RESTRICTED

MANUAL
FOR
UMPIRES

U. S. M. C.
LANDING OPERATIONS
1939

TENTATIVE

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I FLAG SIGNALS

Control flags will be used by umpires and convey the following meanings:

Flag	Meaning
WHITE	Suspend all action and movement in both forces. Conference desired with umpires of opposing units. Resume maneuver when flag is lowered.
BLUE	Unit displaying BLUE FLAG has fire superiority and may advance at rate prescribed by umpire. Opposing force must halt advance, and, if attacked, dig in or withdraw.
RED	Naval gunfire, artillery, bombs or mortar fire falling within 100 yards of RED FLAG.
YELLOW	Gassed area; extent and nature as indicated by umpire.

II RATES OF INFANTRY ADVANCE (approximate)

Ground Organization	Relative Strength Attack to Defense Power Factor Ratio	Maximum Rate of Advance 1st Hour (average per 10 minutes)	Maximum Rate of Advance per hour thereafter (average per 10 minutes)
None	1½ to 1	100 yards	None
	2 to 1	200 yards	125
	2½ to 1	225 yards	150
	3 to 1	250 yards	175
	No resistance	400 yards	400
Hasty	1 to 1	None	None
	1½ to 1	100 yards	None
	2 to 1	150 yards	100
	2½ to 1	200 yards	125
	3 to 1	225 yards	150
Complete	less than 2 to 1	None	None
	2 to 1	100 yards	75
	2½ to 1	150 yards	100
	3 to 1	200 yards	125

For relative strength consider supporting arms, terrain, N.G.F. artillery, aviation, tanks, etc.

ORGANIZATION OF GROUND

Time in hours considered required to prepare a balanced hasty defense.

	Type of Soil		
	Soft	Average	Hard
In daylight	4	6	8
At night	6	9	12

III POWER FACTORS

1. The relative power of the weapons of the units in opposition in a certain sector is compiled by multiplying the number of such weapons by a factor denoting its relative power and then adding up the total for all weapons of all types. The factors, which are more or less arbitrary, are as follows:

R	—Rifles	— 1	
AR	—Auto rifles, light M. G.	— 3	
MG	—Machine guns, cal .30	— 10	
AT	—Machine guns, cal .50 (anti-tank)	— 10	
37	—Guns, 37 mm	— 15	
M	—Infantry mortars	— 15	
C	—Cars, armored or scout	— 20	(a)
T	—Tanks, light or combat car	— 30	(a)
HT	—Tanks, medium or heavy	— 40	(a)
LA (75)	—Light artillery (75 mm gun or how)	— 20	(b)
LA (105)	—Med. artillery (105 mm how)	— 25	(b)
MA	—Medium artillery (155 mm how)	— 30	(b)
HA	—Heavy artillery (155 mm gun or larger)	— 40	(b)

(a) Includes vehicle and its weapons.

(b) Secondary weapons are not included as a power factor.

2. **Unit power factors.**

(Per USMC Organization Tables 1938)

Infantry Units	**Power Factor**	
Rifle Squad (9 E. M.—2 BAR)	13	
Rifle Platoon (3 squads)	45	
Rifle Company (3 platoons)	145	
Machine-gun section (2-cal. 30 M. G.)	20	
Machine-gun platoon (4-cal. 30 M. G.)	40	
Machine-gun company (12-cal. 30 M. G.) (in attack)	120	(*)
81 mm section (2 mortars)	45	
81 mm platoon (2 mortar sections)	90	
Infantry Bn. (3 R. Cos., 1 MG Co., 1 M Plat.)	680	
Tank Platoon (5 L Tanks)	150	
A-Tank or A-Boat Plat. (6-cal. 50—3 gun sections)	60	
Light Artillery Units (75 mm gun or how.)		
Battery, 75 mm (4 guns)	80	
Battalion, 75 mm (12 guns—3 Btys.)	240	
Regiment, 75 mm (24 guns —2 Bns.)	480	

NOTES:—The foregoing figures apply to the attack. For use in defense the above factors are increased by 10 percent.

Reduce 50 percent while infantry unit is actually under artillery fire.

In smoke reduce small arms fire power:
Troops in open, target in smoke—25%
Troops in smoke, target in open—75%
See Chemicals, Aviation, and Naval Gunfire sections for effects of gas, bombs, and naval gunfire support.
(*) In defense, 24-cal .30 MG's available.

3. Fire power.

a. Generally speaking, the progress of the combat phases of the maneuver is determined by the progress of the infantry, which in turn is determined by the relative fire power of opposing elements.

b. An infantry element should be permitted to advance only when it has a decisive superiority of fire, as compared with the elements 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.

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

d. 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, even though considerable delay is caused thereby. Machine guns are supplied with ample blank ammunition, and must fire sufficiently continuously to reveal their presence to the opposing troops and to the umpires. Those which do not fire may be disregarded in reaching decisions.

e. Decision in a particular case is based on the weapons actually firing—excluding those in support or reserve and those engaged on missions other than in the situation under consideration.

f. The situation must be broken down into its essential elements, each being weighed by itself. For example, a company might attack a company, and the total fire power might be substantially equal. But, if the attacking company employed one platoon frontally and two platoons to envelop, the situation might be quite different. The frontal attack would be stopped; but the enveloping attack quite possibly might develop a great superiority of fire, and should be permitted to advance accordingly. Thus the attacking company might be successful by virtue of its maneuver.

4. Application of power factors.

a. Power factors will be computed by the actual number of weapons or units delivering effective fire on the opposing subdivisions concerned. These factors will be materially influenced by terrain corridors for direct fire, observation for indirect fire and other contributing factors such as shelter, camouflage, range and enemy fire as described below, before a decision is reached.

(1) **Range.** Obviously fire at short range is more effective than at long range. Although admittedly inexact, the following guide is deemed sufficiently accurate for practical purposes:

(a) For rifle and automatic rifle fire, full fire power is allowed up to ranges of 500 yards, one-half for ranges of 500-1000 yards, and none for ranges over 1000 yards.

(b) For machine-gun fire, full fire power is allowed up to ranges of 1000 yards, one-half for ranges of 1000-1500 yards, and none for ranges over 1500 yards.

(c) Since the 81 mm. mortar is effective up to 3000 yards, its fire is counted at full value in all cases.

(2) **Artillery.** Artillery fire has its effect on the infantry action in two ways, as follows:

(a) When an infantry element actually is under artillery fire, its fire power is reduced to one-half, as long as the artillery fire continues.

(b) When artillery is in position and is taken under correctly placed fire by the opposing artillery—counterbattery fire—it is neutralized during such fire, and its own fire is interrupted accordingly. Thus counterbattery fire assists the infantry by interrupting artillery fire against it.

b. It should be noted that the power factors listed are the maximum that should be credited to the forces engaged, assuming proper tactical employment throughout the action. Should the attacker fail to make proper use of advantages of the terrain and opportunities for flanking fire, or should the field of fire of the defender be better than average, the rate of advance should be reduced accordingly, or held up until suitable dispositions are made or reserves committed.

c. Power factors will not be credited to infantry units until they open fire.

d. An attacker who employs an artillery preparation with all available artillery may increase his initial factor by a maximum of 20% **for the first hour of attack only,** the amount of increase being influenced by the duration of the preparation and the assumed effect of any enemy counter preparation ordered.

e. The rate of advance on various positions of the front will be controlled by the local application of power factors; thus it is not to be expected that the rate of advance will be uniform over the entire front.

f. An attack launched by foot troops against an undefended front, as will frequently be the case initially in a wide envelopment, or on part of a front initially in a close-in envelopment, will be permitted to advance at a maximum rate of 2500 yards (1½ miles) per hour until determined hostile resistance is met, at which time the rate of advance permitted will be changed to conform to the then existing power factor ratio.

g. Once a break-through has been made, the defender must expect, if he has not made definite plans to meet such a contingency, to suffer considerable losses in personnel, equipment, artillery, and other materiel

by capture. In such cases, he should logically be assessed a commensurate penalty to represent such losses. He can not expect to have such losses replaced until after at least 24 hours have elapsed. Hence the power factor for the units concerned should be reduced for such a period by a percentage equal to the assumed casualties. This reduction will obviously bring about an increase in the rate of advance allowed to the attacker.

h. The characteristics and methods of the attacker and the defender will have a very definite bearing upon the rate of advance which should be permitted to the attacker. Therefore, in the application of the foregoing rules, the rate of advance to be allowed to an attacker must be decided only after full consideration has been given to the characteristics of the units involved.

POWER FACTOR RATIO
(Sample work sheet)

Date ..... Hour ..... Umpire .....

BLUE							FIRE POWER		RED						
UNITS ENGAGED (Use Symbols and Designation)							BLUE	RED	UNITS ENGAGED (Use Symbols and Designation)						
NGS	Air	Art	Tank	MG	Hows	Front Line			Front Line	Hows	MG	Tank	Art	Air	NGS
						A 5	145	145	G 5						
				D 5			120	40			1 H				
		A 10					80	45		2 5					
							345	230							
			Subtract 25%	target in	smoke		85	23	Add 10% for defense						
							260	253	Subtract 75%: troops in smoke target clear						
								63							
						Totals	260	190							

APPROXIMATE POWER FACTOR RATIO = 1⅓ to 1

IV LOSSES

1. **General.** Losses in PERSONNEL, MATERIEL, and TIME will be assessed during the progress of the maneuver. As training in combat of the maximum number of men is of primary importance, casualties in materiel, individuals, or units will not be ruled permanently out of action. Instead, casualties will be taken into account as follows:

a. By application of the power ratio.

b. In the case of units in contact, by controlling the rate of movement or requiring a withdrawal. Actual delays will be enforced.

c. In the case of units not deployed for fire action, by assessing a penalty in numbers, time or space, proportioned to the severity of the casualties received.

Losses are assessed by the umpire with the unit—not by umpires with opposing units. The umpire informs the unit commander from time to time of losses sustained, and keeps a running record of them.

Losses will be considered as not replaced during the maneuver.

The losses to be assessed as a result of fire and other action by the opposing force necessarily are a matter of judgement in a considerable degree. 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 compartively few casualties; but if the company attacked another company, its losses undoubtedly would be heavy.

It is essential that the losses be assessed and recorded, since such losses affect fire power and thus have a direct effect on the progress of the maneuver. The fire power of units may be reduced successively by losses during the course of the maneuver. The total losses may ultimately decisively change the course of the maneuver locally or generally.

2. **Personnel Losses.** Personnel losses are classified as PRISONERS of WAR, MEDICAL CASUALTIES, and BATTLE CASUALTIES.

a. **Prisoners of war.** Prisoners will be captured only under conditions prescribed by the commander of all troops. When the capture of prisoners is not permitted and conditions prevail which would otherwise assure the capture of prisoners, the umpire will furnish the name, rank, and organization of the supposed prisoners.

b. **Medical Casualties.** For various reasons it is deemed impracticable to evacuate casualties as they are assumed to occur. However, in order that medical units may be afforded an opportunity to function under service conditions, the following procedure will be used:

The Medical Umpire, keeping in touch with medical installations through unit umpires, calls on appropriate unit umpires for specified numbers and types of casualties.

