

Chapter 8

Gunner's Examination

The gunner's examination tests the proficiency of the gunner in five areas: mounting the mortar, making small deflection change, referring the sight and realigning aiming posts, making large deflection and elevation changes, and reciprocal lay of the mortar. It is also a test of the three qualified assistants the candidate is allowed to choose. The candidate's success in the examination depends mainly on the ability to work harmoniously with these assistants. The examining board must consider this factor and ensure uniformity during the test. Units should administer the gunner's examination at least semiannually to certify squad proficiency.

PREPARATION AND INSTRUCTION

8-1. Preparation for the gunner's examination teaches the Soldier how to properly and accurately perform the gunner's duties. The squad leader is responsible for this preparation.

8-2. In table of organization and equipment units, squad members should be rotated within the squad so that each member can become proficient in all squad positions. Individual test scores should be maintained and consolidated to determine each squad's score. These squad scores then can be compared to build esprit de corps.

Note. Stryker mortar gunner's examination is covered in chapter 8.

8-3. The conditions and requirements for each step of the qualification course is explained and demonstrated. Then, each candidate is given practical work while being constantly supervised by their squad leader to ensure accuracy and speed. Accuracy is stressed from the start and speed is attained through repetition.

8-4. The platoon leader/platoon sergeant monitors the instruction given by the squad leaders within the platoon. Demonstrations usually are given to the entire group. Squads perform practical work under the supervision of the squad leader.

8-5. A Soldier must be proficient in mechanical training, squad drill, and fire commands and their execution before being qualified to take the examination. Without the proper prior training, a Soldier should not be tested.

8-6. The preparatory exercises for the gunner's examination consist of training in those steps found in the qualification course. After sufficient preparatory exercises, candidates are given the gunner's examination. Those failing the examination should be retrained for testing at a later date.

EXAMINATION

8-7. The examining board consists of one officer and two senior NCOs who are proficient with the weapon. No more than one member is selected from the candidate's organization. The commander who has authority to issue special orders appoints the board. Scores are recorded on DA Form 5964. (See figure 8-1.)

GUNNER'S EXAMINATION SCORECARD - MORTARS				1. MORTARS (CHECK ONE)	
For use of this form see TC 3-22.90, the proponent agency is TRADOC.				Ground-Mounted ☒ Carrier-Mounted ☐	
DATA REQUIRED BY THE PRIVACY ACT OF 1974					
AUTHORITY: 10 USC 3012 (g), Executive Order 9397. PRINCIPAL PURPOSE: To evaluate an individual's training on mortars. ROUTINE USES: Information evaluates individual proficiency; Service ID# is used for positive identification purposes only. DISCLOSURE: Disclosure of this information is voluntary. However, individuals not providing information cannot be rated/ scored on a mass basis.					
2. ORGANIZATION HHC 1st BN (MECH) 66th INF				3. DATE (YYYYMMDD) 20170510	
4. NAME (Last, First, MI) Doe, John J.				5. GRADE E-4	
6. CHECK ONE					
60MM ☐ 81MM ☒ 120MM ☐					
ITEMS	TRIAL (a)	TIME (b)	TRIAL SCORE (c)	CREDIT SCORE (d)	INITIALS (e)
7. GROUND - Mounting the mortar OR CARRIER - Placing the mortar in firing position from traveling position	1st Trial	005800	9	18	JBO
	2nd Trial	005300	9		
8. ALL - Small deflection and elevation change	1st Trial	001300	8	18	JBO
	2nd Trial	000800	10		
9. ALL - Referring the sight and realigning aiming posts	1st Trial	011000	10	19	JBO
	2nd Trial	011300	9		
10. ALL - Large deflection and elevation change	1st Trial	003800	8	16	JBO
	2nd Trial	004000	8		
11. ALL - Reciprocal laying	1st Trial	004700	9	19	JBO
	2nd Trial	004400	10		
12. TOTAL CREDIT SCORE (Check one)		RATING			
90					
90 to 100	EXPERT GUNNER	☒			
80 to 89	FIRST-CLASS GUNNER	☐			
70 to 79	SECOND-CLASS GUNNER	☐			
69 or less	UNQUALIFIED	☐			
13. VERIFIED BY					
a. PRINTED NAME 1LT John B. Only			e. UNIT HHC 2nd BN (MECH) 66th INF		
b. SIGNATURE <i>1LT John B. Only</i>					
c. GRADE O-2					
d. DATE (YYYYMMDD) 20171510					

DA FORM 5964, MAR 2017

PREVIOUS EDITIONS ARE OBSOLETE.

APD LC v1.00ES

Figure 8-1. Sample of completed DA Form 5964

8-8. Each unit armed with a mortar weapon system gives examinations semiannually. Other units may conduct examinations or allow their eligible members to take the qualification tests at nearby stations.

8-9. The commander authorized to issue special orders determines the date of the examination. The area selected should be on flat terrain consisting of soil that allows for aiming posts to be easily positioned at 50 and 100 meters from the station position.

8-10. The following personnel are eligible to take the examination:

- Commissioned officers, NCOs, and enlisted Soldiers assigned to a mortar unit.
- Commissioned officers, NCOs, and enlisted Soldiers whose duties require them to maintain proficiency in the use of mortars, as determined by battalion and higher commanders.

8-11. A candidate's earlier qualification ends when he is administered a record course with the mortar and is classified according to the latest examination score, as follows:

- Expert gunner: 90 to 100.
- First-class gunner: 80 to 89.
- Second-class gunner: 70 to 79.
- Unqualified: 69 or less.

GENERAL RULES

8-12. Conditions should be the same for all candidates during the test. The examining board ensures that information obtained by a candidate during testing is not passed to another candidate, and that candidates do not receive sight settings or laying of mortars left by a previous candidate.

8-13. The best available unit equipment should be used in the examination. Sight settings are considered correct when any part of the index coincides with any part of the line of graduation of the required setting.

8-14. The left side of the aiming post is used for alignment. The elevation and cross-level bubbles are considered centered when the bubbles are resting entirely within the outer etched lines on the vials.

