

MHI
Copy 3

FM 105-5

WAR DEPARTMENT

FIELD MANUAL



UMPIRE MANUAL

April 23, 1942

SECTION SEARCH

FM 105-5

FIELD MANUAL



UMPIRE MANUAL



**UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1942**

WAR DEPARTMENT,
WASHINGTON, April 23, 1942.

FM 105-5, Umpire Manual, is published for the information
and guidance of all concerned.

[A. G. 062.11 (3-27-42).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General.

DISTRIBUTION:

D(10); R(2).

(For explanation of symbols see FM 21-6.)

TABLE OF CONTENTS

CHAPTER 1. General.	Paragraph	Page
Application.....	1	1
Character of maneuvers.....	2	1
Director.....	3	1
Need of umpiring.....	4	2
Status of umpires.....	5	2
Relations between troops and umpires.....	6	2
Organization of umpires.....	7	2
Identification.....	8	3
Control flags.....	9	4
CHAPTER 2. System of umpiring.		
SECTION I. General.		
Basis of umpiring.....	10	5
Decisions.....	11	5
Successive decisions.....	12	7
II. Fire power.		
Infantry fire power.....	13	7
Determination of infantry fire power.....	14	8
Effect of artillery on fire power.....	15	10
Effect of tanks on fire power.....	16	10
Effect of aviation on fire power.....	17	10
III. Losses.		
General.....	18	11
Infantry.....	19	12
Field Artillery.....	20	13
Horse cavalry.....	21	14
Vehicles.....	22	14
Antitank guns.....	23	16
Fire duels.....	24	17
Airplanes.....	25	18
IV. Delays.		
Obstacles.....	26	20
Air attacks against bridges.....	27	24
Other delays and neutraliza- tion.....	28	25
V. Marking artillery fire.		
General.....	29	25
Code coordinates.....	30	26
Procedure.....	31	26
Records.....	32	29
VI. Miscellaneous.		
Chemicals.....	33	32
Blank ammunition.....	34	32
Counterbattery intelligence.....	35	32
Motor-vehicle lights.....	36	32
Prisoners and captured vehi- cles.....	37	33
Artificial casualties.....	38	33

TABLE OF CONTENTS

	Paragraph	Page
CHAPTER 3. Umpire personnel and duties.		
SECTION I. Personnel.		
Director headquarters-----	39	35
Umpires-----	40	36
II. Duties of umpires.		
General-----	41	37
Infantry rifle or parachute battalion umpire-----	42	38
Field artillery battalion um- pire-----	43	38
Company (troop) umpire----	44	39
Tank umpire-----	45	41
Antiaircraft umpire-----	46	42
Signal umpire-----	47	43
Fire umpire-----	48	44
CHAPTER 4. Umpire training.		
General-----	49	46
Program of umpire training--	50	46
Applicatory problems-----	51	47
Field maneuvers-----	52	48

FIELD MANUAL

UMPIRE MANUAL

(This manual supersedes Umpire Manual (mimeographed), February 1941.)

CHAPTER 1

GENERAL

■ 1. APPLICATION.—This manual is applicable specifically to field maneuvers (two-sided). It may be used in field exercises (one-sided), command post exercises, and various other forms of applicatory training so far as appropriate. It pertains only to ground umpiring. Air umpiring is covered in FM 105-6.

■ 2. CHARACTER OF MANEUVERS.—Maneuvers should be—

a. *Free*.—Each force should act as it chooses, subject only to field orders received, to terrain restrictions, and actions by the opposing force. Prohibited areas and other terrain restrictions should be published to both forces alike before a maneuver, preferably by overprinted map or overlay. A particular tract may be used either actually or not at all; it may not be used by assumption or constructively.

b. *Continuous*.—An armistice or rest period during a maneuver—for example, at night—lessens realism and training value and will not be permitted.

c. *Brief*.—While a maneuver should continue until the tactical action is developed fully, it will be found, usually, that the useful and profitable period of maneuvers of a division or smaller unit is limited to about 48 hours. Maneuvers of larger forces may require twice that period or even more.

■ 3. DIRECTOR.—The director plans and conducts the maneuver. Although he participates in the operations of neither of the opposing forces, he acts as the superior commander of both forces for the purpose of presenting the situation, initiating and terminating the maneuver, and giving such instructions as may be necessary. He conducts the critique.

■ 4. NEED OF UMPIRING.—Actual combat involves movement, fire, and physical contact of the opposing forces (shock action). Movement can and should be real, approaching service conditions closely. Fire must be simulated, or with blank ammunition, and its effect determined and indicated by umpires. Hand-to-hand combat also cannot be real, and opposing troops are stopped short of physical contact. Thus, except for movement, it is necessary that tactical progress be determined and indicated by umpires, based on the strength, position, and fire power of the opposing units involved.

■ 5. STATUS OF UMPIRES.—Although umpires are assigned to units of the opposing forces, they are in no sense a part of such units. The entire group of umpires is superimposed on the maneuver as a whole. Umpires are neutral in attitude and actions. Their effort is to promote realism by every proper procedure. Their decisions express and interpret tactical facts.

■ 6. RELATIONS BETWEEN TROOPS AND UMPIRES.—*a.* Troops must understand and conform to procedure established for maneuvers, and accept decisions by umpires without argument. However, troops may call on umpires for decisions when needed and for clarification of decisions already made.

b. Umpires must avoid interfering with troops, and must not reveal the position of troops by exposing themselves unnecessarily. In general, unit umpires should conform to restrictions imposed on troops of the unit to which they are assigned.

■ 7. ORGANIZATION OF UMPIRES.—*a.* Umpires are directly under the director. For large maneuvers, assistant directors are necessary for the administration, assignment, and supervision of umpires and their transportation and equipment.

b. Umpires are of three classes:

(1) Unit umpires, assigned to troop units with duties as described in paragraphs 41-48.

(2) Fire umpires, who mark artillery fires on the ground (pars. 29, 43c, and 48).

(3) Bridge umpires, assigned specially to important bridges which are subject to air attack, in order to assure effective umpiring (par. 27).

■ 8. IDENTIFICATION.—*a. Personnel and motor vehicles.*—(1) *Neutrals.*

	<i>Personnel</i>	<i>Motor vehicles</i>
Director and higher commanders and staffs and all umpire personnel.....	White shoulder loop.....	Green flag.
Observers.....	Green shoulder loop.....	Green flag.

(2) *Participants.*

Blue force.....	Blue shoulder loop.	Blue placard or sticker in front and rear.
Red force.....	Red shoulder loop.	Red placard or sticker in front and rear.
Correspondent.....	Green brassard with white letter C.	Blue (Red) placard or sticker in front and rear.
Photographer.....	Green brassard with white letter P.	Blue (Red) placard or sticker in front and rear.

b. Armored vehicles.—(1) Armored vehicles (par. 22a) in action will carry colored cloth wrapped conspicuously about the body of the vehicle—not flown as a flag—as follows:

Blue force.....	Blue cloth.
Red force.....	Red cloth.

This identification is inapplicable to unarmored vehicles of an armored unit.

(2) If a vehicle is ruled out of action by an umpire, or is captured, the cloth will be removed from view.

c. Airplanes.

Blue force: 5-foot white band around fuselage midway between cockpit and tail.

Red force: 5-foot international orange band around each wing, center of band one-third of way in from wing tips.

d. Supply vehicles.—No vehicle whatever of the opposing forces is authorized to carry the green flag, except ambulances evacuating *actual* casualties or returning therefrom.

■ 9. CONTROL FLAGS.—*a.* When opposing units are in contact, and at other times when appropriate, control flags will be used as follows:

<i>Flag</i>	<i>Displayed by</i>	<i>Meaning</i>
White-----	Unit umpire.	All troops of the unit halt in place while the flag is displayed (pars. 11 <i>a</i> and 44 <i>h</i>).
Blue ¹ -----	Unit umpire.	Opposing infantry (horse cavalry) may advance toward the unit where the flag is displayed, because they have fire superiority. If they do so, the weaker troops must withdraw correspondingly.
Red ¹ -----	Unit umpire.	Opposing infantry (horse cavalry) may <i>not</i> advance toward the unit where the flag is displayed, because they have not fire superiority.
Red with white center.	Fire umpire or field ar- tillery bat- talion um- pire.	Artillery fire is falling within 100 yards of the flag.
Orange----	Gun crew----	Effective (par. 22) antitank gun is firing from the flag.

b. The following sizes are suitable:

White, blue, and red: Foot troops—flag 4 by 4 feet; staff 8 feet.

Mounted troops and armored vehicles—flag 2 by 2 feet; staff 5 feet.

Red with white center: Flag 2 by 2 feet; staff 5 feet.

Orange: Flag 3 by 3 feet; staff 5 feet.

¹Inapplicable to armored elements except the red flag after dark (par. 45*e*).

CHAPTER 2

SYSTEM OF UMPIRING

	Paragraphs
SECTION I. General.....	10-12
II. Fire power.....	13-17
III. Losses.....	18-25
IV. Delays.....	26-28
V. Marking artillery fire.....	29-32
VI. Miscellaneous.....	33-38

SECTION I

GENERAL

■ 10. BASIS OF UMPIRING.—*a.* The outcome of combat is essentially the sum of the outcomes of many encounters between small units of the opposing forces. It follows that realism in maneuvers can be obtained only by painstaking umpiring at all points of contact.

b. Umpiring is based on a studied and reasonably accurate determination of three controlling factors:

(1) Fire power of the infantry, including the effect on it of artillery, tanks, and aviation (pars. 13-17).

(2) Losses of personnel and essential equipment, since they affect infantry fire power either directly or indirectly (pars. 18-25).

(3) Delays, which affect movement and ultimately fire power in some degree (pars. 26-28).

c. The great mass of umpires should be with or among small units which are or will be in contact with the opposing forces. Umpires at the headquarters of the director or of large units should be held to a minimum (pars. 39 and 40).

