FM 105-5

FIELD MANUAL

MANEUVER CONTROL

HEADQUARTERS, DEPARTMENT OF THE ARMY
DECEMBER 1973

CHANGE
No. 1

FM 105–5
C1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *1 October 1975*

MANEUVER CONTROL

FM 105—5, 31 December 1973, is changed as follows:

Page 5—4, paragraph 5—5a. In line 2, after "logistics," insert "and communication security discrepancies."

Page 5—4, paragraph 5—7a. In line 9, after "concealment," insert "adjustments due to COMSEC penalties."

Page 5—5, paragraph 5—10b(8). After "directed," add "e.g., COMSEC discrepancies."

Page 5—7, paragraph 5—12b(5). Change to read, "Communication and communication security."

Page 5—9, paragraph 5—13c(12). After "radar equipment to," delete "ECM" and add "opposing forces SIGINT and ECM and assess effects of COMSEC discrepancies on unit capabilities."

Page 5—9, paragraph 5—16g. In line 5, after "control measures," insert "communication security."

Page 5—13. Paragraph 5—26, add 5—26*e* as follows:

"*e. Communication Security Umpiring.*

(1) During the exercise, when radio and telephone communications of player units are monitored to detect COMSEC discrepancies, umpires and units committing discrepancies will be notified simultaneously through their respective communication channels of such an occurrence by the monitoring organization. The date/time group, COMSEC discrepancy, degree of severity, and units involved will be transmitted. Umpires are responsible for assessing a casualty and/or damage penalty to those units committing COMSEC discrepancies. Umpires will withdraw player personnel and/or equipment from participation in the exercise for a representative amount of time; i.e., 1 hour to simulate the 1 day necessary for resupply. It is emphasized that guidance contained herein does not cover every conceivable situation, and it will frequently be necessary for umpires to supplement this information with professional judgment.

(2) When notified of a COMSEC discrepancy, the umpire will evaluate the discrepancy, degree of severity, and penalties that can be assessed using table H—42, appendix H.

(3) Umpires will determine the effect of the discrepancy on the tactical situation and whether a penalty can be applied realistically. Time required to monitor, analyze, and process a discrepancy through umpire channels will represent the amount of time it would take an enemy force to process and react to a COMSEC weakness.

(4) Umpires will not assess penalties when, in their professional judgment, player units have instituted measures to minimize the effects of enemy reaction to discrepancies. Notes and observations on unit COMSEC procedures will be used to assist in completing evaluation checklists and critiquing units on completion of the exercise.

(5) Casualty and/or damage losses will be applied selectively and realistically at the discretion of the unit umpire.

(6) Casualty and/or damage results will be computed using the weapon system deemed most appropriate by the umpire and based on data available in chapter 6 and appropriate appendixes. Every weapon system must be in range (for artillery, rocket, and mortar fires) and CASUALTIES (bn volleys) will use "prone" percentage of casualty figures. (See table H—42.)

(7) Umpires will not simulate the maneuver of opposing forces to assess penalties."

REASON: To provide the procedures with which umpires will determine penalties based on COMSEC discrepancies.

Page 7—1, paragraph 7—1. Add "STANAG 2353 establishes criteria for evaluating the NBC defense capability of NATO Forces."

Page A—1, paragraph A—1, Army Regulations (AR). After "AR 380—41," add "(C) 380—52—Codes, Non-Machine Ciphers and Authentication Systems (U)" and after "AR 530—1," add "(C) 530—2—Communication Security (U)."

Page A—2, paragraph A—3, Field Manuals (FM). After "(C) 32—5," add "FM 32—6—SIGSEC Techniques."

Page A—3, paragraph A—5. After "STANAG 2112," add "STANAG 2353 Evaluation of NBC Defense Capability."

Page D—52, after example D—22, add *Example D—23* as shown below.

Example D—23. Signal Security Checklist

1. *Utilization of COMSEC Aids:*

a. Are all organic COMSEC aids deployed and used during the exercise?

b. Are COMSEC aids made available to the lowest echelon, as required?

c. Can the unit change COMSEC keys, OPCODES, numeral ciphers, and authentication systems on compromise or loss?

d. Can the unit replace CEOI/CESI items on loss or compromise?

e. Are all COMSEC keys, OPCODES, numeral ciphers, and authentication systems authorized?

f. Are all personnel aware of conditions under which authentication is mandatory?

g. Are adequate instructions on the use of authentication tables and low-level cryptosystems known by all users?

2. *COMSEC Discipline and Net Security:*

a. Does the commander insure circuit discipline through use of a strong net control station (NCS) or personal corrections as necessary?

b. Can the unit change frequencies and callsigns simultaneously on a daily basis or on compromise?

c. Are frequencies and callsigns assigned in a random manner?

d. Does the unit have a system to evaluate what information may have been compromised and its impact due to loss of COMSEC keying material or the disclosure of sensitive tactically significant information?

e. Can the unit communicate in a secure mode, and is all sensitive information communicated only by secure means?

f. Do communication operators know how and when to authenticate?

g. Do communication operators know how to put their cryptographic equipment into operation?

3. *Electronic Counter-Countermeasure (ECCM) Operations:*

a. Can the unit recognize and prevent imitative communication deception?

b. Can the unit perform its mission while being subjected to jamming?

c. Do radio operators engage in chatter?

d. Do radio operators use plain language instead of authorized prosigns and operating signals?

e. Do radio operators transmit unnecessarily?

4. *Cryptosecurity:*

a. Do the cryptofacilities meet the required standards of security prescribed by AR 380—40?

b. Does each cryptofacility have an emergency plan?

c. Are cryptopersonnel familiar with these emergency plans?

5. *Electronic Security (ELSEC):*

a. Are emitters placed so that they are not transmitting toward probable enemy ELINT sites?

b. Are site-selection instructions available to the operators?

c. Does the terrain provide electronic shielding, such as gullies and ridges?

d. Is the site concealed with camouflage netting and foliage?

e. Does the terrain provide shrubbery or trees to absorb the side lobes?

f. Can the operators explain or define the following:

(1) Hard target background?

(2) Soft target background?

(3) Space background?

g. Are ELSEC ECCM procedures and instructions available to the operators?

Page H—2 In table column, add *"Table H—42. Guide for Determining Communication Security Penalties."*

Page H—13. Table H—21, line 3, "CHAPARRAL," under *"Single shot"* add "0.4"; under *"Salvo"* add "N/A." On line 4, "REDEYE": under *"Single shot"* add "0.4"; under *"Salvo"* add "N/A." Delete footnote 3.

Page H—13. Table H—22, line 3, "VULCAN": under "*Tracking time (sec)*" add "1" and under "*Kill probability*" add "0.05." Delete footnote 5.

Page H—23. After table H—41 add table H—42:

Table H—42. Guide for Determining Communication Security Penalties.

		VULNERABILITY		
		INDIRECT FIRE		
DISCREPANCY	*DEGREE OF SEVERITY*	*CASUALTIES*	*DAMAGE*	*AIR ATTACK*
1. Disclosure of plans and operations	Major	Bn volley(s)	Severe or destroyed	Use two passes by each aircraft
2. Disclosure of present or future locations of:				
a. Command posts	Major	Bn volley(s)	" " "	" " " " " "
b. Troop concentrations	Major	Bn volley(s)	" " "	" " " " " "
c. Assembly areas	Moderate	Btry volley(s)	Slight	Use one pass by each aircraft
d. Communication facilities	Moderate	Btry volley(s)	Slight	" " " " " "
3. Player units VIP itinerary	Moderate	Btry volley(s)	Slight	" " " " " "

NOTES: 1. This table is for use as a guide. It should be considered as containing at least a minimum number of discrepancies; however, users may expand this table to include additional discrepancies with commensurate penalties if the exercise to be conducted so warrants.

2. See page D-52, Example D-23, *Signal Security Checklist* (added in this change). This example may be used as a guide in evaluating SIGSEC performance.

Page K—2. Under "Umpiring civil-military operation activities," add "Communication Security umpiring"; under "*Hours,*" add "1."

By Order of the Secretary of the Army:

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DISTRIBUTION:

Active Army, ARNG, USAR: To be distributed in accordance with DA Form 12—11B requirements for Maneuver Control (Qty rqr block no. 422).

FIELD MANUAL
No. 105–5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *31 December 1973*

MANEUVER CONTROL

*This manual supersedes FM 105–5, 29 December 1967.

PART ONE

TACTICAL EXERCISES

CHAPTER 1

INTRODUCTION

1–1. Purpose and Scope

a. This manual contains the principles, procedures, and techniques for use in the planning, preparation, and conduct of tactical exercises. Internal defense assistance exercises are included under the general heading of tactical exercises; it must be recognized, however, that internal defense assistance training encompasses many other functions in addition to those purely tactical functions that may be performed by internal defense assistance forces.

b. Part one deals with the development of tactical exercises as a training medium for units from squad to field army. Part two deals with the umpiring and control of tactical exercises during their execution.

1–2. Application

a. Combat units within the division are used primarily to discuss and illustrate the application of principles and procedures. Other commands of any type or size can readily adapt these principles and procedures to their particular requirements. Organization and procedures for maneuver control may require modification depending on the training objectives, type and scale of tactical exercise, and available resources.

b. It is not the intent of this manual to establish or introduce Army doctrine. Doctrine is established and published by the appropriate commands or agencies concerned. This manual is provided to commanders at all echelons to assist in the application of established doctrine in a training environment. The objective is to provide a guide, for both control personnel and participating troops in tactical exercises, which will enhance the effectiveness of training.

c. This manual is a sequel to FM 21–5.

d. Users of this manual are encouraged to submit recommended changes or comments for improvement. **Comments should be** keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reason should be provided for each comment to insure understanding and permit complete evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publications) **and forwarded direct to Commandant US Army Command and General Staff College, Fort Leavenworth, Kansas 66027.**

CHAPTER 2

TACTICAL EXERCISES—GENERAL

2–1. Purpose and Definition

a. The ultimate goals of all military training are combat efficiency, success in battle, and successful conclusion of other assigned missions that may not be associated directly with combat; the purpose of tactical exercises is to assist in achieving these goals. Tactical training is the instructing of individuals and units in all phases of combat operations. Soldiers are first trained to be proficient as individuals, then as members of progressively larger units, and finally to function with other units of combat, combat support, and combat service support units, and the other Services.

b. Tactical exercises are practical drills that require the application of combat, combat support, and combat service support procedures and doctrine in assumed tactical situations. This manual will assist commanders at all levels to select, plan, prepare for, and conduct appropriate tactical exercises that are consistent with specific training needs and local facilities.

2–2. Methodology

a. Tactical exercises accomplish their purpose only when they present logical and realistic situations, including enemy representation, and when they are adequately controlled. Exercises must be executed with firmness and force, as one coherent operation, and must be followed by a thorough critique that outlines strengths and weaknesses.

b. Troops and units are required to participate in appropriate tactical exercises as early in the training cycle as their degree of training permits. Since all tactical exercises are applications of classroom theory, they follow instruction in basic methods and techniques.

c. The Army emphasizes application in training. The applicatory method, as it applies to tactical training, involves an explanation of a tactical principle, method, or technique to be learned, followed by its application under an assumed combat situation. For balanced and progressive training, each type of tactical exercise (para 2–3 through 2–13) should be used when appropriate.

Section II. TYPES OF TACTICAL EXERCISES

2–3. Terrain Model Exercise

a. A terrain model exercise is a tactical exercise in which a sand table or some other terrain model is substituted for the terrain. Friendly and enemy troops are represented by suitable miniatures or tabs.

b. This exercise is excellent for teaching basic principles to small units, but it can be used at any level. The sand table or terrain model is an excellent training aid for critiques of completed operations and for briefings of future operations.

c. A terrain model exercise may be conducted as a lecture, conference, demonstration, or practical exercise. It can be used in individual and unit training.