8-15. The candidate is permitted to traverse the mortar to the middle point of traverse before each trial at laying the mortar, except at Station No. 5.

8-16. In any test that calls for mounting or emplacing the mortar, either by the candidate or the board, the surface emplacement is used. Digging is not allowed, and the rear of the baseplate assembly is not staked.

8-17. In time trials, the candidate does not receive credit for the trial if he performs any part of it after announcing, "UP."

8-18. The candidate selects assistants from within the squad to participate in the test. When squad members are unavailable for testing, the candidate may select assistants from outside the squad but from within the organization. The board makes sure that no unauthorized assistance is given the candidate during the examination.

8-19. A candidate is given three trials—one for practice and two for record. If the first trial is taken for record, then the second trial is taken for record even if candidate fails it. The credit score is the total of the two record trials. When the candidate fails in any trial through the fault of an examiner, defective sight, mortar, mount, or other instrument used, that trial is void and the

candidate is given another trial as soon as possible. If the candidate's actions cause the mortar to function unsatisfactorily during testing, no credit is received for that portion of the test.

8-20. When a mechanical failure occurs and a mortar fails to maintain the lay after the candidate announces, "UP," a board member twists or pushes the mortar (taking up the play without manipulation) until the cross-level bubble is within the two outer etched lines. The board member then looks through the sight and if the vertical line is within two mils of the correct sight picture, the candidate is given credit for that trial, as long as other conditions are met.

8-21. The squad must repeat all commands. Commands should vary between trials, using even and odd numbers, and right and left deflections.

GROUND-MOUNTED MORTAR EXAMINATION

8-22. The ground-mounted mortar examination tests the gunner's ability to perform basic mortar gunnery tasks with the ground-mounted mortar system. It consists of the following tests with maximum credit scores, as shown:

- Mounting the mortar 20 points
- Small deflection change 20 points
- Referring the sight and realigning aiming posts (refer–realign) 20 points
- Large deflection and elevation changes 20 points
- Reciprocal lay 20 points

ORGANIZATION AND PROCEDURE

8-23. The recommended equipment needed for the five stations includes five mortars, five sights, one aiming circle, eight aiming posts, and five stopwatches.

8-24. The organization prescribed in table 8-1 is recommended for the conduct of the gunner's examination. Variations are authorized, depending on local conditions and the number of Soldiers being tested.

8-25. The candidate carries the scorecard (DA Form 5964) from station to station. The evaluator at each station fills in the time, trial scores, and credit score, and initials the appropriate spaces.

Table 8-1. Conduct of ground-mounted gunner's examination

Station	Phase	Equipment	
		For Candidate	For Examining Officer
1	Mounting the mortar.	1 mortar 1 sight 1 baseplate stake	1 stopwatch
2	Small deflection change.	1 mortar 1 sight 2 aiming posts	1 stopwatch
3	Large deflection and elevation change.	1 mortar 1 sight 2 aiming posts	1 stopwatch
4	Refer - Realign.	1 mortar 1 sight 2 aiming posts	1 stopwatch
5	Reciprocal lay.	1 mortar 1 sight 2 aiming posts	1 stopwatch 1 aiming circle

MOUNTING THE MORTAR

- 8-26. The candidate is tested at Station No. 1 on his ability to perform the gunner's duties in mounting the mortar. The equipment needed is prescribed in table 8-1, page 8-4.
- 8-27. The candidate is directed to mount the mortar with his authorized assistants. The conditions of the test are described in the paragraphs below.
- 8-28. The candidate arranges the equipment as outlined in figures 8-2 through 8-4 on this page through page 8-7. The emplacement is marked before the examination.

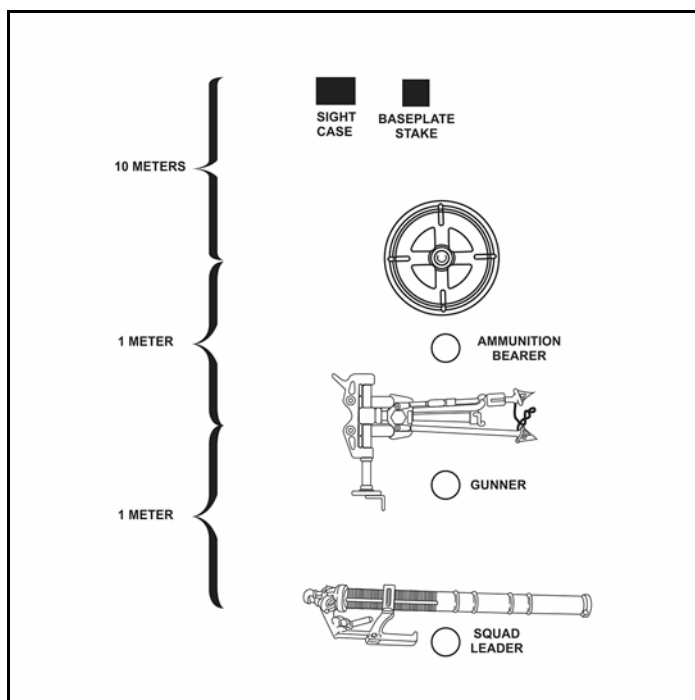


Figure 8-2. Equipment and personnel for the gunner's examination (60-mm mortar)

