fails to fire, the detonating cord is defective and the charges must be primed again.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions statement. (Not all types of systems need to be trained during the same session.)

Brief soldier: Tell the soldier to clear the misfire.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 5-250

Related: None

TASK NO. 051-193-2081: DIRECT A MINE-CLEARING-LINE-CHARGE (MICLIC) LOADING TEAM

CONDITIONS

You are a team leader, given an order to direct a MICLIC loading team in an assembly area. You have a MICLIC launcher assembly on an M353 or M200A1, four soldiers, a trailer chassis, a sling, a towing vehicle, two adjustable wrenches, a pry bar, a linear line charge, a fuse in its container, an MK22 MOD4 rocket, TM 9-1375-215-14&P, and a lifting device.

STANDARDS

You will direct your team to load and prepare the MICLIC for deployment within 30 minutes.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Raise the launcher rail manually until the first thread on the hydraulic cylinder appears.

Step 2. Direct the crew to install the line-charge container on the launcher assembly.

a. Inspect the container for visible damage. If damaged, follow the instructions outlined in TM 9-1375-215-14&P, Tables 6-2 and 6-3.

b. Remove the hard cover.

c. Attach the lifting sling and signal the lifting-device operator to lift, position, and lower the container onto the launcher. Use your team to control the swing and to guide the container into position.

d. Remove the lifting sling and secure the container.

e. Inspect the fuse and charge. If damaged, follow the instructions outlined in TM 9-1375-215-14&P, Tables 6-2, 6-3, and 6-5.

f. Install the fuse and ensure that all electrical connections are made correctly and tightened to ensure good contact.

g. Install the nylon protective cover.

Step 3. Direct the crew to install the rocket.

a. Lower the launcher rail to about 10 degrees.

b. Remove the rocket from the shipping container.

c. Ensure that the front plate is secured to the head of the rocket and that the ball-lock pin is not in the head of the rocket.

d. Inspect the rocket for dents and corrosion, (refer to TM 9-1375-215-14&P, Table 6-4). If damaged, ensure that the electrical protective cap is on the rocket motor lead and return the unserviceable rocket for replacement.

e. Align the rocket on the launcher. Ensure that the rocket is firmly seated on the front and rear alignment pins and that there is no forward movement. Check the alignment and tightness of the four hand knobs. The bolts should

be at right angles to the rocket bands and should hold the rocket securely to the launcher rail.

Step 4. Direct the attachment of the rocket's bridle cable, ensuring that—

a. The rocket's harness connector is pointed forward and positioned near the front of the linear demolition-charge container.

b. The launcher rail is positioned at 20 degrees.

c. The shock cords at the rear of the cover do not interfere with the electrical leads and bridle cable and that the bridle cable exits from the rear of the cover.

d. The ball-lock pin is seated into the rocket's forward shipping plug to prevent rocket burnout on the rail or a partial deployment of the linear charge.

Step 5. Direct the electrical hookup and continuity checks, ensuring that—

a. The launcher rail is elevated to about 5 degrees while making connections.

b. All electrical connections are made and tightened.

c. The demolition fuse kit and rocket motor are kept at least 5 feet from any low-power operating transmitter.

d. Once tests have been made, the ball-lock pin is secured in the head of the rocket and is in the RAISE position.

Step 6. Direct the preparation of the system for deployment, ensuring that—

a. The lead is secured to receptacle #3.

b. The ball-lock pin is secured in the head of the rocket and is in the RAISE position.

c. The hydraulic control-valve handle is in the PRESSURIZE ACCUMULATOR position and that the gauge pressure is pumped to 3,200 pounds per square inch (psi).

NOTE: If the towing vehicle is wheeled, omit step 6d.

d. The selector-switch assembly and lanyard handle are transferred to the towing vehicle.

e. The M34 blasting machine is transferred to the primary operator.

Step 7. Report to the NCOIC that the MICLIC is ready.

EVALUATION PREPARATION

Setup: Provide the soldier with all of the materials listed in the conditions.

Brief soldier: Tell the soldier to direct his team in loading and preparing the MICLIC for firing.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- TM 9-1375-215-14&P
- TM 9-2330-247-14&P

Related: None

TASK NO. 051-193-3022: CALCULATE TIMBER-CUTTING CHARGES

CONDITIONS

You are given a hand-held calculator and the information needed to calculate charges with a formula.

STANDARDS

You will accurately calculate all timber-cutting charges.

TASK STEPS AND PERFORMANCE MEASURES

NOTES:

1. Always refer to FM 5-250 when calculating charges of any kind.

2. The results of test shots will determine the need for increasing or decreasing the amount of explosives required for each shot that follows.

Step 1. Calculate the amount of charges needed.

a. Identify and measure the critical dimensions.

b. Calculate for TNT using the proper formula.

c. Divide by the RE factor if using explosives other than TNT.

d. Round up to the next package size.

e. Calculate the number of charges.

f. Calculate the total amount of explosives (number of pounds and packages).

g. Determine the amount of detonating cord required.

h. Determine the amount of firing (MDI) requirements.

Step 2. Calculate for tamped internal charges using the following formula:

P = D2/250

where—

P = pounds of TNT required

D = diameter of round timber or the smallest dimension of dressed timber, in inches

NOTE: Divide the circumference by 3.14 to calculate the diameter.

Step 3. Calculate for untamped external charges, using the following formula:

P = D2/40

where—

P = pounds of TNT required

D = diameter of round timber or the smallest dimension of dressed timber, in inches

Step 4. Calculate for an abatis or obstacle caused by partially cut trees using the following formula:

P = D2/50

where—

P = pounds of TNT required

D = diameter of the tree

Step 5. Calculate for stump removal using the rule-of-thumb method.

NOTE: Measure the diameter 12 to 18 inches above the ground, when possible.

a. Use 1 pound of explosive per foot of diameter for dead stumps.

b. Use 2 pounds of explosive per foot of diameter for live stumps.

c. Increase the amount of explosive by 50 percent if both the tree and the stump are to be removed.

d. Compute to the next higher 1/2-foot diameter.

e. Determine the amount of detonating cord required.

Step 6. Calculate for ring charges.

a. Use the external charge formula (D2/40) for calculating the amount of explosives.

b. Use 1/2-inch explosive thickness on trees up to 15 inches in diameter.

c. Use 1-inch explosive thickness on trees with a medium to large diameter (up to 30 inches).

EVALUATION PREPARATION

Setup: Provide the soldier with information/reconnaissance reports concerning timber-cutting charges and scenarios for tamped internal charges, untamped external charges, abatis charges, stump-removal charges, and ring charges.

Brief soldier: Tell the soldier to use the information in the scenarios to calculate explosives for timber-cutting charges.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 5-250
- Graphic Training Aid (GTA) 5-10-33

Related: None

TASK NO. 051-193-3023: CALCULATE STEEL-CUTTING CHARGES

CONDITIONS

You are given a hand-held calculator and the information needed to calculate charges with a formula.

STANDARDS

You will accurately determine the type and amount of explosives required.

TASK STEPS AND PERFORMANCE MEASURES

NOTE: Always refer to FM 5-250 when calculating charges.

Step 1. Calculate the charges for an I-beam, using one of the following formulas:

P = 3/8A or P = 0.375A

where—

P = pounds of TNT required

A = cross-sectional area, in square inches

NOTE: The cross-sectional area is the flange (length x width x 2) plus the web (length x width) of the steel member to be cut.

Step 2. Calculate the charge for high-carbon or alloy steel, using the following formula:

P = D2

where—

P = pounds of TNT required

D = diameter or thickness, in inches, of section to be cut

Step 3. Use the rule-of-thumb cutting application for rail destruction.

a. Use 1/2 pound of explosive for rails less than 5 inches high.

b. Use 1 pound of explosive for rails 5 inches or more in height.

c. Use 2 pounds of explosive for frogs.

d. Use 1 pound of explosive for switches and crossovers.

e. Use the number of pounds of TNT that is equal to the diameter of the steel chain (P = D).

NOTE: If one TNT block will bridge the gap in the chain, use one charge; if not, use two blocks.

Step 4. Use the rule-of-thumb cutting application for steel bars, rods, chains, and cables.

a. Use the following amount of explosives for materials up to 2 inches in diameter or thickness:

- Use 1 pound for materials up to 1 inch in diameter or thickness.

- Use 2 pounds for materials between 1 inch and 2 inches in diameter or thickness.

b. Use the following formula for materials over 2 inches in diameter or thickness:

P = (3/8)A

where—

P = pounds of TNT required

A = cross-sectional area of material to be cut

Step 5. Use plastic or sheet explosives for special-purpose charges.

NOTE: One M112 is a 20-cubic-inch block and one M118 is a 9-cubic-inch sheet of C4.

- Ribbon charge.
  - — Use the ribbon charge on noncircular steel targets up to 3 inches thick.

NOTE: The explosive's effectiveness depends on its width and thickness.

  - — Ensure that the charge's—
    - ❍ Thickness is one-half the steel's thickness. **NOTE: Charge thickness must be a minimum of 1/2 inch.**
    - ❍ Width is three times its thickness.
    - ❍ Length is equal to the length of the desired cut.
- Saddle charge.
  - — Use the saddle charge for cutting round, square, or rectangular milled-steel bars up to 8 inches square or 8 inches in diameter.
  - — Ensure that the charge's—
    - ❍ Base is one-half the target's circumference.
    - ❍ Thickness is equal to 1 inch (the thickness of an M112 block plastic explosive).
    - ❍ Long axis is equal to the target's circumference.
- Diamond charge.
  - — Use the diamond charge on high-carbon- or alloy-steel bars up to 8 inches in diameter or square.
  - — Ensure that the charge's—
    - ❍ Thickness is equal to 1 inch.
    - ❍ Long axis is equal to the target's circumference.
    - ❍ Short axis is equal to one-half the target's circumference.

NOTE: The formula to determine the volume of C4 required for a diamond charge is 1/2(thickness x short axis x long axis of the charge).

EVALUATION PREPARATION

Setup: Provide the soldier with the information/reconnaissance reports and scenarios needed to calculate explosive requirements for steel demolition targets.

Brief soldier: Tell the soldier to use the information in the scenarios to calculate the explosive requirements for steel targets.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 5-250
- GTA 5-10-33

Related: None

TASK NO. 051-193-3024: CALCULATE BREACHING CHARGES

CONDITIONS

You are given a hand-held calculator and the information needed to calculate explosives for the destruction of concrete slab bridges, concrete T-beams, bridge abutments, and permanent field fortifications.

STANDARDS

You will calculate breaching charges accurately using the formula or table method.

TASK STEPS AND PERFORMANCE MEASURES

NOTE: Always refer to FM 5-250 when calculating charges. The soldier must have the values of K and C.

Step 1. Calculate the size of charges required to breach concrete, masonry, rock, or similar material by using the following formula:

P = R3KC

where—

P = pounds of TNT required

R = breaching radius (the distance, in feet, from an explosive in which all material is displaced or destroyed)

K = material factor (reflects the strength and hardness of the material to be breached)

C = tamping factor (depends on the location and the tamping of the charge)

Step 2. Calculate the number of charges using the following formula:

N = W/2R

where—

N = number of charges

W = width of pier, slab, or wall, in feet

R = target's breaching radius

NOTE: If the calculated value of N is less than 1 1/4, use one charge; if it is 1 1/4 to less than 2 1/2, use two charges; if it is 2 1/2 or more, round up to the next whole number and use that many charges.

Step 3. Calculate counterforce charges as follows:

P = 1.5T

where—

P = pounds of TNT

T = thickness of the column or cube

a. Round fractional measurements to the next higher 1/2 foot before multiplication.

b. Multiply 1 1/2 pounds (C4 or sheet explosive) by the target's thickness, in feet.

NOTE: Counterforce charges are effective against small cubical or columnar concrete and masonry objects 4 feet or less in thickness and width, but are not used on walls or piers.

EVALUATION PREPARATION

Setup: Provide the soldier with information and scenarios needed to calculate the amount of explosives required to destroy the types of targets described in the conditions.

Brief soldier: Tell the soldier to use the information or scenarios to calculate breaching charges.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 5-250
- GTA 5-10-33
- Soldier's Training Publication (STP) 5-12B24-SM-TG

Related: None

TASK NO. 051-193-3025: CALCULATE EXPLOSIVE REQUIREMENTS FOR ROAD CRATERS

CONDITIONS

You are given a mission directive and information for a specific type of crater in a road at a designated location.

STANDARDS

You must calculate the explosive requirements for a road crater (including the appropriate number of boreholes and sufficient quantities of explosives to ensure that a crater is made to present an obstacle), as specified in the mission directive.

TASK STEPS AND PERFORMANCE MEASURES

NOTE: All road craters are placed at a 45-degree angle diagonally across the road.

Step 1. Calculate the explosive requirements for a hasty road crater.

NOTE: Hasty road craters take the least amount of time to construct based on the number and the depth of the boreholes; however, they produce the least effective barrier because of their depth and shape.

a. Measure the desired road width (the length of the crater obstacle), ensuring that the crater ties in with other artificial or natural obstacles at each end or side.

b. Calculate the number of boreholes required using the following formula:

$N = (L - 16)/5 + 1$

where—

N = number of boreholes required

L = length of the desired obstacle (crater), in feet, measured across the width of the road

NOTE: Round fractional numbers of holes to the next higher number.

c. Determine the quantity of explosive needed for borehole construction. Each borehole must be at least 5 feet deep.

d. Calculate the quantity of cratering explosive required to satisfy the rule of thumb of 10 pounds of explosive per foot of depth.

e. Determine the quantity of detonating cord and MDI shock-tube initiating assembly. (Dual prime in cold weather only.)

Step 2. Calculate explosive requirements for a deliberate road crater. Calculations are the same as for placing a hasty crater, except for the following:

a. Alternate borehole depths from 7 to 5 feet.

b. Place two 7-foot boreholes next to each other at the crown of the road or anywhere along the line if there is an even number of boreholes.

c. Ensure that two 5-foot holes are never placed next to each other.

d. Ensure that the end holes are always 7 feet deep.

e. Place 80 pounds of explosive in the 7-foot holes and 40 pounds of explosive in the 5-foot holes.

NOTE: For dual priming, place a 1-pound block of TNT on the side of the charge when using one 40-pound cratering charge.

Step 3. Calculate the explosive requirements for a relieved-face road crater.

NOTE: The relieved-face road-crater obstacle produces an obstacle that is more effective against tanks than either the hasty or deliberate craters.

a. Measure the desired length of the crater.

b. Determine the spacing of rows based on the road-surface type.

- If the road surface is dirt or gravel, space rows 8 feet apart.
- If the road surface is paved or hard-capped, space rows 12 feet apart.

c. Calculate the number of boreholes required for the friendly side using the following formula:

N = (L - 10) / 7 + 1

where—

N = number of boreholes required

L = length of the desired obstacle, in feet

NOTE: Round fractional numbers of holes to the next higher number.

d. Calculate the number of boreholes required for the enemy's side by subtracting one borehole from the number required for the friendly's.

NOTE: Boreholes in the enemy's row are staggered between boreholes in the friendly's.

e. Determine the quantity of explosive needed.

NOTE: Boreholes on the friendly's side are 5 feet deep; boreholes on the enemy's side are 4 feet deep.

f. Calculate the quantities of cratering and explosive charges required to load each borehole on the friendly's side with 40 pounds of explosive and each borehole on the enemy's side with 30 pounds of explosive.

g. Calculate the quantity of detonating cord and MDI shock-tube initiating assemblies needed to separately dual prime each row.

NOTE: There should be a 1/2- to 1 1/2-second delay between the friendly's and enemy's rows, with the enemy's detonating first. The detonating cord on the friendly's row should be protected with a minimum of 6 inches of earth to prevent misfires from the shock and blast when the enemy's row detonates.

EVALUATION PREPARATION

Setup: Provide the soldier with the mission directive and scenarios to determine the explosive requirements for road craters.

Brief soldier: Tell the soldier to use the information in the scenarios to calculate the requirements for road craters.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 5-250
- GTA 5-10-33

Related: None

TASK NO. 051-193-3055: PREPARE/COMPILE NONNUCLEAR DEMOLITION TARGET FOLDER

CONDITIONS

You are a squad leader in an engineer platoon that is engaged in combat operations. Your squad has been given the mission to prepare/compile a nonnuclear demolition target folder. You have been given a completed DA Form 2203-R and all of the information required to complete the report.

STANDARDS

You will prepare an obstacle folder that meets all of the requirements of Standardization Agreement (STANAG) 2123 as found in FM 5-250.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Prepare a demolition target folder that contains as much information, planning data, and execution data as possible. As a minimum, it should contain—

- The target's location, including—
  - — A photograph showing the direction from which the target is being viewed.
  - — A small-scale map showing the target and prestocked point for demolitions.
  - — A large-scale map showing the target and adjacent targets.
- The location and description of explosives and equipment, including—
  - — A sketch map with location and routes.
  - — A sketch of prestocked points showing entrances, routes, and storehouses.
  - — A list of the specific explosives and equipment necessary for the demolition.
- Orders for preparing and firing, including—
  - — Orders to the commander of the demolition firing party.
  - — Special technical instructions.
  - — Time to prepare.
  - — Time to change states of readiness.
  - — A sketch of the target, charges, and ignition system.
- Handover/takeover instructions detailing how the target will be turned over to the control of another element. These should include—
  - — Target information.
  - — Ammunition handed over/taken over.
  - — Documentation remaining with the target.

— Documentation prepared for the signatures of commanders handing/taking over the target (prepare in duplicate).

- Demolitions report. A blank copy of this report, to be filled out upon execution of the target, should be in the folder. It should include—
  - — Time of demolition.
  - — Damage done.
  - — Sketch of demolition.
  - — Official signature.

Step 2. Prepare the obstacle folder in the language of—

- The units concerned.
- The host nation and either English or French, the two official North Atlantic Treaty Organization (NATO) languages.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to prepare a nonnuclear demolition target folder for the specified target.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-250
- STANAG 2123

Related: None

SECTION III. CONDUCT OF TABLES III AND IV—INDIVIDUAL DEMOLITION AND MINE PROFICIENCY AND QUALIFICATION

Table III is designed to qualify all members of the combat-engineer platoon on demolitions and mines. It is a hands-on, performance-oriented table that requires the soldier to demonstrate proficiency in mine and demolition procedures using inert training aids. Table IV is designed to qualify all members of the combat-engineer platoon using live mines and demolitions. It requires all soldiers to build confidence and proficiency by executing the embedded tasks to the standard provided. All leaders in the platoon are responsible for ensuring that they and their subordinate leaders are qualified in Table II tasks before executing Table III or IV tasks.

FREQUENCY

This table will be executed semiannually. A unit commander may increase the frequency based on his unit's mission and requirements.

EXECUTION

Table III tasks (Table 3-3, page 3-30) may be executed on any available training area using inert training aids. Table IV tasks (Table 3-3) require the use of standard demolitions and supporting ranges.

The following tasks are trained for both Tables III and IV:

- Individual demolition tasks.
  - — Constructing a nonelectric initiating system with MDI.
  - — Priming explosives with MDI.
  - — Priming a shaped charge.
  - — Establishing a dual-primed/dual-initiated system (cold weather) with cratering charges.
  - — Priming a bangalore torpedo.
- Mine-warfare tasks.
  - — Installing and removing AT mines and installing antihandling devices (AHDs).
  - — Detecting and marking enemy mines and detecting AHDs.
- Demolition tasks using MDI.

STRATEGY AND CONCEPT

Each squad leader is responsible for his soldiers' conduct and evaluation. He alone is responsible for the proficiency of his assigned soldiers in their individual demolition and mine tasks.

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Table 3-3. Tables III and IV tasks—individual demolition and mine proficiency and qualification

Task	Task No.	Page
Locate Mines by Visual Means	051-192-1021	3-31
Recognize and Distinguish Friendly and Threat Mines and Firing Devices	051-192-1045	3-33
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All evaluators undergo an extensive installation/organization demolition/mine certification program (according to Army Regulation [AR] 385-63, local range procedures, and SOPs) before being allowed to evaluate/certify their squad members. Evaluators must integrate all local and Army safety regulations into the tasks.

Squads must maintain integrity during the conduct of each task. An AAR will be conducted with the tester upon completion of the test.

Table IV follows the same strategies and concepts as Table III, as listed above. When live-mine training is conducted, Chapter 6 of DA Pam 350-38 will give the total mines a unit is authorized. Each mine may be used 25 times before it must be detonated. Live demolition authorizations will be taken from Chapter 6 of DA Pam 350-38.

TASK NO. 051-192-1021: LOCATE MINES BY VISUAL MEANS

CONDITIONS

You are a member of a squad conducting offensive operations. Your squad is required to locate possible mined and booby-trapped areas. Your NCOIC has directed you to search an area for mines and trip wires visually. He has briefed you on specific locations and conditions. You have been given a field location suspected of having mines and trip wires.

STANDARDS

Using the materials provided, you will—

- Locate possible mined sites and visually search suspected areas for mines and trip wires.
- Ensure that no visible mines, parts of mines, or trip wires are overlooked.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Identify possible mined sites by locating the following areas:

- Likely avenues of approach.
- Key intersections and turnouts.
- Trails, paths, and cleared spots in wooded areas.
- Approaches and exits to bridges, fords, and tunnels.
- Wood lines.
- Depressions and ditches.
- Open fields or grassland.

Step 2. Search possible mined sites for suspected mines and trip wires by locating the following areas:

- Loose dirt, tall grass, trip wires, or any disturbed ground in and around helicopter landing sites.
- Signs of road repairs—holes filled with asphalt or other material.
- Mud smears, grass, sticks, loose dirt, dung, or other material on roads.
- Trip wires near known or suspected AT mines.
- Signs placed in trees, on posts, or on stakes.
- Tunnels under roads.
- Shoulders of roads.
- Unusual or out-of-place material.
- Wilted plants or brush.
- Souvenirs such as flags, equipment, and supplies.
- Areas that local civilians avoid.