■ 11. DECISIONS.—When opposing forces approach contact—and occasionally under other conditions—a decision by umpires is required, in order that there may be tactical realism. The procedure is as follows:

a. Umpires with opposing units display white flags, halting their units pending a decision (par. 9*a*). Other unit umpires in the same locality also display white flags, in order not to distort the tactical situation unnaturally.

b. The umpires concerned then assemble *promptly* and confer as to the situation of their units.

c. One of the following decisions should result:

(1) One force may advance, and the other must withdraw correspondingly. The white flags are replaced by red flags along the front of the stronger force, and by blue flags along the front of the weaker force.

(2) Neither force may advance. The white flags are replaced by red flags along the fronts of both forces (par. 44*h*).

d. In case the umpires of one force disagree with those of the opposing force, a compromise must be reached promptly, in order that the maneuver may progress. In case any umpire displays an inflexible and unreasonable attitude, he should be reported to director headquarters as soon as possible by other umpires who are familiar with the facts.

e. In case an artillery fire is reported which falls in an area where white flags are being displayed, it will be marked and umpires will credit it in determining relative fire power (par. 15*a*). Except for determining relative fire power, however, the artillery fire will be considered as commencing when the white flags are replaced by colored flags.

f. If effective umpiring and sound decisions become impracticable on account of darkness, fog, close terrain, or other conditions, red flags should be displayed along the front of both forces. Such action is in no sense an armistice, but merely restricts movement in the degree necessary to prevent confusion (par. 44*i*).

g. With respect to air attacks, ground umpires—

(1) Assess losses of airplanes due to antiaircraft fire (par. 25), *except* those due to concentrated caliber .30 fire (FM 105-6). They report such losses direct to the airplane pilot, the air formation commander, the air umpire, or director headquarters.

(2) Determine ground effects due to air action, except attacks against airdromes. Such decisions must be made and communicated to the units concerned as promptly as possible, in order to impress troops with the effect of aviation.

h. Air umpires and airdrome umpires (FM 105-6) make the following decisions:

(1) Admissibility and validity of information, including photographs obtained by reconnaissance and observation teams.

(2) Losses of own airplanes and balloons in air fighting and in attacks on airdromes.

(3) Effects of air attacks on own airdromes.

(4) Losses of airplanes flying low over concentrated caliber .30 fire.

■ 12. SUCCESSIVE DECISIONS.—*a.* In general, a decision results in some change of dispositions by one or both forces, in which case white flags must be displayed again and a new decision made. In other words, the combat phase of a maneuver consists of intermittent actions marked by blue and red flags, separated by the display of white flags and the ensuing decisions.

b. The interruption of action, in order to permit decisions, delays the maneuver. Such delays, however, counteract the natural tendency of maneuvers to progress more rapidly than actual combat. Moreover, it is only by frequent and considered decisions, based on facts at points of contact, that a maneuver can afford correct and useful training commensurate with the effort and expense involved.

SECTION II

FIRE POWER

■ 13. INFANTRY FIRE POWER.—*a.* An infantry element or any element acting as infantry should be permitted to advance only when it has decisive superiority of fire as compared with the elements immediately opposing it. This superiority never should be less than 2 to 1, and generally should be 3 or 4 to 1. If the defender has good cover and field of fire, or if the attacker has little cover, there should be no hesitation in requiring a superiority of 5 to 1, or even more.

b. The tendency is to favor the attacker, permitting him to advance with only a small fire superiority, whereas war experience has shown conclusively that a determined defender, well placed, can delay or even stop a greatly superior force.

c. The machine gun is especially effective in defense, and every effort must be made to ascertain and weigh fairly those which are effective in a given situation. Machine guns should be supplied abundantly with blank ammunition, and must fire sufficiently to reveal their presence to opposing troops and to umpires (par. 34*b*).

d. The situation may be such that a sound decision can be reached only by dividing the action into parts which are distinct so far as fire power is concerned. For example, one company may attack another company frontally, which is one action and need not be divided. The fire power is about the same for both forces, and the decision is a stalemate. But, if the attacking company employs one platoon frontally and two platoons to envelop, the situation is quite different and must be divided into two actions. The frontal attack is stopped, but the enveloping attack quite possibly may be decisively superior in fire power and should be permitted to advance. Thus the attacking company may be successful by virtue of its maneuver.

e. Credit should be allowed for weapons which are authorized but not yet issued, provided that trained crews are in proper positions and simulate action so far as possible. It is desirable to improvise dummy weapons.

■ 14. DETERMINATION OF INFANTRY FIRE POWER.—*a.* Manifestly umpires cannot follow and evaluate the fire of infantry weapons individually. Nevertheless it is essential to determine the collective fire effect of infantry units in a form which permits comparison. The adopted system is based on the assumption that all weapons in action are employed with full effectiveness under the attendant conditions. Differences in fire effect then are due principally to numbers and relative effect of weapons in action and to range. It is practicable ordinarily to determine these factors with an accuracy sufficient for the purpose.

b. The number of weapons can be tallied readily by company umpires, and includes only those weapons whose fire is effective in the situation being decided. Weapons in support and reserve and those firing in another situation are excluded.

c. The relative effect of the several weapons cannot be evaluated precisely, but is indicated sufficiently accurately by the following factors:

	0-100 yards	100-200 yards	0-300 yards	0-500 yards	500- 1,000 yards	1,000- 1,500 yards	1,500- 2,000 yards
Rifle, caliber .30, all models.....				1	0.5		
Carbine.....			1				
Automatic rifle.....				3	1.5		
Submachine gun.....	3	1.5					
Light machine gun.....				6	6	3	
Heavy machine gun ¹				10	10	5	
60-mm mortar.....				6	6		
81-mm mortar.....				15	15	15	15

¹ Including caliber .50 when used against personnel.

d. Infantry fire power is determined for each rifle company or smaller separate unit in action. Fire power of heavy weapons is added to that of the rifle unit supported. The total, modified for artillery, tank, and airplane effect (pars. 15, 16, 17) and for losses (pars. 18, 19), is the basis of a decision according to paragraph 11c above.

e. The following example shows how a company umpire might determine the fire power of his company in a particular situation (computations are based on T/O 7-17 and 7-18, Oct. 1, 1940):

4 rifle squads in action; others in support; squads at full strength of 12 rifles.....	48
2 automatic rifle squads in action, each of 2 automatic rifles.....	12
2 light machine guns in action.....	12
3 60-mm mortars in action.....	18
4 heavy machine guns supporting the company, 2 of them at 800 yards and 2 at 1,200 yards.....	30
2 81-mm mortars in action.....	30
Total.....	150

f. The fire power of other rifle units is determined as for Infantry.

■ 15. EFFECT OF ARTILLERY ON FIRE POWER.—*a.* When an infantry element actually is under artillery fire (par. 29), its fire power will be taken as reduced by one-half so long as the artillery fire continues (par. 11*e*). Thus, in the example above, if one rifle platoon of two rifle squads and one automatic rifle squad in action were under artillery fire, the fire power of the company would be reduced by 15.

b. When artillery in position is taken under well-placed fire by the opposing artillery—counterbattery fire—such fire neutralizes the artillery subjected to it. The duration of neutralization of each battery is 5 minutes per battery-minute of counterbattery fire against it. Thus counterbattery fire assists the Infantry by interrupting artillery fire against such Infantry.

■ 16. EFFECT OF TANKS ON FIRE POWER.—*a.* Tanks in action will be taken as neutralizing Infantry within 100 yards of any tank. The fire power of such Infantry against opposing Infantry is zero while the tanks are present.

b. The effect of tanks on artillery fire power is in diverting the artillery from support of the Infantry to antitank defense. Such effect is included automatically in the supporting fires which are reported for marking (par. 29).

■ 17. EFFECT OF AVIATION ON FIRE POWER.—*a.* Air attacks against ground targets require indication of the target from the air, in order that the ground umpire may identify it. Dropped messages, visual signals, or air-ground radio may be used. Visual signals include paper bags of flour of not more than $\frac{1}{4}$ pound, flakes of paper, sprays of lime water or other inert liquids, flares and other pyrotechnics, and airplane landing lights.

b. Deployed Infantry and artillery in position will be taken as neutralized by attack by low-flying airplanes as follows: 1 airplane against a company or battery or less; 3 airplanes against a battalion; and 9 airplanes against a regiment. During the attack, the fire power of the Infantry against opposing Infantry is zero, and the artillery fire is interrupted.

SECTION III

LOSSES

■ 18. GENERAL.—*a.* Losses considered in umpiring are confined to those which have a material effect on realistic progress of maneuvers (par. 10*b*), as follows: casualties of rifle units; destruction or capture of field artillery and antiaircraft pieces, antitank guns, and vehicles; destruction of airplanes.

b. It is essential that the personnel losses of rifle companies and troops of Infantry and horse cavalry be assessed and recorded, since such losses affect fire power and thus influence the progress of a maneuver. Units may be weakened by accumulating losses during a maneuver so as to affect the final outcome decisively.

c. Losses are assessed by the umpire with the company, not by umpires with opposing units. The umpire keeps a running record of losses, and informs the company commander of them from time to time. If a company umpire is not present when elements of his company are subjected to artillery fire, the fire umpire will send written information to the company umpire as to the number of the company personnel and battery-minutes of fire involved.

d. Personnel losses are listed below in percent of the strength involved. Ordinarily umpires must convert such proportions into numbers according to the strength of the element concerned. The total numerical loss at any time, however, must be reconverted to percent in determining fire power. *Example:* The actual initial strength of a rifle company is 200. Losses are assessed for separate, successive actions as follows: Entire company, 2 percent; 1 platoon, 1 percent; 2 platoons, 3 percent. The corresponding numerical losses are 4, $\frac{1}{2}$, and 3—total 8, which is 4 percent of 200. Thereafter, any computed fire power, such as that of paragraph 14*e*, is reduced by 4 percent or 6, on the assumption that losses of fire power other than for rifles are in the same proportion as for rifles.

e. Assessed casualties do not leave their companies actually; in fact, they are recorded quantitatively, not individually. They are distinct from artificial casualties (par. 38).

f. Assessed casualties will be considered as *not* replaced during the maneuver.

g. The losses to be assessed as a result of fire and other actions by the opposing force necessarily are a matter of judgment in some respects. The relative strength of the opposing forces is an especially important factor. For example, a rifle company attacking a squad might be expected to sustain comparatively few casualties; but if the company attacked another company, its losses undoubtedly would be heavy.

h. The data in paragraphs 19-25 are to be taken as a guide in weighing the various aspects of each case. It is to be emphasized that the usual tendency of umpires is to assess losses which are grossly excessive in the light of war experience.