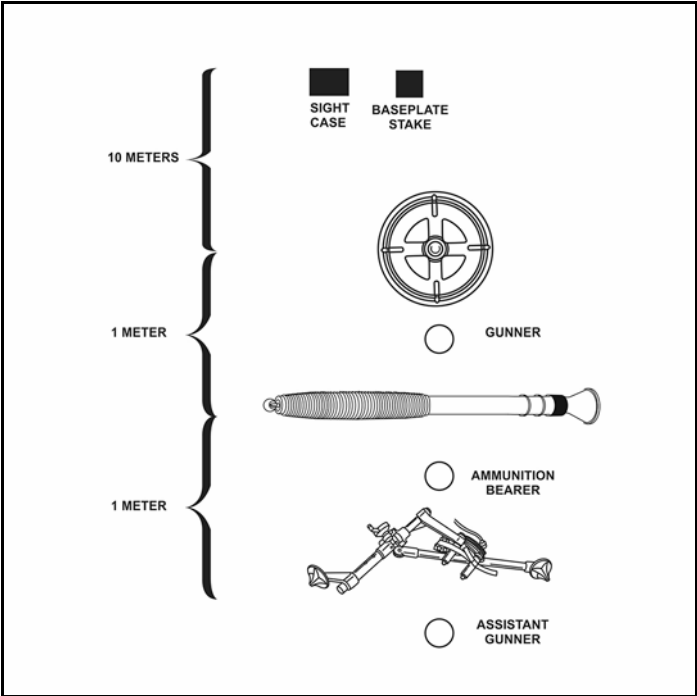


Figure 8-3. Equipment and personnel for the gunner's examination (M252/M252A1 81-mm mortar)

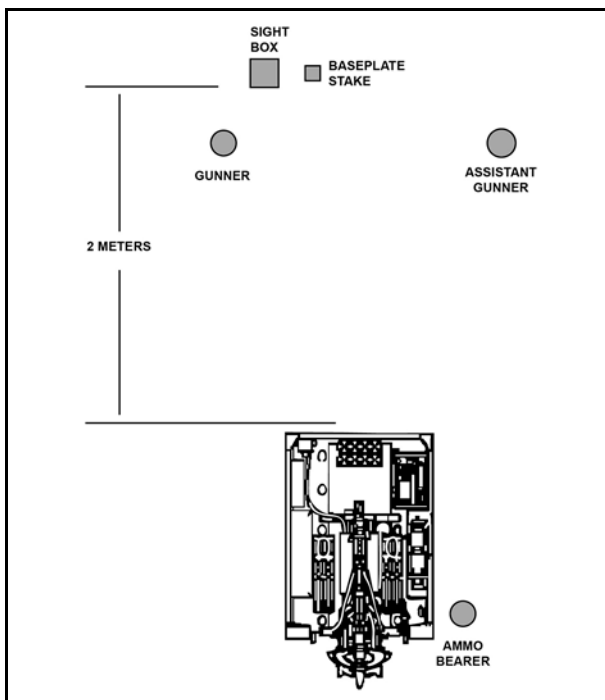


Figure 8-4. Equipment and personnel for the gunner's examination (120-mm mortar with mortar stowage kit)

8-29. The mortar sight is seated in its case with 3800 mils set on the deflection scale and 1100 mils set on the elevation scale, and the sight box is closed and latched. For the 120-mm mortar, the traverse extension is locked and centered.

Procedure

8-30. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The trials include the following procedure:

- The candidate and assistants take their positions. The candidate is instructed to mount the mortar at 3200 mils deflection and 1100 mils elevation.
- The evaluator points to the exact spot where the mortar is to be mounted and indicates the initial direction of fire by pointing in that direction. The evaluator gives the command "ACTION," at which time the candidate begins mounting the mortar. After mounting the mortar, the candidate should have 3200 mils deflection 1100 mils elevation.
- After the sight is mounted, ONLY THE GUNNER can manipulate the deflection and elevation settings on the M64A1/M67 sight unit, the traversing handwheel, the cross-leveling handwheel, and the crank.

- The assistants may manipulate the sight mount knob/cross-level handwheel and elevation hand crank. They may center the connection for the mortar locking pin assembly, but they **MUST NOT** manipulate the sight for deflection or elevation settings.
- Time begins at the command of ACTION and time ends on the gunner announcing, “UP.”

Scoring

8-31. Scoring procedures are as follows:

- The candidate receives no credit when the—
 - Time exceeds one minute, 15 seconds for the 120-mm, or 90 seconds for all other mortars.
 - Sight is not set correctly for deflection and elevation.
 - Cross-level and elevation bubbles are not centered.
 - Mortar locking pin or the clevis lock pin is not fully locked.
 - Connection for the mortar locking pin assembly (buffer carrier, 60-mm mortar) or the traversing slide assembly is off center more than two turns.
 - Assistant manipulates the sight for a deflection or elevation setting, after the sight is mounted.
 - Baseplate is not positioned correctly in relation to the baseplate stake.
 - Selector switch on the barrel is not on D for drop-fire (60-mm mortar only).
 - Collar assembly is not positioned on the lower saddle (60-mm mortar only).
 - Firing pin recess is not facing upwards on the barrel (M252/M252A1 81-mm mortar only).
 - Traverse is more than four turns (120-mm only).
 - Barrel clamp is not locked (120-mm only).
 - Cross-level lock is not tight (120-mm only).
 - Leg-locking handwheel is not wrist-tight (M252/M252A1 81-mm mortar only).
 - Coarse cross-level nut is not wrist-tight (60-mm mortar only).
 - Collar locking knob (60-mm mortar, hand-tight) or collar locking latch (81-mm mortar) is not secured to the barrel
 - Bipod legs are not fully extended and the spread cable or chain is not taut (60-mm and 120-mm mortars only).

- When the mortar is mounted correctly within the prescribed limits, credit is given as follows:

<i>Time in Seconds</i>		<i>Point Credit for Each Trial</i>
<i>120-mm</i>	<i>60/81-mm</i>	
51 or less	65 or less	10
52 to 57	66 to 70	9
58 to 63	71 to 75	8
64 to 69	76 to 80	7
70 to 75	81 to 85	6
-	86 to 90	5
76 or over	91 or over	0

SMALL DEFLECTION CHANGE

8-32. The candidate is tested at Station No. 2 on his ability to perform the gunner's duties when he is given commands that require a change in deflection. Equipment is prescribed in table 8-1, on page 8-4.