Unit umpires in turn call upon unit commanders for the specified number of casualties.

As a result, the various units designate enlisted men as casualties.

Casualties are classified properly according to medical experience, and are evacuated from positions to aid stations in the regular manner, including all details. If the attached medical personnel required is not available at the aid stations, the casualties are required to walk from position to aid station, from which they are evacuated by the medical units.

Casualties are returned from medical aid stations as soon as they are processed there, and rejoin their units.

c. **Battle Casualties.** The following data are to be taken only as a general guide in weighing the various factors of each case. It is emphasized in this connection that the usual tendency of umpires is to assess losses which are grossly excessive in the light of war experience.

(1) **Infantry.** (a) War experience indicates that an infantry regiment may sustain casualties as great as 15% from infantry and artillery fire during one day of severe combat. While the losses of a particular portion of the regiment might exceed this proportion, the figure affords a useful check on the total casualties assessed, and should be borne in mind in connection with the losses resulting from isolated incidents during a day of active combat.

(b) Company umpires should be particularly careful to 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% per hour.

When two infantry units of substantially equal strength oppose each other under the same conditions, the casualties may be taken as 2% per hour. For example, a company of 100 men would lose 2 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% per hour. If a unit is on the defensive, well protected, or if it attacks a markedly inferior force, the losses may be only 1% per hour.

By Art Fire	Infantry within a battery concentration 200 yards in diameter for about 5 minutes .....2% percase Infantry which passes through a standing barrage by one battery on a front of 200 yards .....10% percase Infantry in column which passes through a battery concentration on a road .....4% per case
By Aircraft	Infantry in column attacked by low-flying airplanes - with surprise .....5% per attack without surprise .....2% per attack Infantry in bivouac attacked by low-flying airplanes - elements under the attack .....2% per attack
By Tanks	Infantry overrun by tanks - elements within 200 yards .....3% per attack Antimechanized weapons overrun by tanks - out of action for the day.
By Chemicals	See Chemical Warfare Umpire duties. j. (1) Table of Casualties from Chemical Agents.

(2) **Artillery.** War experience indicates that the casualties of field artillery are about 10% of those of infantry.

The average losses sustained by field artillery are indicated as follows:

Artillery in column passing through a battery concentration on a road at an increased gait 3% per case

Artillery in column attacked by lowflying airplanes—with surprise ..... 5% per attack
without surprise ..... 2% per attack

Artillery in position overrun by tanks—out of action for the day.

Artillery lightly protected, located within a standard 200 yards area on which counter-battery fire is placed by means of H.E. shells or aerial bombs equivalent to 400 rounds 75 mm —destroyed—24 hrs for replacement.

Artillery well protected, within standard 200 yards or on which counter-battery fire is placed by means of H.E. shells or aerial bombs equivalent to 800 rounds 75 mm—destroyed —24 hrs. for replacement.

(3) **Other Units.** To determine battle casualties in units other than infantry and artillery, refer to section devoted to that arm.

(4) **Arbitrary Table of Daily Losses in Personnel, Assumed.**

DEAD AND WOUNDED

Nature of Operations	Regiment in Contact		Brigade in Contact	
	% Dead	% Wounded	% Dead	% Wounded
Leading Bns in boats against weak defense	1.5	8.0	.5	2.0
Leading Bns in boats against strong defense	4.0	20.0	2.0	10.0
During first stages of shore line combat	1.5	8.0	.5	2.0
Attack in a meeting engagement	1.6	8.0	.6	3.0
Attack of a position: first day of attack	2.5	12.5	1.0	5.0
succeeding days	1.2	6.0	.5	2.5
Attack of a zone: first day of attack	4.2	21.0	1.7	8.5
succeeding days	2.1	10.5	.8	4.0
Pursuit	.4	4.0	.3	1.5
Combat of covering and security forces	.6	3.0	.2	1.0
Defense in meeting engagement	1.0	5.0	.4	2.0
Defense of position against attack: first day of defense	1.5	6.0	.6	2.4
succeeding days	.75	3.0	.3	1.2
Defense of a zone against attack: first day of defense	2.5	10.0	1.0	4.0
succeeding days	1.25	5.0	.5	2.0
Periods of stabilized defense	.5	2.0	.2	.8
Retirement and delaying action	.4	2.0	.2	1.0

3. **Materiel Casualties.**

a. **General.** For maneuver purposes the materiel casualties will be limited to weapons, mechanized vehicles, combat transportation, boats, transport and airplanes.

Although materiel declared casualties may be permitted to continue in the maneuver for training purposes, appropriate action should be simulated by officers and agencies concerned to repair or replace such materiel. Wherever applicable, materiel casualties will be assessed in terms of reduced fire power to determine relative power factors.

b. **Mechanized Vehicles.**

(1) Such vehicles include tanks, armored cars, and scout cars.

(2) Cannon, .50 cal., and .30 cal. m.g.'s only are effective.

(3) Mechanized vehicles disabled or destroyed by hostile fire or mines are assumed not to be replaced until the following day.

(4) The average losses sustained by mechanized vehicles are indicated as follows:

Mechanized vehicles passing through a battery concentration ..... 2% per case

Mechanized vehicles under fire with direct laying for a travel of ½ mile and at a range of 500 - 1000 yards—1 vehicle per gun firing.

Mechanized vehicles attacking a position—1 vehicle per gun firing, if fire is opened with direct laying at not less than 300 yards—2 vehicles per gun firing, if fire is opened at not less than 500 yards.

(5) Danger from mechanized vehicles. Attacking mechanized vehicles should sound their sirens or horns frequently during assault. They should use care to avoid injuring foot troops. On the other hand, foot troops must be on the alert in this connection. They are in danger when concealed from the view of mechanized vehicles which approach closely. They must not approach such vehicles in motion nearer than 15 feet, since the vehicles are capable of sharp turns.

(6) Motor vehicle lights. The use of vehicle lights at night is at the option of unit commanders.

c. **Airplanes.** Losses of airplanes will be assessed as prescribed by the assistant chief umpire, air, (See Aviation and Antiaircraft Artillery Sections).

d. **Combat Transportation, Boat and Transport** casualties will be determined by the circumstances and assessed by the umpire concerned. (See Aviation and Artillery Sections for boat casualties.)

4. **Delays.**

a. **Demolitions.**

(1) Demolitions by engineers will be simulated in detail, so as to confine the number and effect approximately to realities. A demolition will be marked by posting a placard describing its nature and indicating its effect as far as practicable. Unit umpires will enforce the restrictions resulting from demolitions. In the case of a bridge destroyed, the effect may well be to deny its use during the entire maneuver.

(2) In case it is practicable to go around a demolition, but doing so would involve violating property restrictions, an equivalent delay—estimated by the unit umpire—may be imposed instead.

b. **Other delays.** Delays due to causes other than demolitions are indicated as follows:

Road interdicted by a battery concentration—delay either for the duration of the fire or for 15 minutes—whichever is less.

Column attacked by low-flying airplanes—for each attack—
Foot troops only — 15 minutes.
Mounted or mixed column — 30 minutes.

Column attacked by mounted horse cavalry—for each attack—
Foot troops only — 15 minutes.
Mounted or mixed column — 30 minutes.

V COMMUNICATIONS

1. The umpire system of communication—radio and messenger—is independent of the troops' communication system. It may be necessary on occasion that a unit umpire use troop communication for umpire purposes but the practice should be avoided. When such use is necessary the umpire should not interfere with the troop requirements. Troops should not under any circumstances use the umpire communication system.

Under the control of the Senior Umpires certain penalties and simulated casualties in communication materiel will be inflicted by umpires. Communications may thus be interrupted for stated periods or as directed; wires will not be cut and other damage to materiel will not be inflicted by umpires.

Troops should employ only organic means of communications. Every endeavor should be exerted to make the communications realistic. This includes the type and amount of equipment employed as well as the method employed. Umpires should observe and note messages or types of communications sent in the clear which should normally be in code. A uniform system of coordinates and map locations should be employed by all agencies, including aviation.

2. Observations by umpires should include:
   a. Working range—visual agencies—day and night.
   b. Speed of radio operations—plain and code.
   c. Possible interference and its effect.
   d. Steps taken to parallel means.
   e. Method of installation of communication agencies at command posts.
   f. Operation of communications at command posts.

VI TECHNIQUE OF UMPIRING

1. Organization.

Umpires will be assigned to infantry companies and higher echelons and to such special units and activities as directed by the Chief Umpire.

Each umpire will be provided with such enlisted assistants as may be necessary for inter-umpire communication and flag control.

2. Equipment, Transportation and Messing.

Certain designated umpires will be provided with transportation by the combatant forces. Designated umpires will be provided by the Chief Umpire with portable radio sets and control flags, maps, umpire instructions, message pads and books for recording notes. Each umpire will provide himself with the following equipment:

Bedding roll	Maps
Mess gear	Message pad General Instructions
Canteen	and Situation of Problem
Flashlight	Manual for Umpires

In general the uniform and field equipment of umpires will conform to that of the troops whom they accompany. Shelter halves and white hat bands for all umpires and enlisted assistants will be provided by the organizations.

During the landing exercise proper, umpires and their enlisted assistants will mess with the unit with which they are serving. At other times they will be quartered and will mess as directed by the Chief Umpire.

3. General Instructions.

All umpires will familiarize themselves with the General and Special Situations, orders of opposing units, and the terrain by map study and on the ground, prior to the opening of the maneuver. Reconnaissance of the terrain shall be so conducted that troops concerned will not be given unfair information as to locations, etc. Similarly, umpires will not discuss the problem with organization personnel in a manner to disclose enemy information or plans.

The effect of planned fires will be computed ready for application upon execution under predetermined situations.

The principal function of umpires is to furnish information concerning the presence and nature of hostile fire, bombing and chemical agents encountered by troops, their personnel losses in prisoners, medical, and battle casualties, materiel losses and delays, all of which are computed according to positive action on the part of units actually delivering the fire.

Umpires should inform troops of situations which they could reasonably be expected to know. They will inform organizations in which losses are inflicted and the extent of those personnel and materiel casualties. Umpires will not inform organizations of the extent of damage done or assigned in opposing forces. Such information must be determined by the troops from the circumstances.

Certain medical casualties will be tagged and evacuated under the direction of the organization medical officers. Such casualties will be returned to their respective organizations with minimum delay.

The maneuver should be maintained as realistic as practicable, artificial features being reduced to a minimum. Check the tendency of unit commanders assuming that a thing ordered is a thing accomplished. Check the time and space factors constantly, insisting upon normal delays which the situation demands. Check the logistic features in munitions and material supply and replacements.

Umpires should not interfere with the role of the participants. Criticism or advice will not be volunteered. Independent initiative and decision should be encouraged, and developed by unit commanders.

Umpires have no command function.

Umpires should show no partisanship. They will avoid argument with troop commanders on difference of opinion concerning personnel or materiel casualties or delays imposed.

Umpires will keep informed constantly concerning the situation, plans, and operations on both sides in their immediate field. They will keep higher and adjacent umpires informed of the situation in their vicinity.

All umpire personnel will wear white hat or sleeve bands for identification. They will observe generally the same restrictions as the troops with respect to lights, smoking, concealment, and the like. Otherwise, troops in the vicinity may be revealed, and the situation—especially from the air—confused.