- Culverts and bridges.

Step 3. Report all suspected areas to the NCOIC.

EVALUATION PREPARATION

Setup: Provide a mined and booby-trapped area.

Brief soldier: Tell the soldier to look at the terrain and visually locate mined and trip-wired areas.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 20-32

Related: None

TASK NO. 051-192-1045: RECOGNIZE AND DISTINGUISH FRIENDLY AND THREAT MINES AND FIRING DEVICES

CONDITIONS

You are a member of a squad conducting defensive or offensive operations. Your NCOIC has directed you to recognize and distinguish friendly and threat mines and firing devices (FDs). You are in an area where emplaced mines and/or FDs have been detected and the camouflage has been removed. The FDs and/or the tops of the mines are visible.

STANDARDS

You will recognize and identify all mines and FDs as friendly or threat equipment.

TASK STEPS AND PERFORMANCE MEASURES

Recognize and identify friendly and threat mines and FDs.

EVALUATION PREPARATION

Setup: For the classroom, present the figures in this task or similar material (mock-ups, 35-millimeter [mm] slides, and overhead slides) to the soldier. For a field environment, present the figures in this task as emplaced mock-ups, models, training devices, or actual items.

Brief soldier: Tell the soldier that pictures or similar material of mines and/or FDs will be shown for 30 seconds each. During each 30-second period, the soldier must recognize and distinguish each item as friendly or threat equipment.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-250
- FM 20-32

Related: None

TASK NO. 051-192-1105: INSTALL AN M15 ANTITANK MINE USING AN M624 FUSE

CONDITIONS

You have been given an M15 AT mine, an M624 fuse with tilt rod, an M20 arming wrench, G-697 silicone grease, sandbags, and an entrenching tool.

STANDARDS

You will install an M15 AT mine using an M624 fuse, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

CAUTION

If there is a problem in any of the following steps, notify the NCOIC.

Step 1. Inspect the mine.

a. Check to see if the mine is dented, cracked, or damaged. If it is, DO NOT use it.

b. Unscrew and remove the arming plug from the mine using the M20 arming wrench.

c. Examine the fuse well for foreign material. If foreign material is present, remove it by turning the mine upside down and lightly shaking the mine. If you cannot remove it, replace the arming plug. DO NOT use the mine.

d. Ensure that the booster's retainer ring is seated in the fuse well. If the retainer ring is missing, replace the mine.

Step 2. Inspect the fuse.

a. Remove the M624 fuse from its shipping container and inspect the fuse for serviceability.

NOTE: DO NOT use the fuse if the safety pin is missing or improperly assembled.

b. Turn the safety band and stop while observing the top of the fuse. If the top of the fuse turns with the stop and band, the fuse's neck is broken. DO NOT use it.

Step 3. Fuse the mine.

NOTE: For long-term emplacement, coat the fuse threads and gasket with G-697 silicone grease before removing the end closure.

a. Unscrew and remove the end closure on the M624 fuse.

b. Screw the fuse hand-tight into the M15 mine's threaded fuse well.

c. Remove the extension rod from its packaging.

d. Tighten the fuse by inserting one unthreaded end of the extension-rod piece into a hole on the side of the fuse. Turn the fuse a quarter turn.

e. Remove the extension rod for further use after the fuse is secure.

NOTE: The M15 AT mine with the M624 fuse can be buried or surface laid.

Step 4. Dig a hole to fit the mine so that when the mine is placed into it, the top of the pressure plate will be ground level.

Step 5. Emplace the mine.

NOTE: Mines with extension rods should be placed in tall grass if possible.

a. Put the mine in the hole.

b. Bury the mine up to the bottom of the safety band on the fuse.

c. Assemble all three pieces of the extension rod.

NOTE: For surface emplacement, use only the first two sections of the extension rod.

WARNING

Ensure that the extension rod is vertical and is not tilted in any direction. If it does tilt, DO NOT use the mine.

d. Thread the extension rod into the fuse's threaded pressure ring.

NOTE: For the pressure role, do not assemble or thread the extension rod into the fuse.

Step 6. Arm the mine.

WARNING

Once armed, DO NOT touch or apply pressure to the extension rod. A minimum horizontal force of 3.75 pounds at the end of the extension rod or a minimum force of 45 pounds on the side of the pressure ring will initiate the fuse.

a. Turn the safety pin upward and grasp the safety band and stop with the left hand above the safety pin.

WARNING

If you see any cracks in the plastic collar, slowly and carefully reassemble the stop and safety pin on the fuse. Carefully remove the extension rod and remove the fuse from the mine. Give the fuse to the NCOIC and replace it with a new fuse.

b. Use the right-hand index finger to pull the safety pin out while sliding it to the right.

c. Remove the safety stop carefully while holding the safety band in place.

d. Remove the safety band. The fuse is now armed. Retain the stop, band, and clip.

Step 7. Camouflage the mine.

a. Add twigs, grass, or other materials natural to the area. Ensure that no pressure is applied to the tilt rod or the fuse.

b. Place the excess soil in sandbags. Remove them from the area.

c. Give the band and stop, the pull-ring assembly, the arming plug, and the end closure to the NCOIC.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to emplace and arm the mine.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1345-203-12

TASK NO. 051-192-1106: REMOVE AN M15 ANTITANK MINE ARMED WITH AN M624 FUSE

CONDITIONS

You have been given the location of an M15 AT mine armed with an M624 fuse with tilt rod, a safety clip, a band and stop, and an M20 arming wrench.

STANDARDS

You will remove an M15 AT mine armed with an M624 fuse, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Disarm the mine.

WARNING

Before attempting to disarm and remove the mine, check for booby traps and damage or malfunctions to the mine. If any of these conditions exist, notify the NCOIC. DO NOT attempt to disarm the mine.

a. Clear the camouflage away from the mine carefully.

b. Assemble the safety band and stop on the fuse so that the fuse is immobilized.

c. Install the safety pin carefully while holding the safety band and stop.

WARNING

DO NOT apply pressure to the tilt rod or fuse at any time.

NOTE: Ensure that the safety pin is correctly replaced.

d. Unscrew and remove the extension rod.

Step 2. Check for AHDs.

a. Hold the mine firmly in place with one hand without putting pressure on the fuse.

b. Use the other hand to feel for AHDs by digging around the sides and under the mine.

Step 3. Remove the mine.

a. Remove the mine from the hole.

b. Remove the fuse from the mine using the extension rod, if necessary.

c. Replace the end closure on the fuse.

d. Install the arming plug into the mine's fuse well.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that will cause the mine to detonate.

Brief soldier: Tell the soldier to disarm and remove the mine.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1345-203-12

TASK NO. 051-192-1107: INSTALL AN M15 ANTITANK MINE ARMED WITH AN M603 FUSE

CONDITIONS

You have been given an M15 AT mine, an M603 fuse, an M20 arming wrench, G-697 silicone grease, an entrenching tool, and sandbags.

STANDARDS

You will install an M15 AT mine with an M603 fuse, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

CAUTION

If there is a problem in any of the following steps, notify the NCOIC.

Step 1. Inspect the mine.

a. Check to see if the mine is dented, cracked, or damaged. If it is, DO NOT use it.

b. Unscrew and remove the arming plug from the mine using the wrench, if needed.

c. Examine the fuse well for foreign material. If foreign material is present, remove it by turning the mine upside down and lightly shaking the mine. If you cannot remove it, replace the arming plug. DO NOT use the mine.

d. Ensure that the booster's retainer ring is seated in the fuse well. If the retainer ring is missing, replace the mine.

Step 2. Perform a function check with the arming plug.

a. Turn the setting knob to the ARMED (A) position. Ensure that the shutter bar moves across the bottom of the arming plug.

NOTE: A spring coil may not be present in older models.

b. Turn the setting knob to the SAFE (S) position. Ensure that the shutter bar moves back across the bottom of the arming plug.

NOTE: If the shutter bar does not go into the SAFE (S) or ARMED (A) position, notify the NCOIC.

Step 3. Fuse the mine.

a. Inspect the fuse for damage after removing it from its metal shipping container. The varnish or painted lining must show on the bottom of the fuse.

NOTE: For long-term emplacement, coat the fuse with G-697 silicone grease. Also smear grease on the threads and walls of the mine's fuse well.

CAUTION

Ensure that the safety fork moves freely. If there is pressure on the fork, DO NOT remove it. Notify the NCOIC.

WARNING

DO NOT apply pressure to the plate at any time.

b. Remove the fuse's safety fork using the hooked end of the wrench. Retain the safety clip for future use.

c. Insert the fuse into the fuse well carefully until it is seated securely on top of the booster's retaining ring.

d. Perform a clearance test using the arming wrench. Insert the tab end of the arming wrench into the fuse well, and move it back and forth to ensure that the tab end does not touch the fuse.

Step 4. Install the arming plug.

NOTE: For long-term emplacement, smear G-697 silicone grease on the threads, the gasket, and the shutter on the underside of the arming plug.

WARNING

If the fuse's pressure plate interferes with the tab end of the M20 arming wrench, investigate the cause and notify the NCOIC. DO NOT arm the mine.

a. Ensure that the setting knob is in the SAFE (S) position.

b. Screw the arming plug into the mine by hand. Ensure a watertight seal by tightening the arming plug with the arming wrench.

Step 5. Dig a hole to fit the mine.

a. Dig a hole so that when the mine is placed into it, the top of the pressure plate will be about 1 1/2 inches below ground level.

b. Dig the sides of the hole at a 45-degree angle to prevent vehicles from bridging the mine.

Step 6. Emplace the mine.

a. Put the mine in the hole.

b. Cover the mine with soil until it is level with the top of the pressure plate.

Step 7. Use the arming wrench to arm the mine by turning the setting knob from the SAFE (S) to the ARMED (A) position.

Step 8. Camouflage the mine.

a. Cover the mine with 1 to 2 inches of soil.

b. Place the excess soil in sandbags and remove them from the area.

c. Give the safety clip to the NCOIC.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to emplace and arm the mine, in proper sequence, without detonating the mine.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1345-203-12

TASK NO. 051-192-1108: REMOVE AN M15 ANTITANK MINE ARMED WITH AN M603 FUSE

CONDITIONS

You have been given the location of an M15 AT mine armed with an M603 fuse, a safety fork, and an M20 arming wrench.

STANDARDS

You will remove an M15 AT mine armed with an M603 fuse, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

WARNING

Before attempting to disarm and remove the mine, check for booby traps and damage or malfunctions to the mine. If any of these conditions exist, stop and notify the NCOIC. DO NOT attempt to disarm the mine.

Step 1. Disarm the mine.

WARNING

DO NOT apply pressure to the pressure plate at any time.

WARNING

If you find an AHD, stop and notify the NCOIC. DO NOT remove the mine.

a. Clear the soil from the top of the mine carefully.

b. Hold the mine firmly in place with one hand without putting pressure on the pressure plate.

c. Use the other hand to feel for AHDs by digging around the sides and under the mine.

d. Use the arming wrench to turn the setting knob to the SAFE (S) position.

WARNING

If the setting knob is difficult to turn, stop; DO NOT force it. Notify the NCOIC.

Step 2. Remove the mine.

a. Remove the mine from the hole.

b. Use the arming wrench to turn the arming plug counterclockwise to remove it.

c. Remove the fuse from the fuse well and replace the safety fork on the fuse.

d. Install the arming plug.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to disarm and remove the mine without detonating the mine.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1345-203-12

TASK NO. 051-192-1109: INSTALL AN M19 ANTITANK MINE

CONDITIONS

You have been given an M19 AT mine, an M50 detonator, an M606 fuse, an M22 arming wrench, G-697 silicone grease, an entrenching tool, and sandbags.

STANDARDS

You will install an M19 AT mine, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

CAUTION

If there is a problem in any of the following steps, notify the NCOIC.

Step 1. Inspect the mine.

a. Check to see if the mine is dented, cracked, or damaged. If it is, DO NOT use it.

b. Use the wrench to remove the fuse from the fuse well by turning it counterclockwise a quarter turn.

c. Ensure that the rubber gasket is on the fuse.

d. Remove any foreign material that is found in the fuse well.

e. Ensure that the setting knob is in the SAFE (S) position and the safety clip is in place.

f. Use the wrench, if needed, to remove the shipping plug from the detonator well. Retain the shipping plug.

g. Examine the detonator well for foreign material. If foreign material is present, remove it by turning the fuse upside down and tapping lightly on the side.

Step 2. Test the firing pin's position.

WARNING

DO NOT adjust the setting knob while the detonator is in the detonator well.

a. Check the firing pin's position visually. Ensure that the firing pin is at the edge of the well when the setting knob is in the SAFE (S) position.

NOTE: If the pin is in the middle of the well, notify the NCOIC.

b. Remove the safety clip.

c. Use the wrench to turn the setting knob to the ARMED (A) position. Ensure that the firing pin is in the center of the well.

d. Use the M22 wrench to turn the setting knob back to the SAFE (S) position. Ensure that the firing pin moves back to the side of the well.

NOTE: If the firing pin is not in the correct position when the setting knob is in either the ARMED (A) or SAFE (S) position, notify the NCOIC.

e. Replace the safety clip.

Step 3. Place the detonator into the detonator well.

NOTE: For long-term emplacement, smear G-697 silicone grease on top of the detonator, the detonator holder, and the threaded portion of the detonator holder.

Step 4. Use the wrench to tighten the fuse into the fuse well.

NOTE: For long-term emplacement, smear G-697 silicone grease on the fuse's gasket.

Step 5. Dig a hole to fit the mine.

a. Dig a hole about 14 inches square by 5 inches deep.

b. Dig the sides of the hole at a 45-degree angle to prevent vehicles from bridging the mine.

Step 6. Emplace the mine.

a. Put the mine in the hole.

b. Cover the mine with soil until it is level with the top of the pressure plate.

Step 7. Arm the mine.

a. Remove the safety clip.

b. Use the wrench to turn the setting knob from the SAFE (S) to the ARMED (A) position.

Step 8. Camouflage the mine.

a. Cover the mine with 1 to 2 inches of soil.

b. Place the excess soil in sandbags and remove them from the area.

c. Give the safety clip and the shipping plug to the NCOIC.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to emplace and arm the mine.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1345-203-12

TASK NO. 051-192-1110: REMOVE AN M19 ANTITANK MINE

CONDITIONS

You have been given the location of an M19 AT mine armed with an M606 fuse, an M22 arming wrench, a safety clip, and a shipping plug.

STANDARDS

You will remove an M19 AT mine, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

WARNING

Before attempting to disarm and remove the mine, check for booby traps and damage or malfunctions to the mine. If any of these conditions exist, notify the NCOIC.

Step 1. Disarm the mine.

WARNING

DO NOT apply pressure to the pressure plate at any time.

a. Clear the soil from the top of the mine carefully.

b. Hold the mine firmly in place with one hand without putting pressure on the pressure plate.

WARNING

If you find an AHD, stop and notify the NCOIC. DO NOT remove the mine.

c. Use the other hand to feel for AHDs by digging around the sides and underneath the mine.

WARNING

If the setting knob is difficult to turn, DO NOT force it. Notify the NCOIC.

d. Use the wrench to turn the setting knob to the SAFE (S) position.

e. Replace the safety clip on the fuse.

Step 2. Remove the mine.

a. Remove the mine from the hole.

b. Use the wrench to remove the fuse by turning it counterclockwise and lifting it out of the fuse well.

c. Use the wrench to remove the detonator from the detonator well.

d. Replace the shipping plug in the detonator well.

e. Replace the pressure plate in the mine.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to disarm and remove the mine without detonating it.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1345-203-12

TASK NO. 051-192-1117: INSTALL AN M21 ANTITANK MINE

CONDITIONS

You have been given an M21 AT mine, an M120 booster, an M607 fuse, an M26 arming wrench, G-697 silicone grease, an entrenching tool, and sandbags.

STANDARDS

You will install the M21 AT mine, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

> **CAUTION**
>
> If there is a problem in any of the following steps, notify the NCOIC.

Step 1. Inspect the mine.

a. Check to see if the mine is dented, cracked, or damaged. If it is, DO NOT use it.

b. Ensure that the safety plugs are securely in place.

Step 2. Insert the booster.

a. Use the screwdriver end of the wrench to remove the closing plug from the bottom of the mine.

b. Examine the booster well for foreign material. If foreign material is present, gently tap the side of the mine with your hand to dislodge it. If you cannot remove it, replace the closing plug. DO NOT use the mine.

c. Insert the booster (with the washer side toward the fuse) into the booster well.

d. Use the wrench to replace the closing plug.

NOTE: For long-term emplacement, smear G-697 silicone grease on the threads of the closing-plug assembly.

Step 3. Inspect the fuse.

a. Ensure that the cotter pins of the fuse's pull-ring assembly and the fuse's closure assembly are securely in place.

b. Turn the safety band and stop while observing the top of the fuse. If the top of the fuse turns with the stop and band, the fuse's neck is broken. DO NOT use it.

Step 4. Fuse the mine.

a. Use the wrench to remove the shipping plug from the fuse well on top of the mine.

b. Examine the fuse well for foreign material. If foreign material is present, gently shake the mine to dislodge it. If you cannot remove it, DO NOT use the mine.

c. Use the wrench to remove the closure assembly from the fuse. Ensure that the gasket remains in place on the fuse.

d. Screw the fuse hand-tight into the fuse well.

NOTE: For long-term emplacement, smear G-697 silicone grease on the fuse's threads.

Step 5. Dig a hole to fit the mine.

NOTE: Mines with extension rods should be placed in tall grass, if possible.

a. Dig a hole 10 to 12 inches in diameter and 6 inches deep.

b. Check the bottom of the hole to ensure that the ground is solid enough to support the mine. If necessary, place a flat object under the mine to provide a firm foundation. Allow additional depth for the object.

Step 6. Emplace the mine.

a. Put the mine in the hole.

b. Cover the mine with soil until it is level with the top of the mine.

c. Press the soil firmly around the sides of the mine.

NOTE: Ensure that no soil falls around or under the plastic collar.

Step 7. Assemble the extension rod.

WARNING

DO NOT tilt the extension rod. A 20-degree tilt of the extension rod will detonate the mine.

a. Screw the extension rod onto the fuse.

b. Ensure that the extension rod is pointing straight up.

Step 8. Arm the mine.

a. Squeeze the end of the cotter pin together on the pull ring.

b. Remove the cotter pin by holding the fuse firmly in one hand and pulling on the pull ring with the other hand.

WARNING

If you see any cracks in the plastic collar, slowly and carefully reassemble the stop and safety pin on the fuse. Carefully remove the extension rod and remove the fuse from the mine. Give the fuse to the NCOIC and replace it with a new fuse.

c. Remove the band-and-stop assembly slowly and carefully from the fuse's neck.

Step 9. Camouflage the mine.

a. Add twigs, grass, or other materials natural to the area. Ensure that no pressure is applied to the tilt rod or the fuse.

b. Place the excess soil in sandbags. Remove them from the area.

c. Give the band and stop, the pull-ring assembly, the shipping plugs, and the closure assembly to the NCOIC.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to install the M21 AT mine with the M607 fuse without detonating the mine.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1345-203-12

TASK NO. 051-192-1118: REMOVE AN M21 ANTITANK MINE

CONDITIONS

You have been given the location of an M21 AT mine, an M26 arming wrench, a band and stop, cotter pins, a shipping plug, and a closure assembly.

STANDARDS

You will remove an M21 AT mine, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

WARNING

DO NOT apply pressure to the tilt rod or fuse at any time.

Step 1. Disarm the mine.

a. Clear the camouflage away from the mine carefully.

b. Attach the band and stop to the fuse.

c. Insert the cotter pin into the band and stop. Spread the ends of the cotter pin.

d. Unscrew and remove the extension rod.

Step 2. Check for AHDs.

WARNING

If you find an AHD, stop and notify the NCOIC. DO NOT remove the mine.

a. Hold the mine firmly in place with one hand without putting pressure on the fuse.

b. Use the other hand to feel for AHDs by digging around the sides and under the mine.

Step 3. Remove the mine.

WARNING

Before attempting to disarm and remove the mine, check for booby traps and damage or malfunctions to the mine. If any of these conditions exist, notify the NCOIC. DO NOT attempt to disarm the mine.

a. Remove the mine from the hole.

b. Remove the fuse from the mine.

c. Install the closure assembly on the fuse.

d. Install the shipping plug into the mine's fuse well.

e. Remove the closing plug from the bottom of the mine.

f. Remove the booster from the mine.

g. Install the closing plug into the booster well.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to disarm and remove the mine without detonating it.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1345-203-12

TASK NO. 051-192-1154: INSTALL THE M5 PRESSURE-RELEASE FIRING DEVICE ON ANTITANK MINES

CONDITIONS

You have been given an M15 AT mine or an M19 AT mine, an M5 pressure-release FD, an M1/M2 mine activator, a standard base, 10- and 18-gauge wire, an entrenching tool, and sandbags.

STANDARDS

You will install the M5 pressure-release FD on the mine, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

NOTE: The M1 activator is used with the M15 AT mine. The M2 activator is used with the M19 AT mine.

Step 1. Install the M5 pressure-release FD.

a. Inspect the FD for damage.

b. Keep pressure on the lid while inserting a length of 10-gauge heavy wire in the positive safety hole. Remove the locking safety pin and replace it with a length of 18-gauge wire.

NOTE: Other items, such as a wire clothes hanger, may be used instead of the 10- or 18-gauge wire.

c. Screw the standard base to the M5 FD.

d. Screw the activator to the standard base.

NOTE: Ensure that the safety pins do not fall out. The safety pins will be facing the mine's outer edge for easy removal.

e. Screw the M5 FD into the fuse well on the bottom of the mine.

f. Place the mine with the FD in the hole, ensuring that the safety pins remain in place. Ensure that the FD is placed on a solid, level surface.