Conditions

8-33. A mortar is mounted with the sight installed. The sight is laid on two aiming posts (placed out 50 to 100 meters from the mortar) on a referred deflection of 2800 mils and 1100 mils elevation. The mortar is center of traverse, and the vertical line of sight is on the left edge of both aiming posts. The conditions of the test are as follows:

- The candidate is allowed to check the deflection set on the sight before each trial.
- The candidate is allowed to start each trial with his hand on the deflection knob.
- The change in deflection does not involve movement of the bipod assembly but causes the candidate to traverse the mortar at least 20 mils, but not more than 60 mils.
- Traversing extension is locked and centered (120-mm).

Procedure

8-34. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidates follow the below guidelines:

- The candidate is given one assistant. A different command is given for each trial. The evaluator records the time and checks the candidate's work after each command has been executed.
- The evaluator announces an initial command requiring a change in deflection of 20 to 60 mils and an elevation change of 35 to 90 mils. The candidate may proceed with the exercise as soon as the deflection element is announced. The evaluator announces the command in normal sequence and cadence.
- The assistant is allowed to manipulate the elevation handwheel and crank.
- Time is charged against the candidate from the announcement of the last digit of the elevation element until the candidate announces, "UP."

Scoring

- 8-35. Scoring procedures are as follows:
- The candidate receives no credit when the—
 - Time is 36 seconds or greater.
 - Sight is not set correctly for deflection or elevation.
 - Elevation bubble is not centered between the outer red lines.
 - Cross-level bubble is not centered between the outer red lines.
 - Assistant manipulates the mortar or sight for elevation or deflection.
 - Vertical cross hair of the sight is more than two mils off the correct sight picture.
 - When the mortar is laid correctly within the prescribed limits, credit is given as follows:

<i>Time in Seconds (All Mortars)</i>	<i>Point Credit for Each Trial</i>
20 or less	10
21 to 23	9
24 to 26	8
27 to 31	7
32 to 35	6
36 or over	0

REFERRAL OF SIGHTS AND REALIGNMENT OF AIMING POSTS

8-36. The candidate is tested at Station No. 3 on his ability to perform the gunner’s duties in referring the sight and realigning the aiming posts. Equipment is prescribed in table 8-1, page 8-4.

Conditions

8-37. The mortar is mounted with the correct sight installed. The sight is laid on two aiming posts (placed out 50 and 100 meters from the mortar) on a referred deflection of 2800 mils and 1100 mils elevation. The conditions of the test are as follows:

- The mortar is within two turns of center of traverse (four turns for the 120-mm). The candidate receives an administrative command with a deflection of 2860 or 2740 mils. The mortar is then re-laid on the aiming posts using the traversing crank and cross level handwheel.
- The candidate checks the conditions before each trial and is allowed to start the test with his hand on the deflection knob of the sight.
- The change in deflection in the command must be less than 25 mils but greater than 5 mils. The elevation remains constant at 1100 mils.
- The candidate is allowed two assistants—one to place out aiming posts and one to move the bipod (mount). The assistant gunner may manipulate the bipod for elevation. The assistant may center-up the traversing bar for the shift after the aiming posts have been realigned. The assistant may not manipulate the sight in any way.
- Traverse extension is not used. It remains locked in the center position.

Procedure

8-38. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidates follow the below guidelines:

- A different command is given for each trial. The evaluator records the time and checks the candidate's work after each command has been executed.
- When the candidate is ready, he is given a command (for example), "REFER, DEFLECTION TWO EIGHT EIGHT ZERO, REALIGN AIMING POSTS."
- The candidate repeats each element of the command, sets the sight with the data given in the command, and directs one assistant in realigning the aiming posts. Then, the candidate centers the traversing assembly, and with the help of the assistant gunner, moves the bridge or bipod (mount) assembly and lays again on the aiming posts. After laying the mortar on the realigned posts, he announces, "UP."

Note. This procedure ensures that, after a registration mission (using a parallel sheaf), the mortars have matching deflections.

- Time is taken from the announcement of refer and align aiming post to the candidate's announcing, "UP."
- The candidate's assistant may not leave the mortar position until hearing the word POSTS in the command, "REALIGN AIMING POSTS."

Scoring

8-39. Scoring procedures are as follows:

- No credit is given when the—
 - Time exceeds one minute, 21 seconds.
 - Traversing crank is turned before the aiming posts are realigned.
 - Sight is not set correctly for deflection or elevation.
 - Mortar is not cross-leveled or correctly laid for elevation.
 - Vertical line of the sight is more than one mil off the correct sight picture.
 - Traversing assembly slide is more than two turns (four turns for the 120-mm) to the left or right of the center position.
 - Assistant manipulates the sight or mortar for deflection.
 - Aiming posts are aligned improperly.

Note. If for any reason either of the aiming posts fall before the candidate announces, "UP," the trial will be terminated and readministered.

- When the mortar is found to be correctly laid within the prescribed limits, credit is given as follows:

<i>Time in Seconds (All Mortars)</i>	<i>Point Credit for Each Trial</i>
65 or less	10
66 to 70	9
71 to 75	8
76 to 80	7
81 or over	0

LARGE DEFLECTION AND ELEVATION CHANGES

8-40. The candidate is tested at Station No. 4 on his ability to perform the gunner’s duties when he is given commands requiring a large change in deflection and elevation. Equipment is prescribed in table 8-1, page 8-4.

Conditions

8-41. A mortar is mounted with the sight installed. The sight is laid on two aiming posts placed out 50 to 100 meters from the mortar on a referred deflection of 2800 mils and elevation of 1100 mils. The elevation change is greater than 100 mils but less than 200 mils. The mortar is within two turns of center of traverse (four turns for the 120-mm). The conditions for the test are as follows:

- The candidate is allowed to check the deflection and elevation setting before each trial and is allowed to start each trial with his hand on the deflection knob.
- The change in deflection involves movement of the bipod assembly and causes the candidate to shift the barrel not less than 200 mils but not more than 300 mils. The change in elevation causes him to elevate or depress the barrel from low range to high range, or vice versa.
- Traverse extension is locked and centered (for the 120-mm).