Umpires will keep a log of events, notes on critical phases of the operation and comments on actions taken with an analysis of effects. Such data will be presented in concrete form to the Senior Umpire immediately following the maneuver to permit the presentation of pertinent data in the final critique and final report.

Umpires will familiarize themselves with the method of designating areas or points on the maps as employed by the troops.

Bayonets will not be fixed.

Blank ammunition will not be fired after dark.

Opposing lines will not be permitted to approach closer than 200 yards of each other. When the situation is vague, umpires of opposing units approaching 200 yards will temporarily suspend the operation in their immediate front, confer with each other and reach impartial decisions as to future action based upon actual situations existing and application of the power factor as influenced by terrain, formations, etc.

Patrols may approach closer than 200 yards in executing assigned missions, without firing blanks and subject to instructions of the troop commanders, which will govern their conduct when in close contact with opposing troops.

4. Duties of Umpires.

a. Chief Umpire.

The Chief Umpire, through the commanding officer of troops, insures that all participants are familiar with umpiring rules, particularly that the troops understand the meaning of the control flags.

The chief umpire is responsible for the organization, execution and details of the umpiring system and for making such plans and basic decisions as may be necessary. He assigns umpire personnel to units and duties and issues such directives as are necessary to insure an efficient umpiring system. The maneuvers are permitted to unfold in a realistic manner in so far as practicable, the chief umpire issuing such instructions as may be necessary to provide a continuity of action, and making decisions as required by questions submitted by Senior BLUE, Senior RED or Special umpires.

The chief umpire is responsible that an efficient system of communication is available for the umpires.

The chief umpire moves about in the maneuver area wherever he deems his presence most advantageous. He maintains constant communication with subordinate Senior and Special umpires.

The chief umpire suspends or concludes the maneuver after consultation and in agreement with the senior officer directing the maneuvers.

The chief umpire requires all umpires to submit such reports as are necessary for the final critique and for the final report which he prepares and submits to the Major General Commandant. (copies to C.G., FMF and Brig.)

The chief umpire is responsible for the conduct of the final critique, arranging the time, place, and program of the critique. He details the personnel to speak, assigns a time limit to each and indicates the sequence and character of criticism with a view to insuring continuity and general uniformity without holidays or repetitions.

b. Senior BLUE and RED Umpires.

These umpires keep informed of the general situation in both forces.

They render decisions as necessary within their province as they affect their own forces.

They submit to the chief umpire for decision those questions concerning the maneuver as a whole, upon which the senior umpires cannot agree, or in which special umpires are involved.

They keep the Chief Umpire and each other informed of the situation, plans and orders of their respective units.

They maintain communication with the Chief Umpire and their Assistant Umpires.

They insure the transmission of information concerning supporting fires other than small arms, in order that proper credit shall be given to the force delivering same, and that information and appropriate penalties shall be communicated to the opposing force.

c. **Infantry Battalion Umpire.**

(1) An infantry battalion umpire has the primary duty of observing and reporting the actions of the battalion commander. His post habitually is with the battalion commander—at least during active periods. He does not attempt to supervise the activities of the company umpires during combat.

(2) Before an action, and at other appropriate times, he assigns all umpires with the battalion to duties, so as best to meet anticipated developments and equalize the burden of umpiring. However, it ordinarily is advisable that there be an umpire with each rifle company throughout active periods. The battalion umpire himself may assume the duties of a company umpire on occasions, placing another umpire on duty at battalion headquarters in the meantime.

(3) His reports should cover the battalion as a unit. With this purpose in view, he contacts the company umpires whenever practicable.

(4) He marks artillery fires in the vicinity when called upon by umpire headquarters. Such occasions, however, should be exceptional.

d. **Company Umpires.**

(1) The company umpire has vitally important duties. The decisions reached by the company umpires with opposing units in contact determine the progress of the maneuver. If such decisions are sound, the maneuver will be realistic and successful. If the decisions are ill-considered and unsound, the situations and outcome will be false and the lessons derived erroneous.

(2) The company umpire posts himself so as best to observe the action of the company. He does not remain with the company commander, but ordinarily is with or ahead of 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.

(3) As soon as opposing troops have approached within 200 yards of each other, all movements and firing should be stopped by company umpires by the display of white flags. Unit umpires will then go forward and confer with umpires in their immediate front, giving them all information concerning composition, disposition and plans of units concerned. Company umpires will then determine with the aid of power factor ratios what movement, if any, will be allowed. The decision will be transmitted to their respective unit commanders and appropriate flags will be displayed for control of the actual movements of the front lines.

(4) For example, if the decision allows RED to advance at an average rate of 100 yards per 10 minutes, umpires will cause blue flags to be displayed with the RED ~~and BLUE~~ troops in their immediate vicinity and cause the flags to be advanced in accordance with the effectiveness of the troop maneuvers. Should the troops fail to adopt suitable

tactics to overcome resistance encountered, or to utilize terrain effectively, the rate of advance will be diminished or stopped entirely until dispositions are corrected or reserves committed. BLUE troops will fall back as the opposing blue flags and attacking troops approach near them. The movement of the flags will not be continuous, but will be controlled by opposing umpires in their respective sectors as indicated above.

(5) Similarly, should BLUE decide to launch a counter-attack, the unit umpire should, where practicable, report the plan to the opposing umpires so that the effect of the operation may be determined in advance. If necessary, white flags will be displayed to stop all action pending decision. If the decision allows BLUE to take a certain terrain feature, blue flags will be advanced to the area concerned and the withdrawal of the REDS therefrom directed accordingly.

(6) His basic method of control is by flags. He avoids oral instructions in connection with his decisions, for they do not reach all elements. However, certain explanations may be necessary from time to time.

(7) Whenever the situation as it affects his unit becomes obscure in any way—due either to the actions by the opposing force or to those by his own 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. The delay caused is of little consequence, in view of the vital necessity of such action.

(8) As soon as white flags are displayed, the umpires concerned confer without delay, and take such other steps as may be necessary to clear up the situation.

(9) As soon as a decision is reached, the umpires return to their units and display the proper flags. The action by the troops then is resumed.

(10) The procedure is repeated as often as necessary to insure orderly and correct progress. An umpire must be on the alert, lest his unit get out of hand. The white flag always is available in this connection. Opposing lines should not be permitted to approach within 200 yards of each other.

(11) Care is used to dispose flags so that they will be visible to the troops. Opposing flags should be so placed as to avoid confusion as for whom they are intended.

(12) The following signals are suggested for use by umpires in communicating with their flag orderlies:

Both arms extended vertically upward—white flags.

One arm extended horizontally toward either one force or the other—action resumed; one force can advance in the direction indicated; the other force must fall back correspondingly.

Both arms extended laterally in opposite directions—action resumed, but neither force may advance.

(13) Umpires should impress upon company commanders that all elements of the company halt in place and cease firing when a white flag is displayed in front of the company. Troops cannot pass within 100 yards of a red or yellow flag without having casualties inflicted; they are free to maneuver around or change their dispositions otherwise. When blue flags are displayed with a unit, troops are free to advance in proper formation. If the troops see no flags in their front, they do not advance, but seek a vantage point from which flags can be seen. No advance may be made against blue flags.

(14) The procedure indicated above is applicable in general to the limited operations at night. Company umpires should be well forward, in order to anticipate contact and render decisions promptly. Control may be facilitated by illuminating flags by flashlights, supplemented if necessary by oral decisions to the units immedately involved. Rotation of umpires for night duty is advisable, in order to permit the necessary rest and sleep.

(15) A company umpire keeps a journal of times and key events—primarily movements, positions, and actions of the unit — together with a running record of strength as affected by casualties. It is unnecessary to record decisions as such, since their results are embodied in the actions of the unit. He submits no reports, except as indicated, his journal being primarily for his own use and for the information of the battalion umpire from time to time. He devotes his time and energy to action on the ground. The control of the maneuver takes precedence over keeping records.

(16) Company umpires submit oral or current reports to battalion umpires as follows:

(a) Immediate report of each location of the command post of the unit.

(b) Immediate report of projected operations and movements—the brief substance of field orders issued or decided upon. Early information is important in such cases.

(c) Report of the bivouac area to be occupied each night—as soon as decided upon.

(d) Immediate report of important developments—for example, the capture of a strong position, a counterattack.

(e) Such reports with reference to unit supply as may be called for.

(f) Reports by radio will be in the clear or in code as directed by the chief umpire. Written reports by messenger may be entirely in the clear.

e. **Logistics and Administrative Umpire.**

This umpire will land and move about in maneuver area wherever necessary to follow the logistical features of the exercise.

He will observe time and manner of landing materiel, supplies and transportation.

He will note the establishment and functioning of reserve dumps and distributing points and the supply of rations and water.

With a view to maintaining realism in the maneuvers it is important that the supply features be not neglected but keep this technique apace with the development of tactical doctrine. Artificiality should be reduced to a minimum in the logistic features of the exercises.

Record should be made of any deficiencies noted in the supply and administrative phases of the problem including the number, type, employment and performance of all types of transportation and equipment.

f. **Ship to Shore Movement Umpire.**

This officer may be the Boat Flotilla Commander.

He studies the orders, instructions and organizations of the boat movement from ship to shore.

Personally and through assistants he notes the preparations on board ship for the debarkation—the formation of the troops, the discipline exercised in getting men and combat equipment into boats with lights and noise observed.

This umpire notes whether all boat officers and coxswains have complete instructions covering movements, time schedules, rendezvous areas, formations, directions, beaches, hazards, etc.

This umpire notes boat discipline, fire discipline of troops against shore targets and aircraft and their manner of debarkation from landing boats.

For losses see "Penalities (Landing Operations)" under Light Artillery Umpire.

g. **Medical Umpire.**

The medical umpire will study medical organization, and plans for the care and evacuation of medical casualties.

He will organize through the medical officers of the troops participating in the maneuvers a system of tagging and evacuating a logical variety of battle casualties in limited numbers for training purposes.

He will note the methods adopted to provide medical supplies and replacements of same.

Note if the medical installations are properly located with regard to line of drift, shelter, water, and routes of approach.

Note method of handling casualties at beach and in boats.

Note the provisions taken to care for gas casualties.

Record any deficiencies noted in the number, type, employment or functioning of any medical organization, transportation and equipment.

h. **Beach and Shore Parties, Umpire.**

This umpire verifies orders, instructions and organization of Beach and Shore Parties.

He will land with leading element of these parties.

This umpire will observe and note the installations and functioning of these parties ashore. He will note the extent of cooperation between the Beach and Shore Parties.

Note measures taken by Beach Parties to reconnoiter beaches, mark favorable or dangerous beaches, to regulate traffic, to expedite landing and forwarding personnel and supplies, in establishing communications, to evacuate casualties and prisoners.

Note measures taken by Shore Parties to select and mark areas for various activities on shore, to mark routes forward, to expedite movement of troops and supplies forward, to organize and control prisoners and stragglers at beach, to evacuate casualties to ships and to establish communication between shore parties and inland as required by the situation.

i. **Light Artillery Battalion Umpire.**

(1) **General.**

A light artillery battalion umpire observes the operations of battalion headquarters and, in whatever degree may be practicable, those of the battalion as a whole.