■ 19. INFANTRY.—*a.* War experience indicates that an infantry regiment may sustain extreme casualties as great as 15 percent during 1 day of severe combat. While losses of a particular portion of the regiment might exceed this proportion, the figure affords a useful check on the total casualties assessed by company umpires.

b. Company umpires should penalize improper formations and undue exposure by increased losses. Doubling the usual losses is a severe penalty in this connection.

c. The average losses sustained by Infantry are indicated as follows:

Fire by opposing Infantry----- 1-3 percent per hour.

When two infantry units of substantially equal strength oppose each other under the same conditions, the casualties may be taken as 2 percent per hour. For example, a company of 200 men would lose 4 men per hour of active combat. If a unit attacks a strong position, or if it encounters especially heavy fire, the rate may be 3 percent per hour. If a unit is on the defensive, well protected, or if it attacks a markedly inferior force, the loss may be only 1 percent per hour.

Personnel in trucks or erect in the open within an artillery concentration 200 yards in diameter----- 2 percent per battery per minute.

Personnel prone within an artillery concentration 200 yards in diameter	1 percent per battery per minute.
Infantry overrun by tanks:	
Elements within 100 yards of any tank and not entrenched.....	3 percent per tank per attack.
Entrenched	1 percent per tank per attack.
Infantry attacked by mounted horse cavalry—elements actually struck.	2 percent per attack.
Infantry in column attacked by an appropriate number ¹ of low-flying airplanes:	
With surprise.....	10 percent per attack.
Without surprise.....	2 percent per attack.
Infantry deployed or in bivouac attacked by an appropriate number ¹ of low-flying airplanes:	
With surprise.....	3 percent per attack.
Without surprise.....	1 percent per attack.

■ 20. FIELD ARTILLERY.—*a.* War experience indicates that casualties of artillery personnel are small and insufficient to interrupt firing or affect progress of the Infantry materially. Hence, in a maneuver there is no need of assessing casualties of Field Artillery.

b. When a battery in position is attacked by either foot or mounted troops, decision as to capture or destruction of the battery is based on relative fire power (par. 14) in directions other than those of the artillery pieces. No advance is permissible against cannon fire at short range.

c. See paragraph 15*b* in connection with neutralization of artillery by counterbattery fire.

d. Artillery employed as antitank guns will be subject to the provisions of paragraph 23.

¹ 1 airplane against a company or less; 3 airplanes against a battalion; and 9 airplanes against a regiment. If the number is materially smaller or larger, the effect is assessed correspondingly.

e. Destroyed and captured artillery (par. 37) will be ruled out of action for the duration of the maneuver, or for such lesser period as may be fixed beforehand by the director.

■ 21. HORSE CAVALRY.—a. Personnel losses of horse cavalry fighting mounted vary largely with speed, formation, and cover, and are indicated as follows:

Mounted cavalry attacking deployed Infantry.....	5 percent per attack.
Mounted cavalry attacking infantry in column.....	3 percent per attack.
Mounted cavalry attacking artillery in position.....	2 percent per attack.
Mounted cavalry attacking artillery in column.....	2 percent per attack.
Mounted cavalry which passes through a battery concentration.....	2 percent per case.
Mounted cavalry attacked by an appropriate number of low-flying airplanes.....	Same as Infantry (par. 19).

b. Personnel losses of horse cavalry fighting dismounted are the same as Infantry (par. 19).

c. It is unnecessary to assess horse losses, since personnel losses bring about the desired realism.

■ 22. VEHICLES.—a. Armored vehicles include all that are armored, regardless of type and use, such as tanks, personnel and gun carriers, and scout cars. Unarmored vehicles include all others, except motorcycles.

b. In maneuvers, the following means are taken as effective against both armored and unarmored vehicles: antitank guns or artillery employed against tanks, mines, grenades, airplanes, and tanks.

c. (1) The following weapons are taken as effective against *armored* vehicles:

Weapon ¹	Maximum effective range (yards) against—		
	Scout cars or personnel carriers	Light tanks	Medium tanks
Caliber .50 machine gun.....	500	Ineffective	Ineffective
37-mm gun ²	1,000	1,000	500
75-mm gun or howitzer or larger ³	1,000	1,000	1,000

¹ On ground or stationary vehicle.

² May be assumed when authorized by Tables of Basic Allowances, even though armed actually with caliber .50 machine gun.

³ Regardless of weapon, a range of over 1,000 yards is taken as ineffective, on account of the small probability of hitting and the difficulty of umpiring.

(2) Against *unarmored* vehicles, the effective weapons are the same as in (1) above and the effective ranges actually are greater than against armored vehicles. However, on account of the great number of unarmored vehicles and their lesser importance, as well as for other reasons, losses will be assessed only at ranges less than 500 yards.

d. Practice mines only will be taken as effective. Such mines, either issued or improvised, must be equipped so as to give off smoke or other visible indication when struck. No effect may be assessed for *dummy* mines, although there is no objection to using them for deception. Mines may *not* be *assumed*.

e. Antitank grenades—both hand and rifle—will be represented by small sacks of flour or similar material thrown by hand. They are effective against all unarmored vehicles and against all light tanks. They are effective against medium tanks if the grenade strikes the tank any place other than the turret. To be given credit for effect, flour sacks must be thrown from a concealed or covered position or one blind to fire from the vehicle at the time.

f. Losses sustained by vehicles are indicated as follows:

(1) Vehicles passing through a battery concentration—percent of vehicles destroyed: armored, 2; unarmored, 3.

(2) Vehicles within a battery concentration—percent of vehicles destroyed per minute: armored, 4; unarmored, 6.

(3) *Moving* vehicles under fire by stationary effective weapons (*c* above) using *direct laying*:

(a) Charging a gun to overrun it—2 vehicles per gun firing if fire is opened at not less than 400 yards; 1 vehicle if fire is opened at not less than 150 yards.

(b) Moving other than toward the gun—1 vehicle per gun per *minute* of firing at range of 500-1000 yards; and 1 vehicle per gun per *half-minute* of firing at range less than 500 yards.

(4) For fire against *stationary* armed vehicles, see paragraph 24.

(5) Vehicles attacked by low-flying bombers in formation appropriate for the purpose—vehicles per airplane per attack:

With surprise: armored, 1; unarmored, 2.

Without surprise: armored, $\frac{1}{5}$; unarmored, $\frac{1}{3}$.

g. Vehicles lost will be ruled out of action for the duration of the maneuver, or for such lesser period as may be fixed beforehand by the director.

h. Losses will not be assessed against ambulances and kitchen, ration, and mail trucks (par. 37c, f).

i. Cargoes of vehicles ruled out of action may be transferred to other vehicles if available.

j. For captured vehicles, see paragraph 37.

■ 23. ANTITANK GUNS.—a. Antitank guns are those which are effective against tanks, as listed in paragraph 22c.

b. Antitank guns in position may be—

(1) Captured or destroyed as a result of attack by either foot or mounted troops (par. 20b).

(2) Neutralized by counterbattery fire (par. 15b), as described in paragraph 29.

(3) Neutralized by *observed* fire of either ground or stationary vehicular mortars, directed on a visible gun and indicated by an umpire. The duration of the effect is that of the fire itself.

(4) Overrun and destroyed by charging tanks or other vehicles unless the vehicles are destroyed beforehand by fire (par. 22f).

(5) Destroyed by *stationary* effective weapons (par. 22c), using *direct laying* under conditions described in paragraph 24.

c. Guns lost or captured (par. 37) will be ruled out of action for the duration of the maneuver, or for such lesser period as may be fixed beforehand by the director.

■ 24. FIRE DUELS.—*a.* A fire duel with effective weapons (par. 22c) between tanks, other vehicles, and/or ground guns is difficult to umpire. Nevertheless painstaking umpiring is essential, since such duels may have a profound effect on the progress of a maneuver.

b. Since the weapons engaged are effective against armor, the outcome of a duel depends on who opens fire first, the number of weapons involved, and the size of target presented.

c. While the effective range is as great as 1,000 yards in some cases, it is impracticable to umpire a fire duel at more than 500 yards. Hence losses will be assessed only when and if the opponents are within this distance of each other.

d. Guns of a *moving* vehicle are taken as ineffective against another vehicle or a ground gun.

e. Guns and vehicles actually firing in a fire duel will be scored as follows:

Each effective (par. 22c) stationary gun:

- | | |
|--|---|
| (1) Ground gun behind natural or artificial cover ¹ _____ | 2 |
| (2) Vehicle gun behind natural or artificial cover so
as to present a target of substantially the same size
as a ground gun_____ | 2 |
| (3) Ground or vehicle gun unprotected by natural or
artificial cover_____ | 1 |

f. (1) When a gun opens fire, it must display an orange flag (par. 9), and must be kept laid accurately on its target. Otherwise its fire will be given no credit. If the opposing gun (vehicle) opens fire at the same time, the gun having the lesser score will be ruled destroyed. If the scores are the same, the gun having the lesser cover will be ruled destroyed. However, if the weaker gun withdraws under cover within 30 seconds after hostile fire is opened, it will not be destroyed.