Step 2. Arm the mine.

a. Cover and camouflage the mine.

b. Leave a hole (trench) at the side of the mine. This will give you space to remove the safety pins.

Step 3. Arm the M5 FD.

WARNING

If you feel a jar or hear a metallic click, stop and notify the NCOIC. The firing pin has gone forward and is resting on the positive safety pin. DO NOT remove the positive safety pin.

a. Remove the locking safety pin carefully.

b. Remove the positive safety pin.

c. Camouflage the mine. Give the safety pins to the NCOIC.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to install the M5 FD.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1375-213-12

TASK NO. 051-192-1155: REMOVE THE M5 PRESSURE-RELEASE FIRING DEVICE FROM ANTITANK MINES

CONDITIONS

You have been given the location of an M15 AT mine or an M19 AT mine, 10- and 18-gauge wire, sandbags, and the appropriate arming wrench for the mine encountered.

STANDARDS

You will remove the M5 FD from the mine, in proper sequence, without causing the mine to detonate.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Remove the M5 FD.

WARNING

Before attempting to disarm and remove the mine, check for booby traps and damage or malfunctions. If any of these conditions exist, notify the NCOIC and DO NOT attempt to disarm the mine.

WARNING

DO NOT apply pressure to the pressure plate at any time.

a. Locate the FD.

b. Install the positive safety pin first.

c. Install the locking safety pin.

d. Turn the arming dial on the mine to the SAFE (S) position.

e. Remove the mine and the FD from the hole.

NOTE: Ensure that the safety pins remain in place on the FD.

f. Remove the FD from the mine.

g. Disassemble the activator and the standard base from the FD.

h. Remove the arming dial or fuse from the mine.

i. Remove the fuse or detonator from the mine.

Step 2. Give all components to the NCOIC.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert equipment when performing this task. Observe the soldier's performance for any improper procedures that may cause the mine to detonate.

Brief soldier: Tell the soldier to disarm the mines encountered.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related:

- FM 20-32
- TM 9-1375-213-12

TASK NO. 051-193-1013: NEUTRALIZE BOOBY TRAPS

CONDITIONS

You are a member of a squad conducting movement through a suspected booby-trapped area. Your NCOIC has directed you to locate, mark, and neutralize all booby traps. You have been given explosives, demolition equipment, a 50-meter rope, and a grapnel.

STANDARDS

Using the materials provided, you will—

- Detect booby traps without causing personal injury.
- Mark, activate, and destroy all booby traps.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Detect booby traps without activating them.

a. Detect booby traps in outside areas.

- Look for explosive and nonexplosive booby traps at and above ground level.
- Look for hidden booby traps near litter; unused construction material; and any movable, valuable, or useful items.
- Look for disturbed ground, unusual marks on the ground, and weathered, camouflaged materials.
- Search for booby traps around machinery and abandoned vehicles.
- Probe to locate FDs.
- Look and feel carefully for trip wires.

b. Detect booby traps inside buildings.

- View the inside of the building or room from outside before entering (whenever possible).
- Work from the lowest level up, if possible.
- Investigate electrical circuits before turning switches, connecting broken wires, or using electrical appliances.
- Look carefully where walking. Inspect loose tiles, floor boards, or carpets. These may conceal booby traps with pressures fuses.
- Look carefully for release fuses or wires attached to pull fuses. Do this before moving pictures, furniture, boxes, drawers, and other items you find indoors.
- Check the inside of fireplaces, stoves, furnaces, flues, and dead-air spaces for booby traps.

Step 2. Identify detonating devices.

- Detonation of explosives. There are six types of detonation actions.

— Pressure. The downward force of a man's foot or the wheel or track of a vehicle activates a fuse.

— Pull. The pull on the trip wire attached to the fuse activates the fuse.

— Tension release. Releasing the tension activates the fuse. Cutting a trip wire is an example of tension release.

— Pressure release. Removing weight activates the fuse.

— Electrical. Closing an electric circuit activates the fuse.

— Timer rundown. A timer reaching the preset time activates the fuse.

- Initiation of mechanical traps.

— Passive mechanical traps have few, if any, moving parts and require the soldier to act directly against them. A camouflaged pit containing upturned spikes or scattered caltrops is an example.

— Active mechanical traps have moving components and require the soldier to activate the trap. This is done by tripping a latch, pulling a wire, or releasing a counterweight. Examples of active mechanical traps are bamboo whips, snares, bear traps, or swing maces.

CAUTION

Make sure that friendly personnel are a safe distance away before you neutralize booby traps.

Step 3. Neutralize the booby traps.

NOTE: Report the location, type of booby traps, and any unique methods used to the NCOIC.

a. Mark all booby traps that cannot be destroyed at the time of detection. Mark booby traps with the standard sign or use an expedient marker as designated by the unit.

NOTE: The standard booby-trap sign is a red triangle with a 3-inch, white circle in the center of it. The word "booby traps" will be spelled out in white letters across the top of the sign. The sign will be placed so that the right-angled apex is pointing down.

b. Neutralize booby traps by activating or blocking the firing chain and/or the mechanical sequence.

- Activate the firing chains and/or mechanical sequences using a rope or wire that is at least 50 meters long. Hook or tie one end of the rope to trip wires, pins, or restraining weights. Move to a protected position at least 50 meters away and pull the other end of the rope. Wait at least 50 minutes before approaching a trap that did not detonate or operate.

- Block firing chains and/or a mechanical sequence by cutting slack trip wires and electrical conductors or by replacing safety pins.

NOTE: You can neutralize passive mechanical traps by scraping the ground, filling the pit, or removing or breaking spikes and blades.

c. Destroy booby traps in place by detonating a 1-pound explosive charge next to the main charge.

EVALUATION PREPARATION

Setup: Provide the soldier with booby-trapped areas, explosives, and items listed in the conditions.

Brief soldier: Tell the soldier to neutralize the booby traps in the area.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 20-32

Related: None

TASK NO. 051-193-1055: CONSTRUCT A NONELECTRIC INITIATING ASSEMBLY WITH MODERNIZED DEMOLITION INITIATORS (MDI)

CONDITIONS

You have been given detonating cord, an M11 branch line, an M12 transmission line, an M81 fuse ignitor, an M14 time-delay fuse, an M9 holder, J-hooks, adhesive tape, a sandbag, and M2 crimpers. Some iterations should be performed in mission-oriented protective posture (MOPP) 4.

STANDARDS

You will construct a nonelectric initiating assembly using MDI correctly and in sequence. You will attach the assembly to a detonating-cord firing system so that, when initiated, it will detonate as if it were live. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Turn the end cap of the M81 fuse ignitor a half turn counterclockwise, and remove both the shipping plug and the shock-tube adapter from the ignitor.

Step 2. Cut off the sealed end of the M14 time-delay fuse, and insert it into the end cap of the M81. Tighten (finger-tight) by turning the end cap clockwise.

Step 3. Attach the blasting-cap end of the M14 time-delay fuse to the existing detonating-cord ring/line main using either an M9 holder or adhesive tape. If using tape, ensure that the tape is at least 6 inches from the end of the detonating cord.

a. Attach the M14 blasting cap using the M9 holder (the preferred method).

- Open both hinged flaps of the M9 holder.
- Insert the blasting cap into the M9 holder and close the small hinged flap.
- Form a bight 6 inches from the end of the detonating cord, lay it in the M9 holder, and close the hinged flap.

b. Secure the detonating cord into the M9 holder. Secure the door with adhesive tape.

Step 4. Construct a nonelectric initiating assembly using the M11 branch line and the M12 transmission line.

a. Place the M11 branch line's blasting cap under a sandbag near the detonating-cord firing system.

b. Attach the M11 branch line to the M12 transmission line by forming a bight at the end of the M11, laying it in the attached M9 holder on the M12, and closing the hinged flap. Tape and secure the M11 into place. Place the M9 holder, along with the M12, under the same sandbag as the M11 blasting cap.

c. Retrieve the M11 blasting cap from under the sandbag. Attach it to the detonating-cord firing system using an M9 holder as described above using

either the M14 or adhesive tape. Ensure that the tape is at least 6 inches from the end of the detonating cord.

d. Secure the transmission line to a nearby anchor point and run the M12 transmission line back to the initiating point.

e. Cut the sealed end of the M12 transmission line at the initiating point, and attach an M81 fuse ignitor as described above for the M14 time-delay fuse.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Observe the soldier's performance for any improper procedures. All steps must be done in sequence and correctly to pass.

Brief soldier: The soldier must construct a nonelectric initiating assembly correctly and in sequence and attach the initiating assembly to a detonating-cord firing system such that, when initiated, it will detonate as if it were live. Safety will be integrated, observed, and evaluated at all times.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 5-250

Related: None

TASK NO. 051-193-1103: PRIME EXPLOSIVES USING MODERNIZED DEMOLITION INITIATORS (MDI)

CONDITIONS

You are given quarter-pound blocks of TNT, a priming adapter, string, a sandbag, M2 crimpers, and a section of M11 branch line. Some iterations should be performed in MOPP 4.

STANDARDS

You will prime the TNT with MDI—with and without the priming adapter—so that the blasting cap remains in the cap well and is not damaged or handled in a way that could cause detonation of the explosive while priming. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

NOTE: Perform all steps in sequence.

Step 1. Prime TNT using a priming adapter.

a. Use the pointed end of the crimpers to punch a hole in the paper covering the cap well of the block of TNT. Inspect the cap well. Ensure that there is nothing that will prevent the cap from fully seating in the charge's cap well.

b. Place the M11 blasting cap under a sandbag.

c. Cut off the sealed end of the M11 branch line, remove the J-hook, and slide the priming adapter onto the M11 branch line until it seats on the blasting cap.

d. Remove the blasting cap from under the sandbag and secure in hand. Ensure that the blasting cap is completely enclosed in the hand and that the shock tube is going over the thumb.

e. Insert the blasting-cap end of the shock tube into the cap well of the TNT and tighten down the priming adapter.

Step 2. Prime the TNT without using a priming adapter.

a. Prepare the block.

- Use the pointed end of the crimpers to punch a hole in the paper covering the cap well and inspect the block.
- Ensure that there is nothing that will prevent the cap from fully seating in the charge's cap well.
- Wrap the string around the block four times while ensuring that the tails are the same length.
- Secure the wraps with a nonslip knot such as a square knot.

b. Secure the M11 blasting cap under the sandbag and insert it into the TNT block.

c. Bend the M11 branch line over and secure it to the charge using electrical tape.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert explosives when performing this task. Observe the soldier's performance for any improper procedures.

Brief soldier: Prime explosives using MDI, in sequence, without causing detonation or damage to the equipment or personnel. Safety will be integrated, observed, and evaluated at all times. The soldier will have 10 minutes to perform this task.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 5-250

Related: None

TASK NO. 051-193-1202: CONSTRUCT A DUAL-FIRING SYSTEM WITH MODERNIZED DEMOLITION INITIATORS (MDI)

CONDITIONS

You are given detonating cord, an M11 branch line, an M12 transmission line, an M14 time-delay fuse, priming adapters, M9 holders, M81 fuse ignitors, quarter-pound blocks of TNT, M2 crimpers, a sandbag, and adhesive tape. Some iterations should be performed in MOPP 4.

STANDARDS

You will dual prime each charge using a combination of both MDI and detonating cord. You will correctly tie the charges into a combination firing system (also consisting of MDI and detonating cord) so the charges will detonate. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

NOTE: Perform all of the steps in sequence.

Step 1. Construct a detonating-cord firing/detonating system.

a. Lay out the line main/ring main.

b. Prime blocks of explosives with detonating cord.

c. Tie the primed explosives into the line main using a girth hitch with an extra turn.

Step 2. Construct an MDI firing/detonating system.

a. Lay out the M12 transmission line from the detonating point to the firing point.

b. Connect the M11 branch line to the M12 transmission line using an M9 holder.

c. Prime the block of explosive with the M11 branch-line shock tube using a priming adapter.

d. Tape the MDI primed block to the detonating-cord primed block.

Step 3. Construct the MDI time-delay initiating system.

a. Remove the M14 time-delay fuse from its sealed package.

b. Cut off the factory-crimped seal from the end of the M14 with crimpers.

c. Attach the M81 fuse ignitor to the M14.

d. Attach the M14 to the detonating cord using either an M9 holder or adhesive tape.

Step 4. Construct an MDI initiating system.

a. Ensure that the connection between the M11 branch line and the M12 are secure.

b. Cut off the factory crimp from the M12 with crimpers.

c. Connect the M81 ignitor to the M12 transmission line.

d. From a safe location, initiate the M81 and MDI firing system when ready.

EVALUATION PREPARATION

Setup: Provide the soldier with the items listed in the conditions. Use inert explosives when evaluating the soldier's performance for any improper procedures. All steps must be done in sequence and correctly to pass.

Brief soldier: Construct a dual-firing system, in sequence, without detonating the explosive or causing damage to the equipment or personnel. Safety will be integrated, observed, and evaluated at all times. The soldier will have 10 minutes to perform this task.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related: None

SECTION IV. CONDUCT OF TABLE V—PRELIMINARY REACT TO CONTACT

Table V is designed to train all members of a combat-engineer squad on fire control and distribution in offensive and defensive engagements.

FREQUENCY

This table will be executed semiannually. A unit commander may increase the frequency based on his unit's mission and requirements.

EXECUTION

Table V tasks (Table 3-4) are conducted under a locally developed scenario that is tactically sound for the range layout. Target array is based on the threat situation and a scenario developed by a commander. A squad is required to fire one day and one night phase. The table is designed to match an offensive phase (day or night) with a defensive phase (day or night). The recommended pairings are offense (day) and defense (night). A unit should develop a scenario to train fire distribution, control techniques, and a squad's SOP. Several rehearsals should be executed before a unit expends live ammunition. Based on a unit's mission-essential training requirements and resource restrictions, a commander may mix the phases. A commander may choose not to fire all of the tasks in selected day or night phases of Table V tasks to conserve ammunition for other tables. Table V tasks do not stipulate exact target placement. This allows a commander to design his training course to specific range limitations. Target arrays must realistically represent mission, enemy, terrain, troops, and time available (METT-T) considerations and provide realistic tactical scenarios. An AAR will be conducted for each squad.

Each squad will be given a mission to move from a designated location to a location 4,000 meters away. During its movement, it must cross the friendly forward area (FFA) and make radio contact with its unit. Each squad will encounter at least two of the tasks in Table 3-4.

Table 3-4. Table V tasks—preliminary react to contact

Task	Task No.	Page
React to Contact	Battle Drill No. 2	3-68
Break Contact	Battle Drill No. 3	3-70
React to Ambush	Battle Drill No. 4	3-72

STRATEGY AND CONCEPT

Squads will maintain integrity while conducting these missions. All risk and safety tables will come from each installation's regulations. (Range safety classes usually cover these areas.) An AAR will be conducted with the tester upon completion of the test.

TASK: REACT TO CONTACT (BATTLE DRILL NO. 2)

CONDITIONS

Your squad has received a fragmentary order (FRAGO)/operations order (OPORD) from higher headquarters to conduct a tactical movement (mounted or dismounted) from an assembly area to a mission site. Your squad is receiving fires from enemy individual or crew-served weapons. Some iterations should be performed in MOPP 4.

STANDARDS

The squad leader will react and identify the threat. He will control his unit's movement and rate of fire with minimum casualties to friendly soldiers. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Soldiers take up the nearest covered positions immediately and return fire in the direction of contact.

Step 2. The team/squad leader locates and engages known or suspected enemy positions with well-aimed fire and passes information to the squad leader.

Step 3. The fire-team leader controls fire using the standard fire commands (initial and supplemental) containing the following elements:

- Alert.
- Direction.
- Description of target.
- Range.
- Method of fire (manipulation and rate of fire).
- Command to commence firing.

Step 4. Soldiers maintain contact with the soldiers to their left and right.

Step 5. Soldiers maintain contact with their team leader and report the location of enemy positions.

Step 6. The team/squad leader checks the status of his personnel.

Step 7. The team/squad leader maintains contact with the squad/platoon leader.

Step 8. The squad leader—

- Moves up to the fire team in contact and links up with its leader. (The squad leader brings his radiotelephone operator [RATELO] and machine-gun team.)
- Determines whether his squad must move out of an engagement area (EA).

- Determines whether he can gain and maintain suppressive fires with his element already in contact (based on the volume and accuracy of enemy fires against the element in contact).
- Makes an assessment of the situation. He identifies—
  - — The location of the enemy's position and obstacles.
  - — The size of the enemy force. (The number of any vehicles and the employment of indirect fires are indicators of the enemy's strength.)
  - — Vulnerable flanks.
  - — Covered and concealed flanking routes to the enemy's position.
- Determines the next COA (for example, fire and movement, assault, breach, knock out bunker, and enter and clear a building or trench).
- Reports the situation to the platoon leader and begins to maneuver.
- Calls for and adjusts indirect fire (mortars or artillery). (Squad leaders relay requests through the platoon leader.)

Step 9. The team/squad leader leads his team by example.

Step 10. The team/squad leader relays all commands and signals from the platoon's chain of command.

EVALUATION PREPARATION

Setup: Higher headquarters has given the squad a mission of tactical movement from a starting location to a mission site. The squad receives fires from enemy individual or crew-served weapons.

Brief soldier: The squad leader will react and identify the threat. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 7-8

Related: None

TASK: BREAK CONTACT (BATTLE DRILL NO. 3)

CONDITIONS

The squad has received a FRAGO/OPORD from higher headquarters to conduct a tactical movement (mounted or dismounted) from an assembly area to a mission site. The squad is under enemy fire and must break contact. Some iterations should be performed in MOPP 4.

STANDARDS

The squad leader will identify the threat and break contact. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The squad leader directs one fire team in contact to support the disengagement of the remainder of the unit.

Step 2. The squad leader orders a distance and direction, a terrain feature, or a last-objective rally point for the movement of the first fire team.

Step 3. The base of fire (fire team) continues to suppress the enemy.

Step 4. The moving element uses fragmentation, concussion, and smoke grenades to mask its movement.

Step 5. The moving element takes up the designated position and engages the enemy position.

Step 6. The squad leader directs the base-of-fire element to move to its next location. (Based on the terrain and the volume and accuracy of the enemy's fire, the moving fire team may need to use fire and movement techniques.)

Step 7. The squad continues to bound away from the enemy until the squad—

- Breaks contact. (The squad must continue to suppress the enemy as it breaks contact.)
- Passes through a higher level support-by-fire position.
- Ensures that its fire teams are in the assigned position to conduct the next mission.

Step 8. The leader considers changing the direction of movement once contact is broken. This reduces the enemy's ability to place effective indirect fires on the unit.

Step 9. Soldiers stay together and move to the last designated rally point if the squad or platoon becomes disrupted.

Step 10. The squad leader accounts for soldiers, reports to higher, reorganizes (as necessary), and continues the mission.

EVALUATION PREPARATION

Setup: Higher headquarters has given the squad a mission of tactical movement from a starting location to a mission site. The squad is under enemy fire and must break contact.

Brief soldier: The squad leader will react, identify the threat, and break contact. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 7-8

Related: None

TASK: REACT TO AMBUSH (BATTLE DRILL NO. 4)

CONDITIONS

The squad receives a FRAGO/OPORD from higher headquarters to conduct a tactical movement (mounted or dismounted) from an assembly area to a mission site. The squad receives fires from enemy ambush. The enemy initiates an ambush with a casualty-producing device and a high volume of fire. Some iterations should be performed in MOPP 4.

STANDARDS

The squad leader will react and identify the threat. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. In a near ambush (within hand-grenade range), soldiers receiving fire return fire immediately; take up covered positions; and throw fragmentation, concussion, and smoke grenades. Immediately after the grenades detonate—

a. Soldiers in the kill zone assault through the ambush using fire and movement.

b. Soldiers not in the kill zone—

- Identify enemy positions.
- Initiate immediate suppressive fires against the enemy.
- Take up covered positions.
- Shift fires as the soldiers in the kill zone assault through the ambush.

Step 2. In a far ambush (beyond hand-grenade range), soldiers receiving fire immediately return fire, take up covered positions, and suppress the enemy by—

- Destroying or suppressing enemy crew-served weapons first.
- Obscuring the enemy position with smoke (M203).
- Sustaining suppressive fires.

a. Soldiers not receiving fires move by a covered and concealed route to a vulnerable flank of the enemy's position and assault using fire and movement techniques.

b. Soldiers in the kill zone continue suppressive fires and shift fires as the assaulting team/squad fights through the enemy's position.

Step 3. The platoon forward observer (FO) calls for and adjusts indirect fires as directed by the squad leader. O/O, he lifts fires or shifts them to isolate the enemy position or to attack them with indirect fires as they retreat.

Step 4. The squad leader reports, reorganizes as necessary, and continues the mission.

EVALUATION PREPARATION

Setup: Higher headquarters has given the squad a mission of tactical movement from a starting location to a mission site. The squad receives fires from enemy ambush. The enemy initiates an ambush with a casualty-producing device and a high volume of fire.

Brief soldier: The squad leader will react and identify the threat. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 7-8

Related: None

SECTION V. CONDUCT OF TABLES VI-VIII—PRELIMINARY TRAINING COURSE, INTERMEDIATE PROFICIENCY COURSE, AND INTERMEDIATE QUALIFICATION COURSE

Tables VI through VIII are designed to train all members of a combat-engineer squad on those critical mobility and countermobility tasks that they will be required to execute in combat.

FREQUENCY

This table will be executed semiannually. A unit commander may increase the frequency based on his unit's mission and requirements.