2–4. Tactical Drill Exercise

A tactical drill exercise is one conducted "by the numbers." It is a form of small unit training in which the fundamentals of tactics are stressed by progressive repetition. During each tactical drill exercise, the leader states the problem to his unit, explains the solution and the reasons for adopting the particular solution, and conducts the unit through the problem according to the stated solution. He makes appropriate on-the-spot corrections of individual actions. He then reviews the entire problem to insure thorough understanding by every individual in the unit. The exercise is repeated until the leader is satisified with the unit's proficiency. The procedures used to develop a tactical drill exercise are similar to those used for a field exercise.

2–5. Terrain Exercise

a. A terrain exercise is a tactical exercise in which the disposition and movement of simulated troops are planned and discussed on a particular piece of ground. This exercise is especially useful in training small unit commanders in terrain appreciation and in reconnaissance techniques, but can be used to train commanders and staff officers at all levels.

b. Personnel can participate in the terrain exercise as individuals or as members of staff groups.

2–6. Map Exercise

a. A map exercise is a tactical exercise in which a series of related situations requiring individual or group solutions is stated. The exercise is followed by a discussion of the solutions presented. A map is the only guide to the terrain. This exercise is especially useful for instruction in command principles and in staff techniques and procedures for commanders and staffs of brigade, division, and larger units.

b. In conducting a map exercise, the instructor presents a series of situations with their accompanying requirements. The students, acting as commanders and staff officers, solve the requirements by making estimates and decisions and by preparing plans and orders to implement their decisions. The students solve the requirements individually, as members of designated groups, or as unit commanders and staffs. They present and discuss several of the solutions to each requirement. The instructor then presents a solution that provides a basis for the solution of subsequent requirements.

2–7. Map Maneuver

a. A map maneuver consists of presenting a military situation by outlining it on a map or overlay and stating requirements that call for estimates, decisions, plans, and orders by the players acting as commanders and staff officers. The sequence of command staff actions in making and executing decisions is employed (chap 5, FM 101–5). The situation is progressive or developmental, depending on whether it presents successive steps or different aspects of an operation.

b. Map maneuvers are free or controlled, one sided or two sided. The controlled map maneuver is conducted according to a preconceived plan of action for one or both sides; controllers force the play of the problem to follow this plan. The free map maneuver places no restrictions on the actions of the opposing forces. They are free to follow any course of action desired within broad limitations of zones of action. Umpires/controllers represent the units, both friendly and enemy, that are not represented by players.

c. A map maneuver may be conducted as a continuous exercise or divided into phases to correspond with the requirements placed on the players. The breaks are used by controllers to war game the outcome of player decisions, actions, and orders. Players may continue with their normal work while the controllers are thus occupied.

d. The map maneuver provides the most realistic approach to combat that can be obtained by artificially providing players with an active enemy and a changing situation. It is suitable for training large numbers of officers and requires no limitations of safety zones, private property, or understrength units, which sometimes detract from field training. It offers a broad field for selection of terrain to fit any type of problem since any terrain can be used if suitable maps are available.

2–8. Command Post Exercise

a. A command post exercise (CPX) is a field exercise for command, staff, headquarters, and communication personnel at all levels. All troops other than headquarters and communication personnel are represented by umpires/controllers. The enemy may be represented by umpires/controllers. This exercise permits command and staff personnel to apply their knowledge of correct command and staff procedures to a wide variety of tactical situations.

b. Command post exercises provide a valuable vehicle for training in displacement of headquarters; use of staff procedures, techniques, and standing operating procedures; use of alternate of fragmented command post echelons; maintenance of command and control under adverse conditions; and rehearsals for field exercises and maneuvers. In comparing the command post exercise and the field exercise, the control system for the former is normally smaller and it can assume more realistic conditions unhampered by artificial restrictions during the play.

c. Command post exercises afford commanders a valuable training device in the area of combat service support. Activities of the combat service support system, especially in the areas of staff coordination and staff direction, are planned and examined for feasibility.

d. Command post exercises may vary in form. At one extreme is the form which resembles a map maneuver in which only key staff personnel participate. Fewer communication facilities are provided and the command posts are grouped in one location or at reduced distances. At the

other extreme is the form which closely simulates combat. Here the command posts are separated by normal distances and enough headquarters and communication personnel are employed to locate, install, and operate the command posts as in combat (normal distance). Command post exercises may be one sided or two sided. Umpires/controllers represent friendly and enemy units that are not represented by players.

2–9. Field Exercise

a. A field exercise is a tactical exercise conducted under simulated combat conditions. The personnel and equipment of the friendly side are present on the ground in whole or in part while the personnel and equipment of the opposing side may be represented or simulated.

b. The field exercise is used to train units of all sizes. It is also used to test units, commanders, and staffs.

2–10. Field Maneuver

A field maneuver is a tactical exercise in which a military operation is conducted; troops and armament of both sides are present in whole or in part. All the conditions of war are simulated. The maneuver is extensive in scope and time, with logistic depth often extending beyond the field army rear boundary into the communication zone (COMMZ). It involves multiphase tactical problems in which more than one division normally participates and requires extensive movement in relatively large areas. Troop tests of various types, by one or more participating units, may be conducted within the framework of the field maneuver.

2–11. Tactical Exercise Without Troops (TEWT)

a. A TEWT is a tactical exercise in which the disposition and movement of simulated troops are planned and discussed on a particular piece of terrain. This exercise is especially useful in training small unit commanders in terrain appreciation and reconnaissance techniques as well as in tactical and logistic procedures used during combat operations. The TEWT may be used to train commanders and staff officers up to brigade level.

b. Personnel can participate in the TEWT as individuals or as members of discussion groups.

c. The TEWT is developed in the sequence of steps prescribed for the field exercise with the following variations:

(1) Preparation of the terrain is completely different from that of the field exercise. In the field exercise, projects such as digging foxholes, constructing bunkers, digging demolition pits, and erecting obstacles of various types are accomplished in an effort to prepare the terrain for the conduct phase. In the TEWT there is no preparation of terrain; you leave the terrain as it is.

(2) The instructor orients the discussion group (six to 10 men) on the terrain, pointing out prominent features and explaining their relationship to the exercise. He then presents the general/special situation, followed by the initial requirement. (The general situation should be issued in advance when possible.)

(3) The students should be issued a terrain sketch, in lieu of a map, as an aid to solving requirements. This procedure insures that solutions are a result of actual ground reconnaissance rather than the result of a study of a topographical or aerial photomap. The instructor tells the students when the requirements are to be completed and where the students will reassemble to discuss and present their solutions and receive the next requirement.

(4) Students will individually solve each problem and be prepared to justify his solution. The group will then discuss individual solutions, argue points, and develop a group solution. The TEWT depends on discussion to generate interest and exchange ideas. It is an excellent exercise for commanders to use to develop their subordinates' concepts of tactics.

d. The advantages of a TEWT when compared to other tactical exercises are as follows:

(1) The TEWT can be as simple or as complicated as you desire. An example of a simplified TEWT would be—

A company commander can take his platoon leaders to a suitable piece of terrain, one that will accomplish his training objective. There the commanding officer will orient the platoon leaders on the ground, present a general/special situation, and initial requirement. He would then let the platoon leaders make their reconnaissance and develop their plans individually. The platoon leaders would meet at a predesignated time and place where one platoon leader would critique the first solution and present his own solution. This technique could continue until all of the solutions were presented or the commanding officer accomplished his teaching point. The commanding officer would then present his own concept or solution. One or two well presented, well critiqued solutions are better than many parrotlike solutions and critiques.

(2) A TEWT is cost effective; it provides maximum effectiveness with minimum use of resources (human, physical, time, funds); i.e., it

does not waste the valuable time of the troops while officers and/or NCO's are making mistakes and learning tactics.

(3) A TEWT is an excellent means of reviewing tactical considerations for commanders and staffs as a prelude to a major field exercise.

e. Some disadvantages of the TEWT are—

(1) The participants lose interest in adverse weather.

(2) The time factor of moving troops and equipment must be simulated.

(3) The fear or uncertainty of the battlefield is not available.

2–12. Nature of Tactical Exercises

a. Tactical exercises are either one sided or two sided. They may also be free or controlled. In a one-sided exercise the opposing force is represented by controller and umpire personnel. In a two-sided exercise the forces involved maneuver against each other. The controllers and the umpires monitor and judge respectively the actions of both sides to keep the exercise within the stated objectives. In the field exercise and field maneuver, umpires arbitrate the results of engagements, using rules and criteria established for that purpose.

b. In a free exercise both sides are permitted freedom of operation during the conduct of the exercise. The controlled exercise is conducted according to a preconceived plan for one or both sides. Controllers and umpires assist in forcing the play of the exercise to follow the plan. Most exercises fall somewhere between these two extremes. It is normal to require one side to attack while the other defends, delays, or withdraws. The situation may be reversed during the course of the exercise. Control may vary at different tactical levels. The higher headquarters may be closely controlled in what it may plan or execute while the subordinate units are less restricted in the actions it may take.

c. There is a relationship between control and umpire resources that are employed and the degree of control of the tactical exercise. Generally speaking, the freer the exercise is from the player standpoint, the more control resources are required for analysis and evaluation of the effects of fire and maneuver play. An exercise rigidly controlled by plan requires fewer umpires and controllers.

d. Free or controlled tactical exercises may be held for the sole purpose of conducting troop tests; also, a troop test may be conducted within the framework of a tactical exercise that has one or more stated purposes. It must be understood by all players that the troop test is conducted to evaluate the validity of the objectives stated in the troop test directive and is not an Army training test (ATT) of the participating unit. A troop test may be conducted in conjunction with an ATT, but control procedures must be such that ATT considerations do not override and thereby invalidate the troop test. It is preferable that the actual troop test be conducted by units other than those undergoing an ATT. The degree of control exercised over a troop test is as needed to insure the proper conduct and adequate evaluation of troop test objectives.

2–13. Content of Tactical Exercises

a. Tactical exercises vary in their objectives, size, participation, degree of control, and the amount and complexity of simulation required to achieve combat realism.

b. Tactical exercises require the use of every aspect of combat intelligence from planning and directing the collection and reporting of information to the production, use, and dissemination of intelligence by the commander and his staff.

(1) Particular attention is devoted to the realistic employment and integration of combat reconnaissance and surveillance and target acquisition, whether simulated or actual, within the framework of the intelligence collection and exploitation system of the tactical units.

(2) Collection of information on enemy targets and the rapid reporting, analysis, and exploitation of resulting target intelligence are given special emphasis in all tactical exercises.

(3) Security consciousness and the integration of counterintelligence activities into maneuver control and evaluation plans are stressed during the planning and conduct of tactical exercises.

(4) Psychological operations intelligence play is habitually integrated as appropriate in limited and general war exercises and is stressed in internal defense operation exercises. PSYOP intelligence should include area and background studies of the exercise environment and current data essential for analyzing and selecting specific target audience conditions, attitudes, susceptibilities, and vulnerabilities.

(5) Intelligence-provided exercise players should include adequate information (actual or assumed for exercise purposes) concerning the inhabitants, and their institutions, works, and activities. Collection and reporting requirements should reflect these intelligence needs.

c. Chemical play is included as appropriate. Emphasis is placed on realistic planning, agent selection, methods of delivery, target analysis, and the effects on friendly troops and civilian populations.

d. Nuclear play is included as appropriate.