(2) If the opposing guns do not open fire at the same time, the score of the later one will be reduced by the ratio of the

¹ Concealment is not cover necessarily.

delay in seconds to 30 seconds, and the decision made as in (1) above.

Example: A thoroughly covered ground gun opens fire against a tank which is only partially covered. The tank replies 15 seconds later. The tank has two effective guns.

Solution: The score of the ground gun clearly is 2, since it is covered well and opens fire first. Each tank gun is scored, say, 1.5 for lack of complete cover, or 3 for both guns. The tank opens fire 15 seconds late, the ratio of 15 to 30 being 0.5. Thus the score of the tank is 0.5 of 3 or 1.5. Unless the tank withdraws under cover within 30 seconds after the ground gun opens fire, the tank is ruled destroyed.

g. If the number of guns and/or vehicles engaged in the fire duel is so considerable as to render the foregoing method impracticable, the following more collective method is used: Determine the total score of each side as nearly as practicable according to the foregoing procedure, including only those elements which remain in action 30 seconds or more. Rule all or a portion of the weaker side destroyed, according to factors such as terrain, tactical employment, and duration of the action. Assess losses of the stronger side in the inverse ratio of the scores. *Example:* Blue score, 40; Red score, 30—20 of Red ruled destroyed; $\frac{3}{4}$ of 20, or 15, of Blue.

h. Tanks maneuvering against tanks—losses in the inverse ratio of participating tanks of two opposing forces. A medium tank is taken as the equivalent of two light tanks. *Example:* Blue, 10 medium and 10 light tanks; Red, 20 light tanks—losses in the ratio of 2 Blue to 3 Red (see par. 45).

■ 25. AIRPLANES.—*a.* Losses of airplanes are assessed by ground or air umpires as indicated in paragraph 11*g* and *h*. Losses due to antiaircraft fire are assessed as indicated below.

b. 3-inch or 90-mm antiaircraft artillery.—The following table showing number of airplanes shot down by one battery (4 guns)¹ will be used as a guide:

Fuze range.....	0-18				Over 18	
	1,050-16,500		Over 16,500		Over 1,050	
Altitude, feet ²	S	F	S	F	S	F
Time in action: ⁴						
0-10 seconds.....	0	$\frac{1}{2}$	0	0	0	0
10-20 seconds.....	$\frac{1}{2}$	$\frac{2}{3}$	0	$\frac{1}{3}$	0	0
20-30 seconds.....	$\frac{2}{3}$	1	$\frac{1}{3}$	$\frac{1}{2}$	0	$\frac{1}{2}$

¹ For pursuit planes, reduce losses by one-half. At night the indicated losses are applicable only during the period while the target is illuminated.

² No losses are assessed for altitudes below 1,050 feet.

³ S—single plane; F—formation of planes.

⁴ Credit is allowed only during the period, not exceeding 30 seconds, that accurate firing data, within the fuze range limits of the director, are applied to the guns.

⁵ It is desirable, when practicable, that all antiaircraft fire be represented by pyrotechnic signal, visible to pilots.

c. 37-mm antiaircraft gun.—The loss is one-half airplane for each platoon (two guns) firing for 20 seconds within a slant range of 2,500 yards and an altitude of 4,000 feet. Losses are not assessed for altitudes greater than 4,000 feet.

d. Caliber .50 antiaircraft machine guns.—The loss is one-third airplane for each platoon (four guns) firing for 20 seconds within a slant range of 1,000 yards and an altitude of 2,000 feet. Losses are not assessed for altitudes greater than 2,000 feet.

e. To determine the combined loss when the airplane or airplanes are engaged by two or more batteries (platoons), take two-thirds of the sum of the assessed losses for individual batteries (platoons) (par. 46). Fractional losses will be taken to the nearest one-third and the airplane considered as either undamaged or destroyed, according to lot. *Example:* Loss of $\frac{2}{3}$ airplane. Mark two slips of paper, one *destroy* and one *undamaged*. The one drawn is the decision.

f. Umpires should apply judgment in assessing losses. Continuous fire need not be maintained during the entire period that airplanes remain within the field of fire. Accuracy, rather than volume, of fire should be the criterion (par. 46).

g. When ground-air umpire radio communication is available, air losses assessed by antiaircraft unit umpires should be communicated instantly to air umpires, in order that the penalties may be made effective at the time. This method stimulates the interest of both air and antiaircraft units, and promotes realism. Lacking such radio communication, losses will be transmitted through director headquarters or by such other means as may be available.

SECTION IV

DELAYS

■ 26. OBSTACLES.—*a.* Demolitions and other obstacles have the primary purpose of delaying the opposing force. However, once executed, obstacles affect both of the opposing forces alike. The work will be either actual or simulated in detail, under the supervision of unit umpires, so as to confine the number and effect of obstacles approximately to realities. Operations will be executed actually, so far as practicable, and the remainder estimated as to time and personnel. During simulated operations, matériel must actually be on hand and that used checked and tallied.

b. A simulated obstacle must be guarded in order to enforce compliance by all troops with the conditions attached to the obstacle by the umpire. The guard will be supplied by the unit executing the obstacle. The guard will have the authority of umpire personnel, and will wear proper identification.

c. Upon completion of a simulated obstacle, the umpire will supply the guard with a statement on the accompanying form. If no umpire is present during the work, a company officer will supply the statement, which will be checked and authenticated by an umpire as soon as practicable. However, the statement is valid without umpire authentication. The time of detonation of a demolition prepared previously may be entered by the guard if no umpire is present at the time.

d. It is permissible to go around an obstacle, provided the movement is actual. Assumed or constructive movements will not be permitted, even with appropriate delays.

e. If an obstacle is defended by troops and is attacked by opposing troops, the action will be decided in the same manner as other actions between troops. The conditions attached to reducing the obstacle itself will be effective only after completion of the troop action.

f. In order that air observers may distinguish bridges which have been demolished by simulation, such bridges will be marked at both ends by large white markers, such as a bed sheet. Responsibility for marking will rest with the ground unit which executes the demolition (see also par. 27).

g. Guards at obstacles must remain on duty constantly until relieved by an umpire, or until the termination of the maneuver phase. Sufficient class C or other rations should be left with guards. Vehicles carrying green flags will not be used to carry food to guards.

h. When opposing troops have reduced an obstacle, guards will be relieved by an umpire, and then will be processed as prisoners (par. 37).

i. Under no circumstances will an umpire with a unit delayed by an obstacle modify in any way the provisions of the certification of obstacle in possession of a guard.

(See reverse side for additional instructions)
CERTIFICATION OF OBSTACLE

UMPIRE OR COMPANY OFFICER CERTIFICATE

(To be executed by company officer when umpire is not present)

1. Type and nature of obstacle: (As: bridge demolition; bridge damaged by bombs; road crater)
2. Method used: (Brief description of work done, as: destroyed abutments by tamped charges, etc.)
3. Personnel used: (As: 1 squad, 2 hours)
4. Equipment used: (As: 1 earth auger, 1 hour, 1 squad demolition set)
5. Material or explosive used: (As: for abutments, 6 charges 200 pounds each; steel, 10 charges 15 pounds each)
6. Date and hour started ----- Completed (to be determined by umpire if present) -----
7. Date and hour bombed -----

Signed

 Company officer Unit umpire
 (line out one)

UMPIRE CERTIFICATE

1. I have inspected the obstacle described above, and find that it will
 will not create an effective military obstacle.
2. Date and hour executed ----- (If no umpire is present at time of execution this may be completed by senior of the executing party and be official. An umpire will verify any such work executed by his unit as soon as practicable.)
3. A careful estimate has been made. The following will be required to restore traffic at this point:
 - a. Engineer personnel and time required: -----
 ----- (Give two alternatives: For example: one platoon 6 hours or one company 3½ hours. Last alternative based on maximum number of men who can be effectively employed on job. Time is taken from time of arrival of men and material on the site.)
 - b. Material: (As judged necessary by engineer umpires of unit reducing obstacle.)
 - c. Equipment: (Reduce time given in a above by ⅓ for suitable labor-saving equipment; suitability determined by engineer umpire of unit reducing obstacle.)

 Umpire

 Unit

UMPIRE CERTIFICATE

Obstacle reduced at ----- AM Date -----
 PM,

 Umpire

 Unit

CERTIFICATION OF OBSTACLE

GUARDS

- Authority:** Same as umpires.
- Number:** Unit executing simulated obstacle leaves at least two guards at each obstacle.
- Equipment:** White shoulder loops. White control flags at least 2 by 2 feet; Flashlight. Watch. Pencil. In case of bridge, two white ground panels at least 5 by 5 feet. Food and water for remainder of maneuver. Personal equipment. This paper.
- Actions:** Remove Blue (Red) identification and substitute White as soon as obstacle is completed.
- If a demolition, fill in time of firing if no umpire is present.
- If a bridge, place white panel on ground near end of bridge.
- Use white control flag to stop all traffic, both friendly and hostile, before it reaches obstacle. Show this paper to explain conditions of obstacle. Permit passage of Army vehicles with green flags only.
- Allow civilian traffic to proceed.
- One sentinel to be on guard at all times, day and night.
- In case any vehicles or troops fail to stop as ordered, report them by name, vehicle number, or unit to any umpire or to your commanding officer when you are relieved.
- When opposing troops have repaired obstacle, have umpire sign this paper and relieve you.
- Then report to nearest troops for processing as prisoners, which will return you to your unit.

UMPIRES

- Actions:** Require operations to be actual whenever practicable.
- Fill in data on reverse side, and give to guard at obstacle.
- Check that material to execute or reduce simulated obstacles if at site when operations are carried out.
- Visit as soon as possible all detachments of your company sent on obstacle work, so as to complete the certification.
- No umpire may modify conditions as to repair of an obstacle imposed by umpire present during its execution.