He observes that preliminary arrangements for early opening of fire including proper coordination, and providing for a maximum continuous effective fire support, have been made.

He observes that none of the conventional functions in laying and firing, simulated where necessary, are slighted.

He observes that batteries from actual positions selected are able to fire concentrations subject to call or on schedule.

He reports the fire of each battery to the senior umpire.

He informs the battalion commander that, when batteries fire on their own initiative, such fires must be reported to battalion commander; otherwise, they cannot be credited.

In so far as practicable, he notes whether fires are delivered properly. In case the fires do not simulate service conditions in all essential details he may omit reporting them.

When a battery is subjected to correctly placed counterbattery fire or aviation attacks, he limits its fire in accordance with computed results.

He follows the state of ammunition supply and causes firing to be suspended when the supply of ammunition is exhausted.

(2) **Base Defense.**

He observes that batteries and other installations are defiladed from enemy sea observation.

He observes that batteries are able to actually fire barrages specified for each battery.

He observes that anti-boat guns are properly screened and are able to cover the prescribed sector.

(3) **Marking Artillery Fires.**

Effort will be made to indicate on the ground the point of fall and duration of all artillery fire which is reasonably concentrated—except counterbattery fire. Umpires of firing units will communicate with senior or other umpires to insure and expedite properly marking or otherwise indicating fire missions.

No attempt is made to mark the fire of a battery, unless it is confined to an area 200 x 200 yards or less, and lasts 5 minutes or more.

A flag is placed so as to mark the center of the fire of each battery, and the fire is taken as effective within 100 yards of the flag in all directions. If a battalion of two or three batteries fires on such an area, a corresponding number of flags are placed a small distance apart.

(4) **Penalties (Landing Operations).**

Landing pack howitzers through direct automatic small arms fire, 15%.

Landing through an enemy Light Artillery normal barrage on the beach, 10%.

Boats passing through Light Artillery fires covering breaks in reefs, 10% of such boats that pass through during actual firing.

Congestion of boats other than above and taken under fire by L.A., 5% (or less as umpire decides, depending on range, etc.)

Enemy L.A. concentrations placed to cover battery or other installations, penalty: 5% and out of action 10 minutes for first concentration and progressively less for later ones on same area.

Unnecessarily exposing personnel and material, as decided by umpire, but not in excess of 10% of such and out of action for 15 minutes.

(5) Ammunition Allotments for Neutralization.

75 mm H.E. Shell

Dia. of circle, yards	100		200		300	
KIND OF DATA	Tr. of fire	Map data cor.	Tr. of fire	Map data cor.	Tr. of fire	Map data cor.
Rounds sweeping	None	None	2	2	3	3
Range safety factor	50 yds	100 yds	50 yds	100 yds	50 yds	100 yds
Number of ranges used to cover area once	5	7	7	9	9	11
Ammunition required to cover area once	20	28	56	72	108	132
Time required to cover area once	1 min	2 min	3 min	3 min	5 min	6 min
Ammunition required to establish neutralization	40	56	112	144	216	264
Time required for one battery to establish neutralization	2 min	3 min	5 min	6 min	9 min	11 min
Rate of fire. Shot bursts. Rounds per battery per minute	24		24		24	

NOTE: (1) Above table based on U. S. Field Artillery estimate.
(2) French use about 5 times this amount but expect 50% casualties.
(3) Naval Gunfire estimates are approximately a mean be- between two.

(6) **Rates of Fire.**

Caliber	75 m/m	105 m/m	155 m/m		240 m/m
			Without sweeping	Sweeping	
Rate of fire, short bursts of not to exceed 10 mins., rounds PER PIECE per min.	6	4	3	2	½
Short bursts, rounds PER BTRY. per min.	24	16	12	8	
Rounds PER BTRY. at max. rate for 5 mins.	120	80	60	40	
Rate of fire, prolonged, rounds PER PIECE per min.	3	2	1	1	¼

(7) **Ammunition Capacities.**—(75 mm Pack How).

In Battery—1-Unit of Fire (300 rds. per how.) .....1200 rds.
In Battalion Combat Train ..... (see NOTE below)
In Regtl. Ammunition Train .....4800 rds.

NOTE: The Bn. Combat Train is improvised by pooling the 5th Sec. of all 3-Btries. Capacity of Bn. Combat Train .....1800 rds.

(8) **Number of Concentrations POSSIBLE.**
(Using 1-75 mm Btry. with 1-Unit of Fire.)

Type of fire	200 yd. concentrations	100 yd. concentrations
Observed-(if allowed to register)	about-11	about-30
Unobserved-(if not allowed to register)	about- 8	about-21
Number Concentrations PER HOUR - For ESTABLISHMENT of neutralization	about- 5	about-12
Number of Concentrations PER HOUR - For MAINTENANCE of neutralization	about- 2	about- 5

C	PIECE ANSPORT	AMMUNITION TRANSPORT		TOTAL WEIGHT (approx) OF PIECE AND CARRIAGE (lbs.)	MARCHES	
		Kind	Rounds per vehicle		Avg. Rate (miles per hour)	Avg. Days March (miles)
7 H	ck actor	Pack (i)	8 (i)	1,300 (e)	3½ 2½	20 20
7 N F	orse team actor uck	(f) (g) (h)		2,650	3½ 3½ 20	20 30 140
3 A (	uck or actor #25 terpillar	Truck or Trailer	44	16,000	12	125
1 g (	Tractor, ton or Caterpil- #50 Caterpil- #25	Truck, 5-10 ton or Trail- er	40	30,081	3½	30

k, 3-ton, 200 rounds.
ounds; truck, 3-ton, 200 rounds.
on, 72 rounds. trailer 3 ton, 200 rounds.
and water borne targets.
of maximum range: for destruction deduct 20% of
er purposes neutralization may be employed up to maxi-

(9) CHARACTERISTICS OF ARTILLERY.

CALIBER AND TYPE	AMMUNITION					EXTREME RANGE (yds.) (1)	TRAVERSE PERMITTED BY CARRIAGE IN DEGREES AND MILS	RATE OF FIRE --ROUNDS PER PIECE PER MINUTE		TIME TO EMPLACE IN FIRING POSITION ORTOCHANGE FROM FIRING POSITION TO TRAVELLING POSITION	PIECE TRANSPORT	AMMUNITION TRANSPORT		TOTAL WEIGHT (approx) OF PIECE AND CARRIAGE (lbs.)	MARCHES	
	KIND	NO. OF ROUNDS PER BOX	WEIGHT (approx) OF COMPLETE ROUND (lbs.)	AREA EFFECTIVELY COVERED BY BURST (approx)				Prolonged	Short Bursts			Kind	Rounds per vehicle		Avg. Rate (miles per hour)	Avg. Days March (miles)
				Range (yds.)	Lateral (yds.)											
75 m/m Pk How (M1)	Shrapnel (fixed)	4	20 (16) (b)	150	25	5,600 (a)	6°	3	6 (max. 20 rds.)	3 minutes	Pack	Pack	8	1,300 (e)	3½	20
	Shell (semi-fixed): HE MK 41	4	22 (18) (b)	5	30	9,400	105 mils			5 minutes	Tractor	(i)	(i)		2½	20
75 m/m gun Mod. 1897, French)	Shrapnel (fixed)	4	20 (16) (b)	150	25	6,700 (a)	6° 105 mils	3	6 (max. 20 rds.)	3 minutes	6-horse team	(f)		2,650	3½	20
	Shell (fixed): HE MK I	4	17 (12) (b)	5	30	8,800				3 minutes	Tractor	(g)			3½	30
	HE MK IV	4	19 (14) (b)	5	30	12.780				5 minutes	Truck	(h)			20	140
	Chemical	4	17 (12) (b)	5	30	8,800										
	Smoke	4	17 (12) (b)	5	30	8,800										
3-inch AA Gun (M3)	Shrapnel (d)	4	27	150	25	12,600 (j) (a)	360°	12	25	10 to 15 minutes	Truck or Tractor #25 Caterpillar	Truck or Trailer	44	16,000	12	125
	Shell HE (d)	4	25	5	30	14,200 (j) (a)	6,400 mils									
155 m/m gun (Mod. 1918)	Shell (sep.-loading): HE MK III		122 (96) (b)	9	70	17,500	60° 1,065 mils	3	4	30 minutes to 6 hours	1-Tractor, 10-ton or 1-Caterpillar #50 2-Caterpillar #25	Truck, 5-10 ton or Trailer	40	30,081	3½	30
	Chemical VII		122 (96) (b)	9	70	17,500										
	Star Shell					15,000										

NOTES:
(a) Extreme limit of fuze.
(b) Weight of projectile only.
(c) Weight of maximum load: 16,230 lbs.
(d) Maximum vertical range; Shrapnel 25,650 feet; Time shell 27,900 feet.
(e) Weight of maximum load: 243 lbs.
(f) Gun limber, 35 rounds; caisson limber, 37 rounds; caisson body, 70 rounds; wagon, 100 rounds; truck, 3-ton, 200 rounds.
(g) Caisson body, 70 rounds; truck, 3-ton, 200 rounds.
(h) In truck transporting gun, 60 rounds; truck, 3-ton, 200 rounds
(i) T-4 cart, 44 rounds, trailer 1-ton, 72 rounds trailer 3 ton, 200 rounds.
(j) Horizontal Range against land and water borne targets
(k) For neutralization deduct 10% of maximum range for destruction deduct 20% of maximum range. For maneuver purposes neutralization may be employed up to maximum range for the gun.

j. Chemical Warfare.

(1) Casualties From Chemical Agents.

(Used in quantities and by technique recommended.)

SITUATION	% casualties of men in or immediately downwind of area gassed		
	No Protection	Gas Mask Worn	Gas Mask & Protective Clothing Worn
Troops marching on road or in an area when actually sprayed with **PERSISTENT VESICANT** from airplanes.	80	50	20
Troops marching on road previously neutralized with **PERSISTENT VESICANT** (on area 30 minutes) (on area 10 minutes or less)	50 5	10 2	5 0
Troops occupying area previously neutralized by **PERSISTENT VESICANT**	80	40	10
Troops attacked by Projector shoot with **PHOSGENE TYPE** agents	80	20	20
Troops moving over fields or through brush neutralized by **PERSISTENT VESICANT** agents. 400 yards across (marching over area) (crawling over area)	50 100	25 100	10 50
Troops in position attacked by **PHOSGENE TYPE** agents in gas shell (wooded) (open)	80 40	10 10	10 10
Troops in position attacked by **PERSISTENT VESICANT** agents in gas shell. Area evacuated at once (wooded) (open)	50 25	25 20	20 10

(2) Types of Chemical Agents.

HS	Mustard	Vesicant	Casualty
CG	Phosgene	Lung Irritant	Casualty
CNS	Tear Gas Solution	Lacrimatory	Harassing
DM	Adamsite	Irritant	Harassing
WP	White Phosphorus	Smoke	Screening & Incendiary

(3) General Rules.

(a) The fire efficiency of troops in the open and target in smoke is three times as great as when troops are in smoke and the target in the open.