EXECUTION

Tables VI through VIII are conducted under locally developed scenarios that are tactically sound and supported by the existing range layout and unit METL. The scenarios should be developed to cue the execution of all tasks listed in Table 3-5. These tables are designed to be progressive in nature in that the conditions change for each table while the tasks remain the same. Table VI begins at the basic level to allow an engineer squad to train mobility and countermobility tasks methodically using inert training devices. Once Table VI has been successfully executed, a unit commander may choose to allow outstanding squads to advance directly to Table VIII. Table VII is executed to allow a unit to train these tasks under daylight conditions using live demolitions and inert mines. Successful completion of Table VII tasks allows a commander to identify a unit as combat ready but not qualified. Table VIII is executed during hours of darkness using live demolitions and inert mines. Successful completion of Table VIII qualifies the squad.

Table VI includes tasks for the preliminary training course (squad drills, inert), including the following:

- Defense:
  - — Constructing wire entanglements.
  - — Creating a crater obstacle with explosives.
  - — Placing a row in a nuisance minefield.
  - — Emplacing a hasty protective minefield.
  - — Emplacing the Modular Pack Mine System.
- Offense:
  - — Breaching a minefield with hand-emplaced explosives.
  - — Clearing a footpath through an obstacle with a bangalore torpedo.

Table VII includes tasks for the intermediate proficiency course (squad drills, inert), including the following:

- Defense:

— Constructing wire entanglements.

— Creating a crater obstacle with explosives.

— Placing a row in a nuisance minefield.

— Emplacing a hasty protective minefield.

— Emplacing MOPMS.

- Offense:

— Breaching a minefield with hand-emplaced explosives.

— Clearing a footpath through an obstacle with a bangalore torpedo.

Table 3-5. Table VI-VIII tasks—preliminary training course, intermediate proficiency course, and intermediate qualification course

Task	Task No.	Page
Breach Obstacles	5-3-70043	3-76
Direct a Minefield Recording Party	051-192-3079	3-80
Emplace a Hasty Protective Row Minefield	5-3-70115	3-83
Remove a Hasty Protective Row Minefield	5-3-70116	3-88
Mark a Minefield	5-4-70110	3-92
Emplace a Nuisance Minefield	5-4-70117	3-95
Construct Wire Entanglements	5-4-70301	3-97
Install a Hasty Protective Minefield Using a Modular Pack Mine System (MOPMS)	Drill No. 6	3-99

STRATEGY AND CONCEPT

In Tables VI and VII, drills may be added to meet a unit's specialized needs. The attack is supported on fortified positions. The squad leader is the primary trainer.

All evaluators undergo an extensive installation/organization demolition/mine qualification program (according to AR 385-63, local range procedures, and SOPs) before being allowed to evaluate their squad members.

Squads must maintain integrity during the conduct of each task. Testers will come from within the battalion, but not from the company being tested. An AAR will be conducted with the tester upon completion of the test.

Table VIII includes tasks for the intermediate proficiency course (squad drills and live fire). The following conditions and standards apply for all tasks in Table VIII.

Conditions: You are given a range, live demolition, ammunition (blank), inert mines, squad equipment, and qualified evaluators.

Standards: All engineer drills will be tested on getting from one end of the lane to the other. The squad rehearses the engineer drills. Evaluators will conduct AARs after each drill to ensure that standards are understood; then, the test will be administered. All tasks must receive a GO to be qualified.

TASK NO. 5-3-70043: BREACH OBSTACLES

CONDITIONS

The engineer squad is supporting a maneuver force conducting hasty breaching operations. The unit is directed to breach an obstacle other than a minefield. The maneuver force commander designates support, breach, and assault forces. Some iterations should be performed in MOPP 4.

STANDARDS

The squad will create and mark lanes through the obstacles to maintain the momentum of the tactical operation. The platoon will create the lanes within 10 minutes if the obstacle is covered by direct fire and/or observed indirect enemy fire. Friendly forces will sustain no casualties from drifting out of the marked lanes. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The squad leader determines the obstacle's type, location, and dimensions from information provided by the maneuver force or an obstacle reconnaissance.

a. Determines the obstacle (log, wire, nuclear-weapons effect, antiairborne, water/beach, rubble, snow/ice, ditch, or crater).

b. Determines the obstacle's location and dimensions (as a minimum, the depth and frontage).

c. Performs a detailed reconnaissance of the obstacle and surrounding terrain (time permitting) when the maneuver force does not provide sufficient details.

Step 2. The platoon leader (light) or the company commander (mech), in coordination with the TF commander—

a. Selects the means for breaching the obstacle.

- Uses the armored combat earthmover, M9 (ACE) for nonexplosive obstacles only (uses the ACE in a minefield as a last resort). Uses the light assault bridge (LAB) and engineer equipment for mechanical obstacle breaching.
- Uses the M58A3 MICLIC, bangalores (not used for minefields that have AT mines), or hand-placed charges for explosive obstacle breaching. He may also use direct-/indirect-weapons fire, but this requires a high expenditure of ammunition.
- Uses planks, assault ladders, or other available engineer tools to reduce wire obstacles, escarpments, ditches, trench lines, and fortifications for manual obstacle breaching. Manual obstacle reduction is the slowest, most hazardous, and least preferred method.

b. Determines the lane characteristics.

- Determines the lane width. Standard widths are 1 meter for a footpath (personnel only), 4 meters for an initial lane (to pass assault

vehicles), 8 meters for one-way vehicular traffic, and 16 meters for two-way vehicular traffic.

- Determines the number of lanes required (a minimum of one lane for a maneuver company and two lanes for a TF).
- Determines the lane location based on the terrain, cover and concealment for the breaching force, time and equipment available for the breach, and the maneuver scheme.

Step 3. The squad clears the obstacle of all mines and booby traps (as required).

a. Identifies or suspects the presence of mines, trip wires, or booby traps.

b. Neutralizes mines and booby traps using a line charge or hand-placed explosives before committing other engineer equipment to the obstacle-reduction task.

Step 4. The squad/platoon breaches the obstacle and creates the desired lanes.

a. Creates the lanes within 10 minutes if the obstacle is covered by direct fire or observed indirect fire. No time standard is established if the obstacle is not covered by fire or if the squad/platoon conducts stealth breaching.

b. The squad leader directs the employment of the ACE (when available) for neutralizing the effects of tank ditches, road craters, log cribs, tetrahedrons, dragon teeth, and similar obstacles.

- Starts blade work 30 meters from the depression, making a shallow incline by means of small cuts.
- Cuts and fills until the incline is traversable by maneuver units and the ACE can cross the far bank.

c. The squad leader directs the employment of the armored vehicle-launched bridge (AVLB), when available, to span destroyed and disabled bridges and other gaps not exceeding 22.9 meters.

d. The platoon reduces log, steel-beam/-post, and concrete obstacles with explosives or pioneer tools (see FM 5-34).

e. The squad reduces wire obstacles with explosives or assault ladders.

f. The squad removes rubble with engineer equipment or explosives.

g. The platoon breaches a tank ditch or other escarpments with pioneer tools (if part of a prebreach operation).

Step 5. The squad marks the cleared lanes. As a minimum, marks the lane's entrance, exit, and left handrail.

a. Marks the lanes temporarily (upon completion of the breach), with material stated in the unit's SOP.

b. Improves the marking as soon as time and availability of assets permit (if the improvement of the lane is not passed to a follow-on engineer unit). Uses the standard minefield marking set #2 or the M133 hand-emplaced minefield marking set (HEMMS).

c. Marks the right side of the lanes if not under enemy fire and if time permits.

Step 6. The squad leader reports the lanes' locations to higher headquarters according to the unit's SOP.

Step 7. The squad provides guides or performs obstacle handover procedures to ensure a smooth flow of traffic through the lanes.

a. Guide detachments provide follow-on forces with instructions to get them through the lanes rapidly.

b. The squad performs obstacle handover procedures according to the unit's SOP. Obstacle handover procedures enable the follow-on forces to assume the guide requirement as well as maintain and upgrade the lanes. The gaining unit assumes total responsibility for the obstacle.

EVALUATION PREPARATION

Setup: The engineer squad is supporting a maneuver force conducting hasty breaching operations. The unit is directed to breach an obstacle other than a minefield. The maneuver-force commander designates support, breach, and assault forces.

Brief soldiers: The squad will create and mark lanes through the obstacles to maintain the momentum of the tactical operation. The squad will create the lanes within 10 minutes if the obstacle is covered by direct fire and/or observed indirect enemy fire. Friendly forces will sustain no casualties from drifting out of the marked lanes.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: None

Related: None

Supporting individual tasks:

- 01-1940.00-0020—Conduct Counterobstacle Operations
- 051-192-0006—Locate Individual Booby Traps and Mines
- 051-192-1082—Fire the MICLIC
- 051-192-1083—Secure an Undeployed MICLIC
- 051-193-0001—Detonate Explosives With Nonelectric Firing Systems
- 051-193-0002—Detonate Explosives With Electric Firing Systems
- 051-193-0003—Assemble a Detonating-Cord Ring Main With Branch Lines

- 051-193-0004—Employ the M180 Demolition Cratering Charge
- 051-193-0005—Neutralize Booby Traps and Mines With Explosives
- 051-194-0003—Execute a Complex Obstacle Breach, an Action, a Task, or a Mission

TASK NO. 051-192-3079: DIRECT A MINEFIELD RECORDING PARTY

CONDITIONS

You are given a sketching set, a lensatic compass, DA Form 1355, a map, a metric tape, two soldiers, and an installed minefield. Some iterations should be performed in MOPP 4.

STANDARDS

You will ensure that all compass readings are in degrees and all measurements are in meters. The DA Form 1355 will be legible and accurately completed. For a scatterable minefield, you will ensure that a Scatterable Minefield Report and Record is accurately completed according to FM 20-32. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Obtain the necessary data from the siting, marking, and laying parties.

a. Obtain the types of stakes used as boundaries and the layout of the minefield from the marking party's NCOIC.

b. Obtain the location of a boundary fence or markers, marking signs, and safety lanes from the siting party's NCOIC.

c. Obtain the strip and irregular outer edge (IOE) feeder reports of the laying party from the NCOIC.

Step 2. Direct the party to establish landmarks and install intermediate markers if necessary.

NOTE: The squad leader must have a minimum of two landmarks to record a minefield. The landmarks should be clearly defined, easily distinguished, permanent objects.

a. Take measurements and azimuth readings from the landmarks to the rear boundary stake.

b. Install intermediate markers (every 75 meters) between landmarks and the rear boundary stake when the landmark is more than 200 meters from the minefield and the strip reference stake cannot be seen from the landmark.

Step 3. Direct the recording party to take measurements and azimuth readings of the following:

- The first landmark to the right (or left) of the rear boundary stake.
- Intermediate markers, if needed.
- The right (or left) boundary stake toward the enemy.
- IOE segments and IOE strips.
- Each strip centerline, starting from the one nearest the enemy's side.
- The remaining boundary from the IOE to the second landmark.

Step 4. Prepare a minefield sketch on DA Form 1355.

NOTE: Record forward azimuths only, and make all measurements in meters (m = paces x 0.75).

a. Sketch the basic pattern of the minefield to scale.

b. Sketch the safety lane.

c. Use arrows to indicate the direction in which the azimuths are plotted.

d. Mark the sketch with accurate measurements and azimuth readings for all sections of the minefield, including the safety lanes.

e. Sketch the boundary fence and important landmarks, such as roads or rivers, to illustrate their general locations.

Step 5. Record all information on DA Form 1355.

Step 6. Record an enemy minefield.

a. Use DA Form 1355 to record enemy minefields.

b. Show the identity of the unit preparing DA Form 1355.

c. Mark "ENEMY MINEFIELD" at the top of the form.

d. Describe the markings placed by the reporting unit and include a sketch or overlay showing the location and any other information.

e. Send the completed DA Form 1355 to the next higher command.

Step 7. Report and record scatterable minefields.

- Scatterable minefields do not need to be recorded in detail as required when emplacing conventional mines.
  - — The locations of individual mines are unknown; individual mines cannot be plotted as are permanent mines.
  - — The aim point/corner points and the type of mine emplaced are basic information that must remain on file for future reference and use.
- FM 20-32 outlines relatively simple reporting and recording procedures that will be used for scatterable mines (SCATMINEs).
  - — Scatterable minefield reports are applicable for all delivery systems and can be sent in a voice, digital, or hard-copy mode.
  - — Some systems—such as artillery, Gator, and MOPMS—are point oriented with the safety zone calculated from one or more aim points.
- Any unit emplacing SCATMINEs will immediately prepare and forward a Scatterable Minefield Report and Record to their headquarters.

EVALUATION PREPARATION

Setup: Provide the squad leader with the items listed in the conditions.

Brief soldier: Tell the soldier to direct the recording party to perform the mission. Not all reports and records need to be performed during the same session.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- DA Form 1355
- FM 5-34
- FM 5-102
- FM 20-32

Related: None

TASK NO. 5-3-70115: EMPLACE A HASTY PROTECTIVE ROW MINEFIELD

CONDITIONS

You are in a field environment and are given the order to emplace a hasty protective row minefield. You are given DA Form 1355-1-R, M15 and M21 AT mines, and M16A1 (Korea only) and M18A1 antipersonnel (AP) mines. There is available time to conduct a reconnaissance of the area. Some iterations of this task should be performed in MOPP 4.

STANDARDS

You will ensure that all mines are placed where they can be observed and covered by fires. AT mines will be placed to affect likely enemy mounted avenues of approach. AP mines will be intermixed with AT mines to affect dismounted approaches. Minefields will be marked and guarded. You will complete DA Form 1355-1-R and submit it to the next higher headquarters. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

NOTE: The report of intention is made as soon as it is decided to lay the minefield. This is the first of three reports and all must be sent in a secure manner. The brigade commander has the initial authority to employ hasty protective row minefields. He may delegate emplacement authority to the battalion or company commanders on a mission basis. This information/authorization is found in the OPORD that is passed to the platoon level.

Step 1. The squad leader reports the intention to lay a hasty protective row minefield on DA Form 1355-1-R. He specifies—

- The minefield's location.
- The estimated number and types of mines to be laid.
- The manner in which the mines will be laid (surface laid or buried).
- The location and width of lanes and gaps through the minefield.
- The proposed date and time for start and completion.

Step 2. The tank commander and driver remain with the vehicle to provide needed security.

Step 3. The tank commander maneuvers the vehicle using a covered and concealed route to the selected location of the minefield.

NOTE: In most situations the squad works together to emplace the minefield.

Step 4. The tank commander and driver move their vehicle to an overwatch position if they are not already there. They—

a. Use cover and concealment.

b. Move into a hull-down position (if possible).

c. Cover likely enemy positions.

Step 5. The squad leader and team leaders conduct reconnaissance of the proposed minefield area to identify mine locations that—

- Cover likely enemy avenues of approach.
- Enhance key weapons systems.
- Cover dead space.
- Can be seen by the defending elements.

Step 6. The squad leader and team leaders return to draw mines and needed equipment to emplace the minefield.

Step 7. The squad leader reports the initiation of the minefield by specifying the—

- Start time of the mine emplacement.
- Exact location of the minefield.
- Target number of the minefield.

Step 8. The squad emplaces the mines.

NOTE: Mines are not armed and do not have trip wires attached. Only metallic mines are used. No booby traps or AHDs will be used. A general rule of thumb for spacing AT and AP mines is no closer than 4 meters. There is no maximum distance; however, it should not pose any tactical impact.

a. Install the mines.

- Place end markers at the end of each row. Markers will be labeled with the letter of the row and the number one for one end of the row and the number two for the other end.

NOTE: Markers should be easily identifiable objects such as steel pickets.

- Place individual mines far enough apart to prevent simultaneous detonation.

NOTE: Mines should be no closer than 4 meters. The distance from the row end marker to the first mine in the row is the distance between all of the mines in that row.

- Emplace rows outside of hand-grenade range, but within the range of small-caliber weapons.

b. Emplace AT mines so they affect likely avenues of approach.

c. Emplace AP mines so they are intermixed with AT mines to deny the enemy dismounted avenues of approach. (M18A1 AP mines will be command detonated when NOT used in Korea. M16A1 AP mines will be used in Korea only.)

- Bury M21 AT mines with only the tilt rod exposed.
- Camouflage the rod with brush or tall grass, if time permits.

NOTE: For Korea only, bury M16Al AP mines up to the bottom of the release-pin ring, leaving only the pressure prongs above ground. This provides the stability required for proper employment.

Step 9. The squad leader records the minefield data on DA Form 1355-1-R.

NOTE: All measurements will be recorded in meters on the DA Form 1355-1-R.

a. Selects and records an easily identifiable and relatively permanent reference point in front of his position.

NOTE: A good reference point should have some degree of survivability from an artillery barrage.

b. Determines the scale to be used in plotting the minefield on the form.

NOTE: The following formula is used to determine the scale. The scale equals the distance from the reference point to the farthest point in the minefield plus 10 meters and divided by four. Adding the 10 meters accounts for a safety margin to ensure that the sum of the minefield sketch is entirely contained within the largest ring. Dividing by four is a constant and represents the concentric rings on DA Form 1355-1-R.

c. Plots the reference point in the center of the circles on the form.

NOTE: The row closest to the enemy is designated A, while succeeding rows are designated as B, C, and so on.

d. Indicates the end of each row marker. Labels with the letter of the row and the number one for one end of the row and the number two for the other end.

e. Records the azimuth and distance to the last row.

NOTE: Determine the magnetic azimuth in degrees from the reference point to the first row marker and record it as B1 (B1 if there are two rows, C1 if there are three rows, and so forth). This marks the beginning of that row.

f. Records the azimuth and distance to the next row (Al in this case).

g. Measures and records the distance and azimuth to each row marker.

NOTE: Measure the distance and azimuth from A1 to the first mine to be recorded. Next, measure the distance and azimuth from the first mine to the second and so on until all mine locations are recorded. Continue this procedure for each row. As each mine is recorded, assign it a number to identify it in the tabular block of DA Form 1355-1-R.

h. M**e**asures and records the distance and azimuth from the reference point to B2 and from B2 to A2.

i. Ties in the reference point with a permanent landmark.

NOTE: This landmark may be used to help relocate the minefield should it be abandoned.

j. Completes the tabular information blocks, specifying the unit and precise description of the reference point, kinds and types of markers used to identify the rows, the map sheet number, the name, the OIC or NCOIC's signature, and the time and date. Describes how the minefield was measured (for example, "the minefield was paced out and the paces were multiplied by 0.75") in the Remarks block.

Step 10. The squad arms the mines.

a. Works from the enemy's side to the friendly's.

b. Camouflages the mines, if time permits.

Step 11. The squad leader recovers the mine safeties and shipping plugs.

a. Collects and stores safeties, shipping plugs, and related items in a waterproof container.

b. Records the items and their locations in the Remarks block on DA Form 1355-1-R.

c. Informs squad members of the location of DA Form 1355-1-R and the shipping plugs and safeties.

Step 12. The squad leader reports the completion of laying the minefield.

a. Reports to the authorizing commander via a secure means that the minefield is complete.

b. Submits the completed DA Form 1355-1-R to the authorizing commander.

Step 13. The squad leader ensures that the minefield is kept under observation at all times to prevent the enemy from breaching or booby trapping the mines.

Step 14. The squad leader establishes a guard to protect friendly troops and noncombatants from entering the mined area. If AP mines are used in the minefield, the guard must remain in place for longer than 72 hours and the minefield must be fenced on all sides.

Step 15. The squad leader submits additional reports, as necessary.

a. Submits oral progress reports during the emplacing process concerning the amount of work completed.

b. Submits a written report of transfer if responsibility for a minefield is altered.

EVALUATION PREPARATION

Setup: The soldier is in a field environment and given an order to emplace a hasty protective row minefield, copies of DA Form 1355-1-R, M15 and M21 AT mines, and M16A1 (Korea only) and M18A1 AP mines. There is time to conduct a reconnaissance.

Brief soldier: All mines will be emplace where they can be observed and covered by fires. AT mines will be emplaced to affect likely enemy mounted avenues of approach. AP and AT mines will be intermixed to affect dismounted approaches. Minefields will be marked and guarded. DA Form 1355-1-R will be completed and submitted to the next higher headquarters.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: DA Form 1355-1-R

Related: None

Supporting individual tasks:

- 051-192-1101—Install an M14 Antipersonnel Mine
- 051-192-1103—Install an M16A2 Antipersonnel Mine
- 051-192-1105—Install an M15 Antitank Mine Using an M624 Fuse
- 051-192-1107—Install the M15 Antitank Mine Armed with an M603 Fuse
- 051-192-1117—Install an M21 Antitank Mine
- 051-192-2026—Direct a Minefield Marking Party
- 051-192-3101—Direct Installation of a Hasty Protective Minefield
- 071-121-4051—Prepare a Situation Report/Status Report
- 071-329-1002—Determine the Grid Coordinates of a Point on a Military Map
- 071-325-4426—Employ an Ml8A1 Claymore Mine
- 071-510-0001—Determine Azimuth Using a Protractor
- 071-610-0002—Compute Back Azimuth

TASK NO. 5-3-70116: REMOVE A HASTY PROTECTIVE ROW MINEFIELD

CONDITIONS

You are in a field environment and have received an order from your higher headquarters to remove the hasty protective row minefield your element emplaced within your assigned sector. Some iterations of this task should be performed in MOPP 4.

STANDARDS

You will ensure that all mines are rendered safe and removed (or accounted for) without damage to the mines or injury to personnel. You will ensure that all mines are repacked and stored according to the unit's SOP. You will file and maintain a report of change until all mines are disarmed and removed. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The tank commander and driver will provide overwatch and security for personnel removing the minefield.

NOTE: Squad members work together to accomplish this type of mission.

Step 2. The squad leader directs the overwatch elements to a position that affords the best observation of the minefield and beyond.

a. The security force employs smoke on the far side (if necessary) to conceal mine removal.

b. The security force remains in position overwatching the removal team until the minefield is clear.

Step 3. The squad leader determines the best method for removing the mines.