SPECIAL NOTES

- Green flags will not be used on vehicles in order to carry food to guards of obstacles.
- It is permissible to go around an obstacle, provided that the movement is actual.
- If an obstacle is defended by troops and is attacked by opposing troops, the action will be decided in the same manner as other actions between troops. Conditions as to reducing the obstacle will be effective only after completion of the troop action.

■ 27. AIR ATTACKS AGAINST BRIDGES.—*a.* Bridges frequently are important targets of bombardment aviation, and the resulting delay exercises a profound influence on the progress of a maneuver. Such attacks ordinarily are planned, so that director headquarters can and should be notified in advance, in order that bridge umpires may be present.

b. Bridge umpires should be accompanied by personnel for guarding bridges if closed to traffic, and be equipped with air-ground vehicular radio for communication with air umpires. Umpires of antiaircraft units defending bridges may be used as bridge umpires if instructed properly.

c. When radio communication is available, the air umpire will report from the air the number of hits and weight of bomb used. The bridge umpire then will fix the delay and the conditions as to repair. If radio communication is not available, the number of hits must be determined beforehand and communicated to the bridge umpires through director headquarters or other available means.

d. Bridge umpires should be informed by antiaircraft umpires of the number of airplanes shot down by antiaircraft fire prior to the time bombs were released (par. 25). The bridge umpire then reduces the number of hits reported by the air umpire accordingly.

e. Delays to be assessed for *one hit* are indicated generally as follows, but should be varied according to the conditions in each case:

(1) Steel truss and concrete bridges of substantial construction:

Bomb 100 pounds—no effect assessed.

Bomb 300 to 600 pounds—delay of 2 hours after arrival of men and material—platoon of engineers and two truckloads of timber.

Bomb 1,000 to 2,000 pounds—delay of 3 hours after arrival of men and material—platoon of engineers and three truckloads of timber.

(2) Wooden highway and railroad bridges:

Bomb 100 pounds or heavier—same as bomb 300 to 600 pounds in (1) above.

(3) Ponton bridge:

Bomb 100 pounds or heavier—1 hour after additional material for *one-third* of bridge is at the site.

f. For more than one hit, increase appropriately the delay, and men and material required.

g. Bridge umpires use the procedure described in paragraph 26.

■ 28. OTHER DELAYS AND NEUTRALIZATION.—Delays and neutralization due to causes other than obstacles are indicated as follows:

a. Road, bridge, or other defile interdicted by artillery or mortar fire—delay for duration of fire.

b. Ponton bridge under construction attacked by artillery or mortar fire, or by small arms fire at less than 1,000 yards—delay in construction for duration of fire.

c. Column attacked by tanks:

(1) Foot troops—delay 15 minutes.

(2) Vehicles (other than tanks), mounted and mixed column—delay 30 minutes.

d. Column, other than tanks, attacked by Cavalry or by armored elements, other than tanks—delay for duration of attack.

e. Troops attacked by an appropriate number (par. 17) of low-flying airplanes:

For troops only, in column—delay of 15 minutes.

Vehicles, mounted or mixed column—delay of 30 minutes.

f. Troop movements within 100 yards of where an artillery concentration is being marked—delay for the duration of the concentration.

SECTION V

MARKING ARTILLERY FIRE

■ 29. GENERAL.—*a.* Every effort will be made to mark on the ground the point of fall and duration of all artillery fire which is reasonably concentrated, except counterbattery fire (*b* below). For this purpose, each artillery battalion umpire and each fire umpire is furnished a vehicular voice radio.

b. The artillery battalion umpire broadcasts the coordi-

nates of the center of each battery target and the duration of the fire. The report is received by all artillery battalion umpires and all fire umpires within hearing. Except when the target is artillery, the fire is marked by either the artillery battalion umpire or the fire umpire nearest the target. When the target is opposing artillery, the artillery battalion umpire concerned suspends the fire of batteries which are neutralized.

c. A target other than artillery is marked by a flag (par. 9) placed at the center of the fire of each battery, and the fire is taken as effective within 100 yards of the flag in all directions. It is desirable, when practicable, to supplement the flag by a lime bomb or other sound or pyrotechnic signal, so as to attract attention to the flag initially.

d. If a battalion of two or three batteries fires simultaneously on the same target, a flag is used for each battery. The flags are separated by about 100 yards.

e. No attempt is made to mark the fire of a battery unless such fire is confined to an area 200 by 200 yards or less, and lasts at least 1 minute.

■ 30. CODE COORDINATES.—Maps or photomaps, scale 1/20,000, ordinarily are used in marking fires. A code coordinate system is employed for brevity as indicated in figures 1 and 2. As a standard procedure in lettering the grid of any map, the grid intersection *inside* the border of the map and nearest the lower left corner is C for the X coordinate and O for the Y coordinate. Examples of code designations of points are given in the figures.

■ 31. PROCEDURE.—a. Speed and accuracy in marking artillery fires depend on simple and uniform procedure, thorough training of personnel, and strict radio discipline.

b. A single frequency is used for all fire marking radio sets. Broadcasts during a maneuver are limited to—

Artillery fires.

Monitor control.

Emergency calls for ambulances.

Requests for replacement or repair of fire-marking equipment.

Other matters approved by the director.

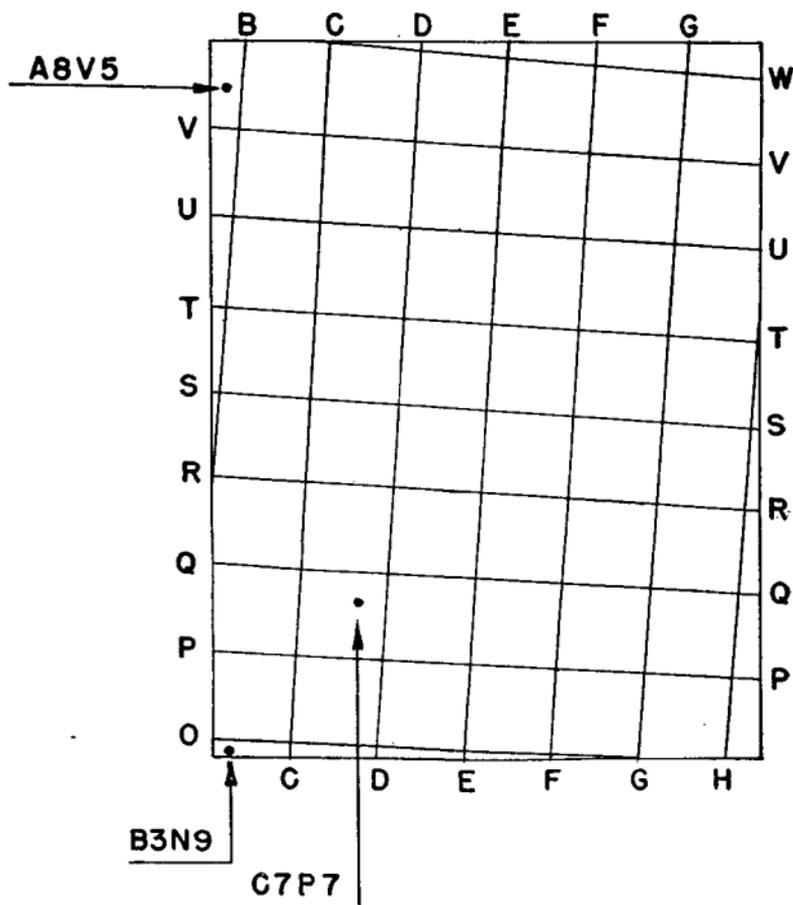


FIGURE 1.

Care must be used to avoid broadcasts that can be used improperly by the opposing forces (par. 41b).

c. In broadcasting a fire, the message is limited to—

- (1) Number of the sending set.
- (2) Name of the map quadrangle containing the target.
- (3) Serial number of the map sheet containing the target.
- (4) Blue, or Red, referring to the sending side.
- (5) Code coordinates of the target.
- (6) Nature of the target if fire is observed.
- (7) Duration of fire in minutes.
- (8) Number of batteries firing.

(9) Hour of firing if a prepared fire (*e* below).

d. A fire is broadcast and then repeated once. The form is as follows:

(1) Observed fire of 5 minutes' duration, using three batteries: 85 Boyce 17 Red Cast 2 Prep 4 Machine Guns 53 Repeat 85 Boyce 17 Red Cast 2 Prep 4 Machine Guns 53. Explanation: 85, number of sending set; Boyce, name of map quadrangle; 17, number of map sheet; Cast 2 Prep 4, coordinates of target; Machine Guns, nature of target, given only when fire is observed on target; 5, duration of fire in minutes; 3, number of batteries firing.

(2) Same fire as (1) above, except unobserved: 85 Boyce 17 Red Cast 2 Prep 4 Red 53 Repeat 85 Boyce 17 Red Cast 2

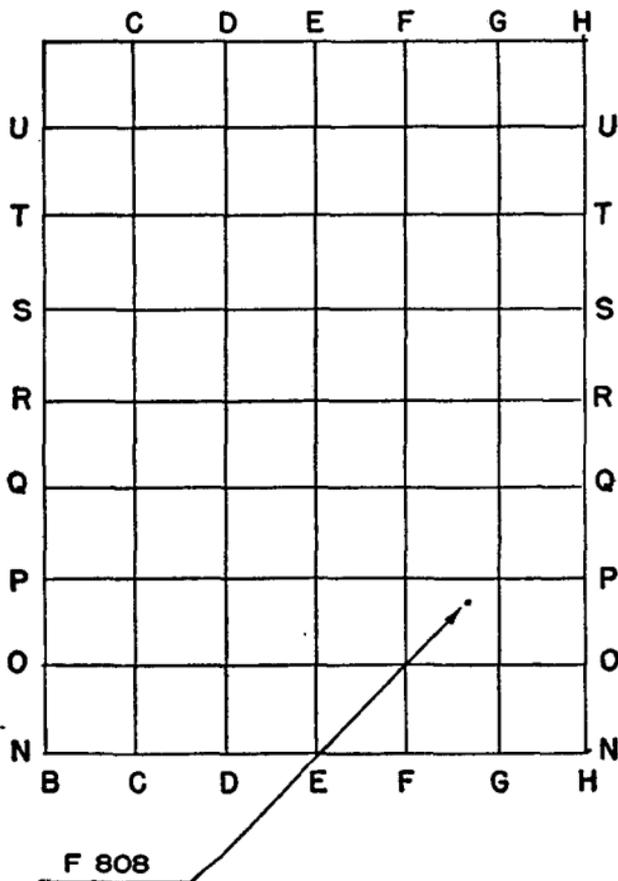


FIGURE 2.