(b) The advance of foot troops, tanks, and trucks in smoke is reduced to one-half normal rate.

(c) Harassing agents which force masking reduce the rate of advance or capacity to do work by foot troops by one-third during first hour, and by two-thirds thereafter. Troops are practically useless after 4 to 6 hours in a mustardized area. Gas masks reduce the speed of tanks and efficiency of tank gun-fire by one-half.

(d) Liquid mustard gas or an effective vapor concentration of mustard gas produces a casualty in four hours. Lewisite produces a casualty in one hour. Phosgene, when breathed, produces a casualty in 30 minutes.

(e) Smoke on the enemy doubles your own rate of advance.

(4) **Ammunition Requirements.**

(a) **Chemical Shell.**

(1′) Point Targets.

(Cross roads—road junctions—small bridges—etc.)

	HS			CNS (1)		CG (2)
	75 m/m	155 m/m	4.2M	75	4.2M	4.2M
Observed Fire	160	30	30	10	8	90
Transfer Fire	240	45	45	15	12	135

(2′) Small Targets.

(Battery positions, distributing points, command posts, combat groups.)

	HS			CNS (1)		CG (2)	
	75 m/m	155 m/m	4.2M	75	4.2M	4.2M	Livens
Observed	320	60	60	20	16	180	
Transfer	480	90	90	30	24	270	
Unobserved	640	120	120	40	32	360	80

(1) (a′) Rounds per hour.
(2) (b′) Fired in not over two minutes.

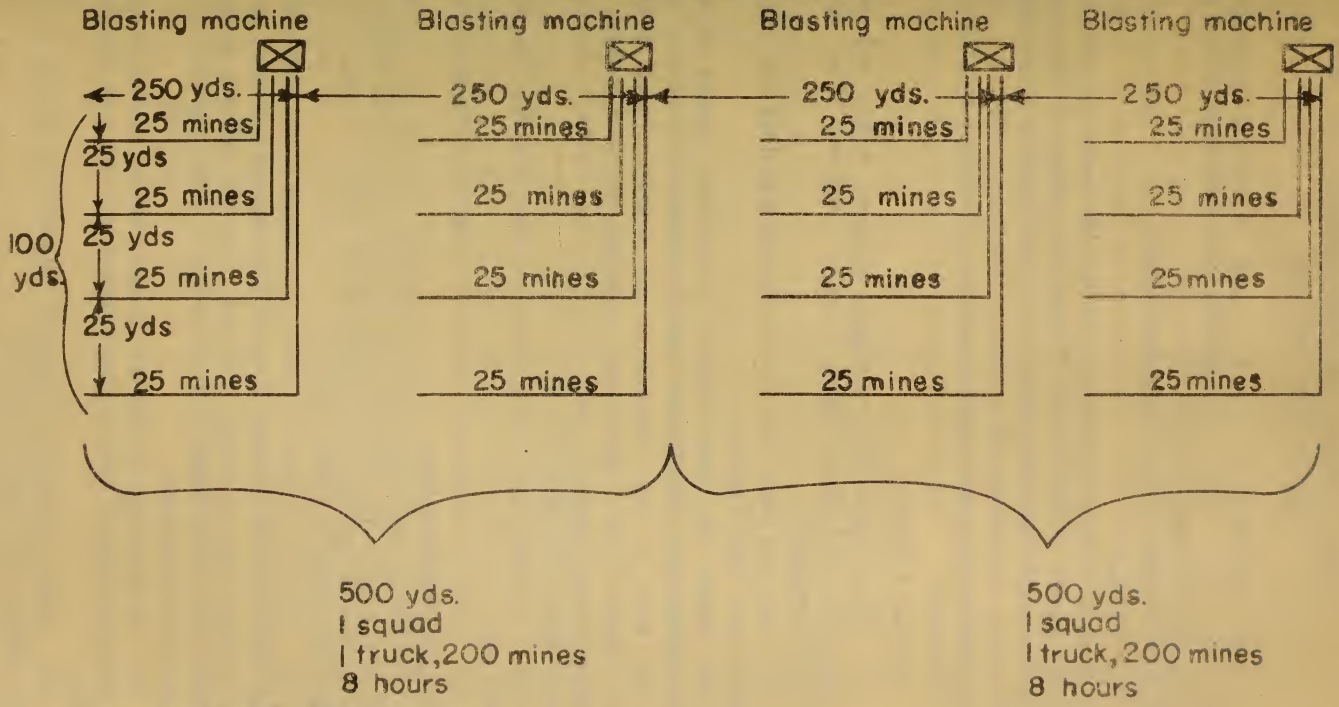
(b) **Airplane Munitions.**

(1′) Bombs 30 pound bombs—HS
Bombs per squars of area target 15
Bombs per 100 yards of occupied road target 5
Bombs per 100 yards of road interdiction..10

(2′) Tanks Chemical HS tanks for airplane attack.
—(One tank)—

Against unprotected personnel 800 yds long—500 yds wide
Against troops equipped with mask only and fairly well trained ..... 800 yds long—250 yds wide
Against troops fully equipped and well trained ..... 800 yds long— 75 yds wide

(5) STATIC INSTALLATIONS HS



At night add 50% to the time.

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One candle (DM Mark I.) per five yards of front is required for target 500 yards away. Add one candle per five yards of front for each additional thousand yards in range.

Maximum effective range about 5000 yards.

(6) Smoke.

One **chemical mortar platoon** can screen 600 yards of front at a range of 1000 yards; or 1200 yards of front at a range of 2000 yards. This is under the most adverse condition, i.e., wind from 6 or 12 o'clock. Wider fronts may be covered with a flank or quartering wind.

One **airplane** can screen one mile of front, or blanket an area 1,000 yards by 400 yards.

k. **Aviation Umpire.**

(1) Check plans, flight schedules, missions, orders and operations and keep the air Liaison Officer (Umpire) informed of air operations and radio messages.

(2) See that planes are grounded during periods that may be designated by the Chief Umpire.

(3) Report to Chief Umpire by quickest means of communication available, all calls for missions by respective forces.

(4) Prior to the execution of the mission, report to Chief Umpire the details of the mission plan, to include objective, number and type of planes, time of take-off, route to be followed, elevation, and probable time of arrival at objective.

(5) All planes will carry the prescribed identification marks while in the air.

(6) Instruct observers relative to dropping messages and reports at Umpire Headquarters.

(7) Upon completion of the mission, estimate its probable effect and drop a message indicating the logical result of the mission to the senior umpire of the forces concerned if his station is known, or by other means immediately after landing.

(8) Umpires should not allow themselves to become involved in figuring exact losses to ground forces in any situation to such an extent that decisions will be unduly delayed. Prompt decision giving in general terms the logical result of the mission, is preferred and will ordinarily answer the purpose.

(9) In coordination with Air Liaison Officer (Umpire) assess penalties based on reports from ground umpires or from own knowledge of situation.

(10) Assess penalties whenever planes on ground at airdrome are attacked by hostile aviation.

(11) Report to Chief Umpire ground troops attacked by aviation, giving location, target, type and duration of attack.

(12) Air umpires flying over combat area in umpire planes will exact penalties for low flying over troops, etc., on the spot, by means of signals, reporting action taken to Chief Umpire and ground umpire concerned.

l. **Air Liaison Officer (Umpire).**

(1) Will keep a joint RED and BLUE air operations map for the information of the Chief Umpire. He will handle all matters pertaining to air umpiring at Headquarters (RED and/or BLUE).

(2) Assess penalties against aircraft based on reports from Unit Umpires regarding observation planes flying low and fired on by troops; such penalties to consist of grounding the plane for a definite period.

(3) Report to the Chief Umpire all calls for air missions by commanders and the results obtained therefrom.

A. **Observation Aviation** (Scouting).

(a) General Rules:

(1′) The following rules apply to any type of, observation mission, whether it is reconnaissance, photographic, or in support of a bombardment mission.

(2′) These rules are to be accepted as a guide only, and are to be considered as "MAXIMUM" penalties. Umpires will assess losses and decide effectiveness in accordance with conditions of the moment.

(b) Limitations:

(1′) Single observation airplanes will be limited in daylight operations only by zero visibility conditions at airdromes and at objectives. Formations of observation airplanes will be influenced in operations by weather conditions to the extent laid down in VP, VT or VB Aviation of these rules.

(c) Effectiveness of observation aviation and losses:

Targets must actually be observed and reported to be allowed.

(1′) Unmolested by enemy aviation, observation planes may be considered to be able to operate without casualties from ground troops as follows:

When over 17,000 ft., in the presence of antiaircraft gun artillery.

When over 5,000 ft., in the presence of small arms fire including cal. .50.

(2′) Losses from antiaircraft machine gun fire will be assessed as follows:

TABLE OF HITS

Altitude of Target:	Percentage of Hits:
100– 500 ft.	2.5
500–1000 ft.	2.0
1000–1500 ft.	1.75
1500–2000 ft.	1.0
2000–2500 ft.	0.5
Above 2500 ft.	Negligible

NOTE: 1. For destructive hits, take 10% of total hits.
2. For maneuver conditions, take 50% of above.

Formula to obtain number of planes out of action:—

Number of guns firing times rate per gun per minute, times minutes plane is in range times percentage of hits times 10% times 50% equals number of planes out of action.

No losses will be assessed unless airplane is under fire at least 30 seconds and losses will be reduced 50% if aircraft is maneuvering while under fire.

(3′) Losses from small arms fire other than .50 cal. antiaircraft machine gun will be assessed when aircraft are operated below 3,000 feet except when under the concentrated fire of at least an infantry battalion for at least 30 seconds. Maximum losses, one-half airplane per battalion firing 30 seconds or longer. Losses from such fire will not be assessed at night.

(4′) A single observation plane (Single Engine) attacked by two or more hostile fighters will fail in its mission.

(5′) Losses inflicted on observation aircraft by hostile fighters are indicated under column "credits" in the appropriate table "Pursuit (Fighter) Aviation."

B. BOMBARDMENT AVIATION
(VP, VT or VB)

(a) General Rules.

(1′) Bombardment units must allow 2 hours for reloading and refueling between landing and take-off or if refueling is not necessary, one hour for reloading.

(2′) Operations at night by bombardment aviation require three times the force required to accomplish the same mission in daylight.

(3′) Except in emergency, bombardment aviation will be used at night against area targets only.

(4′) Required number of bombs to destroy any objective may be calculated by methods outlined in Air Corps Tactical School Text, Bombardment Aviation, Nov. 1, 1935, using the following mean probable error in designated altitudes (feet); at 4,000 ft. 70; at 6,000 ft., 82; at 8,000 ft., 94; at 10,000 ft., 104; at 12,000 ft., 108; at 14,000 ft., 112.

(b) Table of losses and credits.