- If the minefield has been under constant observation from the time it was laid and has not been tampered with, the squad leader directs the personnel who laid the mines to pick up the same mines. The squad leader uses DA Form 1355-1-R to direct the squad members to the location and types of mines to be removed.
- If the minefield has not been under constant observation and may have been tampered with or the personnel who laid the mines are not available (or do not remember the location of the mines), the squad leader uses DA Form 1355-1-R and mine detectors to direct the squad members to the location and types of mines to be removed.

Step 4. The squad leader retrieves the safeties, shipping plugs, and any other items that accompanied the emplaced mines.

Step 5. The removal team locates, "safes," and removes the mines within the minefield.

NOTE: The removal team starts at the reference point and moves to B1 using the azimuth and distance provided on DA Form 1355-1-R, then moves from B1 to the mine and removes the mine. If B1 is destroyed, the team moves from the reference point to B2, using that azimuth and distance. The team then shoots a back azimuth (subtract 180 degrees) from the recorded azimuth from B2 to the first mine and removes the mine. This process is continued until all mines are removed. The stakes at Al, B1, A2, and B2 are necessary because it is safer to find a stake than to find an armed mine.

a. Observes basic safety precautions by—

- Maintaining a 30-meter dispersion between removal personnel.
- Maintaining a steady pace (not running).
- Moving around in only cleared areas.

b. Starts with the row closest to the defender and works away.

c. Checks the sides and bottoms of the mines for AHDs and disarms them as they are found.

NOTE: AHDs are not used in hasty protective row minefields. However, as a safety precaution, all mines are considered to be equipped with AHDs until proven otherwise.

d. Replaces all pins, clips, or other safety devices before the mine is removed from the ground.

e. Turns any arming dials to SAFE or UNARMED.

f. Removes the fuse if the mine has a screw-type fuse, and takes it away from the mine. If the detonator is not built-in, the team takes the fuse from the mine.

g. Lifts the mine from the hole after it has been placed on SAFE.

- If the mine was put in place and kept in sight by the individual who removed it, he lifts it directly from the hole after rendering it safe.
- If the mine has not been kept in sight, he attaches a 60-meter-long rope or wire around the mine, takes cover, and pulls the mine from the hole.

h. Places a tick mark beside each mine on the DA Form 1355-1-R as it is removed.

Step 6. The removal team assembles all the mines in one location for accountability.

Step 7. The squad leader confirms the safety of the mines and accounts for the number and types of mines as recorded on the DA Form 1355-1-R.

NOTE: The squad leader may find it necessary to confirm an exploded mine to account for all the mines. To confirm a mine explosion (if it is not witnessed) place a tick mark beside each mine on the DA Form 1355-1-R as it is removed. If a crater is found in the vicinity of a mine, make sure it was caused by a land mine and not

artillery. A mine crater (depending on the size of the mine) is shallow, circular, and shows traces of burnt soil. The impact and soil dispersion of artillery is generally elongated.

Step 8. The removal team cleans and repacks the mines for future use.

NOTE: This is done only after the squad leader confirms each mine is disarmed and safe.

a. Repacks mines in their original containers and cases to keep them functional and safe for future use.

b. Stores the mines according to the unit's SOP.

Step 9. The removal team removes and stores the row markers for future use.

Step 10. The squad leader submits a report of change to his higher headquarters stating that the minefield has been removed and the area is cleared.

NOTE: The commander responsible for surveillance and maintenance of the minefield makes a report of change as soon as any mines are removed.

Step 11. The squad leader destroys the DA Form 1355-1-R after the minefield has been removed and the report of change has been sent.

EVALUATION PREPARATION

Setup: In a field environment, an order has been received from higher headquarters to remove the hasty protective row minefield your element emplaced within your assigned sector.

Brief soldiers: All mines will be rendered safe and removed (or accounted for) without damage to the mines or injury to personnel. All mines will be repacked and stored according to the unit's SOP. A report of change will be filed and maintained until all the mines are disarmed and removed.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: None

Related: None

Supporting individual tasks:

- 051-103-1025—Neutralize Mines
- 051-192-1104—Remove an M16A2 Antipersonnel Mine
- 051-192-1106—Remove an M15 Antitank Mine Armed With an M624 Fuse

- 051-192-1108—Remove an M15 Antitank Mine Armed With an M603 Fuse
- 051-192-1118—Remove an M21 Antitank Mine
- 051-192-1135—Locate Mines by Probing
- 051-192-2026—Direct a Minefield Marking Party
- 051-192-3102—Direct Removal of a Hasty Protective Row Minefield
- 051-193-1013—Neutralize Booby Traps
- 171-121-4051—Prepare a Situation Report/Status Report
- 071-325-4426—Recover an Ml8Al Claymore Mine
- 071-329-1002—Determine the Grid Coordinates of a Point on a Military Map
- 071-510-000l—Determine Azimuth Using a Protractor
- 071-510-0002—Compute Back Azimuth

TASK NO. 5-4-70110: MARK A MINEFIELD

CONDITIONS

The squad, separately or as part of the emplacing unit, has received a mission to mark a friendly minefield being emplaced or already in place. Squad members will determine the location of the minefield from the emplacing party personnel, DA Form 1355, DA Form 1355-1-R, or the Scatterable Minefield Record and Report. The logistics planning for marking the minefield has been completed. The squad has the necessary material to mark the minefield. Some iterations should be performed in MOPP 4.

STANDARDS

The squad will mark the location of minefield boundaries, gaps, and lanes so there are no friendly casualties to mines. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The squad leader organizes personnel and directs members to assemble all equipment and materials.

a. Organizes the squad into teams to drive pickets, string wire, post signs, and carry materials for uninterrupted marking.

b. Positions materials at intervals around the minefield to limit hauling requirements. Materials include wire (barbed or concertina), pickets, mine warning signs, a standard mine marking set, and an M133 HEMMS.

c. Ensures that teams carry wire gauntlets, wire cutters, sledgehammers, or an expedient picket-driving device to ensure smooth construction of the fence.

Step 2. The squad marks the minefield boundaries.

a. The squad leader places the first fence picket at least 15 meters from the right rear-boundary marker.

b. The squad members install pickets in a pattern to avoid indicating the exact boundary of the minefield. Squad members do not install pickets closer than 15 meters to any mine.

c. The squad leader determines the boundaries of the minefield from the Scatterable Minefield Record and Report or from the emplacing unit (when marking a scatterable minefield).

- The squad installs pickets no closer than 60 meters from the centerline of the first belt and last belt for the Ground-Emplaced Mine-Scattering System (GEMSS) and Volcano minefields.
- The squad installs pickets no closer than 15 meters from the starting and ending row markers.
- The squad installs pickets around the established safety zones identified on the Scatterable Minefield Record and Report for artillery-delivered scatterable minefields.

d. The squad installs two strands of wire concurrently (one ankle high and the second waist high) around the minefield. It places mine warning signs 10 to 50 meters apart on the upper wire.

Step 3. The squad marks safe lanes and gaps through the minefield.

a. Uses the following guidance for safe lanes and gaps: footpaths are 1 meter wide, one-way vehicle traffic is 8 meters wide, two-way vehicle traffic is 16 meters wide, and gaps are greater than 100 meters wide.

b. Marks the safety lanes in forward areas according to the unit's SOP and FM 90-13-1, Appendix E.

c. Marks lanes similar to boundaries (when in rear areas) and emplaces illuminous marking devices (such as the HEMSS) visible only from the friendly side of the minefield.

Step 4. The squad leader reports mission completion to the next higher headquarters by secure means.

EVALUATION PREPARATION

Setup: The squad, separately or as part of the emplacing unit, receives a mission to mark a friendly minefield being emplaced or already in place. The squad must determine the location of the minefield from the emplacing party, DA Form 1355, DA Form 1355-1-R, or the Scatterable Minefield Record and Report. The logistics planning for the marking of the minefield is done. The squad has the necessary material to mark the minefield.

Brief soldiers: The squad will mark the location of minefield boundaries, gaps, and lanes so there are no casualties to friendly forces.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required:

- DA Form 1355
- DA Form 1355-1-R
- FM 90-13-1

Related: None

Supporting individual tasks:

- 051-192-0006—Locate Individual Booby Traps and Mines
- 051-192-2026—Direct a Minefield Marking Party
- 051-192-3031—Direct a Minefield Recording Party
- 051-194-0001—Direct Construction of Wire Entanglements

- 051-194-0002—Plan Installation of Wire Entanglements
- 051-194-1004—Install Pickets, Barbed Wire, and Concertina
- 051-195-4007—Determine Logistical Requirements for Wire Entanglements
- 051-199-0001—Prepare Engineer Estimates

TASK NO. 5-4-70117: EMPLACE A NUISANCE MINEFIELD

CONDITIONS

Your squad is directed to emplace a nuisance minefield, enhance another obstacle in a key area, disorganize the enemy, or force the enemy to deploy early into their assault formation. The minefield's location is selected by the maneuver commander in consultation with the engineer. The security team is provided. Some iterations should be performed in MOPP 4.

STANDARDS

The squad will emplace the minefield within the time prescribed for the mission. Locations are accurate within 10 meters. Camouflaged mines are not detectable from 15 meters. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The squad leader selects the minefield site and composition consistent with the maneuver commander's scheme.

a. Submits a report of intention to higher headquarters to lay a minefield.

b. Selects type of mines (AP [in Korea only], AT, or both) based on the threat and ground conditions.

c. Employs the mines to block likely avenues of approach, enhance key weapon systems, and cover dead space. Good locations are road craters and AT-ditch berms, fords, bridge sites, and observation points overwatching other obstacles.

Step 2. The squad emplaces and arms the mines.

a. The squad leader reports initiation to higher headquarters by secure means according to the unit's field standing operating procedures (FSOP).

b. The squad leader selects a reference point on the minefield's friendly side.

c. The squad emplaces and records the location of the mines. The unit may use AHDs. The squad uses DA Form 1355 to record the minefield.

d. The squad places minefields in an irregular size and shape. Conventional mines or SCATMINEs may be used. The maximum number of AHDs are used.

e. The squad fuses and arms the mines starting on the enemy's side and working back to the friendly's. The laying/arming party personnel should know the exact location of each mine/AHD. The squad saves and buries the safety pins/clips at the reference point.

f. The squad camouflages mines using natural or other lightweight material.

g. The squad leader submits (by secure means)—

- Status reports (STATREPs), as required by the unit commander.
- A report of completion to higher headquarters.
- A copy of DA Form 1355 to the parent unit.

EVALUATION PREPARATION

Setup: The squad is directed to emplace a nuisance minefield, enhance another obstacle in a key area, disorganize the enemy, or force the enemy to deploy early into their assault formation. The maneuver commander selects the minefield's location.

Brief soldiers: The squad will emplace the minefield within the time prescribed for the mission. Locations are accurate within 10 meters. Camouflaged mines are not detectable from 15 meters.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: DA Form 1355

Related: None

Supporting individual tasks:

- 01-1920.00-0006—Plan Employment of Scatterable Mines
- 01-1920.00-0013—Supervise Installation of Minefields
- 01-1920.00-0019—Prepare/Process Minefield Recording Forms
- 01-1920.00-0021—Plan Installation of Conventional Minefields
- 051-192-0010—Install or Remove Mines in a Hasty Protective or Nuisance Minefield
- 051-192-0011—Lay or Recover Mines in Clusters
- 051-192-3002—Direct a Standard Pattern Minefield Laying Party
- 051-192-3004—Lay a Nuisance Minefield
- 051-192-3031—Direct a Minefield Recording Party
- 051-192-3032—Direct a Row Minefield Laying Party

TASK NO. 5-4-70301: CONSTRUCT WIRE ENTANGLEMENTS

CONDITIONS

The maneuver commander orders the construction of wire entanglements to enhance the terrain in support of the defensive scheme. The squad has wire obstacle materials available. Some iterations should be performed in MOPP 4.

STANDARDS

The obstacles will block, fix, turn, or disrupt the enemy and force it to change its scheme of maneuver according to the maneuver commander's intent. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The squad leader prepares to construct a wire entanglement.

a. Reconnoiters the site to consider needed security, potential action on contact, and the accessibility of materials.

b. Organizes the work party.

Step 2. The squad leader sites the obstacle between existing or reinforcing obstacles to prevent bypass. The obstacle is covered by direct or indirect fire, out of grenade range (40 to 100 meters) from friendly positions, and irregular in shape. It denies cover to breaching enemy forces.

Step 3. The squad constructs triple-standard concertina.

a. Works from enemy's to friendly's side.

b. Spaces pickets at 3.8-meter (5-pace) intervals (staggers rear row).

NOTE: 1 pace = 0.75 meters.

c. Secures the bottom rolls with horizontal wire.

d. Anchors the end pickets 1.5 meters (2 paces) from the end.

e. Secures the top roll with wire at 3.8-meter (5-pace) intervals.

f. Completes within the time standard (one squad hour per l00 meters in daylight; two squad hours per l00 meters during darkness).

Step 4. The squad constructs a knife rest.

a. Prepares a knife rest 3 to 5 meters in length.

b. Secures the knife rest to the ground 3 to 5 meters between cross members, a minimum of 1 meter in height, and tightly lashed together.

c. Completes within the time standard (one squad hour per knife rest for daytime; two squad hours per knife rest during darkness).

Step 5. The squad constructs a double-apron 4-2 pace.

a. Lays the fence centerline.

b. Spaces long pickets at 3-meter (4-pace) intervals.

c. Spaces anchor pickets at 1.5 meters (2 paces) each way from the centerline and midway between long pickets.

d. Installs all 12 wires working from the enemy side to the friendly side.

e. Ties the wire (as a minimum at the beginning and end of each roll).

f. Completes within the time standard (three squad hours per 100 meters in daytime; four and one-half squad hours per 100 meters during darkness).

Step 6. The squad constructs a concertina roadblock.

a. Spaces pickets at 3.8 meter (5-pace) intervals.

b. Places concertina wire over long pickets.

c. Anchors horizontal wires to anchor stakes 1.5 meters (2 paces) from each end of the concertina.

d. Ensures that the obstacle is no less than 10 meters deep.

e. Completes within the time standard (for every entanglement 15 meters wide and 10 meters deep, allows one squad hour during daytime and two squad hours during darkness).

Step 7. The squad leader submits intermediate status and completion reports to higher headquarters.

EVALUATION PREPARATION

Setup: The maneuver commander orders the construction of wire entanglements to enhance the terrain in support of the defensive scheme. The squad has wire obstacle materials available.

Brief soldiers: The squad will construct obstacles that will block, fix, turn, or disrupt the enemy and force him to change his scheme of maneuver according to the maneuver commander's intent.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: None

Related: None

Supporting individual tasks:

- 051-193-3055—Prepare Obstacle Folder
- 051-194-0001—Direct Construction of Wire Entanglements
- 051-194-0002—Plan Installation of Wire Entanglements
- 051-194-1004—Install Pickets, Barbed Wire, and Concertina

TASK: INSTALL A HASTY PROTECTIVE MINEFIELD USING A MODULAR PACK MINE SYSTEM (MOPMS) (BATTLE DRILL NO. 6)

CONDITION

You are in a field environment and given an order to emplace a hasty protective row minefield. You are given copies of DA Form 1355-1-R and the MOPMS. You have available time to conduct an area reconnaissance. Some iterations should be performed in MOPP 4.

STANDARDS

The squad will position, enter the command control data (CCD), and prepare the MOPMS to deploy mines. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

NOTE: In this task, the platoon leader submits all minefield reports.

Step 1. Train personnel to handle all dispensers as potentially dangerous, even if the item is labeled inert or practice. Do not strike, drop, or otherwise abuse the dispenser or remote control unit (RCU) in any way.

Step 2. Stop operations within a 270-meter radius and evacuate personnel if live mines are accidentally dispensed. If mines are intentionally dispersed during training, ensure that personnel to the left, right, and front sides of the dispenser stay at least 270 meters away. Personnel occupying the defensive line must be provided protective frontal cover and be no closer than 100 meters to the dispenser before mines are dispensed or detonated.

Step 3. Ensure that correct and timely preventive maintenance checks and services (PMCS) are performed on all components.

Step 4. Do not attempt to deploy mines or operate the RCU with weak batteries.

Step 5. Conduct a deliberate risk assessment before training this mission.

Step 6. Train with the MOPMS as follows:

- Resources. See Table 3-6 for necessary resources.

Table 3-6. Resources for training with MOPMS

Item	Quantity	Carried By—
M131 or M132 MOPMS with batteries	1 each	Soldiers 1-4
Firing wire on reel (minimum 150 meters)	1 each	Team leader
Compass	1 each	Team leader
Blasting machine	1 each	Soldier 1
M71 RCU with batteries	1 each	Team leader
M51 test set	1 each	Soldier 4
Lineman's pliers	1 each	Soldier 4
Short U-shaped picket	1 each	Soldier 2
Picket driver	1 each	Soldier 2

NOTE: M136 practice MOPMS should be used for all training not involving live fire.

- Training site. A platoon maneuver area where the MOPMS can be safely emplaced. Inert training may be accomplished wherever space permits.
- Unit instructions.
  - — The platoon is occupying a defensive sector. The platoon leader/sergeant orders a squad to install a protective minefield with the MOPMS forward of the platoon's position and designate the azimuth, the location for placement, and the self-destruct time.
  - — The emplacement site can be seen from the firing point within the defensive perimeter. It is 100 meters from the defensive positions.
  - — Two squads provide watch from the defensive line. Enemy direct fire is imminent.
  - — The squad leader assigns a team to emplace the MOPMS. The platoon leader/sergeant gives the MOPMS to the squad and tells the squad to begin the drill on signal.
- Organization and responsibilities.
  - — An emplacement team consisting of four soldiers and a team leader is organized from the squad. The squad leader leads the team when other duties do not conflict.
  - — The team leader establishes the firing point before leading the team forward of the perimeter. He will test the firing wire before starting the drill. The platoon leader may designate the specific location for the firing point.
  - — The emplacement team assembles with the necessary equipment at the firing point along the perimeter where they will pass through the line. The platoon leader will give the signal to start the drill.
  - — The squad leader—
    - ❍ Conducts troop-leading procedures.
    - ❍ Designates an emplacement team.
    - ❍ Reviews individual responsibilities with each team member.
    - ❍ Designates the azimuth, location for placement, and the self-destruct time for the dispenser.
    - ❍ Designates the route to and from the site.
    - ❍ Designates a firing point inside the defensive perimeter and briefs the challenge and password to the team members.
    - ❍ Directs the team to consolidate the equipment needed at the firing point.
  - — The emplacement team—

- Loads batteries into the RCU and dispenser, tests the equipment, and either repairs or replaces unserviceable items.
- Shunts the firing wire.
- Moves to the firing point and prepares to pass through the line.

- Walk-through instruction. The squad leader will walk the teams through the drill, ensuring that each soldier can perform his assigned task. Time standards are disregarded.
- Coaching points. Practice with inert devices before attempting the drill with live munitions.
- Performance measures.
  - The drill begins when the squad reaches the firing point.
  - The platoon leader gives the signal to start the drill.
  - The emplacement team performs the following functions:
    - The team leader immediately leads the team to the emplacement site and designates the exact point and arrow direction for setting the dispenser.
    - Soldiers 1 though 4 carry the MOPMS, place the dispenser, and orient the arrow as directed.
    - Soldier 1 receives the firing wire from the team leader, unreels part of the running end, and gives it to Soldier 2.
    - Soldiers 1, 3, and 4 lay the firing wire back to the firing point, where they remain.
    - Soldier 2 emplaces the U-shaped picket. He secures the running end of the firing wire to the short U-shaped picket near the dispenser. He leaves enough wire to easily reach the dispenser.
    - The team leader enters the CCD once the dispenser is set and oriented.
    - Soldier 2 connects the firing wire to the RCU and arms the dispenser after the CCD is entered.
    - The team leader verifies that the dispenser is armed and moves with Soldier 2 to the firing point.
    - Soldier 4 tests the firing circuit once all team members have arrived at the firing point, shunts the firing wire after the test, and reports its operability to the team leader when he arrives.
    - The team leader reports to the platoon leader that the dispenser is ready for deployment.

EVALUATION PREPARATION

Setup: The squad is given an order to emplace a hasty protective row minefield in a field environment. Copies of DA Form 1355-1-R and the MOPMS are available. There is time to conduct an area reconnaissance.

Brief soldiers: The squad will position, enter the CCD, and prepare the MOPMS to deploy the mines.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required:

- DA Form 1355-1-R
- FM 5-102
- FM 20-32

Related: None

SECTION VI. CONDUCT OF TABLE IX—ADVANCED REACT TO CONTACT

Table IX is designed to qualify all members of a combat-engineer platoon on fire control and distribution in offensive and defensive engagements.

FREQUENCY

This table will be executed annually. A unit commander may increase the frequency based on his unit's mission and requirements.

EXECUTION

Table IX tasks (Table 3-7) are conducted under a locally developed scenario that is tactically sound for the range layout. Target array is based on the threat situation and the scenario developed by a commander. A unit should rehearse the table to maximize fire distribution, control techniques, and a platoon's SOP before expending ammunition. Based on his unit's mission-essential training requirements and resource restrictions, a commander may mix the phases. A squad is required to fire one day and one night phase. The table is designed to match an offensive phase (day or night) with a defensive phase (day or night). The recommended pairings are offensive (day) and defensive (night). Depending on a unit's level of proficiency, a commander may choose not to fire all of the tasks in selected day or night phases of Table IX. Table IX does not stipulate exact target placement. This allows the commander to design his training courses to specific range limitations. Target arrays must realistically represent METT-T considerations and provide realistic tactical scenarios. Other direct and indirect fires, such as mortars, AT weapons, and artillery can be incorporated (live or simulated) to provide enhanced training on fire planning and calling for supporting fires. An AAR will be conducted for each squad.

NOTE: The commander may place friendly targets inside or outside the platoon's sector of fire. These targets should be placed randomly within one of the engagement areas but must be within the range limit markers. The platoon should be required to identify and report friendly targets as part of the tactical tasks.