Prep 4 Red 53. Red, between Prep 4 and 53, is merely to separate numbers.

e. Scheduled fires may be broadcast beforehand, usually during quiet periods at night, if it is reasonably certain that fires will be executed properly at the times specified. The form for broadcasting such fires is the same as described in *d* above, except that the message is concluded with Prep, followed by the hour the fire is to be delivered, for example, Prep 5: 20A.

f. The broadcast of a fire is received by all fire umpires and battalion umpires within hearing. It is acknowledged by the one closest to the target, for example: Roger 66. Roger indicates received, and 66 is the number of the umpire who will mark the fire.

g. In the case of observed fires, the marker goes to the point designated by the coordinates, but places the flag *at* the nearest target which is of the same nature as that broadcast, regardless of coordinates. If the target is moving Infantry, it may be necessary to depart considerably from the coordinates, due to lag of marking and movement of the target.

h. When a fire mission is not acknowledged, the sender may repeat the broadcast at any time after 10 seconds, provided the net is free of other sending.

■ 32. RECORDS.—Radio operators with artillery battalion umpires and fire umpires will keep radio and target logs on the accompanying form, and turn them in to director headquarters at the conclusion of the maneuver. Negative reports will be submitted in case no fires are broadcast nor marked.

Sheet No. -----

**RADIO AND TARGET LOG
RADIO AT F. D. C. OR WITH FIRE UMPIRE**

Date -----

Name of battalion or fire umpire -----

Number of radio set -----

Located in vicinity of what unit -----

No.	From			Message				Time			Remarks		
	Set	Quad	Sheet	Force	Coordinates	Target	Minutes	Batteries	Received from F. D. C.	Sent		Received by fire marker	Marked
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

SECTION VI

MISCELLANEOUS

■ 33. CHEMICALS.—*a.* In connection with decisions involving fire power and losses, it is impracticable to make distinctions as between high explosive and chemical ammunition. Artillery fire is weighed in general terms, regardless of calibers and types of ammunition. Similarly the effect of attack by low-flying airplanes is the same, regardless of whether machine guns, bombs, or chemicals are used.

b. Visibility will be actual—both day and night. The use of smoke will not be simulated.

■ 34. BLANK AMMUNITION.—*a.* The use of blank ammunition at maneuvers promotes realism and facilitates decisions. Also it is helpful in accustoming young soldiers to the sounds of battle.

b. Caliber .30 blank ammunition, if available, will be used freely for ground fire, especially with machine guns (par. 13c). *Blank ammunition will not be fired toward personnel at less than 20 yards.*

c. No blank ammunition will be fired against airplanes, since the supply is inadequate for the purpose.

■ 35. COUNTERBATTERY INTELLIGENCE.—Absence of actual firing by artillery affects counterbattery intelligence adversely. The following procedures will be used when practicable:

a. Each artillery firing battery will fire four lime bombs with each concentration, one at a safe distance in front of each piece. The smoke is visible to the opposing observation, and the blast marks are visible in air photographs. Blast marks may not be removed nor covered during the firing of the concentration.

b. Field artillery observation battalions will set off charges of TNT near friendly batteries for the benefit of opposing observation units. An officer of the observation battalion will be responsible for safety.

■ 36. MOTOR-VEHICLE LIGHTS.—*a.* Whether, when, and where lights of motor vehicles will be used at night is a command decision. Operations without lights usually are practicable,

subject to appropriate arrangements with local civil authorities, and add much to the realism of maneuvers.

b. Umpires and observers will conform to restrictions imposed upon troops (par. 6b).

■ 37. PRISONERS AND CAPTURED VEHICLES.—*a.* Opposing forces should not come into physical contact (par. 4). Hence, if umpiring is effective, there should be few prisoners ordinarily.

b. However, units or individuals may be cut off by maneuver, and the action may be such that in reality they would be either captured or destroyed. In this case, umpires should permit prisoners to be taken and handled as such. Prisoners will be processed after interrogation to an enclosure established by the capturing side (FM 100-10).

c. Except as noted in *d*, *e*, and *f* below, vehicles, including those carrying class I supplies, are subject to capture. They are processed as are prisoners of war.

d. Captured artillery pieces and antitank guns, with prime movers if any, and armored vehicles will be handled as though destroyed (pars. 20, 22, and 23). Personnel of such elements will remain with their equipment, but umpires will place and dispose them so as to preclude their further and unauthorized participation in the maneuver. Such measures will include silencing captured radio.

e. Evacuation and surgical hospitals, clearing stations, collecting stations, aid stations, and ambulances which may be captured by either side will be returned to parent units by umpires without delay.

f. Depots, supply points, railheads, truckheads, distributing points, dumps, and kitchens which may be captured by either side will be made inactive by the umpires for 6 hours.

g. Prisoners and captured vehicles will be exchanged daily under supervision of the director.

h. Cargoes of vehicles processed with prisoners will remain with the vehicles. Transfer to other vehicles is prohibited.

i. Animals will not be subject to capture.

■ 38. ARTIFICIAL CASUALTIES.—*a.* Artificial casualties will be provided for the training of medical personnel by tagging a suitable number of men in each unit engaged actively. Such casualties will be assessed periodically during each day of

combat and tagged on the spot by unit umpires, using tags furnished by medical umpires. It is of no consequence that the number of casualties correspond with the number assessed as losses by unit umpires.

b. Artificial casualties will not be evacuated ordinarily beyond the division clearing stations. As soon as they are processed there, they should be returned to collecting stations promptly by means of ambulances.

c. Actual casualties will not be tagged as artificial casualties.

CHAPTER 3

UMPIRE PERSONNEL AND DUTIES

	Paragraphs
SECTION I. Personnel.....	39-40
II. Duties of umpires.....	41-48

SECTION I

PERSONNEL

■ 39. DIRECTOR HEADQUARTERS.—*a.* Ordinarily it should be practicable to operate the director's headquarters (par. 3) with not more than the tabular staff of the tactical unit which he commands. If additional personnel is required, it should be obtained, so far as practicable, from sources other than participating troop units.

b. Umpires at headquarters of large units should be unnecessary. Reports of operations can and should be made through normal tactical channels to director headquarters as required. Additional details can be obtained readily by liaison officers sent out periodically from director headquarters.

c. A reserve pool of unit, fire, and bridge umpires at director or subordinate headquarters may be advisable, in order to meet abnormal, temporary, and unforeseen needs and to provide reliefs if necessary.

d. Observers and correspondents (par. 8) are received, supplied, and directed by director headquarters. Paragraph 6*b* is applicable to them as well as to umpires.

e. Commanders are authorized to use green flags and white shoulder loops (par. 8) for motor couriers, in sending important and urgent reports or other dispatches to director headquarters, when such action necessitates a passage of opposing lines. This authority will be exercised only in the case of dispatches which cannot be handled by wire, radio, or TWX, or which are so urgent that they cannot be held properly for dispatch by scheduled messenger service, motor, or airplane. Such motor couriers will be enlisted men only

and will be dispatched by the most direct routes between the two headquarters.

■ 40. UMPIRES.—*a.* The following personnel is suitable and adequate ordinarily:

Umpire assignment	Officers	Enlisted men ¹	Transportation ²
Infantry battalion.....	3 5	5 NCO's; 1 ch; 7 fo ⁴ ...	Umpire—1 truck.
Field artillery battalion.....	1	1 rad; 1 ch; 1 fo.....	Umpire—1 truck. ⁵
Field artillery supervisor.....	6 1	1 NCO; 1 rad; 1 ch.....	Umpire—1 truck. ⁵
Engineer lettered company.....	1	1 NCO; 1 fo.....	Unit.
Engineer ponton company.....	1	1 NCO; 1 fo.....	Unit.
Horse cavalry rifle troop.....	2	1 NCO; 2 fo.....	Unit. ⁷
Mechanized cavalry troop.....	4	4 NCO's; 4 fo.....	Unit.
Antiaircraft battalion.....	1	1 NCO; 1 fo ⁸	Unit. ⁸
Antiaircraft firing battery.....	1	1 NCO; 1 fo.....	Unit.
Antitank platoon.....	1 or 1	1 NCO.....	Unit.
Armored element ⁹	1 or 1	1 NCO.....	Unit.
Artillery fire ¹⁰	1	1 NCO; 1 rad; 2 ch; 2 fo.	Umpire—2 trucks. ⁵
Division.....	11 4	4 ch ¹²	Unit.
Parachute battalion.....	13 13	5 NCO's; 13 fo.....	Unit.
Air ¹⁴	1	Unit. ¹⁵

¹ Abbreviations: NCO—noncommissioned officer; rad—radio operator; ch—chauffeur; fo—flag orderly.

² Umpire—supplied by director headquarters; unit—supplied by unit to which the umpire is assigned.

³ 1 battalion; 1 each rifle company; 1 supernumerary.

⁴ 1 battalion; 2 each rifle company.

⁵ 1 vehicular radio.

⁶ For each division and higher headquarters.