Procedure

8-42. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate follows these guidelines:

- The candidate is given two assistants—one assistant may visually align the mortar, while the other shifts the bipod. The candidate maintains the option to shift the bipod without assistance. The assistants neither manipulate the sight nor lay the mortar for deflection. A different command is given for each trial. The evaluator records the time and checks the candidate’s mortar after each command has been executed.
- The evaluator announces a command for a change in deflection and elevation that requires the movement of the bipod assembly, and a change in the elevation range—for example: “NUMBER ONE, HE QUICK, ONE ROUND, DEFLECTION THREE ZERO FOUR FIVE, CHARGE, FOUR, ELEVATION, ONE ONE FOUR ZERO.”
- The candidate repeats each element of the command. As soon as the deflection element is given, he places the data on the sight and lays again on the aiming point with a compensated

sight picture. As soon as the mortar is laid, he announces, "UP." The assistants must remain in their normal positions until the deflection element is given.

- Time is taken from the announcement of the last digit of the elevation element of the fire command until the candidate announces, "UP."

Scoring

8-43. Scoring procedures are as follows:

- The candidate receives no credit when the—
 - Time exceeds time exceeds 55 seconds for the 120-mm or 60 seconds for all other mortars.
 - Sight is not set correctly for deflection or elevation.
 - Mortar is not correctly laid for elevation.
 - Mortar is not cross-leveled.
 - Vertical line is more than two mils off the compensated.
 - Traversing assembly slide is more than two turns (four turns for the 120-mm) to the left or right of the center position.
 - Assistants make unauthorized movements or manipulations.
 - Collar assembly is not positioned on the correct saddle for the announced elevation (60-mm).
 - Traverse extension is not locked and centered (for the 120-mm).
- When the mortar is laid correctly within the prescribed limits, credit is given as follows:

<i>Time in Seconds</i>		<i>Point Credit for Each Trial</i>
<i>120-mm</i>	<i>60/81-mm</i>	
35 or less	35 or less	10
36 to 40	36 to 40	9
41 to 45	41 to 45	8
46 to 50	46 to 50	7
51 to 55	51 to 55	6
-	56 to 60	5
56 or over	61 or over	0

RECIPROCAL LAY

8-44. The candidate is tested at Station No. 5 on his ability to perform the gunner's duties in laying a mortar for direction. Equipment is prescribed in table 8-1 on page 8-4.

Station Setup

8-45. The evaluator sets up the aiming circle about 25 meters to the left front of the station, levels the instrument, and orients the aiming circle so that the 0-3200 line is in the general direction the mortar is mounted. A direction stake is placed out about 25 meters in front of the mortar position.

Conditions

8-46. The candidate is given one assistant to shift the bipod assembly, but the candidate maintains the option to shift the bipod unassisted. The assistant does not manipulate the sight. The assistant may manipulate the bipod elevation and level the elevation bubble. The conditions of the test are as follows:

- All mortars are mounted at 3200 mils deflection and 1100 mils elevation. The mortar is laid on a direction stake on the initial mounting azimuth with the traversing mechanism centered.
- The mounting azimuth on which the candidate is ordered to lay the mortar is not less than 150 mils or more than 200 mils away from the initial mounting azimuth.
- The evaluator sets up the aiming circle about 25 meters to the left front of the mortar, with the instrument leveled and the 0-3200 line already on the mounting azimuth on which the mortar is to be laid.
- The candidate is allowed to start the test with his hand on the deflection knob. The assistants must remain in their normal positions until the evaluator gives the first deflection element.
- Traverse extension is locked and centered (120-mm).

Procedure

8-47. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate follows the below guidelines:

- The evaluator operates the aiming circle during this test, lays the vertical line on the mortar sight, and commands, “AIMING POINT THIS INSTRUMENT.”
- The candidate refers his sight to the aiming point and replies, “AIMING POINT IDENTIFIED.”
- The evaluator then announces the deflection—for example, “NUMBER ONE, DEFLECTION TWO THREE ONE FIVE.”
- The candidate repeats the announced deflection, sets it on his sight, and lays the mortar on the center of the aiming circle lens. He then announces, “NUMBER ONE READY FOR RECHECK.” The evaluator announces the new deflection immediately so that there is no delay.
- The operation is completed when the candidate announces, “NUMBER ONE, ZERO (or one) MIL(s), MORTAR LAID.”
- Time is taken from the last digit of elevation first announced by the evaluator until the candidate announces, “NUMBER ONE, ZERO (or one) MIL(s), MORTAR LAID.”

Scoring

8-48. Scoring procedures are as follows:

- The candidate receives no credit when the—
 - Time exceeds one minute, 51 seconds.
 - Sight is not set correctly for deflection or elevation.
 - Elevation bubble is not centered.
 - Cross-level bubble is not centered.
 - Vertical line of the sight is not centered on the aiming circle lens.
 - The mortar sight and the aiming circle deflection difference exceed one mil.

- Assistant performs unauthorized manipulations or movements.
- Traversing mechanism is more than two turns (four turns for the 120-mm) from center of traverse. Traverse extension is not locked in the center position.
- When the mortar is laid correctly within the prescribed limits, credit is given as follows:

<i>Time In Seconds (All Mortars)</i>	<i>Point Credit for Each Trial</i>
50 or less	10
51 to 62	9
63 to 74	8
75 to 86	7
87 to 98	6
99 to 110	5
111 or over	0

M121 CARRIER-MOUNTED OR THE RMS6-L STRYKER-MOUNTED MORTAR EXAMINATION

8-49. This examination tests the gunner's ability to perform basic mortar gunnery tasks with the carrier-mounted 120-mm mortar system.

Note. All mounted platforms will use this examination in the conventional mode using the M-67 sight unit to demonstrate proficiency.

SUBJECTS AND CREDITS

8-50. The examination consists of the following tests, with maximum credit scores as shown:

Placing the mortar into a firing position from the traveling position.	20 points
Small deflection change.	20 points
Referring the sight and realigning the aiming posts.	20 points
Large deflection and elevation changes.	20 points
Reciprocal lay.	20 points

8-51. The minimum equipment needed for the five stations includes five mortars, five M1064A3-series carriers, five sights, one aiming circle, eight aiming posts, and five stopwatches.