Special emphasis is placed on the realistic integration of nuclear weapons play in planning, the effects of nuclear weapons, and the resulting physical and psychological effects on civilian populations and military forces.

e. In chemical, biological, radiological, and nuclear defense play the defensive aspects of planning, troop actions, and degradation of operations are stressed.

f. Logistic play emphasizes the ability of units to sustain themselves in the field and simulates the losses, casualties, damage, interruptions, and delays that confront all commanders in combat.

g. Civil affairs play appropriate to the purpose and scope of the exercise, the size and composition of the forces involved, and the characteristics (actual or assumed) of the area of operations must be included. Civil affairs play may include the entire spectrum of civil-military relationships (FM 41–5 and 41–10). In all types of exercises dealing with civilians, the G5 will insure that action (actual or simulated) is in compliance with the Geneva Convention. The G5 will be consulted for advice on use of political constraints.

h. The maintenance of personnel strength, casualties and replacements, labor requirements, morale, and personnel services are realistically played.

i. Tactical air support, Army aviation support, and passive and active air defense play is included as appropriate. Free and simultaneous play of all these activities is rarely possible due to conflicting airspace requirements, safety problems, data collection, and correlation difficulties.

j. Psychological operations (PSYOP) play in internal defense/development operations emphasizes coordination of PSYOP activities with intelligence and civil affairs activities as well as with tactical operations. Area coordination centers (ACC's) at province, district, or similar political subdivisions function to coordinate the activities of US/host country military forces and civilian agencies. Part of this effort is to coordinate PSYOP at the lowest echelons.

k. Counterguerrilla operations play is included in the tactical exercise to provide commanders and staff training in countering threats from unconventional forces while engaged in conventional warfare.

l. Tactical exercises require effective use of communication and noncommunication (e.g., radar) emitters. Special emphasis is placed on the employment of and defense against electronic countermeasures (ECM). Within the framework of applicable electronic warfare (EW) directives, electronic jamming and deception must be planned as combat support activities against aggressor electromagnetic radiations. Also, stress must be placed on exercising individuals and units in countering aggressor EW through the adoption of appropriate electronic counter-countermeasures (ECCM) and signal security (SIGSEC) procedures.

m. Cover and deception play involves the arrangement of many command actions and staff functions, to include, as appropriate, signal intelligence (SIGINT), electronic warfare (EW), operations security (OPSEC), signal security (SIGSEC), countersurveillance, counterintelligence, camouflage, and concealment, in support of deception operations.

n. Finance services play is included when the capability of automated pay, finance, and fiscal accounting systems and organizational structures are questioned because of a mobile environment, resource limitations, new command and control structures, or technology advances.

o. Tactical cover and deception (TC&D) play is included in the tactical exercise to provide commanders and staff personnel training in implementing a TC&D plan and in countering hostile TC&D.

Section III. SEQUENCE AND SELECTION OF EXERCISES

2–14. Sequence

Tactical exercises should be programed to follow one another in logical sequence to provide progressive training from small to large unit field exercise. It may then progress to a field maneuver. This orderly progression avoids confusion, misunderstanding, and the learning of incorrect procedures and techniques of combat.

2–15. Purpose

The first consideration in selecting the type of tactical exercise is whether the training is for individuals or for units. If it is for individuals, a map exercise may be appropriate; if it is for a headquarters or a unit, a command post exercise or field exercise may be selected.

2–16. Status of Training

The proficiency of the individuals or unit to be trained is a determining factor, not only in the type of exercise to use, but also in its complexity. For example, there is no definite or scheduled time that a field exercise will be injected into basic unit training. It is programed as the

status of training of small units permits. The teamwork and training of a staff may require that it participate in a series of map maneuvers before taking part in a command post exercise or a large unit field exercise. The working knowledge of staffs should be verified by command post exercises before staff members are required to direct the operations of entire units in large unit field exercises or field maneuvers.

2–17. Terrain Available

The terrain available is a deciding factor in determining the size of the unit that will participate in a field exercise or field maneuver. When the type or extent of terrain to properly emphasize the desired training objectives is not available, a terrain substitute, such as a terrain model, may be employed. A commander desiring to provide training in jungle operations may schedule map exercises and a map maneuver because of the lack of suitable terrain.

2–18. Time

Enough time must be allowed for the preparation of tactical exercises to permit accurate and logical presentation. The time allocated for the conduct of the exercise must permit realistic development of situations that lead to logical conclusions. All exercises should encompass a complete operation or a distinct phase of an operation.

2–19. Equipment

Umpires and controllers require adequate transportation and communication with the chief umpire or controller, with the participating units, and with each other. Since the participating units need all their organic equipment, the equipment used by control personnel should come from other sources. This becomes a major consideration when a large amount of equipment for use in umpire and control activity must be obtained and returned in a short time.

2–20. Control Personnel

Efficient control is essential to the success of any tactical exercise. When planning a tactical exercise, it is necessary to consider the need for and the availability and qualification of umpire and control personnel. The number and qualifications of umpire and control personnel may determine whether an entire unit can participate in an exercise or whether a series of smaller unit exercises is more practicable. A small-unit exercise can be prepared and conducted by one individual, using only visual signals for control. A field maneuver may require hundreds of men and elaborate communication facilities in the umpire and control system.

2–21. Funds

Special field exercise funds are budgeted and allocated for expenses above normal training costs. These funds are not available to cover any and all types of expenses incident to field training. See AR 220–55 for a detailed explanation regarding exercise funds.

CHAPTER 3

DEVELOPMENT OF TACTICAL EXERCISES

Section I. INTRODUCTION

3–1. Scope

This chapter describes the steps used in the development of all types of exercises. In general, the steps used in the development of all types of exercises are similar; however, the variations introduced by the many different types of exercises and the level at which they are conducted are discussed.

3–2. Realism

a. Soldiers learn best by doing. For this reason, training doctrine emphasizes that theory must give way to practical exercise as quickly as possible.

b. In the military training of individuals and units, situations are used that may arise in purely combat environments or in internal defense operational environments, or in both. Constant attention is given to the use of tactical cover and deception (TC&D), covered routes, individual cover, camouflage, and concealment; response to orders and signals, movement to and occupation of positions, the reporting of intelligence information, changing positions, advancing by bounds; the technique of fire, the employment of supporting weapons, and taking full advantage of the effects of supporting weapons. Consideration is given to the confusion and uncertainty that can develop in a changing situation—noise, discomfort, lack of time, fatigue, sketchy and false information, and lack of instructions. Care must be taken to have all missions executed by applying correct principles and not by following arbitrary rules. Decisions are made and action is taken only after careful consideration of the mission, terrain, weather, enemy population, and other variables affecting the situation. Soldiers must be conditioned for battle mentally as well as physically. Training must be so realistically designed and conducted that a unit or individual will not find the noise and confusion of battle a strange experience when introduced to combat for the first time.

c. The objectives of all types of tactical exercises at battalion and higher echelons are to promote—

(1) The integration of the organic staffs and units into coordinated and efficient teams capable of successful action in combat.

(2) A high degree of unit and individual proficiency in tactical and logistic operations.

(3) The advancement of training of troops, units, commanders, and staffs.

(4) A high degree of unit and individual proficiency and understanding in conducting internal defense/development operations.

3–3. Preparation and Control

a. An exercise for the squad, platoon, or company is usually prepared by one individual. During normal training situations, this individual is appointed by the next higher echelon of command. Ideally, exercises for Army training tests are planned one or two echelons higher than the unit being tested. The individual preparing the exercise is normally the chief umpire for the exercise. He requires a number of assistants to control the exercise and to evaluate the performance of the participating unit. Depending on the complexity of the exercise, it may be advisable to designate more than one individual to prepare a company exercise.

b. It is unrealistic to charge one individual with the preparation of a large unit exercise that requires advanced tactical play as well as combat service support. A directive to prepare a larger unit exercise is issued to an individual who has a unit or coordinating and special staff to assist him. At times an individual may have an *ad hoc*, or a specially designed staff, tailored for the forthcoming exercise. While the individual assumes responsibility for the full preparation of the exercise, his staff members are responsible to him for the preparation of various portions of it. The individual preparing an exercise for a squad, platoon, or company receives staff support from higher echelons, whereas at battalion and higher echelons of command there is actual staff participation in the preparation of the exercise.

c. An exercise director is appointed to develop a larger unit exercise. His operations officer or G3 assumes the major portion of the staff responsibility for preparing the exercise. The coordinating staff designation is used in this chapter when referring to staff members. However, it should be remembered that the statement applies equally to the counterpart on the unit staff or on a director staff.

d. The senior participating staff may plan, prepare, and conduct the exercise when the primary objective is to train the subordinate units. When a particular headquarters is to participate in the exercise as the highest echelon involved, realism is increased if another (normally the next senior) headquarters plans and prepares it. If the next senior headquarters is not available, then a temporary staff may be drawn from the participating staff, with the sole mission of planning, preparing, and conducting the exercise. This mission can be accomplished in a number of ways. The principal member of each staff section may perform as the principal staff section member on the staff of the exercise director. This procedure causes the most experienced staff members to plan and prepare the exercise and provides the assistant participating staff section chiefs with the opportunity to perform the duties of the participating staff section chief. If this arrangement is not feasible, the assistant staff section chiefs may function as the exercise director staff section chiefs. This plan allows the most experienced staff members to carry on normal duties and prepare the unit for the exercise, and provides training for the assistant participating staff section chiefs in planning and preparing the exercise. As an alternative to these methods, an exercise director staff may be formed from outside sources to plan, prepare, and conduct the exercise. The first two methods should be used alternately for maximum training benefit. When participating in normal training under an Army training program (ATP), a higher headquarters is usually not available, and one of these three methods is used. However, when units are participating in Army training tests a higher headquarters should plan and prepare the exercise.

Section II. PLANNING STEPS IN THE DEVELOPMENT OF EXERCISES

3–4. Major Planning Steps

a. There are three major planning steps in the preparation of exercises: preparation of the directive, development of the scenario with its supporting plans, and preparation of the training circular.

b. This section describes, in general, the steps involved in the planning, preparation, and conduct of exercises.

3–5. Directive—Initial Considerations

a. Definition. A directive is an oral or written military communication in which a policy is established, or a specific action is ordered. The issue, receipt, and study of a directive constitutes the first major step in the planning process for an exercise. A directive requiring the development of an exercise may be issued by any authorized person or headquarters in the chain of command. At company, a directive is normally issued orally. At battalion and higher commands, a directive is usually written.

b. Purposes and Objectives. Before preparing the directive, the author must carefully consider the purpose of the exercise as stated or implied by the commander. Normally, the purpose of an exercise is to provide a vehicle for accomplishing certain objectives. The purpose of the exercise may be the provision of a test vehicle, in the form of a field activity, to obtain a specific objective. The objectives to be accomplished in the exercise or activity constitute the basis for the planning and then for the development of the directive. The objectives may be considered as the *what*, or the test criteria of the exercise. Objectives may have already been provided by the commander. However, in the absence of predetermined objectives, the author of the directive must develop those actions that will realistically meet the intended purpose of the exercise and then must afford opportunities for successful accomplishment of the exercise objectives.

c. Essential Elements of Analysis. The directive author will propose a series of questions—essential elements of analysis (EEA)—specifically designed to obtain an answer to a particular problem area or to provide information that can be used in evaluating a particular functional area. The closest analogy to the EEA is the essential elements of information (EEI) used by the intelligence staff officer as a basis for the intelligence collection plan. The intelligence staff officer prepares a series of questions and then uses the information obtained as a basis for making his intelligence estimate. Answers to EEA perform the same function for the directive author as EEI answers do for the intelligence staff officer. The answers to EEA provide the factual information needed to form the objectives and lay the framework for the *how*, or the measurement criteria of the exer-

cise. With the *what* and the *how* of the exercise firmly in mind, the author of the directive is now prepared to write the directive and thus initiate the action required to write the scenario—the *who, where,* and *when,* or the environmental criteria of the exercise.

d. Understanding. A clear understanding of the directive is essential because the directive contains the planning guidance that is the basis for the planning and the preparation of the exercise.