⁷ Mounts.

⁸ Additional personnel and transportation required if provided with vehicular radio for air-ground communication.

⁹ Single vehicle or small unit.

¹⁰ 1 per infantry regiment (par. 43).

¹¹ 1 QM, 1 Ord, 1 Med, 1 Sig.

¹² 1 additional lineman for signal umpire.

¹³ 1 chief umpire, 3 company umpires, 9 platoon umpires.

¹⁴ Minimum of 1 each per squadron, group, airdrome, and major headquarters.

¹⁵ 1 airplane for each air umpire. Umpires may fly as passengers in multiplace airplanes.

b. In certain cases, supervising umpires are necessary and advisable (pars. 45-48).

c. Umpire personnel is supplied by the director, preferably from sources other than participating troop units. It is essential that umpires be assigned to units other than their own.

d. Umpire personnel is quartered and rationed with either director headquarters or troop units, as is convenient.

e. Director headquarters supplies or makes arrangements for subordinate units to provide flags and other umpire equipment as needed, except maps, and transportation as indicated in *a* above. Umpires are furnished maps by units to which they are assigned.

SECTION II

DUTIES OF UMPIRES

■ 41. GENERAL.—*a.* An umpire as such has neither command nor instructional functions (par. 5).

b. An umpire should avoid disclosing to troops information obtained through umpire activities and which the troops should seek with their own means. He should conform to restrictions concerning lights, cover, camouflage, and the like (pars. 6*b*, 31*b*).

c. Umpires restrain movement of troops in the degree necessary to prevent physical contact of opposing forces and permit proper decisions, but they do not order movement. So far as umpires are concerned, movement is either permitted or not permitted; but if permitted, it is not obligatory. Movement is either ordered by commanders or forced by the enemy (par. 4).

d. Umpires will familiarize themselves with terrain restrictions. While compliance with such restrictions is a responsibility of command, umpires will assist in this connection by timely advice. In case a restriction actually is violated, the unit umpire concerned will report the circumstances to the director as soon as possible.

e. Contact occurring between opposing forces beyond the limits of the maneuver area will be treated by umpires as a meeting in a defile.

f. Violations of the provisions of this manual or orders for the conduct of a particular maneuver will be reported

by umpires to director headquarters through the ordinary command channels, except that serious infractions which are likely to affect the outcome of the maneuver will be reported directly by the most rapid means of communication available.

g. All umpires will follow the state of ammunition supply and cause fire to be suspended when the supply is exhausted.

h. The play of ammunition supply and resupply will be realistic. No assumptions as to quantities, types, and transportation will be made.

■ 42. INFANTRY RIFLE OR PARACHUTE BATTALION UMPIRE.—*a.* The senior umpire assigned to an infantry rifle or parachute battalion is in charge of all umpire personnel and equipment with the battalion.

b. He disposes the umpires so as best to meet anticipated developments and equalize the burden of umpiring. Ordinarily it is advisable that there be an umpire with each rifle company.

c. He may remain with the battalion commander as a general procedure, but supervises the company umpires and participates in umpiring during active periods.

■ 43. FIELD ARTILLERY BATTALION UMPIRE.—*a.* An artillery battalion umpire reports the fire of each battery (pars. 29*b*, *e*), if it is of 1 or more minutes' duration.

b. He reminds the battalion commander that, when batteries fire on their own initiative, such fires must be reported to the battalion commander; otherwise, the fires will not be marked.

c. He acts as a fire umpire (pars. 7*b*, 29, and 48) for targets in his area.

d. When a battery is subjected to correctly placed counter-battery fire, he suspends its fire (par. 15*b*).

e. So far as practicable, he notes whether fires are delivered properly. In case the fires do not simulate service conditions in all essential details or are not well prepared technically, he will omit broadcasting them. The following indications will be taken as a guide:

(1) *Observed fires.*—Broadcast if target is under observation by an air or ground observer and a reasonable adjustment, where necessary, is made.

(2) *Transfers of fire.*—Broadcast if at least three of the following questions can be answered in the affirmative. Do not broadcast if three or more answers are negative. Has the check point been located accurately, preferably by two independent means? Can the observer see and identify the check point? Is fire delivered within 3 hours of registration? Have batteries been laid by common and accurate means if data from registration of one battery are used by another battery? Is vertical control employed?

(3) *Metro or map data.*—Broadcast if at least two of the following questions can be answered in the affirmative. Do not broadcast if more than two answers are in the negative. Is the metro message used less than 4 hours old? Has direction been obtained by survey into hostile area or by previous registration on known point? Has scale of photomap been determined by survey, preferably in direction of fire? Is vertical control employed?

f. In order to insure that ammunition supply (par. 41g) is played with realism and that expenditures are in proportion to the effect credited by umpires, he informs the battalion commander, after each fire is broadcast, how much ammunition should be charged as expended, on the following basis:

(1) *For observed fires.*—At the maximum rate of fire prescribed for short bursts. This rate for various calibers follows:

<i>Caliber</i>	<i>Rate per gun or howitzer per minute</i>
75-mm-----	6
105-mm-----	4
155-mm-----	3
8-inch or 240-mm-----	1/2

(2) *For transfers of fire.*—Double the amount for observed fires.

(3) *For metro or map data.*—Triple the amount for observed fires.

■ 44. COMPANY (TROOP) UMPIRE.—*a.* Decisions reached by company umpires of opposing units in contact determine the progress of a maneuver. If decisions are sound, the maneuver will be realistic and successful. If decisions are ill-con-

sidered and unsound, situations and outcomes will be false and lessons derived erroneous.

b. A company umpire posts himself so as best to observe the action of the company. Ordinarily he is with the leading element of the company, whether it be a patrol or a combat formation. He remains habitually with the company, except when conferring with other umpires in reaching a decision, during which period the company should be halted by white flags.

c. His basic method of control is by flags (par. 11). He avoids giving oral instructions in connection with his decisions, for they do not reach all elements. However, certain explanations may be necessary occasionally.

d. Whenever the situation as it affects his unit becomes obscure to him in any way—due to either own or opposing force—he causes white flags to be displayed at once, halting the action. Similarly, when white flags are displayed with the opposing unit, he displays them with his unit. The display of white flags necessarily is a frequent and indispensable requisite of sound and informed umpiring.

e. The following arm signals are convenient for use by umpires in communicating with their flag orderlies:

(1) Both arms extended vertically upward—white flags.

(2) One arm extended horizontally toward either one force or the other—action resumed. One force may advance in the direction indicated; the other force must withdraw correspondingly. Red flags with the advancing force; blue flags with the withdrawing force.

(3) Both arms extended laterally in opposite directions—action resumed, but neither force may advance. Red flags along both fronts.

f. Flags must be placed so as to be visible to the troops. Opposing lines of blue and red—or red and red—flags should be separated sufficiently to avoid confusion as to the force for which they are intended.

g. Blue and red control flags are used when opposing forces (except armored elements, pars. 9 and 45e) approach physical contact. They are discontinued when physical contact no longer is likely. However, the handling of flags must not be permitted to reveal a withdrawal.

h. Umpires should impress upon company commanders that all elements of the company halt in place and cease firing when white flags are displayed in front of the company. When red flags are displayed with the unit opposing the company, the company may not advance toward such flags, but is free to maneuver around them or change its dispositions otherwise. During contact, if troops see no flags in their front, they do not advance but seek a vantage point from which flags can be seen. An advance may be made only against blue flags.

i. The procedure indicated above is applicable in general to night operations. Company umpires should be well forward, in order to anticipate contact and make decisions promptly. During contact, it may be necessary to illuminate control flags by flashlights, supplemented on occasions by oral decisions to units immediately involved. When night operations reach a stage where umpiring is ineffective, umpires on their own initiative will stop the action by displaying red flags with both sides (par. 11*f.*) Such provisions will not apply to minor actions such as patrolling, where it is practicable for umpires to accompany the opposing elements closely. Rotation of umpires for night duty is advisable, in order to permit rest and sleep.

j. If contact is made and there is but one umpire present, he will ascertain the situation of both forces, make a decision, and communicate it in the most practicable manner. If no umpire is present, the troops will be halted short of physical contact by their commanders, each of whom will send for an umpire.

■ 45. TANK UMPIRE.—*a.* Umpires for tanks and other armored vehicles (par. 22*a*) must be provided in numbers such that every contact with the opposing force, even if by a single vehicle, will be umpired.

b. A tank umpire accompanies the leading vehicle of a formation.

c. He assesses losses of armored vehicles, and of opposing personnel and antitank guns when umpires assigned to opposing units are not present.

d. If opposing armored elements meet, they will be permitted to maneuver freely until the intentions of the com-

manders are disclosed and the results of fire and movement are apparent. Both forces then are halted by white flags, and decisions made in accordance with paragraph 24*g* and *h*.

e. Armored elements obey the white control flag, regardless of whether displayed by their own or another umpire. They disregard blue and red flags, except after dark as provided in paragraph 11*f*. They are free to move unless and until halted by the white flag. After being halted, they are free to move again when the white flag disappears, unless ruled out of action.

f. It is advisable usually to have supervising tank umpires to instruct and supervise unit umpires. One for each column, combat team, or regiment is appropriate.

■ 46. ANTI-AIRCRAFT UMPIRE.—*a.* A battery umpire determines and reports airplane losses resulting from fire of the battery to which assigned (par. 25). Also he assesses losses to anti-aircraft weapons of the battery when employed as antitank weapons (par. 23). He keeps the battery commander informed of airplane losses accredited to the battery.

b. A supervising umpire supervises and coordinates battery umpires. A supervising umpire should be assigned to each anti-aircraft defense established by two or more batteries. If a regularly detailed supervising umpire is not available for this purpose, the senior battery umpire of the batteries establishing the defense should serve as such.

c. If other batteries are defending the same objective, the battery umpire reports airplane losses by telephone, or other available means, to the senior supervising umpire. If his battery is providing a separate defense of an objective, he reports airplane losses directly to the air umpire or to director headquarters by the most rapid means of signal communication available.

d. As soon as practicable after receipt of battery umpire reports, the supervising umpire will determine the total losses to be assessed as a result of anti-aircraft artillery fire of all batteries which engaged the target (par. 25*f*) and will transmit a consolidated report to director headquarters or to the air umpire by the most rapid means of communication available.