Objectives Targets	Size of target (feet)	Size of bombs (lbs)	No. of hits required	No. of bombs dropped to give 90 % probability		Danger radius (feet)	Probable results from detonation	Out of commission (days)
				4000 ft.	12,000 ft.			
Airdromes, not paved	3000 x 300	100	14	14	27	0	Displacement 56 cu yd earth-damage to 15% airplanes on airdrome	1
Aqueducts	3000 x 25	500	1	12	20	15	Break hole or crack & collapse structure	3 to 10
Bridge pier, abutment, tower not massive	50 x 30	1000	1	36	80	15	Displacement of piers and span causing collapse of one or more spans	1 to 7
Buildings, large frame or brick	360 x 360	100	4	6	10	0	Collapse walls, destroy cause fires	30
Buildings, large frame, factory type	1000 x 360	500	10	13	17	0	Same as above	60
Dams, massive	1000 x 15	2000	3	16	26	15	Cause breach, release water	400
Wharf, concrete	500 x 100	2000	7	12	21	25	Collapse structure	3 to 20
Railroad track roadbed	1000 x 16	100	1	22	34	7	Tear up 20 ft. roadway	
Roads including bridge decks	1000 x 20	500	1	17	27	9	Do	
Battleship (x)	600 x 97	2000	2	5	8	40	Out-30% efficient	
Heavy Cruiser (x)	600 x 80	1000	2	6	11	30	Do	
Locks, large	100 x 35	2000	1	16	46	25	Destroy ,wreck gate	30
Light Cruiser (x)	555 x 55	500	.2	8	16	25	Out-30% efficient	100
Destroyers (x)	325 x 35	500	1	9	19	20	Do	100
Submarines	230 x 25	100	1	13	25	20	Sink or beach	
Transports, supply or merchant ship (x)	500 x 90	500	2	7	12	20	Do	

(x) **NOTE:** If target is maneuvering, multiply number of bombs by 1.2.

(c) Restrictions and assessments due to weather.

Due to	Conditions	Penalties and Restrictions	Remarks
Weather - enroute to objective-daylight	Where coordinated attack is necessary and storm zone of over 300 miles of zero zero conditions exists between airdrome and objective.	No Operations	Ground fog will not prevent operations.
Weather - enroute to objective-night	Zero zero conditions 100 to 300 miles in width lying between airdrome and objective.	40% of airplanes dispatched will not accomplish their mission.	Ground fog will not effect missions.
	Formation under ordinary atmospheric conditions.	Limited to 9 airplanes.	— — — — — — — — —
	Coordinated attacks, wings.	No Operations.	Until 1 hr after daylight.
	Coordinated attacks, groups.	No Operations.	Until 1 hr after daylight.
	Storm zone over 300 miles in width between airdrome and Objective.	No Operations.	— — — — — — — — —
Weather - at objective daylight	Ceiling less than 1000 ft. with demolition bombs.	No Operations.	— — — — — — — — —
	Ceiling less than 500 ft. with chemicals.		
Weather - at objective night	Target requires illumination ceiling less than 4000 ft.	No Operations.	— — — — — — — — —
	Ceiling less than 1000 ft.	No Operations.	— — — — — — — — —

C. ATTACK AVIATION

Objective	Force employed	Weapons employed	Conditions	Credit		Losses		Remarks
				Night*	Daylight	Night	Daylight	
Airdromes (average dimensions) (300x1000 feet)	6 airplanes	Fragmentation Bombs (17 or 30 pounds). persistant gas. Machine guns. Phosphorus bombs.	AA machine gun protection	20-30% of airplanes exposed	20-40% of airplanes exposed	None	1 airplane for, each AA machine gun platoon for each attack.	If individual airplanes on airdrome are protected by revetments allow ½ these credits. An airdrome neutralized with persistent gas may not be used for 3 days. Allow no credit for a force of less than one flight element (3 planes).
			Without AA MG protection.	20-30% airplane exposed	30-50% airplane exposed	None	None	
Small bridges, trestles, culverts, of wooden or light steel construction	6 airplanes	Demolition bombs (100 lb) Persistent gas to impede repair	With AA MG protection	None	Destroy	None	½ airplane for each MG Platoon	Demolitions neutralized with persistent gas, will be assumed to require twice the normal time to repair. Allow no credit for a lesser force. Allow no credit against reinforced concrete structures.
			With AA gun protection	None	Destroy	3%	5%	
			Without AA gun or MG protection	None	Destroy	None	None	
Highways & railroads (except concrete)	1 flight element	Demolition bombs (100 lbs) Persistent gas to impede repair	Without AA MG protection	Crater 9 ft. wide by 4 ft. deep. 1 rail cut the other bent. 9 ties destroyed.	Same as at night	None	None	Damage can be repaired in 15 man hrs; if drenched with persistent gas 30 man hrs. Allow one demolition for each flight. Allow no credit for a force of less than 1 flight element. Allow no credit against concrete highways.
	1 airplane	Fragmentation bomb (17 or 30 lbs) Persistent gas to impede repair	Do	Crater inconsiderable one rail cut	Crater inconsiderable one rail cut	None	None	Damage can be repaired in 10 man hrs; if drenched with persistent gas, 20 man hrs. Allow 2 demolitions for each airplane. Allow no credit against concrete highways.

Antiaircraft gun batteries & searchlights with AA machine gun protection.	1 flight element for each gun battery to be neutralized.	Fragmentation bombs (17 or 30 lbs) machine guns armor piercing ammunition. Persistent gas.	In support of bombardment aviation.	Reduce losses assessed against bombardment aviation by 85%	Reduce losses assessed against bombardment aviation by 75%	None	1 airplane for each battery attached	Increase losses for daylight attack by 1 airplane for each machine gun platoon protecting a gun battery, (in addition to 4 organic MGs).
Definitely located troop concentration	1 sq for each square mile of area.	Fragmentation bombs (17 or 30 lbs) Machine Gun. Persistent gas.	With AA machine gun protection	2-5% casualties in men & animals from bomb & MG fire. From 10-20 % if persistent gas assumed.	5-15% casualties in men & animals from bombs & MG fire. From 10-25 % if persistent gas assumed.	None	10% for 1st att'k plus 1 airplane for each AA MG platoon. For each subsequent attack, 15% plus 1 airplane for each AA MG platoon.	Base credit within prescribed limits on degree of dispersion in bivouacs, cover available warning systems, and number of attacks made. Allow no credit except where troops have been previously definitely located. Reduce credit for lesser force.
Definitely located ground forces in column (all kinds)	1 flight of 3 airplanes for each 1500 yds. of column	Fragmentation bombs (17 or 30 lbs) Machine gun. Persistent gas.	With AA machine gun protection without use of persistent gas.	Column delayed from ½ to 1 hr. for each attack. 5-10% casualties in men & animals. 10-25 % of vehicles disabled temporarily	Column delayed from ½ to 1 hr. for each attack. 5-10% casualties in men & animals. 10-25 % vehicles disabled.	None	Do	Allow no credits except where troops have been previously definitely located Base credits within prescribed limits on terrain, dispositions, warning systems, and number of attacks made.
			With use of persistent gas.	Rate of advance reduced to ½ normal rate. 10–20% casualties in men & animals. 10-25% of vehicles disabled.	Rate of advance reduced to ½ normal rate. 10–25% casualties in men & animals. 10-25% of vehicles disabled.			At night, successive attacks by single planes will reduce the rate of march during period of attack as follows: Foot elements, 1 mi. per hr. Horse " 2½ " " " Tractor " 1½ " " " Motor " 4 " " " Reduce credit for lesser force.
Logistical establishments, large depots.	1 Squadron (18 airplanes).	Demolition bombs persistent gas White phosphorus.	With AA MG protection	15% destruction	25% destruction	None	2%	Reduce credit for any lesser force. Allow no credit for force of less than 1 flight element. 72 hrs required for complete evacuation of materiel.
			With AA gun protection	15% destruction	25% destruction	5%	10%	

Small depots, dumps & distributing points	9 planes	Do	Do	Do	Do	Do	Do	Allow no credit for less than 1 flight element. 72 hrs. required for complete evacuation of material.
Railroad trains	1 plane	Fragmentation bombs (17 or 30 lbs) persistent gas. White phosphorus bombs.	Without AA machine gun protection.	Train wrecked 10% supplies destroyed. 12 hrs. to clear	Train wrecked 10% supplies destroyed. 12 hrs. to clear	None	None	If persistent gas assumed, credit 24 hrs. to clear.
Tanks & mechanized forces in column.	1 flight element for each 1500 yds. of column	Do	Do	5-10% disabled at least temporarily for each attack. Column delayed 1 hr. for each attack.	10-15% disabled for each attack. Delay 1 hr. for each attack.	None	5%	Allow no credit for force less than 1 flight element. Base credit within prescribed limits on terrain, march dispositions, and security measures adopted.
Small open boats	1 plane	Machine guns fragmentation		Sink 1 boat 50% caualties	Sink 2 boats 75% casualties	None	1 plane for each 5 boats attacked	
Antiaircraft gun batteries of major warships (in support of bombardment)	6 planes for each ship	Fragmentation bombs White phosphorus bombs machine guns.		Neutralize for 5 minutes.	Neutralize for 5 minutes.	5%	25%	Reduce credit for any lesser force. Allow no credit for force less than 1 flight element.
Destroyers	9 planes	Demolition bombs (100 lb)		Sink or disable ship	Sink or disable ship	5%	25%	Allow no credit for lesser force.
Transports	6 planes	Do	Transports equipped with AA machine guns only.	Sink or disable ship	Sink or disable ship	None	2%	Do

Aircraft carriers	9 planes	Demolition bombs (100 lb) persistent gas		Destroy airplanes on deck. Wreck flight deck Neutralize with gas.	Destroy airplanes on deck. Wreck flight deck Neutralize with gas.	5%	25%	Do
Mine layers & Mine sweepers	1 flight element (3 planes)	Demolition bombs persistent gas.	Ships equipped with AA machine guns only.	Sink or disable ship	Sink or disable ship	None	2%	Do
Submarines	3 planes	Fragmentation bombs (17 or 30 lb) or demolition bombs (100 lb)	Submarine equipped with AA guns only.	Disable	Disable	None	2%	Do
Factories & build'gs of wood or light steel construction	1 flight element	Demolition bombs (100 lb) persistent gas	With AA gun or MG protection	Destroy	Destroy	2%	5%	Allow no credit for force less than 1 flight element. Allow no credit against reinforced concrete structures.
			Without AA gun or MG protection.					

D. PURSUIT (FIGHTER) AVIATION.

(a) General Rules.

(1′) Pursuit aviation will be presumed not to operate against hostile aircraft below altitude of 1000 feet.

(2′) Combat crews of pursuit aviation will not be required to perform more than 2 two-hour mission per 24 hours, nor more than 5 two-hour missions per 72 hours.

(3′) Pursuit aviation will not be credited with protecting ground installations without support of adequate aircraft warning service.

(4′) Aircraft warning service will be considered adequate if capable of furnishing information to permit pursuit aviation to attack hostile aircraft 15 minutes before it reaches its objective.

(5′) For problem and maneuver purposes, pursuit squadrons will be presumed to clear their airdromes as follows: when on the alert, in 5 minutes; when refueling and reloading, in 45 minutes; when reloading only, in 30 minutes.

(6′) For problem and maneuver purposes, pursuit aviation will be considered to have within its combat range of 250 miles, sufficient gasoline for 15 minutes of combat.

(b) Table of credits and losses.