3–6. Directive Content

A directive may contain many different items of information, depending on the desires of the commander issuing it and on the local training situation. Any information not provided must be deduced or it must be requested by the author planning the exercise. As a minimum, the directive should contain the items listed below.

a. Personnel. The directive should stipulate the exercise director and make provisions for his staff.

b. Type of Training. This item explains the type of tactical operation to be conducted to attain the training objectives. The type of training may specify an attack, defense, retrograde, or internal defense type operation. This item will further specify a particular type of attack or defense, such as the infantry-tank team in the attack or the defense of a river line. This item will specify still further whether the operation is to take place during daylight or darkness and whether service ammunition, blank ammunition, or no ammunition will be used.

c. Time and Place. This item designates the terrain area allocated for the exercise and is normally supplemented with a map or overlay showing the area to be used. This portion further specifies certain time factors governing the planning, preparation for, and conduct of the exercise. This item may establish the amount of time available for each unit to participate or a block of time during which a specified number of units will be committed throughout the exercise. This portion of the directive also establishes a planning deadline for the officer preparing the exercise.

d. Units to Participate. This item prescribes the type and number of units that will participate. For instance, the exercise may be prepared to train all weapon squads of the rifle company or to train all rifle platoons of the battalion.

e. Special Equipment. In many instances, such as the attack of a fortified position, a night raid, an airmobile or airborne assault, the use of special equipment is required. The directive will identify the type and amount of special equipment required for the exercise.

f. Additional Information. In addition to the minimum information already outlined, a directive for a larger unit exercise will require information on funding requirements and environmental settings, and any pertinent assumptions. Funding data should include both fund citations and any limitations on funds. Environmental information may include statements on the strategic settings and the type of exercise envisioned, such as general or limited warfare or internal defense operations, and may include area and background studies pertinent to the exercise areas. Since directives are normally issued well in advance of the proposed exercise time, pertinent assumptions should also be included in the directive.

3–7. Research

a. Organization, weapons, and equipment are changed to meet the demands of changing tactical doctrine and capabilities. For this reason, the officer or exercise staff planning the exercise must research pertinent material to insure the authenticity of the exercise. Research must be thorough enough to provide authors with the background necessary to place the exercise in a realistic combat environment and to maintain the interest and enthusiasm of the participants. The officer or exercise staff planning the exercise should consult such tactical references as field manuals, subject schedules, training films, and service school publications; copies and reports of exercises previously conducted that are available in unit files; and area and background studies pertinent to the exercise area. In addition to these references, other helpful material is available through library services, service journals, and semiofficial publications; from members of the Air Force, Navy, and Marine Corps who are qualified to offer expert or pertinent advice in their fields; and from foreign army representatives. The training directives of higher headquarters must also be consulted for the inclusion of integrated subjects and other requirements.

b. Authors should consult administrative references to insure the uninterrupted progress of the exercise and to preclude injuries during the training. Some administrative references pertinent in all cases are post and garrison regulations, range regulations, and unit standing operating procedures (SOP's). Occasionally, both Army and special regulations will apply.

c. In research and planning, authors draw on personal experience as well as on that of others

in an effort to make the exercise as realistic and authentic as possible.

3–8. Planning Schedule

a. General. As in the accomplishment of any mission, it is imperative to consider from the very beginning the tasks required to complete the preparation of the exercise and the approximate time necessary to complete these tasks. The amount of time required to complete the included tasks varies, of course, with the experience of the personnel involved. Many exercises fail to accomplish their intended purposes when seemingly self-evident factors are not considered in prior planning.

b. Single Authors. In the case of the small unit exercise with only one author, the planning schedule may be nothing more than a visualization by the author of the tasks to be completed and the apportionment of the remaining time to finish these tasks.

c. Exercise Planning Staffs. After a thorough study of the directive by the preparing staff, the G3 prepares a planning schedule calling for the completion of the various supporting plans within the time available for preparation. He accomplishes this by first determining the date on which the training circular with all annexes is to be published. By planning backward, he establishes the completion date of all supporting plans based on the publication date. The planning schedule lists all of the major plans required for the exercise. The schedule designates the staff officer responsible for each plan and the time that it must be submitted for the commander's approval. This provides for coordination and timely planning. Detailed coordination between responsible staff officers is necessary when overlapping areas are encountered.

3–9. Task Responsibilities

a. The planning and execution of a large field exercise require the same detailed planning as an actual combat operation. To perform these tasks the directive initiating the exercise will name the exercise director and designate an exercise staff. This staff is responsible for the planning and conduct of an exercise to meet the objectives of the exercise directive. Normally the G3 acts as the principal coordinator for the exercise director. Throughout this chapter the coordinating staff designation is used; however, comments are equally applicable to unit or directorate staffs, or to a single individual in the case of small unit exercises. The general planning sequence is:

(1) Study the directive and determine the general nature of the exercise to be conducted.

(2) Select and review pertinent references.

(3) Prepare and distribute a planning schedule.

(4) Make a map reconnaissance of the area allocated for the exercise in order to formulate an outline plan,

(5) Confirm the outline plan by making a ground reconnaissance.

(6) Obtain concept approval from exercise director.

(7) Prepare a draft of the exercise scenario containing all situations, requirements, and the time schedule.

(8) Prepare the operation order, with appropriate annexes, for approval by the exercise director. When approved, this operation order will be issued to the participating units to initiate play.

(9) Prepare the orientation and critique plan for the exercise.

(10) Prepare the training circular to support the exercise.

b. To insure full and timely completion of the effort, a planning sequence is essential. A typical planning sequence is found in appendix C.

c. The G3 prepares the troop list, which identifies the units participating in the exercise and those in the support organization. If simulated units are played, they are shown in the troop list for player planning purposes. This portion of the plan also prescribes the control organization. The organization and manning of the exercise planning staff and the control staff are included in the troop list.

d. When the scenario has been completed to the satisfaction of all staff sections and is approved by the responsible commander, the appropriate staff sections can begin work on their portions of the supporting plans and instructions.

e. The G1 consults with the G3 and the chief/controller on umpire and control requirements. He prepares the personnel portion of the control plan and provides the G3 with the name, rank, and organization of all personnel who have a part in presenting the exercise. He also prepares the personnel portion of the administrative plan for the exercise (para 3–16).

f. The G2 studies the directive, appropriate references, and the scenario and prepares a series of enemy situations to guide the exercise along the lines intended. He reconnoiters the terrain to verify that his enemy situations are workable. The G2 consults with the chief umpire/controller, the G3, and the Aggressor force commander to obtain concurrence on the information to be released to the troops concerning the enemy situation and to plan the methods of releasing this information so that the units will

get maximum combat intelligence training. The G2 then prepares the intelligence plan to consolidate all aspects of intelligence play in the exercise. (See paragraph 3–14 for the content of the intelligence plan.)

g. The G4 studies the directive, appropriate references, the scenario, and the operation plan and consults with the individuals and agencies that will support the exercise. He plans for playing logistic aspects of combat service support during the exercise. His plan includes provisions for establishing complete or skeleton installations, providing special equipment to represent TC&D and EW activities, incorporating actual resupply where feasible, and simulating physical quantities and weights where the actual supplies cannot be carried into the field. He also plans for the *actual* support of the exercise based on requirements for ammunition, field rations, fuel, pyrotechnics, and any special equipment, as well as for medical evacuation and traffic control. The G4 drafts the administrative plan and reconnoiters the terrain to make sure that the plan is workable. He consults with the G3 to make sure the administrative plan conforms to the operation plan, the control plan, and the troop orientation and critique plan.

h. The G5 studies the directive, appropriate references, and the scenario, and prepares the civil-military operations (CMO) annex. The G5 coordinates with the G3 to insure conformity of the CMO plan to the overall operation plan; with the G2 to insure appropriate input into the combat intelligence training; and with the G4 for inclusion of pertinent data into the administrative plan. The G5 consults with the G1 and G3 regarding civil affairs and PSYOP requirements for umpire and control personnel.

3–10. Outline Plan

a. General. The outline plan is the framework on which the scenario—the story of the exercise—is built. The procedures used in outline plan development depend on the size of the unit involved. In small-unit exercises the reconnaissance phase and the outline planning considerations are normally combined. Larger unit exercise planning separates these two steps.

b. Development. The steps described below specifically refer to actions taken by an exercise director staff; however, these same actions would apply to those used by a single author in the smaller units:

(1) The development of the outline plan is the responsibility of the exercise director G3, in close coordination with exercise director G2. Essentially it is the application of the objectives of the exercise to the terrain. This plan is prepared by first determining the mission in the sense of analyzing the directive to insure the commander's intended purpose is understood and the objectives proposed will accomplish the commander's purpose. Use of the technique, previously described, of preparing a series of broad questions (EEA) specifically designed to develop actions that accomplish the objectives outlined in the commander's directive will materially assist at this stage, because the actions called for in the objectives must be included in the outline plan and scenario.

(2) The next step is selecting the general area where the exercise will be conducted. Consideration is then given to the general sequence of events needed to meet the objectives of the exercise. To make this determination the planner must visualize the combat situations and the significant terrain features required, anticipate the need to include control measures, develop a time schedule, and complete the outline plan. The outline plan must include plans for moving the participating units into the area, conducting postexercise activities, and completing a ground and aerial reconnaissance prior to the exercise if the terrain is to be actually occupied.

(3) To select the best sequence of events, the estimating process is used. The mission, the training objectives of the exercises, is examined to identify those factors that have a bearing on the course of action. Next the planner selects as courses of action the feasible sequences of events that may be used to accomplish the training mission. Each sequence is applied to the terrain and examined in detail to determine the effects that the terrain will have on the conduct of the exercise. All feasible combinations should be retained and compared with one another. The best course of action (sequence) should be chosen. This sequence becomes the recommendation or decision.

(4) Selecting actual locations and visualizing combat situations at these locations can be compared to task planning in the preparation of an operation order. A final objective is selected, and other events are scheduled in inverse order. Alternatively, a final objective may be selected, and other events may be scheduled starting from the initial assembly area. Either method can be employed.

(5) Outline plan time schedules are guides to allow completion of objectives and to assist in keeping the combat situations realistic. For example, night attack situations are preceded by daylight periods for reconnaissance; unit reliefs require preparation and planning time; and

restoration of command and control measures after nuclear strikes requires execution time.

3–11. Reconnaissance

a. To make the most efficient use of the area allocated for the exercise, the preparing officer must plan and conduct a thorough reconnaissance: "first on the map; then, on the ground."

b. To save time and effort during planning and preparation, the author should first study a map of the area updated with aerial photographs. The area is analyzed to determine its military aspects, including observation and fields of fire, cover and concealment, obstacles, key terrain, and avenues of approach. If the exercise is offensive by type, the author starts by choosing the unit objective. He then plans backward, choosing a possible assault position, line of departure, assembly area, and other control features normally used in the attack. The author selects additional locations of Aggressor activities or positions where specific actions are to take place. If the exercise is defensive by type, the author starts by choosing the main battle area, locations for security elements, routes of approach to the defensive positions, location of the reserve, if applicable, and assembly areas. Next, the author selects installations such as roadblocks, locations for road guards, wire heads, and visitor control points. In plotting map locations for Aggressor units and activities, red should be used; for friendly units and activities, blue should be used; and for man made objects, black should be used. These positions are plotted on the map, using a series of letters and numbers that are carried over to the margin and explained in a legend. This is an aid that avoids cluttering the map, especially if the author wishes to prepare more than one tentative plan for conducting the exercise. (Since this method of organizing the exercise area is for the author's use, it is not necessary to use orthodox overlay techniques at this time.) When this has been accomplished, the overall scheme of operation is determined by visualizing the employment of the parent unit two levels of command higher than the unit to participate. In the case of a squad exercise, the employment of the other squads in the platoon and the other platoons in the company must be determined. The officer preparing the exercise must remember that, in selecting the locations for activities, he is limited to the area designated for the exercise. See figure 3–1 for an example of the organization of an exercise area.

c. The author makes a ground reconnaissance to verify the tenative plan that he prepared from his map and aerial photographic reconnaissance. His plan will need only minor changes if his map and aerial photographic reconnaissance has been thorough. In making the ground reconnaissance, he again checks his plan backward from the objective that he first located. He verifies that the objective is appropriate for the types of units that are to participate. While on the objective, he critically examines the terrain, as would the enemy commander, to determine the realistic locations of activities to take place. He then walks through the remaining portion of the area, determining the realistic location and the feasibility of the other features that he selected. He changes his original plan as necessary and, before continuing his planning of the exercise, submits it for approval to the individual who originally directed that the exercise be prepared.

d. When conducting reconnaissance for internal defense and unconventional warfare exercises, FM 19–50, FM 30–20, FM 30–31, FM 30–31A, FM 31–20A, FM 31–21, FM 31–21A, FM 31–23, FM 31–40, FM 33–5, FM 41–10, and FM 100–20 should be consulted for additional considerations peculiar to these types of operations.