8-52. The organization prescribed in table 8-2, page 8-16, is recommended for the conduct of the gunner's examination. Variations are authorized, depending on local conditions and the number of Soldiers being tested.

8-53. The candidate carries the scorecard from station to station. The evaluator at each station fills in the time, trial scores, and credit score, and initials the appropriate spaces.

Table 8-2. Conduct of carrier-mounted gunner’s examination

Station	Phase	Equipment	
		For Candidate	For Examining Officer
1	Placement of the mortar into firing position from the traveling position.	1 mortar carrier 1 mortar 1 sight	1 stopwatch
2	Small deflection change.	1 mortar carrier 1 mortar 1 sight 2 aiming posts	1 stopwatch
3	Referring of the sight and realignment of the aiming posts.	1 mortar carrier 1 mortar 1 sight 2 aiming posts	1 stopwatch
4	Large deflection and elevation changes.	1 mortar carrier 1 mortar 1 sight 2 aiming posts	1 stopwatch
5	Reciprocal lay.	1 mortar carrier 1 mortar 1 sight 2 aiming posts	1 stopwatch 1 aiming circle

PLACEMENT INTO A FIRING POSITION FROM TRAVELING 120-MM MORTAR

8-54. The candidate is tested at Station No. 1 on his ability to perform quickly and accurately the gunner’s duties in placing the mortar into the firing position from the traveling position. Equipment is prescribed in table 8-2.

Conditions

8-55. The mortar is secured in the traveling position by the mortar tie-down strap. The conditions of the test are as follows:

- The sight is in its case, and the case is in its stowage position.
- The candidate selects an assistant gunner.
- The BAD is removed and stored properly for the 120-mm mortar system.
- The mortar hatch covers are closed and locked. The ramp may be in the up or down position.
- The gunner and assistant gunner are seated in their traveling positions.
- The evaluator ensures that the candidate understands the requirement of the test and instructs him to report, “I AM READY” before each trial.

Procedure

8-56. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate follows the below guidelines:

Note. The traverse extension is not used during the gunner's examination. It remains locked in the center position.

- The evaluator is positioned inside or outside the carrier to best observe the action of the candidate. The evaluator's position should not interfere with the action of the candidate.
- The trial is complete when the candidate announces, "UP."

Scoring

8-57. Scoring procedures are as follows:

- The candidate receives no credit when the—
 - Time exceeds one minute, 15 seconds.
 - Sight is not set at 3200 mils deflection and 1100 mils elevation.
 - Elevation and cross-level bubbles are not centered (within outer red marks).
 - Turntable and traversing assembly slide are not centered. The traverse extension must also be centered and locked.
 - The traversing lock handle is not locked.
 - The white line on the barrel is not aligned with the white line on the buffer housing assembly.
 - The mortar carrier rear hatch covers are not securely latched.
 - The safety mechanism is not set on FIRE. (F is showing.)
 - The cross-level locking knob is not hand-tight.
 - The buffer housing assembly is not positioned against the lower collar stop.
 - The BAD knob is not hand-tight.
 - The assistant manipulates the sight and mortar for deflection.
- When the mortar is found to be in the correct firing position within the prescribed limits, credit is given as follows:

<i>Time in Seconds</i>	<i>Point Credit for Each Trial</i>
50 or less	10
51 to 57	9
58 to 63	8
64 to 69	7
0 to 75	6
76 or over	0

SMALL DEFLECTION CHANGE

8-58. The candidate is tested at Station No. 2 on his ability to perform the gunner's duties when he is given commands that require a change in deflection. Equipment is prescribed in table 8-2 on page 8-16.

Conditions

8-59. The mortar is prepared for action with sight installed. The conditions of the test are as follows:

- The sight is laid on two aiming posts placed out 50 and 100 meters from the mortar on a referred deflection of 2800 mils and 1100 mils elevation. The turntable is centered, and the traversing mechanism is within four turns of center of traverse, and the traverse extension is centered and locked. The vertical line of the sight is on the left edge of both aiming posts.
- The change in deflection causes the candidate to traverse the mortar 20 to 60 mils for deflection and 30 to 90 mils for elevation.
- The candidate is allowed to begin the test with his hand on the deflection knob.

Procedure

8-60. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate follows the below guidelines:

- The evaluator announces an initial command requiring a change in deflection.
- The candidate repeats each element of the command, sets the sight with the data given, and traverses and cross-levels the mortar until obtaining the correct sight picture.
- Time is charged against the candidate from the announcement of the last digit of the elevation element until the candidate announces, "UP."

Scoring

8-61. Scoring procedures are as follows:

- The candidate receives no credit when—
 - The time exceeds 35 seconds.
 - The deflection or elevation is not indexed correctly.
 - The elevation and cross-level bubbles are not centered within the outer lines.
 - The vertical cross hair of the sight is not within one mil of the left edge of the aiming post.
 - The traverse extension is centered and locked in position.

- When the mortar is laid correctly within the prescribed limits, credit is given as follows:

<i>Time in Seconds</i>	<i>Point Credit for Each Trial</i>
20 or less	10
21 to 23	9
24 to 26	8
27 to 31	7
32 to 35	6
36 or over	0

REFERRAL OF SIGHTS AND REALIGNMENT OF AIMING POSTS

8-62. The candidate is tested at Station No. 3 on his ability to perform the gunner's duties in referring the sight and realigning the aiming posts. Equipment is prescribed in table 8-2, page 8-16.