Objectives - Targets	Conditions of operations	Strength of forces	Losses	Credits
Those of attack aviation (See Attack Aviation, these rules).	As attack aviation Pursuit airplanes are required to be fully equipped with bomb racks which will not be assumed.	All units	From AA fire, same as for attack. From hostile pursuit, 3 times losses assessed against attack.	50% as effective as attack aviation except against armored vehicles, it will be considered 75% as effective.
Open boats-motor launches for landing parties. Open boats-motor launches for landing parties. Submarines Destroyers		All units. 1 pursuit airplane 3 " " s 1 flight pursuit airplane	1 Pursuit airplane per 5 boats attacked. None None	2boats destroyed 1 submarine put out of action. 1 Destroyer put out of action.
Observation airplanes	Aerial combat - day	Against equal Nos. " ½ " " 1/3 " " 1/4 " " 2 times " " 3 times "	5% per 15 min. combat. 4% " " " " 2% " " " " 1% " " " " 10% " " " " 20% " " " "	10% losses per 15 min. combat. 33-1/3% " " " " " 50% " " " " " 75% " " " " " 10% " " " " "
	Aerial combat-night cooperating with antiaircraft searchlights & listening devices.	Any unit	2% " " " "	60% of airplanes illuminated for 1 minute will be lost.
VP, VT or VB airplanes without support	Aerial combat - day without support of antiaircraft.	Against equal Nos. " ½ " " 1/3 " 1/4 " " 2 times " " 3 times "	20% per 15 min. combat 10% " " " " 10% " " " " 5% " " " " 33-1/3% " " " " 75% " " " "	10% losses per 15 min. combat 20% " " " " " 30% " " " " " 35% " " " " " 5% " " " " " 1% " " " " "
	Aerial combat - day with or without support of antiaircraft fire.	Any unit	Same as above	Add to above, loss due to antiaircraft fire.

VP, VT or VB airplanes with support of pursuit aviation.	Aerial combat - day with or without support of antiaircraft fire.	Any unit	See above for losses of remaining friendly pursuit against bombardment.	Hostile pursuit is neutralized by equal number of friendly pursuit Credit remainder of friendly pursuit & AA losses.
VP, VT or VB airplanes with support of attack aviation.	Aerial combat - day with support of antiaircraft fire.	Any unit	15% neutralizing force of friendly pursuit. See above for losses of remaining friendly pursuit against bombardment.	Hostile attack is neutralized by 1½ times its No. in friendly pursuit. Credit remainder friendly pursuit & AA losses.
VP, VT or VB airplanes without support	Aerial combat - night cooperating with antiaircraft searchlight & listening devices.	Any unit	5%	50% of airplanes illuminated for 1 minute will be lost.
VP, VT or VB airplanes with support of attack aviation.				Above losses reduced by 75%
Attack airplanes	Aerial combat - day without support of antiaircraft	Against equal Nos. " ½ " " 1/3 " " 1/4 " " 2 times " " 3 times "	20% per 15 min. combat 10% " " " " 10% " " " " 5% " " " " 25% " " " " 50% " " " "	10% losses per 15 min. combat 20% " " " " 33-1$3% " " " " 50% " " " " 5% " " " " 1% " " " "
Attack airplanes	Aerial combat - day with support of AA.	Any unit	Same as above	Add to above, loss due to AA fire.
	Aerial combat - night cooperating with antiaircraft searchlight & listening devices.	Any unit	5%	33-1/3% of airplane illuminated for one minute will be lost.
Pursuit airplanes	Aerial combat - day without support of antiaircraft	Against equal Nos. " ½ " " 1/3 " " 2 times " " 3 times "	10% per 15 min combat 2% " " " " 1% " " " " 15% " " " " 25% " " " "	10% losses per 15 min. combat 15% " " " " 25% " " " " 2% " " " " 1% " " " "
	Aerial combat - day with support of AA	Any unit	Same as above	Add to above, loss due to antiaircraft fire.
	Aerial combat - night cooperating with antiaircraft searchlight and listening devices.	Any unit	5%	25% of airplanes illuminated for one minute will be lost.

NOTES:

* Allow no credit in night attacks except where attack force is supported by observation aviation.

(1) In applying percentage losses, compute any fraction of one-half or more of an airplane as one airplane.

(2) An attack formation will be considered capable of performing its mission in the face of any amount of hostile pursuit aviation unless actually intercepted en route out at least 15 minutes flying time from the objective. A force so intercepted by pursuit having numerical superiority of 4 to 1, or greater will be considered as having failed in its mission.

(3) Combat losses with hostile pursuit will be determined in accordance with Pursuit Aviation, these rules.

(4) In screening operations, one airplane can lay a screen 1 mile long. Normally 3 airplanes will be required to produce a screen of sufficient density to completly screen an objective.

(5) Attack units will be restricted to 2 missions every 24 hours, with only 75% of its actual total strength.

(6) Under favorable conditions 1 airplane using only its two organic wing tanks at altitude 200 feet can produce casualty inflicting concentrations of persistent gas throughout an area 1 mile long by 300 feet wide. Thus a flight of 6 airplanes will be assumed capable of neutralizing an area of 1 square mile. If two additional tanks are assumed double the area.

(7) To determine the total time which must elapse between missions, compute flying time from target to airdrome; double this figure to get total flying time between airdrome and target, then add 1 hour for reloading and, if necessary, one hour for reservicing; then, if a moving target, add or subtract the flying time to compensate for movement of the target. The resulting figure, added to the time of last attack, is the earliest time a new attack can be launched.

m. Antiaircraft Artillery Umpire.

(1) General. The functions of the antiaircraft umpire should be coordinated with those of the aviation umpire. One umpire should be present at all times with each 3" antiaircraft gun battery and each .50 caliber antiaircraft machine-gun platoon; one umpire should be present with each Searchlight-Sound Locator Battery during hours of darkness. In the absence of other umpires, selected personnel of antiaircraft artillery units may act as umpires.

When personnel other than personnel of antiaircraft artillery units are serving as umpires, and if practicable, before the start of each phase of the maneuver, each umpire should be furnished an overlay containing routes of approach, course and time of each aircraft attack in his area, and the number and type of airplanes in the attack formation. This is particularly necessary during periods of low visibility and hours of darkness.

Determination as to effectiveness of antiaircraft artillery fire in maneuvers necessarily depends upon the **length of time** that the airplane target is within the range of and under simulated fire of the antiaircraft battery.

In addition to the regular umpire's equipment, each antiaircraft artillery umpire should have a stop-watch.

In his report the antiaircraft artillery umpire should comment on the effectiveness of the location of antiaircraft units. The disposition of batteries should be such as to provide the most efficient protection for the installation or troops requiring protection.

Antiaircraft umpires should keep a running record of events. This record should include all information necessary to assess losses against attacking airplanes and antiaircraft artillery units.

(2) Aviation Losses from Antiaircraft Fires.

(a) The principal information required to compute aviation losses from antiaircraft fire is:

(1') Type and number of attacking airplanes.

(2') Altitude, in feet, of airplanes.

(3') Length of time airplanes are under the simulated fire of antiaircraft batteries. (At night, length of time airplanes are illuminated.)

(b) Losses from Antiaircraft Artillery Fire.
(to aircraft in formation)

Altitude in feet	Probable losses per AA battery per minute within field of fire (See Notes (5) and (6) below)			
	Obs.	Bomb	Att.	Pur.
2000 to 4000	11%	16%	7%	7%
4000 to 8000	11%	16%	7%	7%
8000 to 12,000	7%	11%	5%	5%
12,000 to 17,000	5%	7%	4%	4%
Over 17,000	3%	4%	1%	1%

NOTES:

(1)

Type	Tactical Speed yds. per min.	Length of time within field of fire		
		2000′ to 4000′	4000′ to 17,000′	Over 17,000′
Obs.	4400	1 7/12 min	1 1/3 min	1 min
Bomb	5560	1 1/4 min	1 min	¾ min
Att.	5280	1 1/3 min	1 1/7 min	¾ min
Pur.	6688	1 min	11/12 min	7/12 min
Length of field of fire		7000 yds	6000 yds	4000 yds

(2) Fractional losses estimated from above will be taken to the nearest whole number.

(3) Reduce losses by 75% if the AA battery is harassed by attack aviation.

(4) At night, losses above apply only during time plane is actually illuminated.

(5) Regardless of above percentages, single planes flying under 12,000 feet for one minute in the field of fire of one battery will be lost.

(6) When simultaneous attack by more than one squadron is delivered, the losses will be computed as for one squadron.

(c) **Losses from Caliber .50 Antiaircraft Machine Gun Fire.** (to aircraft)

Losses from antiaircraft machine gun fire will be assessed as follows:

Altitude	Losses in aircraft
3,000 — 5,000 feet	25 per cent per platoon.
Under 3,000 feet	50 per cent per platoon

No losses will be assessed unless airplane is under fire at least 30 seconds and losses will be reduced 50 per cent if aircraft is maneuvering while under fire.

n. **Naval Gunfire Support Umpire.**

Make a careful analysis of FMF plans and request for N.G.S.

Studies plan of NAF for delivery of N.G.S.

Analyzes effect of fire on defensive units and installations in conference with Chief Umpire prior to operation.

Insures the transmission to umpires concerned, information of naval gunfire for display of appropriate flags.

Establishes liaison with agencies concerned to keep informed of changes in delivery of fire at variance with original plan, i.e., delays, cancellations, transfers of fire or additional fires delivered. He communicates this information to unit umpires concerned.

He insures that sufficient communications are established between combatant units and naval gunfire observation agencies ashore and fire support ships, that messages are actually transmitted and received, and that all fires are simulated in all respects except actually firing, in order to give credit for that fire.

He will maintain communication with the Chief Umpire and umpires with N.G.S. observation parties ashore.

In his final report to the Chief Umpire he will make comment on technique of request for N.G.S., on the preparation of the plan by the NAF and separate ships, and on the technique and effectiveness of the communications and delivery of naval gunfire support.

(1) Naval Gunfire Data

1	2	3	4	5	6	7	8	9	10	11	12	13	
Ship Type No.	No. of guns	Caliber of Gun	Type Amm.	Con-trols	No. guns per control	Rds. per min. 5 min. rate	Eff. 1 rd. terms 75% shell	Tot. eff. per con. less 10%	No. 100 yard Squares neutralized in terms of 75 m/m shells with density of:				
									16	14	12	8	A
BB34	10	14"/45	B	Fwd	4	1.5	16	86	5.4	6.1	7.2	10.8	B
				Aft	6	1.5	16	130	8.1	9.3	10.8	16.3	C
			AP	Fwd	4	1.5	6	32	2.0	2.3	2.7	4.0	D
				Aft	6	1.5	6	49	3.1	3.5	4.1	6.1	E
	16	5"/51	C	Fwd	4	6	1	22	1.4	1.6	1.8	2.8	F
				Aft	4	6	1	22	1.4	1.6	1.8	2.8	G
			FN	Fwd	4	6	2.2	48	3.2	3.4	4.0	6.0	H
				Aft	4	6	2.2	48	3.2	3.4	4.0	6.0	I
	8	3"/50h	AA	Side	4	10	.7	25	1.6	1.8	2.1	3.1	J
			FN	Side	4	10	1	36	2.3	2.6	3.0	4.5	K
BB33	12	12"/50	B	Fwd	6	1.5	10	81	5.1	5.8	6.8	10.1	L
				Aft	6	1.5	10	81	5.1	5.8	6.8	10.1	M
			AP	Fwd	6	1.5	4.5	36	2.3	2.6	3.0	4.5	N
				Aft	6	1.5	4.5	36	2.3	2.6	3.0	4.5	O
	Secondary and Anti-aircraft batteries same as for BB34												P

(See notes on page 49.)