Each platoon will be given a mission to move from a designated location to a location 4,000 meters away. During their movement they must cross the FFA and make radio contact with their unit. Each platoon will encounter at least two of the tasks in Table 3-7.

Table 3-7. Table IX tasks—advanced react to contact

Task	Task No.	Page
React to Contact	Battle Drill No. 2	3-105
Break Contact	Battle Drill No. 3	3-107
React to Ambush	Battle Drill No. 4	3-109

STRATEGY AND CONCEPT

Platoons will maintain integrity while conducting these missions. All risk and safety tables will come from each installation's regulations. (Range safety classes usually cover these areas.) An AAR will be conducted with the tester upon completion of the test.

TASK: REACT TO CONTACT (BATTLE DRILL NO. 2)

CONDITIONS

Your platoon has received a FRAGO/OPORD from higher headquarters to conduct a tactical movement (mounted or dismounted) from an assembly area to a mission site. Your platoon is receiving fires from the enemy's individual or crew-served weapons. Some iterations should be performed in MOPP 4.

STANDARDS

The platoon leader will react and identify the threat. He will control his unit's movement and rate of fire with minimum casualties to friendly soldiers. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Soldiers take up the nearest covered positions immediately and return fire in the direction of contact.

Step 2. The squad leader locates and engages known or suspected enemy positions with well-aimed fire and passes information to the platoon leader.

Step 3. The fire-team leader controls fire using the standard fire commands (initial and supplemental) containing the following elements:

- Alert.
- Direction.
- Description of target.
- Range.
- Method of fire (manipulation and rate of fire).
- Command to commence firing.

Step 4. Soldiers maintain contact with the soldiers to their left and right.

Step 5. Soldiers maintain contact with their team leader and report the location of enemy positions.

Step 6. The team/squad leader checks the status of his personnel.

Step 7. The team/squad leader maintains contact with the squad/platoon leader.

Step 8. The squad/platoon leader moves up to the fire team/squad in contact and links up with its leader. (The platoon leader brings his RATELO, his platoon FO, the squad leader of the nearest squad, and one machine-gun team. The platoon sergeant [PSG] also moves forward with the second machine-gun team and links up with the platoon leader, ready to assume control of the base-of-fire element.)

Step 9. The platoon leader—

- Determines whether his squad/platoon must move out of an EA.

- Determines whether he can gain and maintain suppressive fires with his element already in contact (based on the volume and accuracy of enemy fires against the element in contact).
- Makes an assessment of the situation. He identifies—
  - — The location of the enemy position and obstacles.
  - — The size of the enemy force. (The number of any vehicles and the employment of indirect fires are indicators of the enemy's strength.)
  - — Vulnerable flanks.
  - — Covered and concealed flanking routes to the enemy position.
- Determines the next COA (for example, fire and movement, assault, breach, knock out bunker, and enter and clear a building or trench).
- Reports the situation to the company commander and begins to maneuver.
- Calls for and adjusts indirect fire (mortars or artillery). (Squad leaders relay requests through the platoon leader.)

Step 10. The team/squad leader leads his teams by example.

Step 11. The team/squad leader relays all commands and signals from the platoon's chain of command.

EVALUATION PREPARATION

Setup: The platoon is given a mission of tactical movement from a starting location to a mission site from higher headquarters. The platoon receives fires from enemy individual or crew-served weapons.

Brief soldiers: The platoon leader will react and identify the threat. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: FM 7-8

Related: None

TASK: BREAK CONTACT (BATTLE DRILL NO. 3)

CONDITIONS

The platoon receives a FRAGO/OPORD from higher headquarters to conduct a tactical movement (mounted or dismounted) from an assembly area to a mission site. The platoon is under enemy fire and must break contact. Some iterations should be performed in MOPP 4.

STANDARDS

The platoon leader will identify the threat and break contact. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The platoon leader directs one squad in contact to support the disengagement of the remainder of the unit.

Step 2. The platoon leader orders a distance and direction, or a terrain feature, or last objective rally point for the movement of the first squad.

Step 3. The base of fire (fire team/squad) continues to suppress the enemy.

Step 4. The moving element uses fragmentation, concussion, and smoke grenades to mask its movement.

Step 5. The moving element takes up the designated position and engages the enemy position.

Step 6. The platoon leader directs the base-of-fire element to move to its next location. (Based on the terrain and the volume and accuracy of the enemy's fire, the moving fire team/squad may need to use fire and movement techniques.)

Step 7. The platoon continues to bound away from the enemy until the platoon—

- Breaks contact (the platoon must continue to suppress the enemy as it breaks contact).
- Passes through a higher level support-by-fire position.
- Ensures that its squads are in the assigned position to conduct the next mission.

Step 8. The platoon leader should consider changing the direction of movement once contact is broken. This will reduce the enemy's ability to place effective indirect fires on the unit.

Step 9. Soldiers stay together and move to the last designated rally point if the squad or platoon becomes disrupted.

Step 10. The squad/platoon leader accounts for soldiers, reports, reorganizes as necessary, and continue the mission.

EVALUATION PREPARATION

Setup: Higher headquarters has given the platoon a mission of tactical movement from a starting location to a mission site. The platoon is under enemy fire and must break contact.

Brief soldiers: The platoon leader will react, identify the threat, and break contact. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: FM 7-8

Related: None

TASK: REACT TO AMBUSH (BATTLE DRILL NO. 4)

CONDITIONS

The platoon receives a FRAGO/OPORD from higher headquarters to conduct a tactical movement (mounted or dismounted) from an assembly area to a mission site. The platoon receives fires from enemy ambush. The enemy initiates an ambush with a casualty-producing device and a high volume of fire. Some iterations should be performed in MOPP 4.

STANDARDS

The platoon leader will react and identify the threat. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. In a near ambush (within hand-grenade range), soldiers receiving fire return fire immediately; take up covered positions; and throw fragmentation, concussion, and smoke grenades. Immediately after the grenades detonate—

a. Soldiers in the kill zone assault through the ambush using fire and movement.

b. Soldiers not in the kill zone—

- Identify enemy positions.
- Initiate immediate suppressive fires against the enemy.
- Take up covered positions.
- Shift fires as the soldiers in the kill zone assault through the ambush.

Step 2. In a far ambush (beyond hand-grenade range), soldiers receiving fire immediately return fire, take up covered positions, and suppress the enemy by—

- Destroying or suppressing enemy crew-served weapons first.
- Obscuring the enemy position with smoke (M203).
- Sustaining suppressive fires.

a. Soldiers not receiving fires move by a covered and concealed route to a vulnerable flank of the enemy's position and assault using fire and movement techniques.

b. Soldiers in the kill zone continue suppressive fires and shift fires as the assaulting squad fights through the enemy position.

Step 3. The platoon FO calls for and adjusts indirect fires as directed by the platoon leader. On order, he lifts fires or shifts them to isolate the enemy position or to attack them with indirect fires as they retreat.

Step 4. The platoon leader reports, reorganizes as necessary, and continues the mission.

EVALUATION PREPARATION

Setup: Higher headquarters has given the platoon a mission of tactical movement from a starting location to a mission site. The platoon receives fires from enemy ambush. The enemy initiates an ambush with a casualty-producing device and a high volume of fire.

Brief soldiers: The platoon leader will react and identify the threat. He will control the unit's movement and rate of fire with minimum casualties to friendly soldiers.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: FM 7-8

Related: None

SECTION VII. CONDUCT OF TABLES X-XII—ADVANCED TRAINING COURSE, ADVANCED PROFICIENCY COURSE, AND ADVANCED QUALIFICATION COURSE

Tables X through XII are designed to train all members of a combat-engineer platoon on those critical mobility and countermobility tasks that they will be required to execute in combat.

FREQUENCY

These tables will be executed annually. A unit commander may increase the frequency based on his unit's mission and requirements.

EXECUTION

Table X through XII tasks (Table 3-8) are conducted under locally developed scenarios that are tactically sound and supported by the existing range layout and unit METL. The scenario should be structured to cue the execution of all tasks listed in the table. These tables are designed to be progressive in nature in that only the conditions change for each table. Table X begins at the basic level to allow the engineer squad to train mobility and countermobility tasks methodically using inert training devices. Once Table X has been successfully executed, a platoon may advance to Table XI. Table XI is designed to allow a unit to train these tasks under daylight conditions using live demolitions and inert mines. If resources are limited, Table XI tasks may be executed using inert systems. The inert option should be used as a last resort but will allow units to qualify for combat even though ranges and/or Class V supplies are locally constrained. Successful completion of Table XI tasks allows a commander to identify a unit as combat ready but not qualified. Table XII is executed during hours of darkness using live demolitions and inert mines. Successful completion of Table XII qualifies a platoon.

Table 3-8. Table X-XII tasks—advanced training course, advanced proficiency course, and advanced qualification course

Task	Task No.	Page
Breach Obstacles	5-3-70043	3-113
Conduct an In-Stride Breach of a Minefield	5-3-70103	3-117
Direct a Minefield Siting Party	051-192-3076	3-121
Direct a Minefield Recording Party	051-192-3079	3-123
Direct a Minefield Laying Party	051-192-3078	3-126
Install/Remove a Row Minefield	5-3-70017	3-129
Supervise Minefield Clearing Operations	051-192-3077	3-132
Emplace a Row Minefield	5-3-70119	3-134
Supervise Minefield Breaching Operations	051-192-4053	3-138
Construct Wire Entanglements	5-4-70301	3-140

Table X includes tasks for the advanced training course (platoon, inert), including the following:

- Offense:
  - — Conducting a breach using the MICLIC.
  - — Supporting the company in a deliberate breach.
- Defense:
  - — Emplacing/operating a mine dump.
  - — Emplacing a tactical minefield.
  - — Emplacing wire entanglements.

Table XI includes tasks for the advanced proficiency course (platoon, inert), including the following:

- Offense:
  - — Conducting a breach using the MICLIC.
  - — Supporting the company in a deliberate breach.
- Defense:
  - — Emplacing/operating a mine dump.
  - — Emplacing a tactical minefield.
  - — Emplacing wire entanglements.

STRATEGY AND CONCEPT

In Tables X and XI, drills may be added to meet the unit's specialized needs. The attack is supported on fortified positions.

Conditions will include a training area, inert training aids or supporting devices, squad/platoon equipment, and qualified evaluators. Testers will come from within the battalion. An AAR will be conducted after each mission.

Table XII includes tasks for the advanced qualification course (platoon, live). The following conditions and standards apply for all tasks in Table XII:

Conditions: You are given a training area, inert training aids and/or supporting devices, squad/platoon equipment, and qualified evaluators.

Standards: All five platoon drills will be tested on a lane. The platoon will rehearse the five missions. Evaluators will conduct AARs after each mission to ensure that standards are understood.

TASK NO. 5-3-70043: BREACH OBSTACLES

CONDITIONS

The engineer platoon is supporting a maneuver force conducting hasty breaching operations. The unit is directed to breach an obstacle other than a minefield. The maneuver-force commander designates support, breach, and assault forces. The platoon creates and marks lanes through the obstacles to maintain the momentum of the tactical operation. Some iterations should be performed in MOPP 4.

STANDARDS

The platoon will create and mark lanes through the obstacles to maintain the momentum of the tactical operation. The platoon will create the lanes within 10 minutes if the obstacle is covered by direct fire and/or observed indirect enemy fire. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The platoon leader determines the obtacle's type, location, and dimensions from information provided by the maneuver force or an obstacle reconnaissance.

a. Determines the obstacle (log, wire, nuclear-weapons effect, antiairborne, water/beach, rubble, snow/ice, ditch, or crater).

b. Determines the obstacle's location and dimensions (as a minimum, the depth and frontage).

c. Performs a detailed reconnaissance of the obstacle and surrounding terrain (time permitting) when the maneuver force does not provide sufficient details.

Step 2. The platoon leader, in coordination with the TF commander—

a. Selects the means for breaching the obstacle.

- Uses the ACE for nonexplosive obstacles and the AVLB and engineer equipment for mechanical obstacle breaching.
- Uses the M58A3 MICLIC, bangalores (not used for minefields that have AT mines), or hand-placed charges for explosive obstacle breaching. May also use direct-/indirect-weapons fire, but this requires a high expenditure of ammunition.
- Uses planks, assault ladders, or other available engineer tools to reduce wire obstacles, escarpments, ditches, trench lines, and fortifications for manual obstacle breaching. Manual obstacle reduction is the slowest, most hazardous, and least preferred method.

b. Determines the lane characteristics.

- Determines the lane width. Standard widths are 1 meter for a footpath (personnel only), 4 meters for an initial lane (to pass assault vehicles), 8 meters for one-way vehicular traffic, and 16 meters for two-way vehicular traffic.

- Determines the number of lanes required (a minimum of one lane for a maneuver company and two lanes for a TF).
- Determines the lane location based on the terrain, cover and concealment for the breaching force, time and equipment available for the breach, and the maneuver scheme.

Step 3. The platoon clears the obstacle of all mines and booby traps (as required).

a. Identifies or suspects the presence of mines, trip wires, and/or booby traps.

b. Neutralizes mines and booby traps using a line charge or hand-placed explosives before committing other engineer equipment to the obstacle-reduction task.

Step 4. The squad/platoon breaches the obstacle and creates the desired lanes.

a. Creates the lanes within 10 minutes if the obstacle is covered by direct fire and/or observed indirect fire. No time standard is established if the obstacle is not covered by fire or if the squad/platoon conducts stealth breaching.

b. The platoon leader directs the employment of the ACE (when available) for neutralizing the effects of tank ditches, road craters, log cribs, tetrahedrons, dragon teeth, and similar obstacles.

- Starts blade work 30 meters from the depression, making a shallow incline by means of small cuts.
- Cuts and fills until the incline is traversable by maneuver units and the ACE can cross the far bank.

c. The platoon leader directs the employment of the AVLB, when available, to span destroyed and disabled bridges and other gaps not exceeding 22.9 meters.

d. The platoon reduces log, steel-beam/-post, and concrete obstacles with explosives or pioneer tools (see FM 5-34).

e. The platoon reduces wire obstacles with explosive or assault ladders.

f. The platoon removes rubble with engineer equipment or explosives.

g. The platoon breaches a tank ditch or other escarpments with pioneer tools (if part of a prebreach operation).

Step 5. The platoon marks the cleared lanes. As a minimum, marks the lane's entrance, exit, and left handrail.

a. Marks the lanes, temporarily, (upon completion of the breach) with materials outlined in the unit SOP.

b. Improves the marking as soon as time and availability of assets permit (if the improvement of the lane is not passed to a follow-on engineer unit). Uses the standard minefield marking set #2 or the HEMMS.

c. Marks the right side of the lanes if not under enemy fire and time permits.

Step 6. The platoon leader reports the lanes' locations to higher headquarters according to the unit's SOP.

Step 7. The platoon provides guides or performs obstacle-handover procedures to ensure a smooth flow of traffic through the lanes.

a. Guide detachments provide follow-on forces with instructions to get them through the lanes rapidly.

b. Performs obstacle-handover procedures according to the unit's SOP. Obstacle-handover procedures enable the follow-on forces to assume the guide requirement as well as maintain and upgrade the lanes. The gaining unit assumes total responsibility for the obstacle.

EVALUATION PREPARATION

Setup: The engineer platoon is supporting a maneuver force conducting hasty breaching operations. The unit is directed to breach an obstacle other than a minefield. The maneuver-force commander designates support, breach, and assault forces.

Brief soldiers: The platoon will create and mark lanes through the obstacles to maintain the momentum of the tactical operation. The platoon will create the lanes within 10 minutes if the obstacle is covered by direct fire and/or observed indirect enemy fire. Friendly forces will sustain no casualties from drifting out of the marked lanes.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: FM 5-34

Related: None

Supporting individual tasks:

- 01-1940.00-0020—Conduct Counterobstacle Operations
- 051-192-0006—Locate Individual Booby Traps and Mines
- 051-192-1082—Fire the MICLIC
- 051-192-1083—Secure an Undeployed MICLIC
- 051-193-0001—Detonate Explosives with Nonelectric Firing Systems
- 051-193-0002—Detonate Explosives with Electric Firing Systems
- 051-193-0003—Assemble a Detonating-Cord Ring Main with Branch Lines

- 051-193-0004—Employ the M180 Demolition Cratering Charge
- 051-193-0005—Neutralize Booby Traps and Mines with Explosives
- 051-194-0003—Execute a Complex Obstacle Breach, an Action, a Task, or a Mission

TASK NO. 5-3-70103: CONDUCT AN IN-STRIDE BREACH OF A MINEFIELD

CONDITIONS

The engineer platoon, in support of a maneuver force conducting an in-stride breach, is directed to reduce a minefield. The maneuver-force commander designates support, breach, and assault forces. The minefield has been located and reconnoitered. The mines are surface laid and/or buried. AHDs may have been used. The minefield is 120 meters deep, surface laid, and covered by direct and/or observed indirect enemy fire. Some iterations should be performed in MOPP 4.

STANDARDS

The platoon creates and marks lanes through the minefield to maintain the momentum of the tactical operation. The platoon creates the lanes within 10 minutes if the obstacle is covered by direct fire and/or observed indirect enemy fire. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The platoon leader advises the breaching force leader on the location, size, and number of lanes to be created.

a. Determines the lane location based on terrain, cover and concealment for the breaching force, time, equipment available for the breach, and the maneuver scheme.

b. Determines the lane size based on the time allowed for the unit and the equipment that must pass through the lanes. The minimum desired widths are 1 meter for a 1-foot assault lane (dismounted troops) and 4 meters for an initial lane to pass vehicles/equipment conducting the attack.

c. Determines the number of lanes based on the size of the unit to pass through the minefield. A minimum of one lane is required for a maneuver company and a minimum of two lanes for a TF.

Step 2. The platoon leader, in coordination with the breaching-force leader, selects the means for reducing the minefield, according to the commander's priorities. Uses—

- Explosive line charges. The M58 minefield depth is less than 80 meters. The MICLIC is normally employed in pairs, unless the limits of the minefield (for example, front edge) are well known and the MICLIC clears a lane 8 by 100 meters.
- Manual means with and without explosives. Destroys mines with hand-emplaced explosives.
- Mechanical reduction techniques (if available). Creates lane with a mine plow or a main battle tank (MBT) mine plow.

As a last resort, uses the CEV or the ACE to create a lane by the skimming technique.

Step 3. The platoon creates the required lanes using the selected reduction technique.

a. Creates a lane within 10 minutes if the obstacle is covered by direct and/or observed indirect fire. No time standard is established if the obstacle is not covered by fire or if the platoon is conducting stealth breaching and is not detected by the enemy.

b. Creates a lane using an explosive line charge.

- Employs line charges in pairs, unless the minefield's limits are well known, since most enemy minefields will be deep enough to counter the length of the line charge.
- Positions the line charge to allow sufficient standoff to compensate for the length of the inert cable to ensure that the line charge covers the suspected forward edge of the minefield.
- Positions the second line charge allowing for a 10- to 20-meter overlap. Aligns it with the first line charge.

c. Creates a lane manually by using explosives (surface-laid minefield).

- Places 1-pound hand-emplaced charges directly next to the mines. Connects individual charges into a ring main or line main and simultaneously detonates.
- Uses grapnels to clear trip wires (if detected or suspected) or marks them clearly so personnel placing explosives do not activate them.

d. Creates a lane, manually, with explosives (buried minefield). (This method is not recommended for minefields covered by direct fire.)

e. Detects the mines by the visual method, probing, or electronic detectors. Marks mines and destroys in place using explosives. If personnel encounter trip wires, they are cleared with grapnel hooks.

f. Creates a lane manually without explosives. (This method is not recommended for minefields covered by direct fire.)

- Uses a grapnel to remove mines/trip wires (for surface-laid minefields). Requires all personnel to take cover or lie in a prone position at least 50 meters from the mine. Throws the grapnel or, if removing a mine, attaches a rope, wire, or grapnel to the mine. Pulls the rope or wire from the covered position. Waits 30 seconds before leaving cover to guard against possible time-delay fuses.
- Does not use this technique for creating a lane in a buried minefield.

g. Creates a lane using a fabricated or MBT mine plow for surface-laid and buried minefields. Employs the plow a minimum of 20 meters forward of the suspected or known forward edge of the minefield. Continues using the mine plow at least 20 meters beyond the far edge of the minefield.

h. Creates a lane using the skimming technique (surface-laid minefields only).

- Uses engineer equipment such as earthmoving blades of the CEV or the ACE to create vehicle lanes.

- Uses the skimming techniques as a last resort due to probable loss of valuable engineer assets.
- Pushes the top 16 centimeters of soil. Does not let the buildup go over or under the blade. Alternates strikes to the left and right sides of the desired lane. (This is a dangerous and time-consuming method.)

i. Uses special procedures when chemical mines are known or suspected to be present.

- Ensures that all personnel operating within the downwind area have implemented MOPP 4 procedures.
- Equips breaching teams with a chemical-agent detector kit or automatic chemical alarm. Ensures that each team has trained and proficient operators.
- Ensures that the teams do not detonate chemical mines in place.

Step 4. The platoon marks (as a minimum) the safe lane's entrance, exit, and left handrail.

a. Marks the lanes temporarily (upon completing the breach) with materials outlined in the unit's SOP and FM 90-13-1, Appendix E.

b. Improves the marking by using the standard minefield marking set #2 or the M133 HEMMS as soon as the tactical situation permits.

c. Marks the right side of the lanes to prevent vehicles and personnel from straying into the minefield (if time and assets are available).

Step 5. The platoon provides guides for follow-on forces or performs obstacle handover procedures to ensure that the forces find and quickly negotiate the lanes.

a. The platoon leader designates a traffic-control team to remain behind to assure safe transfer of the obstacle site.

b. If the platoon detects obstacles early, the follow-on force provides a guide detachment.

c. The platoon leader reports the obstacle handover according to the unit's SOP as soon as the tactical situation permits. Minimum information includes losing- and gaining-unit designations, date and time of handover, obstacle location, and obstacle type.

d. The platoon leader ensures that the obstacle handover occurs as soon as the gaining unit is in position to provide guides. The gaining unit assumes all responsibility for obstacle maintenance.