Conditions

8-63. The sight is laid on two aiming posts (placed out 50 and 100 meters from the mortar) on a referred deflection of 2800 mils and 1100 mils elevation. The ramp is down with ammunition bearer in or outside the vehicle. The conditions of the test are as follows:

- The mortar is within four turns of center of traverse. The candidate receives an administrative command with a deflection of 2860 or 2740 mils. The mortar then is relaid on the aiming posts using the traversing crank.
- The candidate checks the conditions before each trial and is allowed to start the test with his hand on the deflection knob of the sight.
- The change in deflection in the command must be less than 25 mils but greater than 5 mils. The elevation remains constant at 1100 mils.
- The candidate selects two assistants—one assistant realigns the aiming posts and the other helps in moving the turntable and cross-leveling. The assistants do not manipulate the sight or mortar for deflection. The assistant may manipulate the elevation mechanism and level the elevation bubble.
- The traversing extension is not used. It remains locked in the center position.

Procedure

8-64. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate follows the below guidelines:

- A different command is given for each trial. The evaluator records the time and checks the candidate's work after each command has been executed.
- When the candidate is ready, he is given a command—for example, "REFER, DEFLECTION TWO EIGHT EIGHT ZERO, REALIGN AIMING POSTS."
- The candidate repeats each element of the command, sets the sight with the data given in the command, and directs one assistant in realigning the aiming posts. Upon completion of these

actions, the candidate centers the traversing assembly. The assistant may center up the traversing assembly at the candidates discretion, and with the help of the other assistant, moves the turntable and lays again on the aiming posts. After laying the mortar on the realigned aiming posts, he announces, “UP.”

- Time is taken from the announcement of “REFER, DEFLECTION TWO EIGHT EIGHT ZERO, REALIGN AIMING POSTS,” until the candidate announces, “UP.”
- The candidate’s assistants are not permitted to leave the carrier until the command “REALIGN AIMING POSTS” is given.

Scoring

- 8-65. Scoring procedures are as follows:
- The candidate receives no credit when the—
 - Time exceeds one minute, 20 seconds.
 - Traversing assembly slide is turned before the aiming posts are realigned.
 - Traverse extension and turntable are not locked in the center position.
 - Sight is set incorrectly for deflection or elevation.
 - Elevation and deflection bubbles are not centered.
 - Sight picture is not correct.
 - Traversing assembly slide is more than four turns to the left or right of the center position.
 - Assistant manipulates the sight or mortar for elevation or deflection.
 - When the mortar is laid correctly within the prescribed limits, credit is given as follows:

<i>Time in Seconds</i>	<i>Point Credit for Each Trial</i>
60 or less	10
61 to 65	9
66 to 70	8
71 to 75	7
76 to 80	6
81 or over	0

Note. If for any reason either of the aiming posts fall before the candidate announces, “UP,” the trial will be terminated and readministered.

LARGE DEFLECTION AND ELEVATION CHANGES

8-66. The candidate is tested at Station No. 4 on his ability to perform the gunner’s duties when given commands requiring a large change in deflection and elevation.

8-67. The evaluator selects a deflection change that is at least 200 but not more than 300 mils off the referred deflection of 2800 mils and 1100 mils elevation. The conditions of the test are as follows:

- The change in deflection involves movement of the turntable. The change in elevation causes the candidate to elevate or depress the barrel from low range to high range, or vice versa. The change in elevation is not less than 100 mils but not more than 200 mils.
- The candidate selects two assistants.
- Traversing extension and turntable are locked at the center position.
- The candidate is allowed to check the deflection and elevation settings before each trial.
- The candidate is allowed to begin the test with his hand on the deflection knob.
- The assistant gunner may manipulate the elevation and level the elevation bubble.

Procedure

8-68. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate selects two assistants—one assistant may visually align the mortar, while the other elevates or depresses the standard assembly, and assists in moving the turntable. The assistant does not manipulate the sight or lay the mortar for deflection. The assistant may manipulate the elevation mechanism and level the elevation bubble. The candidate follows the below guidelines:

- The evaluator announces a command that requires a change in deflection involving movement of the turntable and an elevation change involving movement of the elevating mechanism cam.
- The candidate is allowed to start the test with his hand on the deflection knob, repeats each element of the fire command, and sets the sight with the data given in the command.
- As soon as the deflection element is announced, the candidate can immediately place the data on the sight. The assistants must remain in their normal positions until the elevation element is given.
- The evaluator times the candidate from the announcement of the last digit of the elevation command to the candidate announcing, "UP."
- A different deflection and elevation are given in the second trial.

Scoring

8-69. Scoring procedures are as follows:

- The candidate receives no credit when the—
 - Time exceeds 65 seconds.
 - Sight is not indexed correctly for deflection or elevation.
 - Elevation and cross-level bubbles are not centered.
 - Vertical line of the sight is more than two mils off the correct compensated sight picture.
 - Traversing mechanism is more than four turns off center of traverse.
 - Turntable is not in the locked position.
 - Assistants make any unauthorized manipulation of the mortar or sight unit for elevation or deflection.
 - Traversing extension is not locked in the center position.

- When the mortar is laid correctly within the prescribed limits, credit is given as follows:

<i>Time in Seconds</i>	<i>Point Credit for Each Trial</i>
45 or less	10
46 to 50	9
51 to 55	8
56 to 60	7
61 to 65	6
66 or over	0

RECIPROCAL LAY (AIMING CIRCLE)

8-70. The candidate is tested at Station No. 5 on his ability to quickly and accurately perform the gunner’s duties in reciprocal lay of the mortar. Equipment is prescribed in table 8-2, page 8-16.

Conditions

8-71. The mortar is prepared for action and laid on an initial azimuth by the evaluator and his assistants. The conditions of the test are as follows:

- The sight is set at 3200 mils deflection and 1100 mils elevation.
- The evaluator sets up the aiming circle about 75 meters from the carrier where it is visible to the gunner.
- The evaluator orients the aiming circle on an azimuth of not less than 150 mils but not more than 200 mils away from the initial azimuth.
- The candidate is allowed to begin the test with his hand on the deflection knob with the carrier engine running.
- A relay man is positioned halfway between the aiming circle and carrier to relay commands.
- The traversing mechanism is centered and the traversing extension is locked in the center position.