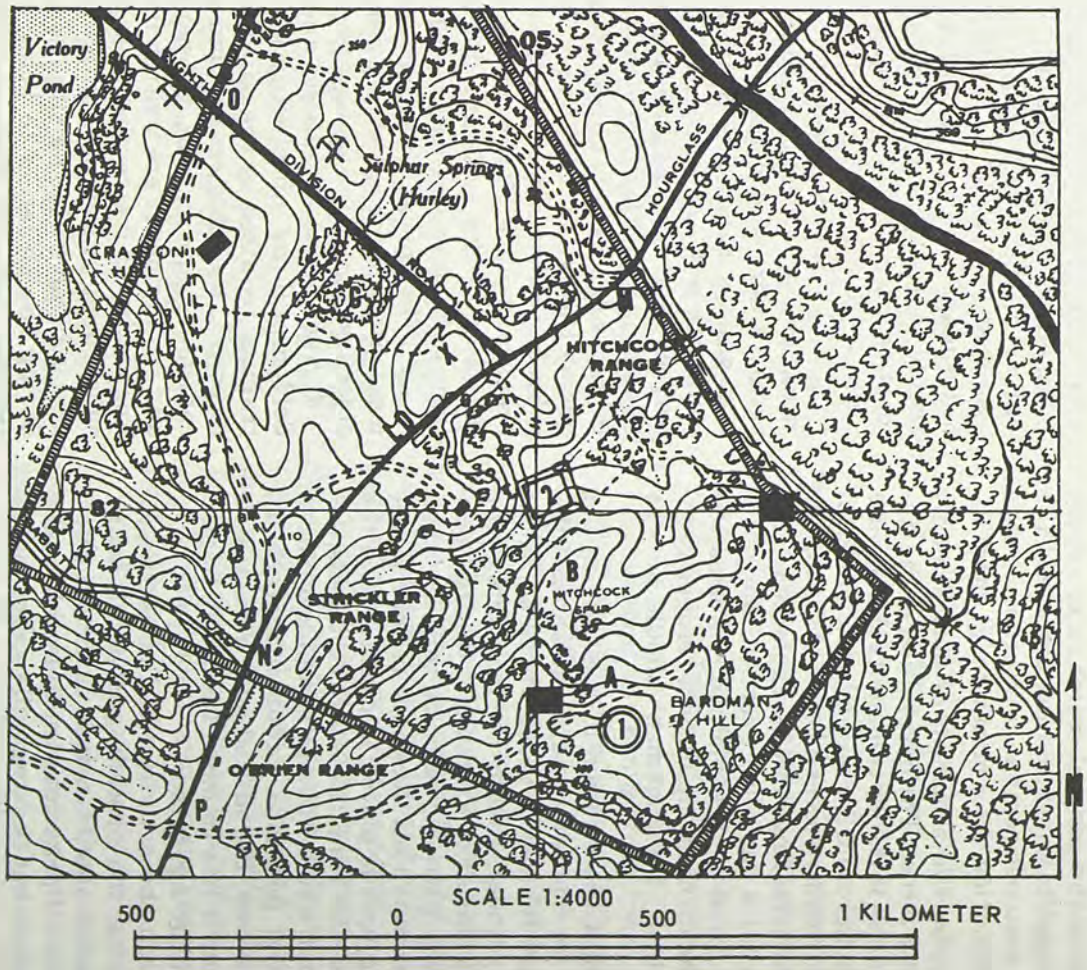
3–12. Scenario

a. General. On approval of the outline plan by the exercise director, the G3 prepares to complete the scenario.

(1) The scenario portrays a series of situations that will meet the objectives required by the commander's directive. The scenario is written to guide control and Aggressor personnel so that they may cause the exercise to progress according to the predetermined plan. It is composed of four parts: *a general situation, an initial situation and requirement, subsequent situations and requirements, and a time schedule.*

(2) The scenario may be general or detailed, depending on the desires of the commander and the purpose of the exercise. Scenarios of a general nature are used in exercises designed to develop coordination in the command or in exercises used as vehicles for a training test. Scenarios of this category outline the broad aspects of the exercises, such as the mission, phase lines, times to cross phase lines, and the action of the command as a whole during each phase of the exercise. This allows greater freedom of play on the part of the participants. A detailed scenario is used when the purpose of the exercise is to correct specific deficiencies or to emphasize specific points in training. An exercise based on a detailed scenario requires close control and allows the participants less freedom of play.

b. The General Situation. The general situa-



ORGANIZATION OF THE EXERCISE AREA

①	Location of enemy squad (simulated)
2	Enemy mortar fire area
A	Probable assault position
B	Lead elements fired on from point
C	Platoon assembly area
X	Company OP
M,N,O	Road guard
P	Roadblock

LEGEND

AREA BOUNDARY

BLEACHER LOCATION

RANGE MARKERS

8-0681

Figure 3–1. Hitchcock Range area map.

tion provides the participants with the background normally available in a combat or an internal defense operational situation. The general situation includes the setting (tactical or strategic, depending on the size of the units in the exercise), a general statement describing the situation of friendly and enemy forces, the location of the participating unit relative to the terrain and to other units, the recent tactical activities of the unit, and the location of the unit commander if he is not present at the time. For small exercises the general situation is generally read or given to the participants by the chief umpire at the beginning of the exercise. For large exercises the general situation is usually issued administratively to the key personnel and disseminated through regular command channels. Imagination and realism must be incorporated into the general situation to arouse interest and enthusiasm and logically lead the unit into an assumed combat or internal defense operations situation. As a minimum, it should—

(1) Describe the situation of both friendly and Aggressor forces. The description of the Aggressor situation includes comments that create a realistic background for the exercise. The situation of the friendly forces two echelons higher than the participating unit is explained. This means that, for a battalion exercise, the situation of the division is explained. Information regarding the civilian population, refugee problems, and rules of engagement should also be provided.

(2) Explain the location of the unit on the ground and its relation to adjacent units. Adjacent units are limited to those whose activities will be easily understood by the members of the participating unit. For example, if the unit participating is a platoon, refer to adjacent platoons and companies. Realism is lost if the participating unit is placed in contact with the Aggressor at the time the exercise begins, because the unit would have to have been moved into its initial positions administratively. To start the exercise, the unit should normally be placed so that it has to move tactically to gain contact with the Aggressor.

(3) Explain the activities of the participating unit during the preceding 24 to 48 hours. This explanation should include sufficient reference to the unit's prior mission to lead logically into the mission that the unit will receive for the exercise.

(4) Specify the location of the unit leader if he is not with the unit when the general situation is issued. Normally, the unit leader will be at the next higher unit command post or observation post receiving the order when the unit is receiving the general situation. If the unit leader is with the unit at the time the general situation is issued, no mention need be made of his location.

c. Initial Situation and Requirement.

(1) The initial situation starts the action by the unit participating in the exercise. It is designed so that a logical solution to it will start the exercise along the desired lines. The situation is described in enough detail to give the unit and its leader a complete mental picture of it. Any tactical situation that requires action on the part of the unit may be used as an initial situation. However, for the squad, platoon, and company, a fragmentary or operation order issued by the next higher unit commander is normally used to begin the action. When an operation order is used, it should be complete, covering all five paragraphs and referring to the missions of all subordinate units in the parent unit as if they were also participating in the exercise. The use of an extract of an operation order may result in a loss of realism. The order should be issued under tactical conditions at a location such as the command or observation post.

(2) The first requirement follows the initial situation. It is a statement outlining the *expected* orders and actions of the participating unit and its leader as a result of the conditions confronting the unit in the initial situation. The correct orders and actions are based on previous tactical instruction. The requirement is a guide for control personnel only in observing and evaluating the actions of the unit. The requirement is broken down in detail in the umpire checklist prepared by the officer writing the exercise. It indicates to the assistant umpires specific actions to be observed and reported.

(3) The initial situation and first requirement provide for satisfying *one or more of the objectives stated in the directive.*

d. Subsequent Situations and Requirements. Seldom will the initial situation provide all the training required by the objectives listed in the directive. For this reason and for the sake of continuity and reason, subsequent situations and requirements are written into the scenario. For clarity of instruction to control personnel, subsequent situations contain information on *who* is involved in the situation, *what* happens during the situation to bring out the desired training, *when* it happens, *where* the action takes place, and exactly *how* the action is brought about.

e. Time Schedule. The time schedule is an estimate of the time necessary to perform certain operations in the exercise. Sufficient detail

is included to properly direct control personnel in the performance of their duties. To provide this direction, subsequent situations should include a written portrayal of the following:

(1) What action is to occur.

(2) When the action takes place.

(3) Where the action takes place.

(4) Who is involved in the action.

(5) How the action is initiated.

Guided by this information, control personnel are able to properly portray each situation to the participating unit during the exercise. Following each subsequent situation is a requirement that must be fulfilled by the participating unit or its leader.

f. Schedule of Events. A schedule of events may be prepared as an inclosure to the scenario. This is an abbreviated scenario arranged chronologically in column form to provide a ready index to the time, place, persons or units involved, and activity planned for any given situation. It is an estimate of the amount of time required to conduct one unit through the exercise, including time for the troop orientation at the beginning of the exercise and a critique at the end of the exercise. This time estimate will be more accurate after the rehearsal of the exercise has taken place. However, it should be understood by the officer preparing the exercise and his assistant control personnel that no two units will require exactly the same amount of time to complete the exercise. No attempt should be made to require them to do so. This time estimate is for planning purposes only.

3–13. Operation Plan

a. General. The scenario is the operation plan for the tactical exercise. The scenario will require further development by the G3 and other members of the exercise staff to produce the various supporting plans that are required. These include any warning and fragmentary orders to initiate play and the complete operation order and its annexes. The operation plan may contain the following supporting documents.

b. Chemical, Biological, Radiological, and Nuclear Plans. These plans cover the scope and objectives of exercise play in these areas. They prescribe—

(1) Wind data to be used if other than that actually in existence at the time of the exercise.

(2) Scale of use of nuclear and chemical weapons during the exercise, and the capabilities of the logistic support system.

c. Tactical Air Support Plan. The tactical air support plan establishes the scope and objectives of tactical air support play. It covers—

(1) Concept for tactical air support.

(2) Extent and nature of Air Force play.

(3) Air Force agencies to participate with the different Army headquarters.

(4) Air/ground communications.

(5) Marking of Aggressor aircraft.

(6) Air traffic control.

(7) Safety, to include rules and procedures governing simultaneous use of the airspace by high-performance jet aircraft and low-performance Army aircraft.

d. Army Aviation Plan. The Army aviation plan establishes the scope and objectives of Army aviation play in the exercise and provides for—

(1) Applicable rules and procedures.

(2) Reports and markings of Aggressor aircraft.

(3) Safety.

(4) Air/ground communication.

(5) Air traffic control.

(6) Employment of armed Army aircraft.

e. Army Air Defense Plan. The Army air defense plan establishes the scope and objectives of Army air defense play in the exercise and provides for—

(1) Tactical missions.

(2) Air defense artillery units to participate.

(3) Control and communications.

(4) Employment of nonair defense weapons in an air defense role.

(5) Employment of Redeye teams.