■ 47. SIGNAL UMPIRE.—*a.* At any time during maneuvers a force may use tactically all commercial communication facilities, as well as those of its own construction, in territory under its own or friendly control. Use of commercial facilities is limited to service obtained by agreement with the operating company. Under no circumstances will military personnel interfere with functioning of commercial installations.

b. Arrangements must be made by the signal director with commercial communication companies prior to maneuvers so that employees concerned may be familiar with action contemplated by signal umpires. Signal umpires are furnished identification, the nature of which is known by the operating companies.

c. Communication by participants between territory held by one side and that held by the opposing side is prohibited.

d. When a force advances into territory which has been occupied by or is accessible to the enemy, it will be assumed that no communication facilities are available in that territory. The use of such facilities is prohibited unless signal construction troops are present, equipped to construct the type of facility to be used, and the required time for construction is expended (par. 232, FM 101-10).

e. No open wire or cable will be interrupted except by direction of a signal umpire.

f. Commercial telephone and telegraph service may be interrupted by the signal umpire informing the head official of the telephone or telegraph office that no calls or messages chargeable to the pertinent army account will be honored prior to a specified time. This will include traffic designated as "Flash," "Blitz," or similar terms. Signal umpires will check with commercial exchanges and telegraph offices to see that service is not given to the enemy.

g. Each signal umpire should be provided with the following: Line route map of all military open-wire circuits in the maneuver area; a map showing all commercial telephone exchanges in the area and the circuits connecting the exchanges; a list of commercial telegraph offices in the maneuver area; a suitable maneuver area map; an identification card; one EE-8 telephone with leads suitable for connecting to open copper wire, or a handset in lieu of the

telephone; one set of climbers and safety belt; a supply of insulated, flexible wire and connecting clips or clamps which will be used to short-circuit and ground open-wire circuits; several ground rods; one tool equipment TE-33; a supply of marking tags; watch; pencil and paper.

h. Field wire lines of one force may be interrupted by the opposing force by legitimate tactical operations. Such wire will not be damaged. If removed, it will be cared for by the troops removing it in the same manner as their own field wire. No signal equipment other than wire and vehicular radio equipment may be captured or molested.

i. When a command post or other signal installation is attacked, signal service will be discontinued for the period prescribed for other activities of the installation. If action is taken to reestablish the command post or other installation at a new location, signal equipment other than that theoretically damaged in the attack will be utilized. Restriction on the use of equipment at the old installation is removed as soon as the new one is in operation.

j. No attempt will be made to assess damage to wire lines caused by artillery fire.

k. Circuits to director headquarters will be marked. They will not be interrupted, tapped, or molested.

l. Code books and cards for which accountability exists may be destroyed when necessary to prevent capture by the enemy. Constructive or theoretical destruction will not be recognized. The certificates of two witnesses that destruction was necessary will be presented as supporting evidence in cases requiring survey.

m. Signal umpires will maintain records of all action taken and will make such reports as may be required by the maneuver director.

■ 48. FIRE UMPIRE.—*a.* Realistic participation by Field Artillery in maneuvers depends greatly on correct and rapid marking of fires.

b. Fire umpires are provided on the minimum basis of one per infantry regiment participating in a maneuver (par. 40). Artillery battalion umpires also mark fires within their areas (par. 43).

c. A fire umpire receives broadcasts of artillery fires (par. 31), and acknowledges and marks those within his area.

d. Fire umpires may assess losses (pars. 19-24) or delays (par. 28) caused by artillery fire if no other umpire is present.

e. In large maneuvers, certain umpires usually will be needed in addition to unit umpires, as follows:

(1) *Supervisors*.—1 for each division, army corps, and army to instruct, supervise, and administer artillery unit and fire umpires.

(2) *Monitors* are assigned by the supervisor to control the radio net and assure proper radio discipline. Long-range radio communication desirably should be maintained between director headquarters and the senior monitor of each opposing force.

f. Director headquarters arranges for the necessary maintenance of the transportation and equipment of fire umpires. All participating units are required to supply fuel and emergency repairs to fire umpires as needed. All fire marking personnel will carry two class C rations habitually.

g. In addition to individual equipment, fire marking equipment is required as follows:

White shoulder loop—1 per individual.

Green flag and staff—1 per vehicle.

Red flag with white center and staff—3 per flag orderly.

Flashlight—1 per vehicle and 1 per flag orderly.

Watch—1 per vehicle and 1 per flag orderly.

Cowbell—1 per individual.

Pencil and notebook—1 per officer, noncommissioned officer, and radio operator.

Radio spare parts—as indicated by experience.

Fuel containers—as appropriate.

Time bombs or other pyrotechnics—as available and needed.

CHAPTER 4

UMPIRE TRAINING

■ 49. GENERAL.—*a.* Maneuvers are the highest form of troop training in peace. No matter how highly trained the troops may be, maneuvers can be successful only when umpired effectively, and umpiring will be effective only so far as umpires are trained.

b. Every troop unit should maintain a certain quota of trained umpire personnel, which may be used in rotation at maneuvers without interfering unduly with unit training.

■ 50. PROGRAM OF UMPIRE TRAINING.—*a.* One week of well-directed instruction is sufficient to prepare umpires to participate in small maneuvers. Large maneuvers preferably should be umpired—in key positions at least—by officers who have had experience in small maneuvers. Artillery fire marking umpire personnel present a special case and require additional instruction. Four to six weeks should suffice for them.

b. The following program is suitable for officers who have little or no umpire training. It should be modified appropriately for those with umpiring experience.

Subject	Nature	Hours
Preliminary instruction:		
Methods, principles, and general procedure.	Conference..	2
Fire power—principles and illustrative problems.	Conference..	4
Losses—principles and illustrative problems.	Conference..	2
Delays—principles and illustrative problems.	Conference..	1
Control flags—procedure.	Conference..	1
Control flags—field demonstration.	Practical.	1½
		11½
Action of the arms, with particular reference to umpiring problems:		
Infantry.	Conference..	1
Field Artillery.	Conference..	½
Engineers.	Conference..	½
Armored elements.	Conference..	½
Horse cavalry.	Conference..	½
Aviation.	Conference..	½
Antiaircraft elements.	Conference..	½
Antitank elements.	Conference..	½
		4½

Subject	Nature	Hours
Applicatory problems:		
Fire power.....	Test.....	3
Losses.....	Test.....	2
Delays.....	Test.....	1
Procedure.....	Test.....	2
Field maneuvers—battalion against battalion:		8
Advance to contact; reconnaissance; security; meeting engagement.	Practical....	4
Attack and defense; horse and mechanized Cavalry in reconnaissance and counterattack.	Practical....	4
Attack and defense; armored vehicles in reconnaissance and attack.	Practical....	4
Pursuit and withdrawal.....	Practical....	4
Group instruction by arms.....		16
Group instruction by arms.....		4
Total.....		44

■ 51. **APPLICATORY PROBLEMS.**—*a.* Such problems are simply those which arise in field maneuvers, solved in the classroom where they can be discussed and clarified. One or a few maneuvers yield an abundance of problems for the instruction contemplated here.

b. Problems in procedure are exemplified by questions such as the following:

(1) An antitank gun sees an armored vehicle at 400 yards, moving toward the gun, but the vehicle carries neither blue nor red cloth. Should the gun fire against the vehicle? Why? (Par. 8*b*(2).)

(2) You as company umpire display the white control flag. Shortly afterward you note a support platoon of the company moving toward the flank of the company. What action do you take? (Par. 44*h*.)

(3) You as company umpire display red control flags along the front of your company. There are red flags opposite your company also. What movement, if any, may your company make? (Par. 44*h*.)

(4) You as company umpire are displaying red control flags. Your company sees no flags at all in its front. May the company advance? (Par. 44*h*.)

(5) You as company umpire are displaying no control flags, and your company sees no flags at all in its front. May the company advance? (Par. 44*h*.)

(6) A caliber .30 machine gun fires against a hostile tank. Should an orange flag be displayed? If so, by whom? (Pars. 9*a*, 22*b*.)

(7) Twelve riflemen and two automatic rifles are deployed and firing on a front of 40 yards. A red flag with white center is placed 10 yards in rear of the right of the line. What is the fire power of the squad within a range of 500 yards? At 800 yards? (Pars. 14*c*, *d*, 15*a*.)

(8) An artillery fire flag is placed so that it is partially effective on the company of which you are umpire. Who assesses the losses of your company, you or the fire umpire? (Par. 18*c*.)

(9) The company of which you are umpire is advancing toward the enemy in approach formation. It meets fire at about 500 yards. What is your position with respect to your company at this time? Have you any control flags displayed? What do you do, if anything, when the hostile fire is opened? (Pars. 4, 18*b*, 44*g*.)

(10) The company of which you are umpire is marching on a road, well to the rear of a large column. Combat aviation attacks the column some distance ahead of you, and approaches your company. The company immediately takes a dispersed formation on both sides of the road, and opens fire against the airplanes as they approach. What percentage of losses do you assess? (Par. 19*c*.)

■ 52. FIELD MANEUVERS.—Small field maneuvers afford the director a means of verifying practically the fitness of his umpires. Two battalions or a similar force is as useful for the purpose as a larger one. A critique after each maneuver or at the end of each day is essential in order to correct faults thoroughly. Maneuvers should be varied, so that umpires will acquire confidence in their ability to handle all situations likely to be encountered.