Procedure

8-72. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate follows the below guidelines:

- The evaluator operates the aiming circle during the test.
- Once the candidate identifies the aiming point, the evaluator announces the deflection.
- Time is started from the last digit of the first deflection announced by the evaluator.
- When the candidate announces, “READY FOR RECHECK,” the evaluator immediately announces the new deflection.
- The assistant may manipulate the elevation mechanism and level the elevation bubble.
- The trial is complete when the gunner announces, “ZERO MILS (or ONE MIL), MORTAR LAID.”

Scoring

8-73. Scoring procedures are as follows:

- The candidate receives no credit when the—
 - Time exceeds one minute, 35 seconds.
 - Difference between the deflection setting on the sight and the last deflection reading from the aiming circle is more than one mil.
 - Elevation and cross-level bubbles are not centered.
 - Vertical reticle line of the sight is not centered on the lens of the aiming circle.
 - Traversing extension is not locked in the center position.
 - The mortar sight and the aiming circle are not sighted on each other with a difference of more than one mil between deflection readings.
 - Turntable is not centered and locked.
- When the mortar is laid correctly, credit is given as follows:

<i>Time in Seconds</i>	<i>Point Credit for Each Trial</i>
55 or less	10
56 to 67	9
68 to 79	8
80 to 90	7
91 to 95	6
96 or over	0

RECIPROCAL LAY (COMPASS)

8-74. In this test (120-mm mortar only) the compass is substituted for the aiming circle.

8-75. The mortar is prepared for action and laid on an initial azimuth by the evaluator and his assistants. The conditions of the test are as follows:

- The turntable is centered with the sight set at 3200 mils deflection and 1100 mils elevation.
- The evaluator places the M2 compass on a stake about 75 meters from the mortar carrier and measures the azimuth to the mortar sight. The candidate then selects a mounting azimuth from the azimuth measured to the mortar sight.
- The candidate selects an assistant gunner and driver.
- The evaluator ensures that the candidate understands the requirements of the test and instructs him to report, "I AM READY," before each trial.

Procedure

8-76. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate follows the below guidelines:

- The evaluator operates the compass during the test.
- When the candidate identifies the aiming point, the evaluator announces the deflection.

- When the gunner is laid back on the aiming point, he announces, “UP,” and the evaluator commands, “REFER, DEFLECTION TWO EIGHT ZERO ZERO, PLACE OUT AIMING POSTS.”
- The ammunition bearer moves out as soon as the initial deflection has been announced by the evaluator and places out the aiming posts as directed by the gunner.
- The assistant may manipulate the elevation mechanism and level the elevation bubble.
- The trial is complete when the gunner announces, “UP,” after the aiming posts are in position.

Scoring

8-77. The scoring procedures are as follows:

- The candidate receives no credit when the—
 - Time exceeds two minutes, five seconds.
 - Deflection placed on the sight is incorrect.
 - Elevation and cross-level bubbles of the sight are not centered.
 - Turntable is not centered.
 - Aiming posts are not properly aligned.
 - Mortar is not within four turns of center of traverse.
- When the mortar is laid correctly, credit is given as follows:

<i>Time in Seconds</i>	<i>Point Credit for Each Trial</i>
70 or less	10
71 to 81	9
82 to 92	8
93 to 103	7
104 to 114	6
115 to 125	5
126 or over	0

RECIPROCAL LAY (SIGHT-TO-SIGHT)

8-78. In this test, the sight-to-sight method is used to reciprocally lay the mortar. The mortar is prepared for action on an azimuth by the evaluator and his assistants by taking the following actions:

- The sight is set at 3200 mils deflection and 1100 mils elevation.
- The evaluator sets up the base mortar about 35 meters from the test mortars where it is visible to the gunner.
- The evaluator orients the base mortar on an azimuth of not less than 150 mils or more than 200 mils away from the initial azimuth.
- The candidate selects an assistant gunner (optional for the 60-mm mortar).
- The candidate is allowed to begin the test with his hand on the deflection micrometer knob.
- The evaluator ensures that the candidate understands the requirements of the test, and instructs him to report, “I AM READY,” before each trial.

Procedure

8-79. The candidate is given three trials. If he chooses to use the first practice as a record, then the second is also for record. If he chooses to use the first trial as practice, the second and third trials are records. The credit score for the test is the total of the two record trials. The candidate follows the below guidelines:

- The evaluator is positioned at the base mortar and commands, “AIMING POINT THIS INSTRUMENT.”
- The gunner refers his sight to the aiming point and replies, “AIMING POINT IDENTIFIED.”
- The evaluator reads the deflection from the sight of the base mortar, determines the back azimuth of that deflection by adding/subtracting 3200 mils, and announces the deflection—for example, the deflection on the base mortar is 1200 mils. The evaluator adds 3200 mils to this deflection ($1200 + 3200 = 4400$ mils) and announces, “NUMBER ONE, DEFLECTION FOUR FOUR ZERO ZERO.”
- The candidate repeats the announced deflection, sets it on the sight, and, with the help of the assistant gunner, lays the mortar on the center of the base mortar sight lens, and announces, “NUMBER ONE READY FOR RECHECK.” The evaluator announces the new deflection as soon as possible so that there is no delay.
- The assistant may manipulate the elevation mechanism and level the elevation bubble.
- The operation is completed when the candidate announces, “NUMBER ONE, ZERO (or ONE) MIL(S), MORTAR LAID.”

Scoring

8-80. The scoring procedures are as follows:

- The candidate receives no credit when the—
 - Time exceeds one minute, 55 seconds.
 - Deflection placed on the sight is incorrect.
 - Elevation and cross-level bubbles of the sight are not centered.
 - Mortar is not within two turns of center of traverse.
 - The sight and the base mortar sight are not sighted on each other, with a difference of not more than one mil between deflection readings.
- When the mortar is laid correctly, credit is given as follows:

<i>Time in Seconds</i>	<i>Point Credit for Each Trial</i>
55 or less	10
56 to 67	9
68 to 79	8
80 to 91	7
92 to 103	6
104 to 115	5
116 and over	0

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