(6) Ammunition resupply.

(7) Air defense rules and procedures, to include rules for engagement and hostile criteria, which must be considered in the tactical air support and Army aviation plans.

f. Internal Defense and Internal Development Supporting Plans. Internal defense and development operations encompass areas of endeavor normally associated with low intensity forms of warfare. These operational plans will require the following additional supporting documents listed below.

(1) Military-civic action plan to outline limitations, types of projects that may be undertaken, coordinating requirements, material resources, and civilian and other military units available to assist in military-civic action programs.

(2) Advisory assistance plan to outline subordinate unit responsibilities for this type of support to the armed, paramilitary, and irregular forces.

(3) Populace and resources control plan to outline subordinate unit responsibilities, degree of participation, and coordination instructions for US participation in host country (HC) populace and resources control activities.

(4) PSYOP estimate of the situation, PSYOP plans, orders, annexes, and directives to outline PSYOP and tactical unit responsibilities and provide guidance to subordinate commanders concerning PSYOP objectives and plans.

g. Electronic Warfare (EW). The EW plan establishes the scope and objective of electronic warfare support measures (ESM) and electronic countermeasures (ECM) support play. It covers—

(1) Concept of EW support.

(2) Extent and nature of the United States Army Security Agency (USASA) play.

(3) Frequencies to be used in ECM play.

(4) Time and duration of ECM play.

h. Additional Plans. Additional plans, such as artillery, engineer, barrier, denial, signal, unconventional warfare, civil affairs, cover and deception, enemy air, defense suppression, psychological warfare, and military police may be included. Specialized operations, such as amphibious or airborne, require inclusion of appropriate guidance in the exercise directive. These additional plans include the scope and objectives of play in the exercise and other information as required.

i. Tactical Cover and Deception Plan. This plan establishes the scope and objective of TC&D play in the exercises and provides for—

(1) The concept for TC&D play.

(2) Extent and nature of USASA participation in electronic deception aspects.

(3) Requirements for dummy and/or salvage equipment.

(4) Applicable rules and procedures designed to insure that TC&D play is realistic and does not disrupt the intended intelligence portrayal of Aggressor activity to the point of adversely affecting the planned course of exercise play.

(5) Reports to be submitted.

3–14. Intelligence Plan

a. The G2 prepares the intelligence plan in coordination with the G3 and the chief umpire/controller. The plan provides for the realistic play of combat intelligence.

b. Before writing the intelligence plan, the G2 studies the directive and the scenario and prepares a series of enemy situations that will guide the exercise along the lines intended. He reconnoiters the terrain to make sure that the enemy situations are workable. The intelligence plan and its supporting documents must be carefully coordinated with the control plan as well as with the scenario. Documents that support the intelligence plan are the—

(1) *Aggressor plan and situation.* This plan shows the various enemy situations that must be portrayed by the Aggressor force. A situation overlay should be prepared for each phase to clarify the plan. With this plan and overlay, the Aggressor commander makes his detailed plan of operation to carry out the required tasks.

(*a*) The play of intelligence sources and agencies, such as aerial surveillance and reconnaissance, surveillance devices, patrols, US Army Security Agency, documents, prisoners of war, and technical intelligence, is described.

(*b*) Counterintelligence, guerrilla activities, enemy propaganda and counterpropaganda, and intelligence activities in rear areas are narrated.

(*c*) When appropriate, the chemical, biological, and nuclear attack capabilities of Aggressor forces are developed in just enough detail that the troops are required to interpret the information applied. Plans would be made for early dissemination of meteorological data, recent Aggressor CBR activities, and special intelligence bulletins on strange-looking Aggressor, equipment, unusual diseases, etc.

(*d*) Aggressor EW capabilities are presented. Also, plans are developed for the dissemination of electronic warfare support measures (ESM) information, current enemy electronic order of battle, and recent aggressor EW activities.

(*e*) Aggressor TC&D and counterdeception activities are narrated as a normal portion of the exercise scenario. These activities must support realistic play. The TC&D story must be plausible, complete, and in consonance with previous, current, and logically-anticipated future Aggressor activity. Intelligence information released to friendly forces must be designed to depict both the TC&D activity and the true exercise activity of Aggressor (though not necessarily simultaneously). The goal must be to provide enough information to insure that the friendly forces will encounter difficulty in reaching a conclusion and will have to exercise prudence before being able to distinguish the true from the false picture. Additionally, planning must provide for the release of intelligence information designed to bring play back to the intended path in the event friendly forces accept the Aggressor TC&D activity as factual. Aggressor counterdeception activities

must also be developed in sufficient depth to reflect realism, and to complicate friendly development of TC&D activities.

(*f*) Distinction is made between exercise and actual security and intelligence measures.

(2) *Directive to Aggressor commander.* The G2 prepares this directive as a means of outlining the responsibilities of the Aggressor commander. The training objectives are cited, exercise dates are announced, and the suspense date for the Aggressor commander's operation plan is specified. The command relationship between the Aggressor commander and the exercise director or chief umpire/controller is stated in this directive.

(3) *Special instructions to Aggressor forces.* These instructions are prepared as an inclosure to the Aggressor commander's directive and outline matters of interest to the entire Aggressor command. As a minimum, these instructions should cover—

(*a*) The composition and identity of the Aggressor force.

(*b*) The Aggressor uniform and equipment.

(*c*) Provisions for an orientation of Aggressor key personnel.

(*d*) Guidance for conducting Aggressor schools.

(*e*) Preexercise training area allocation.

(*f*) A rehearsal schedule for Aggressor forces. Rehearsals may be in the form of a map maneuver, command post exercise, field exercise, or a combination of these.

(4) *The intelligence information distribution plan.* The continuous play of intelligence before and during the tactical play of the field exercise is provided by the intelligence information distribution plan. This plan shows the intelligence information to be released, the manner of releasing it, and a schedule for distribution. There are two categories of intelligence information released: that which the unit receives automatically so that the exercise may progress as planned, and that which the unit receives only when it takes the proper action to obtain it. The most realistic method of starting intelligence play for the large unit field exercise is to provide for the early issue of intelligence to the participating unit from the next higher tactical headquarters (chief umpire/controller). This objective is accomplished through the dissemination of area analyses and intelligence summaries and reports. This action provides background for tactical as well as intelligence play at all levels during the exercise. The Aggressor plan and situation and the intelligence information distribution plan are carefully coordinated so they will be in phase.

(5) *Intelligence annex to the operation order.* The intelligence annex contains the specific orders and requests that are the basis for intelligence activity by the participating unit during the play of the exercise, to include intelligence operations when conducting stability operation exercises and development operation exercises. Stability operations and intelligence operations are covered in FM 30–31, FM 30–31A, and FM 33–5.

c. As the size of the unit increases, the details of preparation of the intelligence plan become more complex. Careful planning is required to achieve the desired degree of intelligence play and to exploit the capabilities of participating intelligence personnel and agencies. Appropriate documents and reports are prepared to supplement the information contained in the intelligence plan. They include analyses of the area of operations, periodic reports, intelligence summaries, and initial allowances and subsequent issues of maps.

3–15. Control Plan

a. The control plan provides for the organization of the umpire/control system and for instructions pertinent to the control and evaluation of the exercise. The success of the exercise depends to a large degree on the thoroughness of this plan and on how well it is carried out.

b. The director staff G3 or the chief umpire/controller prepares the control plan. He refers to the exercise scenario and appropriate references to build an umpire and control system that will provide the proper degree of control and evaluation. All instructions for control personnel (exercise director, control group, chief umpire/controller and staff, and unit umpires) must be prepared in conformity with the scenario and the intelligence plan. The control plan contains the following supporting documents:

(1) *A plan for umpire/controller distribution and assignment.* Distribution of umpires and controllers is determined by the chief umpire/controller, based on the degree of evaluation and control that the exercise director desires. A notation of the lowest level at which umpires are to be used may be included in the directive. The G1, in conjunction with the G3, makes recommendations to the exercise director regarding the source and the selection criteria of umpires and controllers. If the umpires and controllers are taken from the participating units, it will leave vacancies that will have to be occupied by junior personnel. This procedure is desirable at times, particularly in the

latter phases of training. At other times, however, it is more desirable to have the unit at full strength with all personnel in their assigned positions; *for example,* when the exercise is for testing a unit or for a training inspection. Assignment is the process of assigning each umpire or controller to a specific headquarters or unit for the period of the exercise or assigning each within the control organization (para 5–33 through 5–36).

(2) *Safety instructions.* In attaining maximum realism, hazardous conditions and situations may arise that could have an adverse effect on the progress of the problem and on the individual participants, as well as on the local communities. To preclude accidents and injuries, specific safety instructions are prepared and disseminated well in advance. The responsibility for implementing these instructions rests with the control personnel in the exercise area. However, this in no way lessens the command responsibility within the participating unit for issuing, clarifying, and enforcing safety rules. Safety instructions include—

(*a*) Objectives and responsibilities.

(*b*) Accident causes and preventive measures.

(*c*) Accident reporting. The use of spot reports as well as formal accident reporting and investigative procedures is prescribed.

(3) *Umpire/controller communication and transportation plan.* Good communication is an essential element of control and coordination among umpires and controllers. The large unit field exercise, which encompasses operations over extended distances, creates numerous obstacles to continuous and efficient communication and requires of umpire personnel a high degree of mobility. The G3, assisted by the G4 and the director staff signal officer, prepares a plan for communication and transportation to support the exercise. Since the participating units require most of their organic communication and vehicular equipment during the exercise, the G3, G4, and signal officer normally provide for this equipment from other sources. An effective plan is one that provides for the displacement of umpires and links all major control headquarters, the artillery umpires, fire marking teams, and friendly and Aggressor forces on a continuing basis. Both wire and radio are used whenever possible.

(4) *Schedule of umpire/controller training.* This schedule shows the type of training to be given umpire and control personnel to qualify them as umpires, controllers, and evaluators. The degree of training is dependent on the background and experience of these individuals. The schedule provides for—

(*a*) A detailed orientation on the field exercise, to include the training objectives, the methods of attaining the objectives, the scenario, and supporting plans.

(*b*) A detailed reconnaissance of the exercise area.

(*c*) A school that emphasizes functions of the umpire and controller, qualification in the use of umpire and control equipment, map reading, and tactics.

(*d*) Rehearsals in the form of tactical exercises to insure complete understanding of the exercise.

(5) *Records and reports.* The G3 is responsible for formulating a plan for reporting procedures. As a minimum, these reports should include a periodic report of unit activities, special reports covering specific subjects, and afteraction reports at the completion of the exercise. Requirements for afteraction reports designate the commanders who are to submit afteraction reports, the format, number of copies, and suspense date. All reports are tabulated to show the report title, basic references, submitting unit, time interval covered, time report is due, form to be used, number of copies required, and normal method of transmission.

(6) *Umpire reports.* The chief umpire/controller prepares a guide for umpire reports. The guide outlines reporting procedures and afteraction report requirements and designates special areas of interest for evaluation during each part of the exercise. The reports should provide an evaluation of the level of unit proficiency displayed in each of the training objectives listed in the exercise objective. Any examples of outstanding performance or substandard performance should be noted even if they are not within the areas of specific interest.

(7) *Uniform markings, color control, and exercise rules.* This plan prescribes—

(*a*) Uniform markings for identification of Aggressor, umpire, controller, and observer personnel.

(*b*) Vehicular, aircraft, and equipment markings.

(*c*) Pyrotechnic and munition signals and instructions for their use.

(*d*) Flag signals and instructions for their use.

(*e*) Funding, authorization, and source of supply for uniform markings, pyrotechnic and munition signals, and flags.

(*f*) Umpire rules.

(*g*) Guidance concerning the use of civilians (or military personnel disguised as civil-

ians) in exercise play, and their identification and treatment.