Step 6. The platoon leader records and reports the lanes' locations to higher headquarters.

EVALUATION PREPARATION

Setup: The engineer platoon is directed to reduce a minefield. The maneuver-force commander designates support, breach, and assault forces. The minefield has been located and reconnoitered. The mines are surface laid and/

or buried. AHDs may have been used. The minefield is 120 meters deep, surface laid, and covered by direct fire and/or observed indirect enemy fire.

Brief soldiers: The platoon will create and mark lanes through the minefield to maintain the momentum of the tactical operation. The platoon will create the lanes within 10 minutes if the obstacle is covered by direct fire and/or observed indirect enemy fire.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required: None

Related: None

Supporting individual tasks:

- 01-1920.00-0012—Supervise Hasty Breach of a Minefield
- 051-192-0011—Lay or Recover Mines in a Cluster
- 051-192-0006—Locate Individual Booby Traps and Mines
- 051-192-1082—Fire the MICLIC
- 051-192-1083—Secure an Undeployed MICLIC
- 051-192-3010—Direct a Squad Minefield Breach
- 051-192-3050—Direct a Mine Sweeping Team
- 051-193-0001—Detonate Explosives With Nonelectric Firing Systems
- 051-193-0002—Detonate Explosives With Electric Firing Systems
- 051-193-0003—Assemble a Detonating-Cord Ring Main With Branch Lines
- 051-193-0005—Neutralize Booby Traps and Mines With Explosives
- 051-194-0003—Execute a Complex Obstacle Breach, an Action, a Task, or a Mission

TASK NO. 051-192-3076: DIRECT A MINEFIELD SITING PARTY

CONDITIONS

You are given squad personnel, a sketch of a proposed minefield, TOE equipment, wooden stakes, nails, and engineer tape. Some iterations should be performed in MOPP 4.

STANDARDS

You will direct a minefield siting party so that—

- Stakes will be driven into the ground, leaving 6 inches of the stake above the ground at boundaries, end points, and turning points of all mine rows, safety lanes, and traffic paths.
- The mine rows will be at least 15 meters apart.
- Turning point angles will not exceed 45 degrees from the previous row (from the last azimuth taken).
- Short rows off the IOE will only be located on the enemy's side at irregular angles.

The time required to perform this task is increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Obtain the minefield sketch from the OIC. The sketch includes—

- The location of the starting points for each row (and IOE, if applicable).

NOTE: The minefield can be laid from right to left or left to right, facing the enemy.

- The location and number of safety and traffic lanes.

Step 2. Determine the locations of the starting, turning, and ending points for rows, the IOE (if applicable), safe lanes, and traffic lanes/paths.

Step 3. Install the boundary.

NOTE: You must use either metal or wooden stakes embedded with a nail so that they can be found by electronic detectors.

a. Walk to the starting point of the closest row to the friendly side and drive a stake into the ground, leaving 6 inches of the stake above the ground at that point.

b. Walk to the starting point of the second row and drive a stake at that point.

c. Continue this procedure until you reach the IOE.

Step 4. Install the IOE baseline turning points.

NOTE: Extend the IOE short rows only toward the enemy's side and at irregular angles. The rows should channel the enemy to the center of the minefield.

- If the minefield is to have an IOE row, the siting and recording parties proceed across the IOE and establishes I1, I1E, I2, I2E, and so on until they reach the end.
- Each row must be done in sequence of each other from the number one until the highest number is reached.

Step 5. Site the rows.

a. Proceed down the right (or left) boundary and emplace start-row marker A1.

b. Proceed from A1 to A2, then place intermediate markers as required.

c. Emplace the end row marker after reaching the A2 marker, and repeat the procedure from B1 to B2, C1 to C2, until all required control measures are emplaced.

d. Establish landmark 2 and the left (or right) rear fence location.

e. Ensure that mine dump sites are near the minefield.

Step 6. Inspect the sited minefield.

EVALUATION PREPARATION

Setup: Provide the squad leader with a sketch of the minefield and the other items listed in the conditions.

Brief soldier: Tell the squad leader to direct the soldiers in the siting of the minefield and in which direction the minefield is to be laid. All siting requirements must be met.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 5-34
- FM 20-32

Related: None

TASK NO. 051-192-3079: DIRECT A MINEFIELD RECORDING PARTY

CONDITIONS

You are given a sketching set, a lensatic compass, DA Form 1355, a map, a metric tape, two soldiers, and an installed minefield. Some iterations should be performed in MOPP 4.

STANDARDS

You will ensure that all compass readings are in degrees and all measurements are in meters. The DA Form 1355 will be legible and accurately completed. For a scatterable minefield, you will ensure that a Scatterable Minefield Report and Record is accurately completed according to FM 20-32. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Obtain the necessary data from the siting, marking, and laying parties.

a. Obtain the types of stakes used as boundaries and the layout of the minefield from the siting party's NCOIC.

b. Obtain the location of a boundary fence or markers, marking signs, and safety lanes from the marking party's NCOIC.

c. Obtain the strip and IOE feeder reports of the laying party from the NCOIC.

Step 2. Direct the party to establish landmarks and install intermediate markers if necessary.

NOTE: The squad/platoon leader must have a minimum of two landmarks to record a minefield. The landmarks should be clearly defined, easily distinguished, permanent objects.

a. Take measurements and azimuth readings from the landmarks to the rear boundary stake.

b. Install intermediate markers (every 75 meters) between landmarks and the rear boundary stake when the landmark is more than 200 meters from the minefield and the strip entrance stake cannot be seen from the landmark.

Step 3. Direct the recording party to take measurements and azimuth readings of the following:

- The first landmark to the right (or left) of the rear boundary stake.
- Intermediate markers, if needed.
- The right (or left) boundary stake toward the enemy.
- IOE segments and IOE strips.
- Each strip centerline, starting from the one nearest the enemy side.
- The remaining boundary from the IOE to the second landmark.

Step 4. Prepare a minefield sketch on DA Form 1355.

NOTE: Record forward azimuths only, and make all measurements in meters (1 pace = 0.75 meters).

a. Sketch the basic pattern of the minefield to scale.

b. Sketch the safety lane.

c. Use arrows to indicate the direction in which the azimuths are plotted.

d. Mark the sketch with accurate measurements and azimuth readings for all sections of the minefield, including the safety lanes.

e. Sketch the boundary fence and important landmarks, such as roads or rivers, to illustrate their general location.

Step 5. Record all information on DA Form 1355.

Step 6. Record an enemy minefield.

a. Use DA Form 1355 to record enemy minefields.

b. Show the identity of the unit preparing DA Form 1355.

c. Mark "ENEMY MINEFIELD" at the top of the form.

d. Describe the markings placed by the reporting unit and include a sketch or overlay showing the location and any other information.

e. Send the completed DA Form 1355 to the next higher command.

Step 7. Report and record scatterable minefields.

- Scatterable minefields do not need to be recorded in detail as required when emplacing conventional mines.
  - — The locations of individual mines are unknown; individual mines cannot be plotted as are permanent mines.
  - — The aim point/corner points and the type of mine emplaced are basic information that must remain on file for future reference and use.
- FM 20 32 shows relatively simple reporting and recording procedures that will be used for SCATMINEs.
  - — Scatterable minefield reports are applicable for all delivery systems and can be sent in a voice, digital, or hard-copy mode.
  - — Some systems—such as artillery, Gator, and MOPMS—are point oriented with the safety zone calculated from one or more aim points.
- Any unit emplacing SCATMINEs will immediately prepare and forward a Scatterable Minefield Report and Record to their headquarters.

EVALUATION PREPARATION

Setup: Provide the squad/platoon leader with the items listed in the conditions.

Brief soldier: Tell the soldier to direct the recording party to perform the mission. Not all records need to be performed during the same session.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- DA Form 1355
- FM 20-32
- FM 5-34
- STANAG 2036

Related: None

TASK NO. 051-192-3078: DIRECT A MINEFIELD LAYING PARTY

CONDITIONS

You are a platoon leader given AT mines, AP mines (in Korea only, except the M18A1), entrenching tools, squad personnel, sandbags, and a proposed minefield that has been sited and marked. Some iterations should be performed in MOPP 4.

STANDARDS

You will direct a minefield laying party, so that—

- The total number of mines in any one cluster have only one AT mine (except in a blocking-effect minefield).
- The minimum distance between rows of AT mines is 8 meters (Korea only: 15 meters with AP mines). However, the mines will be no more than 6 meters apart.
- The angle at any given turning point will not exceed 45 degrees from the direction of the previous row.
- All mines will be armed, buried, and camouflaged. All safety clips/ pins will be buried 30 centimeters to the rear of the end of the strip marker on the right boundary. A strip feeder report will be accurately prepared.

If the mission requires that mines be surface laid, the mines will not be camouflaged. The time required to perform this task is increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. A platoon uses three vehicles to emplace a row minefield. Each vehicle is assigned a row. A separate party can be detailed to install the IOE.

- The vehicle moves to the starting marker for its assigned row and prepares to lay.
- Soldier 1 ties the rope to the end of the lowered ramp or tow pindle.
- Soldier 2 ties the partially filled sandbag on the other end of the rope. The rope equals the correct spacing between mines.

Step 2. The spacing between mines or clusters can vary from 4 to 10 meters, but must remain constant within the row. For a standard row minefield, the normal spacing between clusters is 6 meters.

a. Record the information on DA Form 1355.

b. Omit clusters within lanes or gaps, in areas less than 2 meters from boundaries or lanes, and in areas where the terrain (trees and rocks) prohibits emplacement.

c. Space mines or clusters no closer than 15 meters from the perimeter fence.

d. Omit a mine or cluster if the distance between them and any turning point is less than the spacing for that row. After the turning point, start laying the mine clusters at the same spacing for that row.

Step 3. The platoon leader directs row A to start laying.

a. The squad leader (soldier 3) positions the team members.

b. Soldier 1 is at the rear of the compartment passing mines to soldier 2; soldier 2 sits on the edge of the vehicle; and soldier 4 walks behind the vehicle.

c. The squad leader tells the squad to start laying. The squad leader then supervises mine arming and placing.

Step 4. The vehicle moves in a straight line toward the row end point at a low speed (2 to 3 miles per hour[mph]).

a. Soldier 1 fuses and passes a mine to soldier 2.

b. Soldier 2 places the mines on the ground when the sandbag (used for spacing) is even with the previously laid mine.

c. The squad leader walks behind the vehicle, records all mines issued, and supervises mine laying.

d. Soldier 4 arms the mines. After the mine row is armed and camouflaged, he buries pins, clips, and shipping plugs 30 centimeters to the rear of each start-row marker.

Step 5. Row B will start when row A is a safe distance from the start point (30 meters).

NOTE: Do not close the safe distance between rows. Always remain at 30 meters or more.

a. Row C will start when row B is a safe distance from the start point (30 meters). Continue until all of the required rows have been started and completed.

b. When each row is finished, the vehicle will turn left (or right) down the boundary to their next assigned row and wait for that row to finish.

NOTES:

1. All vehicles will exit the minefield together.

2. The above steps are repeated until the end of the row is reached.

Step 6. The dig team follows the laying team (if the platoon is burying the mines).

a. The NCOIC selects the mine to be buried by each soldier and supervises the operation.

b. Soldiers dig in the mines, but leave them exposed until arming is complete.

c. The dig team moves along the friendly's side of the row to the next unburied mine and repeats the process.

Step 7. The squad leader allocates a vehicle, if possible, to help remove spoil from the site.

a. The marking party completes the boundary fence.

b. The marking party removes the extra equipment when the fence is complete.

Step 8. The OIC will complete DA From 1355.

EVALUATION PREPARATION

Setup: Provide the platoon leader with the items listed in the conditions.

Brief soldier: Tell the platoon leader to direct the soldiers in the laying of the minefield and in which direction the minefield is to be laid. Explain that all laying requirements must be met.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 20-32
- DA Form 1355

Related: None

TASK NO. 5-3-70017: INSTALL/REMOVE A ROW MINEFIELD

CONDITIONS

You have been given a combat-engineer platoon and its equipment, FM 20-32, and—

- A mission to install a row minefield. You are also given a blank DA Form 1355 and an accurate listing of logistical requirements.
- A mission to remove a row minefield. You are also given the appropriate completed DA Form 1355.

Some iterations should be performed in MOPP 4.

STANDARDS

The noncommissioned officer (NCO) will—

- Plan the installation, organize the platoon, and supervise the party leaders according to FMs 5-34 and 20-32 and STANAG 2036 to accomplish the mission.
- Analyze the completed DA Form 1355, plan the removal, organize the platoon, and supervise the party leaders according to FMs 5-34 and 20-32 and STANAG 2036 to accomplish the mission.

The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Supervise the installation of a row minefield.

a. Plan the installation with the OIC.

- Do a map study.
- Reconnoiter the site.
- Determine the location of each mine row and all landmarks for reference purposes.
- Determine the location of the minefield-marking fence, mine dumps (150 meters apart in the rear of the field), and approaches.
- Arrange for the mines and materials to be moved to the site.
- Plan and coordinate jobsite security.

b. Organize the platoon for installation.

c. Explain the installation plan to the party leaders using sketches, on-site directions, and/or OPORDs.

d. Provide the siting party with a minefield sketch that includes the location of the starting points for the IOE baseline and each row and the location and number of safety lanes and traffic tapes.

e. Provide the marking party with—

- The location of the rear starting point.

- The trace of boundary fences.
- The use of any existing fences, if permissible.
- Information on whether the front boundary of the enemy's side of the minefield is to be marked.
- The number, width, and location of safe lanes.
- The type of illumination to use.

f. Provide the laying party with the—

- Cluster composition of each row.
- Type of mines to be used.
- Number of AHDs in each row.
- State of readiness.

g. Supervise the party leaders in the installation of the row minefield.

h. Monitor installation procedures and ensure that the minefield meets the mission requirements.

i. Ensure that DA Form 1355 is accurately completed.

Step 2. Supervise the removal of a row minefield.

a. Plan the removal operation.

- Analyze the completed DA Form 1355 to locate landmarks, reference points, and minefield layout.
- Orient DA Form 1355 to the map and ground, then locate the landmarks on the ground.
- Determine the location of mine-collection dumps and usable approaches to the minefield.
- Plan and coordinate jobsite security.

b. Organize the platoon for removal. Ensure that—

- The party organization is similar to the installation party's.
- The siting and mine-removal parties use electronic detectors and probes.
- The fencing party uses tools to recover the wire and remove pickets.

c. Explain the removal plan to the party leaders using sketches, on-site directions, and/or OPORDs.

d. Remove a row minefield according to the following suggested plan:

- The recording party will interpret DA Form 1355 and—
  - — Provide a minefield sketch containing all necessary information for the siting party.
  - — Provide strip feeder reports for the mine-removal parties.

— Correlate the number of mines and devices removed from the field with the number of mines and devices recorded on DA Form 1355.

- The siting party will use the minefield sketch to locate and mark boundary stakes and boundaries, rows, and IOE baseline and short rows.

NOTE: The siting party should always be preceded by electronic detectors and/or probers.

- The mine-removal parties will use the strip feeder reports and electronic detectors and/or probers. They will also locate all clusters and mines, disarm and remove them, then turn them into the mine dump.
- The fencing party will partially remove the boundary fence while other parties are working. Once all mines are disarmed, the fencing party may remove the entire fence.

e. Supervise the party leaders in the removal of the minefield, ensuring that all safety precautions are taken.

f. Ensure that all mines are recovered or neutralized.

EVALUATION PREPARATION

Setup: Provide the NCO with the items listed in the conditions. (Installation and removal may be performed during different training sessions.)

Brief soldier: Issue an OPORD that requires the NCO to supervise the installation/removal of a standard pattern minefield. Then tell the NCO to complete the mission.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- DA Form 1355
- FM 20-32
- FM 5-34
- STANAG 2036

Related: None

TASK NO. 051-192-3077: SUPERVISE MINEFIELD CLEARING OPERATIONS

CONDITIONS

You have been given a combat-engineer platoon and its equipment, explosives, and site security at a location near an enemy's or a friendly's minefield for which records are unavailable. Some iterations should be performed in MOPP 4.

STANDARDS

You will supervise clearing parties (mine-sweeping teams) so all mines and similar devices in the minefield are neutralized or removed without injury to personnel or damage to equipment. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Perform tactical and Battlefield-Operating-System (BOS) planning procedures according to FM 20-32.

a. Plan the removal operation.

b. Perform a ground reconnaissance.

c. Establish and supervise the marking of minefield boundaries (if the field is not marked).

d. Task-organize the platoon for clean-up operations (see FM 20-32).

e. Establish control points at the minefield's rear.

f. Designate a mine-dump location where friendly mines are to be recovered.

g. Coordinate with the maneuver-force security team.

h. Assign mine-sweeping team starting points and areas to be cleared. (The mine-sweeping teams are normally in echelon formation.)

NOTE: The areas should be no larger than 40 meters wide and 100 meters long.

i. Define actions to be taken by mine-sweeping teams as mines are encountered.

- Enemy mines may be neutralized as they are located, or several mines may be located and then all neutralized simultaneously.
- Friendly mines that are to be recovered should be pulled up by rope and/or grapnel. If they do not detonate, they may then be disarmed, defused, moved to the mine dump, and prepared for reuse.

Step 2. Submit reports as required.

- Spot reports are a tactical commander's most common source of minefield intelligence.
- Information is transmitted to higher headquarters on an Enemy Minefield Report.

NOTE: Report format is not as important as speed and accuracy.

Step 3. Ensure safety practices are observed.

EVALUATION PREPARATION

Setup: Give the NCO the materials and equipment listed in the conditions.

Brief soldier: Tell the NCO to supervise the clearing parties so all mines and similar devices in the minefield are neutralized or removed without injury to friendly personnel.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: FM 20-32

Related: None

TASK NO. 5-3-70119: EMPLACE A ROW MINEFIELD

CONDITIONS

The platoon is emplacing a minefield in support of a maneuver unit. The maneuver commander has determined the minefield's location, type, and composition. Mines and AHDs are available. The maneuver commander will provide security. Some iterations should be performed in MOPP 4.

STANDARDS

The platoon emplaces a tactical minefield (tied to existing or reinforced obstacles) to block, fix, turn, or disrupt the enemy. Locations are accurate to within 10 meters. Camouflaged mines are not detectable from 15 meters. The time required to perform this task is increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The platoon leader conducts troop-leading procedures.

Step 2. The platoon leader issues a FRAGO to the platoon (including the task, observation post [OP], and times).

Step 3. The platoon leader conducts a reconnaissance of the minefield location and coordinates with the maneuver force on the exact location.

- Ensures that the maneuver force covers the minefield by fire.
- Ensures that the final location is tied to existing or reinforced obstacles.
- Determines the approximate locations for mine rows, landmarks, fences, mine dumps, and approaches.
- Selects movement routes.
- Establishes local security.

Step 4. The platoon leader calculates man-hours and logistical requirements (if standard-row minefield designs are not used) and arranges for mines to be drawn. Calculates the—

- Number of mines.
- Number of rows (depending on the effect).
- Number of AHDs.
- Number of man-hours to install the minefield.
- Amount of fencing and marking material.
- Number of trips to transport mines.

Step 5. The platoon leader reports (by secure means) the intention to lay mines to higher headquarters. The report includes the minefield number, the number and type of mines, the location, the type of minefield, whether the mines are surface laid or buried, whether AHDs are used, where lanes and/or gaps are located, and the proposed start and completion times.

Step 6. The PSG organizes the platoon to emplace the minefield.

- Siting party—one NCO and two enlisted members (EMs).
- Laying party (three parties)— one NCO and four EMs.
- Recording party—one NCO and two EMs.
- Marking party—one NCO and two EMs.
- Mine-dump party—PSG and two EMs.

NOTE: Personnel breakdown depends on the number of personnel available at the time of the mission.

Step 7. The squad leaders assemble all equipment and material to emplace the minefield.

- Equipment and materials include a map, lensatic compass, minefield record forms, stakes or pickets, sledgehammers, engineer tape on reels, nails, barbed wire on reels, marking signs, lane signs, wire cutters, gauntlets, metric tape, picks, shovels, and sandbags.

NOTE: The quantity of equipment and material required varies depending on the minefield's size and the number of personnel working.

- For night operations, equipment includes a HEMMS and chemical lights to mark the lanes and end points of rows.

NOTE: The platoon must assume that they are being observed by the enemy and maintain noise and light discipline.

Step 8. The platoon leader reports that the unit has initiated emplacement to higher headquarters. The report includes the time, location, and target number.

Step 9. The platoon establishes a mine dump on the minefield's friendly side.

a. Selects a reasonably level site with adequate access for vehicles.

b. Elects whether to keep the mines in trailers (tailgate method of resupply).

c. Spaces the mine dumps 150 meters apart.

Step 10. The platoon emplaces the minefield.

a. The platoon emplaces the minefield within plus 10 percent of the time calculated.

- The platoon leader identifies the minefield intent, (turn, block, fix, or disrupt) from the obstacle overlay.
- The platoon leader designates landmarks, the minefield's dimensions, and the location of the minefield fence.
- The platoon leader and the siting party site the minefield. The rows must have at least 8 meters between them.
- The marking party emplaces the fence once the minefield is sited.
- The PSG establishes a mine dump.

- The mine-dump party loads a vehicle with mines from the dump. Depending on the mines used, mines may be fused, but not armed.
- The laying party determines mine spacing. The driver follows the NCO or row markers.

NOTE: A 6-meter-long rope with a weight (sandbag) on the end towed by the laying vehicle may be used. This space will vary depending on METT-T.