CA24	10	8"/55	B	Fwd	5	2	4	36	2.2	2.5	3	4.4	Q
				Aft	5	2	4	36	2.2	2.5	3	4.4	R
			C	Fwd	5	2	2.5	22.5	1.4	1.6	1.9	2.8	S
				Aft	5	2	2.5	22.5	1.4	1.6	1.9	2.8	T
	4	5"/25h	AA	Side	2	10	2	36	2.2	2.5	3	4.4	U
CL40	15	6"	FN	Fwd	9	5	3.3	133.6	8.3	9.5	11.1	16.6	V
				Aft	6	5	3.3	89.1	5.6	6.4	7.4	11.2	W
			C	Fwd	9	5	1.8	72.9	4.6	5.2	6.1	9.2	X
				Aft	6	5	1.8	48.6	3	3.5	4.1	6	Y
	8	5"/38h	AA	Side	4	10	2	72	4.5	5.2	6	9	Z
AG17	Main battery same as one half main battery of BB33												A1
	Secondary and Anti-Aircraft batteries same as for BB34												B1
All DDs	4	4"/50	C	Side	3	7	1	19	1.2	1.4	1.6	2.4	C1
			FN	Side	3	7	1.5	28	1.8	2.0	2.3	3.5	D1
	1	3"/23h	C	Side	1	10	.5	5	.3	.4	.4	.6	E1
			FN	Side	1	10	1	9	.6	.6	.8	1.1	F1
All SSs	1	4"/50	C	Side	1	7	1	6	.4	.4	.5	.8	G1
			FN	Side	1	7	1.5	9	.6	.6	.8	1.1	H1

NOTE: h High angle fire. C Common. B Bombardment. FN Flat nose. AA Antiaircraft. AP Armor piercing.

Example: An impact area equal to 12-100 yard squares is required to be neutralized with close supporting fire of density 14. Can the main battery of BB34 give this support by firing AP shells? Can the proper support be given by firing B shell?

Computation: Add figures in lines D and E, Column 11: 2.3 plus 3.5 equals 5.8 squares. The answer is NO; AP shell will not suffice. Now add figures in lines B and C, column 11. 6.1 plus 9.3 equals 15.4 squares. The answer is YES; B shell will give the density required.

NOTE: The above data covers most types of ships employed in support of landings and can be used as a quick reference to determine the capabilities of any type shown. To test a specific gunfire plan the umpire should secure or compile a Work Table for each ship which is to take part in the firing. He may then use the data in his Work Table to test in detail any gunfire schedules proposed to determine if they represent the best use of the ships and ammunition available.

The execution of the gunfire should be carefully observed from as many controls as are in operation in order to determine the extent to which the prepared gunfire plan is followed, and the probable resulting neutralization of target areas ashore. (See Chap. V, FPP-167, particularly Sec. IX.)

DO'S

Be familiar with these instructions, particularly those sections pertaining to your activity.

Make a careful study of all plans by troop commanders.

Keep informed of all activities and progress of the unit to which you are attached.

In judging fire effect, consider fire positions, range, nature of target, observation and control.

Note use of auxiliary arms.

Make decisions only after all factors have been considered. If necessary the maneuver may be suspended locally for a brief time, while umpires from both sides confer and all factors are analyzed.

Cooperate with all commanders.

Inform commanders of situations which they would reasonably know.

Make frequent reports to senior umpires to prevent loss of control.

Use initiative and common sense.

DON'T'S

Do not permit maneuver to develop too rapidly.

Do not overrate the effect of fires.

Do not show partisanship.

Avoid caustic comment.

Avoid argument with troop commanders on differences of opinion.

UMPIRE REPORTS

Upon completion of exercise or problem each Unit or Assistant Umpire will submit to his Senior Umpire a report (using area maps if practicable).

Senior and Special Umpires will consolidate their reports and prepare same for critique following exercise.

Some features which may be noted among others are:

Reconnaissance measures taken.
Soundness of decisions and plans.
Manner of preparing and transmitting orders.
Functioning of staffs and cooperation of different arms.
Security measures taken and liaison.
Troop leading.
Conduct of troops.
Display of initiative.
Utilization of auxiliary arms.
Employment of reserves.
Use of cover.
Functioning of communications.
Operation of supply and evacuation agencies (munitions, water, rations, materiel).

VII CRITIQUE

1. **The preparation and presentation of the critique** is one of the most important functions of the umpiring system and forms the principal means by which all participants in the exercise gain a general view of the maneuver as a whole and have pointed out to them the major lessons in strategy, tactics and logistics brought out by the exercise.

Information for the critique must be assembled as the play progresses and all pertinent facts collected and analyzed in a serious, detached and judicial manner. Facts and opinions must be recorded in a systematic manner suitable for expeditious compilation upon conclusion of the problem. The matter must be suitable for the written and oral critique, the latter generally following the exercise with a minimum delay.

The compilation of the written and the presentation of the oral critique will be conducted under the direction of the chief umpire.

2. **Outline of the critique.**

The following outline of the critique may serve as a guide for all umpires in recording and presenting data for the critique:

a. Designation and composition of forces.
   General statement of action of this force, omitting details.

b. Organization of umpiring system.
   Artificialities introduced, if any, showing necessity.
      Terrain "out-of-bounds";—constructive troops, etc.
      Control exercised by umpire.

c. Tactical principles illustrated.
      Mission received or conceived by commander.
      General plan adopted to execute assigned mission.
      Major phases or details in execution.
      Critical comment on orders issued.
      Illustrations of tactical principles well executed.
      Tactical principles illustrated by operations which the umpire considers faulty and why.

d. Logistical principles illustrated.
      Logistical problem involved.
      Major effects of logistical plans on tactical operations and vice versa.
      Logistical plan adopted.
      Weakness or faults and commendable features noted.

e. Conclusions:
      Summary of major lessons learned from the maneuver.
      Favorable comments on items of merit in the maneuver.
      Recommendations for future maneuvers.

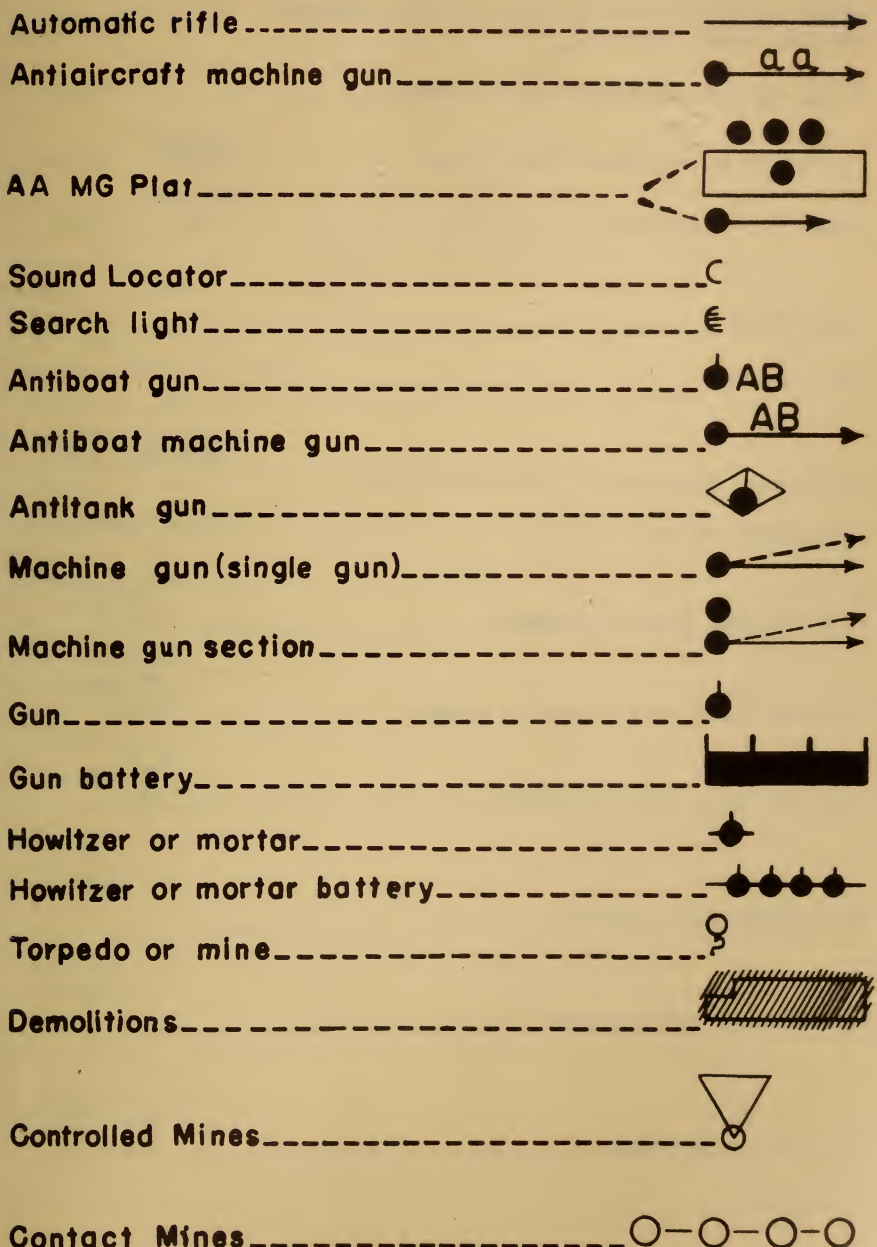
VIII. FINAL REPORT OF CHIEF UMPIRE

Upon conclusion of the maneuver the chief umpire will render a complete report embodying the substance of the critique, including a critical analysis of the operations themselves and the umpire system.

The report should be sufficiently comprehensive in scope to present the details of the operations and the umpire system together with the recommendations for future improvement.

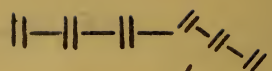
All umpires will submit the data for the final critique and final report when directed by the chief umpire.

SPECIAL MILITARY SYMBOLS

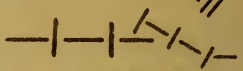


R.D. 2287

Torpedo Net (with gate)



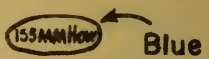
Anti-Submarine Net (with gate)



Obstructions (such as piles, sunken vessels, hurdles and booms)

Area to be covered by fire (blue)

(indicate character of fire thus)

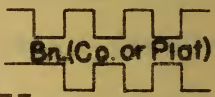


Area to be gassed

Tank trap

Tank barrier

Trenches completed (indicate thus)



Trenches hasty

Distributing point rations

Ammunition distributing point

(for artillery and infantry)

Battalion aid station

Regimental aid station

Collecting station

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Water distributing point_____ (W) dp

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