(8) Guidance for actual (nonexercise) relations between exercise participants and the local populace; in this regard it will be closely coordinated with the exercise G5 and the public and troop information plans and activities. Additionally, it will include procedures for identification and treatment of civilians residing in or near the exercise area but not participating in the exercise.

c. For more detailed information on umpire and control organization, functions, and communication, see part two of this manual.

3–16. Administrative Plan

a. The purpose of the administrative plan is to provide for *actual* combat service support and combat service support *play* in the exercise. The logistic support must conform to the exercise logistic policies. Appendixes to the administrative plan pertaining to combat service support must establish a list of mandatory supply items to be brought to the exercise area by supporting troops, must describe the procedures for obtaining and maintaining training supplies, must establish supply rates for all types of munitions (both actual and simulated), and must determine logistic requirements for special items such as decontamination materials, fog oil, CBR and nuclear simulants, etc. In order for the appendixes to the administrative plan to contain all this information, an estimate of the types and quantities required of these various items of supply and simulants must be made early in the planning stage of the exercise.

b. The G4 prepares the administrative plan in close coordination with the G1 and G5. This plan covers all administrative details concerning the preparation, conduct, and afteraction phases of the exercise and contains instructions for the realistic play of combat service support for both Aggressor and friendly troops. It also provides for the concurrent training of the combat service support elements involved.

c. The G4 coordinates with the G1, G5, and appropriate special staff officers regarding the play of combat service support, including the establishment of complete or skeleton combat service support installations and resupply. He determines the availability of essential supplies and maintenance support and plans for medical evacuation and traffic circulation. The administrative plan must be in consonance with the scenario and operation plan. It consists of the following supporting documents:

(1) *Movement plan.* The number of participating troops, Aggressor troops, and control personnel involved in the large-unit field exercise requires that the director staff G4 prepare a detailed movement plan to coordinate the use of transportation and the use of all routes into and out of the exercise area. Failure to do so may result in many difficulties that could have a direct effect on the entire time schedule of the exercise.

(2) *Maneuver damage control plan.* The maneuver damage control plan is closely related to the claims plan. It prescribes—

(*a*) General policies.

(*b*) Responsibilities of commanders and units and the areas for which they are responsible.

(*c*) Training and orientation of troops, claims personnel, and repair teams.

(*d*) Restrictions, limitations, and precautions to be observed, to include rules governing vehicular travel, use of airstrips, communication, command post sites, and wire and cable laying.

(*e*) The organization for maneuver damage control and the organization and duties of maneuver damage control teams.

(*f*) Participation of umpire and control personnel.

(*g*) The following reports:

1. Preexercise.

2. Spot reports of damages.

3. Exercise locations of all player and support units.

4. Postexercise repair reports.

(3) *Civil-military operations plan.* The civil-military operations plan establishes the scope and objectives of civil-military operations play in the exercise. It may include—

(*a*) The concept for the employment of civil affairs units and staffs during the exercise (see FM 41-series manuals).

(*b*) Portions of the PSYOP plan dealing with the aspects of consolidation PSYOP in support of the civil affairs plan.

(4) *Administrative instructions.* These are instructions that the participating unit, Aggressor forces, controllers, and supporting agencies must receive to be guided in their preparation for the field exercise and in their conduct during the field exercise. They include—

(*a*) The extent of play for the various classes of supply.

(*b*) The extent of casualty play.

(*c*) Evacuation and hospitalization.

(*d*) Play of unit replacement and individual replacement.

(*e*) The types of reports to be played.

(*f*) Play of simulated losses in equipment, and simulated destruction of installations such as bridges, highways, radio sites, etc.

(*g*) Traffic control and circulation in the exercise area.

(*h*) Arrangements for observers.

(*i*) Uniform and equipment markings and pyrotechnics and their use.

(5) *Administrative order.* The administrative order or paragraph 4 of the operation order. This order provides for realistic play of all combat service support elements in the performance of their normal combat service support functions.

d. During the preparation of their respective portions of the administrative plan, the G1, G4, and G5 should make detailed ground reconnaissances to verify the feasibility of their plans.

3–17. Alert, Emergency, or Readiness Measures

a. Since forces in an exercise may be required, on call, to execute actual operation or alert plans, a transition plan is prepared to terminate the training exercise, with little or no warning. Multiple and secure notification means are provided for this purpose.

(1) If a situation arises that requires implementation of operation or alert plans and warrants the immediate termination of the exercise, the exercise director may terminate it by transmitting in the clear, duly authenticating a certain preselected code word.

(2) The code words are transmitted by each player and control echelon taking part in the exercise.

(3) In such an event, the exercise will cease. All communication circuits are cleared for emergency traffic. Those circuits out of action for exercise traffic are restored immediately.

b. If a situation develops that warrants temporary suspension of the exercise in a specific area, the exercise director, senior control officer, or a tactical commander may suspend the exercise by transmitting in the clear, on appropriate communication channels, the preselected code word signifying emergency suspension of the exercise.

c. Careful distinction is made between exercise instructions and actual instructions pertaining to an operation or alert plan.

3–18. Orientation and Critique Plan

The director staff G3, or the chief umpire/controller in conjunction with the G3, prepares this plan. It contains detailed instructions for orienting the players before the exercise and for the critique after the exercise.

a. The preexercise orientation is essential if all personnel are to start on the same basis and carry out their duties with interest and enthusiasm. Sufficient key personnel of the participating unit are designated to attend the orientation to insure dissemination of pertinent information to all participants. The plan and orientation must lead to an understanding of the training objectives and the general manner of attaining these objectives. A classroom arrangement with appropriate briefing aids will assist materially. A schedule of speakers is published, and a rehearsal is conducted to prevent duplication, overlap, or conflict in instruction.

b. The critique is held as soon as practicable after the exercise. Consideration is given to the physical condition of the troops, the location of units, and the time needed to collect, collate, and evaluate the umpire reports. The most effective critique is brief and to the point. A review of the training objectives, by phases, and discussion of major achievements and errors will satisfy this requirement. Like the orientation procedure, the critique is rehearsed and then presented to the key personnel. Unit commanders are allowed sufficient time to continue the critique process down to individuals in the smallest participating units.

c. Although the orientation and critique plan is considered a major plan, it may be published as an appendix to the control plan.

3–19. Information Plans.

a. The director staff information officer, through coordination with all staff sections, prepares a public information plan to take advantage of the opportunity for developing an awareness of the Army's mission in the minds of the public. The extent of this plan is determined by the scope and objectives of the exercise and the command emphasis attached to it. In the interest of sound public relations, the exercise director must prepare the local populace for any unusual or inconveniencing situations that may arise.

b. All exercises have certain security, political, and public relations implications. These implications should be carefully weighed, and a basic concept for publicity must be formulated for each exercise. When publicity is *not* desired, policies are established for the handling of press inquiries. In formulating public relations and information policies for a particular exercise, the following actions are taken:

(1) A suitable press release date is determined in advance, taking into consideration the requirements for security, public relations, and any international political interest.

(2) Release of detailed information concerning the nature and location of exercises and the participating forces is weighed in relation to the security and political implications.

(3) Invitations to the press are prepared by information officers and cleared by security staff officers. The invitations may include a request that the exercise by given no publicity prior to the predetermined date.

c. The public information plan provides for—

(1) Initial releases announcing the exercise.

(2) The extent of hometown press releases and radio, television, and other news media coverage.

(3) The extent of press coverage and the invitations to be issued.

(4) Support of news media representatives.

(5) Briefings to be given and courtesies to be extended.

d. The troop information plan provides for—

(1) Troop orientation.

(2) Exercise news publications or other news dissemination media.

3–20. Claims Plan

When a large-unit field exercise involves the use of privately owned land, buildings, or equipment, the director staff G4 must prepare a claims plan. He coordinates with the G1, staff judge advocate, engineer officer, G5, and G3. The plan designates—

a. A claims officer. He must be appointed early enough to execute the leases for the property required. The same officer should be responsible for settling any claims arising from the exercise.

b. The amount of land, equipment, or building space required.

c. A rental procedure, which includes the length of time that these facilities will be required.

d. The limitations that are imposed on the use of all leased property.

e. The means for issuing these instructions to all units affected.

f. A means of processing claims.

g. The procedure for obtaining claim releases.

h. The off limit areas.

3–21. Publication of the Training Circular

The director staff G3 draws up a training circular as the final step in preparing a field exercise. This circular is used for issuing the necessary orders, instructions, or directives to all personnel and units participating in or contributing to the exercise. It is prepared as a basic circular with annexes.

a. The basic circular answers the *who, what, when, where,* and *why* of the exercise. It is paragraphed to show the objectives of the exercise, references pertaining to the tactical doctrine involved, and a schedule of participation.

b. The annexes to the basic circular contain information requiring special distribution or instructions on particular subjects that are detailed or lengthy. They consist of the scenario with the operation order and administrative order, the orientation and critique plan, the administrative instructions, the control plan, and the special instructions to the Aggressor forces. Only "need-to-know" annexes are attached to the training circular, which is issued to participating units.

3–22. Comptroller Matters

The large field exercise of division or higher level normally requires, for funding purposes, the assignment of a comptroller as a permanent member of the director staff. Since the cost of most activities connected with the exercise must be met by special field exercise funds, a policy of rigid economy must be pursued at all levels.

3–23. Training Circulars

The publication of the training circular is the final phase in the step-by-step planning process for the development of exercises prior to final rehearsals and the actual conduct of the exercise. The training circular is prepared as a basic circular with annexes.

a. The information in the basic circular parallels the information contained in the exercise directive, which is issued only to the exercise director and staff. Essentially, the basic circular answers the *who, what, when,* and *why* of the exercise. In addition to the information previously discussed in detail in paragraphs 3–5 and 3–6, the training circular may include pertinent references on actions envisioned as necessary to accomplish the objectives of the exercise.

b. The annexes to the training circular will include the scenario and the supporting plans for the exercise. Therefore, the exercise headquarters must carefully prepare the distribution formula so that the scenario or allied instructions become available only to "need-to-know" personnel. Failure to prevent player troops from having prior knowledge of the time and place of certain key events can in some cases invalidate an entire exercise.

3–24. Terrain Preparation

Preparation of the terrain is necessary to provide a realistic problem environment. The au-

thor accomplishes this preparation by requesting work details for construction needed in the exercise area. If he is preparing the exercise by direction of the battalion commander, other battalion units may assist in this work. If the exercise is to be live fire, he makes use of electrically or mechanically controlled targets installed in foxholes or bunkers to represent the Aggressor. He may choose to install a dug-in, remotely controlled machine gun to represent Aggressor fire from the objective. If the exercise is to be blank fire, he may install barbed wire obstacles on the objective and/or around villages, demolition pits along routes of approach to the objective, or safety devices to facilitate control and safe operation during the exercise. These projects require considerable coordination on the part of the officer preparing the exercise with both the players and aggressor, but are necessary to provide realism.

3–25. Rehearsal

The officer preparing the exercise rehearses the exercise as a final check on his plan. He conducts the rehearsal well in advance of the scheduled exercise so he will have time to correct any errors and readjust the time schedule. He rehearses the umpire and Aggressor detail first, repeating the rehearsal as necessary so that everyone is thoroughly familiar with his duties. He follows this with a full-scale rehearsal, using a practice unit. The individual who originally directed that the exercise be prepared should be present at the rehearsal to make any changes he deems necessary or to give his approval of the field exercise.