— The mines are handed to a layer, and carefully laid from the vehicle. The mines are not buried.

— The arming party arms the mines and recovers the row markers.

NOTE: If a blocking or a turning minefield effect is required, place another three rows of minefield at least 100 meters behind the first. If a blocking minefield effect is required, bury the base mines and add a buried IOE row and AHDs.

- The platoon leader completes DA Form l355 and forwards it according to the unit's SOP.
- The platoon emplaces the minefield within plus 10 percent of the time calculated in step 4, above.

Step 11. The platoon leader sends a report of completion, usually an oral report, to the authorizing commander.

EVALUATION PREPARATION

Setup: The platoon is emplacing a minefield in support of a maneuver unit. The minefield's location, type, and composition have been determined by the maneuver commander. Mines and AHDs are available. The maneuver commander provides security.

Brief soldiers: The platoon will emplace a tactical minefield (tied to existing or reinforced obstacles) to block, fix, turn, or disrupt the enemy. Locations will be accurate to within 10 meters. Camouflaged mines will not be detectable from 15 meters.

EVALUATION GUIDE

Score the soldiers GO if all steps are properly completed. Score the soldiers NO-GO if any step is not properly completed. If the soldiers do not properly complete any step, the trainer must show them how to correct the mistake(s). The soldiers are expected to review the task steps and performance measures and to practice the task until they perform it correctly.

REFERENCES

Required:

- FM 20-32
- DA Form 1355

Related:

Supporting individual tasks:

- 01-1920.00-0013—Supervise Installation of Minefields
- 01-1920.00-0019—Prepare/Process Minefield Recording Forms
- 01-1920.00-0021—Plan Installation of Conventional Minefields
- 051-192-0011—Lay or Recover Mine Clusters
- 051-192-0012—Install Mines in Row Minefields
- 051-192-3029—Direct a Minefield Siting Party
- 051-192-3030—Direct a Minefield Laying Party
- 051-192-3031—Direct a Minefield Recording Party

TASK NO. 051-192-4053: SUPERVISE MINEFIELD BREACHING OPERATIONS

CONDITIONS

You are given a combat-engineer platoon and its equipment, explosives, and a mission/tactical situation requiring a minefield breach or a route sweep. Some iterations should be performed in MOPP 4.

STANDARDS

You are a platoon leader assigned to supervise a platoon in a minefield breach.

- For a platoon minefield-breach mission, direct squad and/or team leaders to take appropriate actions to perform reconnaissance; suppress enemy fires; obscure the breach site; secure the breach site; and reduce the obstacle by conducting the breach proofing and marking the breached lane and assisting in the attack, as required. This will be done so as to maintain momentum and establish a safe path through the minefield.
- For a route sweep, assign squad and/or team leaders to provide security and perform as mine-sweeping teams when required to sweep and clear a route of mines. The time required to perform this task is increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. Coordinate directly or indirectly through squad leaders with the supported unit for security, suppressive fires, and smoke screens.

Step 2. Issue a platoon OPORD that includes actions to be performed before, during, and after the breach.

Step 3. Assign tasks to squad/team leaders as required, to—

- Assist the supported unit.
- Conduct required reconnaissance to locate possible breach sites and to determine the limits of the minefield.
- Conduct the minefield breach using available assets.
- Proof and mark the breached lane.

NOTE: Use markings according to the unit's SOP and FM 90-13-1.

- Direct/guide friendly forces safely forward.

NOTE: For light forces only: Breaching elements are normally located with the lead elements of maneuver units. Usually an engineer squad instead of an entire platoon will be required to perform in-stride breaches. In such cases, the PSG should, if possible, supervise the most critical breach site.

CAUTION
Before neutralizing mines, ensure that all friendly personnel are a safe distance away.

NOTE: The progression of the breach will normally begin with sweep teams in columns breaching a footpath first, although it may begin with a sweep team in echelon. Mines may be detected, marked, and cleared immediately or a group of mines may be detected, marked and cleared simultaneously.

EVALUATION PREPARATION

Setup: Provide the NCO with the personnel, equipment, explosives, a simulated minefield, and a mission to perform a minefield breach or a route sweep. Not all situations must be evaluated during the same training sessions.

Brief soldier: Tell the NCO to perform a minefield breach or a route sweep.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required:

- FM 20-32
- FM 5-100
- FM 90-13-1

Related: None

TASK NO. 5-4-70301: CONSTRUCT WIRE ENTANGLEMENTS

CONDITIONS

The maneuver commander orders the construction of wire entanglements to enhance the terrain in support of the defensive scheme. The squad/platoon has wire obstacle materials available. Some iterations should be performed in MOPP 4.

STANDARDS

The obstacles will block, fix, turn, or disrupt the enemy and force it to change its scheme of maneuver according to the maneuver commander's intent. The time required to perform this task will be increased when conducting it in MOPP 4.

TASK STEPS AND PERFORMANCE MEASURES

Step 1. The squad/platoon leader prepares to construct a wire entanglement.

a. Reconnoiters the site to consider needed security, potential action on contact, and the accessibility of materials.

b. Organizes the work party.

Step 2. The squad/platoon leader sites the obstacle between existing or reinforcing obstacles to prevent bypass. The obstacle is covered by direct or indirect fire, out of grenade range (40 to 100 meters) from friendly positions, and irregular in shape. It denies cover to breaching enemy forces.

Step 3. The squad/platoon constructs triple-standard concertina.

a. Works from enemy to friendly side.

b. Spaces pickets at 3.8-meter (5-pace) intervals (staggers rear row).

NOTE: 1 pace = 0.75 meters.

c. Secures the bottom rolls with horizontal wire.

d. Anchors the end pickets 1.5 meters (2 paces) from the end.

e. Secures the top roll with wire at 3.8-meter (5-pace) intervals.

f. Completes within the time standard (one squad hour per l00 meters in daylight; two squad hours per l00 meters during darkness).

Step 4. The squad/platoon constructs a knife rest.

a. Prepares a knife rest 3 to 5 meters in length.

b. Secures the knife rest to the ground 3 to 5 meters between cross members, a minimum of 1 meter in height, and tightly lashed together).

c. Completes within the time standard (one squad hour per knife rest for daytime; two squad hours per knife rest during darkness).

Step 5. The squad/platoon constructs a double-apron 4-2 pace.

a. Lays the fence centerline.

b. Spaces long pickets at 3-meter (4-pace) intervals.

c. Spaces anchor pickets at 1.5 meters (2 paces) each way from the centerline and midway between long pickets.

d. Installs all 12 wires working from the enemy's side to the friendly's.

e. Ties the wire (as a minimum at the beginning and end of each roll).

f. Completes within the time standard (three squad hours per 100 meters in daytime; four and one-half squad hours per 100 meters during darkness).

Step 6. The squad/platoon constructs a concertina roadblock.

a. Spaces pickets at 3.8 meter (5-pace) intervals.

b. Places concertina wire over long pickets.

c. Anchors horizontal wires to anchor stakes 1.5 meters (2 paces) from each end of the concertina.

d. Ensures the obstacle is no less than 10 meters deep.

e. Completes within the time standard (for every entanglement 15 meters wide and 10 meters deep, allows one squad hour during daytime and two squad hours during darkness).

Step 7. The squad/platoon leader submits intermediate status and completion reports to higher headquarters.

EVALUATION PREPARATION

Setup: The maneuver commander orders the construction of wire entanglements to enhance the terrain in support of the defensive scheme. The squad/platoon has wire obstacle materials available.

Brief soldier: The squad/platoon will construct obstacles that will block, fix, turn, or disrupt the enemy and force him to change his scheme of maneuver according to the maneuver commander's intent.

EVALUATION GUIDE

Score the soldier GO if all steps are properly completed. Score the soldier NO-GO if any step is not properly completed. If the soldier does not properly complete any step, the trainer must show the soldier how to correct the mistake(s). The soldier is expected to review the task steps and performance measures and to practice the task until he performs it correctly.

REFERENCES

Required: None

Related: None

Supporting individual tasks:

- 051-193-3055—Prepare Obstacle Folder
- 051-194-0001—Direct Construction of Wire Entanglements
- 051-194-0002—Plan Installation of Wire Entanglements
- 051-195-1004—Install Pickets, Barbed Wire, and Concertina

Appendix A

Metric Conversion Chart

This appendix complies with current Army directives which state that the metric system will be incorporated into all new publications. Table A-1 is a conversion chart.

Table A-1. Metric conversion chart

US Units	Multiplied By	Metric Units
Acres	0.4947	Hectares
Cubic feet	0.0283	Cubic meters
Cubic inches	16.3872	Cubic centimeters
Cubic inches	0.0164	Liters
Cubic yards	0.7646	Cubic meters
Feet	0.3048	Meters
Feet per second	18.288	Meters per minute
Gallons	3.7854	Liters
Inches	2.54	Centimeters
Inches	0.0254	Meters
Inches	25.4001	Millimeters
Miles	1.6093	Kilometers
Square feet	0.0929	Square meters
Square inches	6.4516	Square centimeters
Square miles	2.590	Square kilometers
Square yards	0.8361	Square meters
Yards	0.914	Meters
Metric Units	**Multiplied By**	**US Units**
Centimeters	0.3937	Inches
Cubic centimeters	0.0610	Cubic inches
Cubic meters	35.3144	Cubic feet
Cubic meters	1.3079	Cubic yards
Kilometers	0.62137	Miles
Meters	3.2808	Feet
Meters	39.37	Inches
Meters	1.0936	Yards
Millimeters	0.03937	Inches
Square centimeters	0.155	Square inches
Square kilometers	0.3861	Square miles
Square meters	1.1960	Square yards
Square meters	10.764	Square feet

Appendix B

Engineer Ammunition

The following is a list of ammunition used by engineers that must be reported back to the USAES annually. This report shows an annual consumption that each unit uses to accomplish the EQT. Not all units get all of the ammunition listed below:

- A059 5.56, ball
- A062 5.56, ball (SAW)
- A063 5.56, tracer
- A064 5.56, ball with tracer (SAW)
- A075 5.56, blank, linked
- A080 5.56, blank, M16
- A111 7.62, blank, M60
- A131 7.62, tracer mix, M59
- A143 7.62, ball, M60
- A358 9 mm, tracer/AT4
- A363 9 mm, ball
- A557 .50 cal
- A598 .50 blank
- B472 40 mm, dummy cartridge
- B519 40 mm, target practice
- B546 40 mm, HE, dual purpose
- B584 40 mm, target practice/MK19
- G881 Hand grenade, fragmentation, M67
- G878 Hand grenade, practice fuse, M228
- G930 Grenade, smoke, hexachloroethane (HC)
- G940 Grenade, smoke, green
- G945 Grenade, smoke, yellow
- G950 Grenade, smoke, red
- G955 Grenade, smoke, violet
- G963 Grenade, CS

- J143 Rocket, motor 5 inches
- K042 M88, Volcano mine
- K092 Mine, AP, M16A1
- K143 Mine, claymore, M18
- K180 Mine, AT, M15
- K181 Mine, AT, M21
- K250 Mine, AT, M19
- K867 Smoke pot, with HC
- L305 Signal, illumination, green parachute
- L306 Signal, illumination, red parachute
- L307 Signal, illumination, white parachute
- L311 Signal, illumination, red star
- L312 Signal, illumination, white star
- L314 Signal, illumination, green star
- L367 Simulator, AT4 guided missile and rocket
- L495 Flare trip, yellow
- L594 Simulator, projectile, ground burst
- L595 Simulator, projectile, air burst, liquid
- L596 Simulator, artillery, flash
- L598 Simulator, explosive booby trap, flash
- L599 Simulator, explosive booby trap, illumination
- L600 Simulator, explosive booby trap, whistle
- L601 Simulator, explosive hand grenade
- M023 C4, 1.25 pounds
- M028 Bangalore torpedo
- M032 TNT, 1-pound block
- M039 40-pound crater charge
- M420 Shape charge, 15 pound
- M421 Shape charge, 40 pound
- M456 Detonating cord
- M914 MICLIC, practice
- MJ45 Holder, MDI, M9
- ML47 Nonelectric branch, M11
- MN02 Nonelectric cap, M12

- MN03 Nonelectric cap, M13
- MN06 Nonelectric fuse, M14, 5 minutes
- MN08 Igniter, N81, MDI

In addition, units having CEVs are authorized the following ammunition:

- A111 7.62, blank
- A131 7.62, coax
- A140 7.62, sub cal
- A479 .45 cal
- A520 .50 cal
- A599 .50 cal, blank
- B592 40 mm, sub cal
- D570 165 mm, HE plastic
- D590 165 mm, target practice

Appendix C

Engineer Qualification Table Work Sheets

The follow work sheets are to be used for multiple purposes. Each sheet provides a record of the individual, squad, and platoon tasks/engagements. Leaders, as well as the individual soldier can anticipate the need to support and sustain required training. Commanders can use the work sheets to assess individual and unit readiness levels.

The standards for each event are published tactics, techniques, and procedures; STPs, ARTEP MTPs, and DA Pam 350-38.

When annotating results on these work sheets, print all entries accurately and legibly.

Engineer Qualification Table I

Complete Engineer Qualification Table I by filling in the following blocks:

- Block 1. Date. Enter the date of the last day of the assessment.
- Block 2. Range. Enter the name of the facility used.
- Block 3. Unit. Enter the company and battalion.
- Block 4. Platoon/squad. Enter the individual's platoon/squad.
- Block 5. Name. Enter soldier's last name, first name, middle initial, and rank.
- Block 6a. Weapon types. Enter the weapon identification (may require numerous entries).
- Block 6b. Go/No Go Date. Enter the status and date of determination.
- Block 6c. Grenade Live/Inert. Enter the grenade type.
- Block 6d. Go/No Go Date. Enter the grenade status and date of determination.
- Block 6e. Engagement assessment (T/P/U). Enter the rating determination.
- Block 7. Remarks. Enter any additional comments, references, or pertinent data.

ENGINEER QUALIFICATION TABLE I						
1. Date:		2. Range:		3. Unit:		
4. Platoon/Squad:						
5. Name	6a. Weapon Types	6b. Go/No Go Dates	6c. Live/Inert Grenade	6d. Go/No Go Date	6e. Engagement T/P/U Assessment	7. Remarks

Engineer Qualification Table II

Complete Engineer Qualification Table II by filling in the following blocks:

- Block 1. Date. Enter the date of the last day of the assessment.
- Block 2. Range. Enter the name of the facility used.
- Block 3. Unit. Enter the company and battalion.
- Block 4. Platoon/squad. Enter the individual's platoon/squad.
- Block 5. Name. Enter soldier's last name, first name, middle initial, and rank.
- Block 6. Task. Enter the appropriate Go or No Go rating for each task and the date accomplished.
- Block 7. Remarks. Enter any additional comments, references, or pertinent data.

ENGINEER QUALIFICATION TABLE II															
1. Date:				2. Range:					3. Unit:						
4. Platoon/Squad:															
5. Name	6. Task														7. Remarks
	3023	3024	3025	2017	2015	2016	2018	2030	2081	3022	2081	3022	3055	4040	

Engineer Qualification Tables III and IV

Complete Engineer Qualification Tables III and IV by filling in the following blocks:

- Block 1. Date. Enter the date of the last day of the assessment.
- Block 2. Range. Enter the name of the facility used.
- Block 3. Unit. Enter the company and battalion.
- Block 4. Platoon/squad. Enter the individual's platoon/squad.
- Block 5. Name. Enter soldier's last name, first name, middle initial, and rank.
- Block 6. Task. Enter the appropriate Go or No Go rating for each task and the date accomplished.
- Block 7. Remarks. Enter any additional comments, references, or pertinent data.

ENGINEER QUALIFICATION TABLES III AND IV																	
1. Date:				2. Range:							3. Unit:						
4. Platoon/Squad:																	
	6. Task																
5. Name	192-1045	192-1021	193-1013	192-1154	192-1155	192-1105	192-1106	192-1107	192-1108	192-1109	192-1110	192-1117	192-1118	193-1055	192-1103	193-1202	7. Remarks

Engineer Qualification Table V

Complete Engineer Qualification Table V by filling in the following blocks:

- Block 1. Date. Enter the date of the last day of the assessment.
- Block 2. Range. Enter the name of the facility used.
- Block 3. Unit. Enter the company and battalion.
- Block 4. Platoon. Enter the squad's platoon.
- Block 5. Squad. Enter the squad performing the tasks.
- Block 6. Task. Enter the appropriate Go or No Go rating for each task and the date accomplished.
- Block 7. Remarks. Enter any additional comments, references, or pertinent data.

ENGINEER QUALIFICATION TABLE V				
1. Date:		2. Range:		3. Unit:
4. Platoon:				
		6. Task		
5. Squad	React to Contact	Break Contack	React to Ambush	7. Remarks

Engineer Qualification Tables VI, VII, and VIII

Complete Engineer Qualification Tables VI, VII, and VIII by filling in the following blocks:

- Block 1. Date. Enter the date of the last day of the assessment.
- Block 2. Range. Enter the name of the facility used.
- Block 3. Unit. Enter the company and battalion.
- Block 4. Platoon. Enter the squad's platoon.
- Block 5. Squad. Enter the squad performing the tasks.
- Block 6. Task. Enter the appropriate Go or No Go rating for each task and the date accomplished.
- Block 7. Remarks. Enter any additional comments, references, or pertinent data.

ENGINEER QUALIFICATION TABLES VI, VII, AND VIII									
1. Date:	2. Range:				3. Unit:				
4. Platoon:									
	6. Task								
5. Squad	3-70043	192-3079	3-70115	3-70116	3-70110	3-70117	3-70301	Drill 6	7. Remarks

Engineer Qualification Table IX

Complete Engineer Qualification Table IX by filling in the following blocks:

- Block 1. Date. Enter the date of the last day of the assessment.
- Block 2. Range. Enter the name of the facility used.
- Block 3. Unit. Enter the battalion.
- Block 4. Company. Enter the company.
- Block 5. Platoon. Enter the platoon performing the tasks.
- Block 6. Task. Enter the appropriate Go or No Go rating for each task and the date accomplished.
- Block 7. Remarks. Enter any additional comments, references, or pertinent data.

ENGINEER QUALIFICATION TABLE IX				
1. Date:		2. Range:		3. Unit:
4. Company:				
		6. Task		
5. Platoon	React to Contact	Break Contact	React to Ambush	7. Remarks

Engineer Qualification Tables X, XI, and XII

Complete Engineer Qualification Tables X, XI, and XII by filling in the following blocks:

- Block 1. Date. Enter the date of the last day of the assessment.
- Block 2. Range. Enter the name of the facility used.
- Block 3. Unit. Enter the battalion.
- Block 4. Company. Enter the company.
- Block 5. Platoon. Enter the platoon performing the tasks.
- Block 6. Task. Enter the appropriate Go or No Go rating for each task and the date accomplished.
- Block 7. Remarks. Enter any additional comments, references, or pertinent data.

ENGINEER QUALIFICATION TABLES X, XI, AND XII											
1. Date:	2. Range:				3. Unit:						
4. Company:											
	6. Task										
5. Platoon	0043	0103	3-70117	4041	3-70112	4053	3-70301	3076	3079	3078	7. Remarks

Glossary

AAR	after-action review
ABF	attack by fire
ACE	armored combat earthmover, M9
ACR	armored cavalry regiment
AHD	antihandling device
AP	antipersonnel
AR	Army regulation
ARTEP	Army Training and Evaluation Program
ASAT	Automated Systems Approach to Training
aslt	assault
AT	antitank
ATGM	antitank guided missile
attn	attention
AVLB	armored vehicle-launched bridge
BOS	Battlefield Operating System
cal	caliber
CCD	command control data
CEV	combat engineer vehicle
COA	course of action
CPT	captain
CTC	Combat Training Center
DA	Department of the Army
EA	engagement area
EM	enlisted member
EQT	Equipment Qualification Tables
FD	firing device
FFA	friendly forward area
FHG	fragmenation hand grenade
FM	field manual

FO	forward observer
FRAGO	fragmentary order
FSO	fire-support officer
FSOP	field standing operating procedures
GEMSS	Ground-Emplaced Mine-Scattering System
GTA	graphic training aid
HC	hexachloroethane
HE	high explosive
HEMMS	hand-emplaced minefield marking set
HQ	headquarters
IOE	irregular outer edge
LAB	light assault bridge
LT	lieutenant
MAJ	major
MBT	main battle tank
MDI	modernized demolition initiators
mech	mechanized
METL	mission-essential task list
METT-T	mission, enemy, terrain, troops, and time available
MG	machine gun
MICLIC	mine-clearing line charge
mm	millimeter(s)
MOPMS	Modular Pack Mine System
MOPP	mission-oriented protective posture
mph	miles per hour
MRB	motorized rifle battalion
MRC	motorized rifle company
MRP	motorized rifle platoon
MTP	mission training plan
NATO	North Atlantic Treaty Organization
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NVD	night-vision device
o/o	on order

OBJ	objective
OIC	officer in charge
OP	observation post
OPORD	operations order
Pam	pamphlet
PL	phase line
PMCS	preventive maintenance checks and services
PMI	preliminary marksmanship instruction
posn	position
PSG	platoon sergeant
psi	pound(s) per square inch
RATELO	radiotelephone operator
RCU	remote control unit
RE	relative effectiveness
S2	Intelligence Officer (US Army)
S4	Supply Officer (US Army)
SAW	squad automatic weapon
SBF	support by fire
SCATMINE	scatterable mine
SFC	sergeant first class
SITEMP	situational template
SOP	standing operating procedure
STANAG	Standardization Agreement
STATREP	status report
STP	Soldier's Training Publication
TC	training circular
TEC	Training Extension Course
TF	task force
TM	technical manual
TNT	trinitrotoluene
TOE	table(s) of organization and equipment
TRADOC	United States Army Training and Doctrine Command
USAES	United States Army Engineer School

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