3–26. Conduct

a. A field exercise is conducted with the same care and attention to detail that go into its preparation. A properly prepared exercise can be ineffective if its conduct is not thoroughly planned and coordinated.

b. Although the exercise may be phased, the participating units should function continuously whenever possible. Complex or extremely long exercises may require administrative breaks between phases to permit realinement of forces. Maximum effort should be made to provide continuity of action to insure realism and to maintain a high level of interest. The umpiring difficulties involved with continuous action must be anticipated and provided for in umpire and Aggressor instructions.

c. The play of the exercise normally begins with the commander's orders for starting action on the first requirement. The commander's first need is information of the enemy. He is allowed to obtain this information only if he seeks it through the regular higher headquarters or subordinate units, through the various reconnaissance agencies, or by personal reconnaissance. If the commander follows this procedure, the umpires will furnish the information he would normally obtain in this way.

d. While umpires are not charged with the actual control of troops, they influence their movement and conduct by assessing casualties and restricting forward movement against superior firepower. It is important for umpires to prevent a situation from developing more rapidly than it would in combat and to keep the exercise from proceeding at an illogical rate. They penalize improper formations and exposed elements by subjecting them to air attack, artillery fire, or small arms fire.

e. Commanders are responsible for both tactical decisions and the appropriate orders to carry out the decisions. Umpires must avoid curbing the commander's initiative. For example, if a commander orders his unit over an exposed area swept by hostile fire, the umpires should not countermand the order. Instead, if the situation warrants, the Aggressor is instructed to indicate such heavy fire that the umpire can inform the commander that he is unable to advance because of the enemy's fire superiority. Then the commander must either establish local fire superiority or change his scheme of maneuver before he is allowed to advance.

f. The scenario is the basis for umpire control. It is impossible to foresee all the situations that may arise during the exercise, or to include in the scenario all the instructions that may be necessary. Therefore, based on their knowledge of the situation, the umpires must supply the action needed to keep the exercise within the preconceived plan.

g. The chief umpire, his assistants, and the Aggressor force act continuously to give the exercise mobility and continuity. Assistant umpires keep their senior umpires informed of the situation, particularly of troop movements, and the chief umpire/controller maintains contact with the exercise director. In this way the field exercise progresses in a manner aimed at accomplishing all the training objectives. This forceful supervision during the conduct phase results in superior training for the units concerned.

Section III. OTHER TACTICAL EXERCISES

3–27. Terrain Model Exercise

When time or training facilities limit or prohibit the use of the ground, a sand table or terrain model is used as a terrain substitute. Either a sand table or terrain model may be used as a training aid for a conference, demonstration, or an applicatory exercise for units or individuals. Their use is not restricted to small unit training. They may be used at all levels and during all phases of training to teach new lessons, to reemphasize lessons already taught, to critique a completed operation, or to aid in briefings on planned operations. They are particularly valuable training aids for teaching basic tactical principles. A sand table or terrain model exercise may be used during the early part of the basic unit phase of training to prepare the unit for a field exercise. The steps in preparation of the sand table exercises are similar with the procedures prescribed for the field exercise with the following variations:

a. During the reconnaissance, the officer preparing the exercise normally conducts a map reconnaissance only. After organizing the exercise area on the map, he then constructs the sand table or terrain model and the necessary accessories.

b. The problem of control is reduced because the instructor is able to control the exercise by limiting the number of participants.

c. The administrative and logistic support required for this exercise is greatly reduced.

d. A rehearsal with a practice group is conducted whether the instructor intends to use assistants or not.

e. The instructor starts the exercise by orienting the unit or student group. The orientation includes the purpose of the exercise, how the sand table will be used and the method of representing enemy and friendly forces on it, an explanation of the terrain represented and its prominent terrain features, and an explanation of the scale to be used for the exercise. The instructor then presents the general and initial situation. The students are allowed a few minutes to study the initial situation before the requirement is explained. Each student prepares his own solution to the requirement. The instructor has one student present his solution, which the instructor then discusses. He may ask for and discuss additional solutions. When the instructor is satisfied that a training objective has been properly emphasized, he proceeds to the next situation and follows the same procedure. When all the situations have been presented and various solutions to all the requirements have been discussed, the instructor conducts a critique and summarizes the lessons learned.

3–28. Terrain Exercise

a. The terrain exercise is an excellent means of providing unit leaders with additional training in terrain appreciation and reconnaissance techniques, and in tactics and logistic procedures used during combat operations.

b. The terrain exercise is developed in the sequence of steps prescribed for the field exercise, with the following variations:

(1) Preparation of the terrain takes on a slightly different aspect. In the field exercise, such projects as digging foxholes, constructing bunkers, digging demolition pits, and erecting obstacles of various types are accomplished in an effort to prepare the terrain for the conduct phase. In the terrain exercise, such projects as clearing pathways for fields of vision, erecting panels to designate limiting points and objectives, and clearing roadways for transportation of student groups are accomplished for the efficient conduct of the exercise.

(2) The instructor orients the student group or unit on the terrain, pointing out its prominent features and explaining their relation to the exercise. He then presents the general situation, followed by the initial situation.

(3) The students should be issued a terrain sketch as an aid to solving requirements. This procedure insures that solutions are a result of a ground reconnaissance rather than the result of a study of a topographical or aerial photomap. The instructor tells the students when the requirements are to be completed and where the students will reassemble to present their solutions and receive the next requirement. After each requirement has been completed, the instructor starts subsequent situations with an orientation on the terrain and the present dispositions of friendly and Aggressor forces. During the practical exercises, the instructor and his assistants make themselves available to the students for advice and counseling.

3–29. Command Post Exercise

The command post exercise is developed in the same manner as a field exercise for battalion and larger units, except for the following variations:

a. The primary purpose of the command post exercise is to train commanders, staffs, commu-

nication personnel, and certain headquarters personnel. However, it is invaluable as a means of rehearsing a field exercise of preparing for a field maneuver prior to its actual conduct.

b. Subordinate units do not participate in the exercise except for headquarters and communication personnel. Umpires represent each unit—higher, lower, or adjacent—that is not represented by its own personnel.

c. Since subordinate units are not present, changes in the tactical situation do not require time to physically relocate the units. Therefore, a time ratio can be used in the exercise to save training time. When a participating headquarters is planning an operation, the ratio is one to one (1 hour of problem time equals 1 hour of clock time). After the planning phase is completed and orders are issued, a ratio of three to one, for example, may be employed during the execution phase. Thus, 3 hours of problem time equals 1 hour of clock time, and a time saving is realized.

d. If the exercise is of reduced distance, a reduction in the use of communication equipment and transportation is possible. Support requirements are also reduced in this case.

e. The directive specifies the headquarters, categories of personnel to participate, and the time ratio to be used.

f. The reconnaissance made by the G2 and G3 can be reduced to a map reconnaissance in most cases.

g. Since entire units do not participate, the scenario must be written in greater detail to guide the umpires representing these units. For the same reason, the information distribution plan is prepared in much greater detail.

h. When the Aggressor force is not represented by players, the directive to the Aggressor commander is not necessary. However, it must be remembered that controllers will then represent the Aggressor and they must be provided with a situation map containing the planned employment of the Aggressor force. In the one-sided command post exercise, the Aggressor plan in employment is prepared by the director staff G2.

i. The plan for actual administrative and logistic support is reduced in accordance with the reduction in personnel, units, and equipment.

j. While control is one of the most important factors in this type of exercise, the total requirements for personnel and equipment are reduced.

k. In conducting the exercise, umpires and controllers follow the exercise scenario and the Aggressor plan and overlay to represent the Aggressor force in the exercise areas. The Aggressor situation map must be maintained in accurate and timely detail. Umpires and controllers portray the result of actions by subordinate units by sending messages to the participating headquarters.

3–30. Map Exercise

a. Advantages. A map exercise is the most commonly used and probably the most effective type of tactical exercise for classroom presentation of command and staff principles, doctrine, and procedures. It overcomes many of the inconveniences of field exercises and field maneuvers. In addition to being economical and suitable for training large numbers of officers for key positions, the map exercise has no artificial limitations of safety zones, private property, or understrength units, which sometimes detract from field training. It offers a broad field for selecting terrain to fix any type of problem because any terrain can be used if suitable maps are available. Map exercises permit realistic training in the preparation of plans and orders from a map.

b. Disadvantages. A map exercise is not realistic as to time, space, weather, and terrain. It provides only a limited opportunity for introducing problems that arise from human imperfections and mechanical failures. It is difficult to demonstrate in a map exercise that sound, workable plans and clear orders will not, by themselves, insure success in battle, but that constant supervision and determined execution by capable and aggressive leadership is equally important and necessary. Realism must often be sacrificed to provide certain facts and assumptions as a basis for solution that the commander or staff would have to deduce in a real situation. In the map exercise it is difficult to portray conditions that show how surprise influences a given situation. Map exercises should be planned and developed to minimize these disadvantages as much as possible.

3–31. Directive

The directive requiring the preparation of a map exercise contains information similar to that for a field exercise except as prescribed below.

a. Objectives. Examples of objectives stressed in a map exercise are making staff estimates, preparing operation and administrative plans and their annexes, planning special operations, making oral estimates and decisions, and preparing fragmentary orders in successive situations.

b. Type of Training. The type of training in a

map exercise influences the conditions that are assumed during the conduct of the problem. These include the weather, the time of year, and the time of day, as well as operational variables such as offensive or defensive operations.

c. Time and Place. The place, date, and time of the exercise are stated in the directive. (A map exercise is normally conducted in an indoor classroom.)

d. Units to be Played. The size and type of units involved depend on the level of the training. If the objective of the exercise is to prepare command and staff officers at division, then divisions should normally be the largest units played.

e. Maps. If the maps to be used for the exercise are not specified in the directive, the officer preparing the exercise may choose appropriate ones that are in adequate supply. The maps must show terrain features suited to the exercise; for example, the most obvious features such as a river for river-crossing instruction, as well as less apparent ones such as soil trafficability for armored operations. The map scale must be large enough to portray the complete operation and all the details a student needs to make an adequate analysis of the area of operations. It may be necessary to use two maps of different scales to fill both these requirements and to show both general and subsequent situations; but it is desirable to use only one map for the tactical play when possible.

f. Status of Training. The officer preparing the exercise should know what training his students have completed and what future training has been planned for them. This information enables him to develop his map exercise at a level that is both instructional and interesting.

3–32. Research

To insure authenticity and realism, it is necessary to study tactical and historical references that will provide a background of information in preparing the exercise. The same research procedure is followed as for the field exercise.

3–33. Developing the Plan

a. The first step in developing a plan for a map exercise is to write an outline of presentation. This outline is a list of the objectives in a logical sequence of instructional blocks, with classroom time allocated to each of the blocks. The objectives are those stated or implied in the directive and expanded or modified by the author after he has studied his reference material. The outline of presentation is perhaps the most important step in developing a map exercise, because it is the basis for most of the other preparatory work.

b. If the directive does not specify the map to be used for the exercise, the preparing officer's next step is to choose a map that is appropriate.

c. The officer then makes a tentative plan on the map for the play of the exercise, basing it on his outline of presentation. The plan must insure that the students arrive at the goal indicated in the outline of presentation. The best approach is to decide first how the players are to participate. The author asks himself, "What can I require of the player in this exercise that will cause him to learn?" This is a general question and it should be answered generally, without a specific situation in mind. For example, the author may decide that the player should demonstrate and apply his knowledge by participating as the G3 of a division, and that he will require the player to submit on an overlay his recommendations for the zones of action and line of departure to implement an attack. He leaves until later the exact wording of the requirement that will produce this effort on the part of the player and the writing of the situation that will provide the basis for the solution. In the outline of presentation, he determines the general pattern for player participation in each of the training objectives.

d. After the author establishes a general pattern for the requirements, he determines the specific situations that he will place in the exercise. Completeness and continuity of the situations are important. When he has decided on the specific situations, he organizes the exercise area, which consists of outlining on the map the situations in the exercise. To do this, he visualizes the disposition of troops and installations, both friendly and enemy, on the ground represented by the map. He decides, for the entire exercise, what the activities and movement of the opposing forces must be to tie in with the situations he wants to present. By outlining on the map the various forces and activities, he obtains a graphic picture of the plan and the play of the problem.

3–34. Study Assignments

a. Players must have sufficient background knowledge, acquired through experience or study, to allow them to participate intelligently in the map exercise. Since experience is a variable factor within any group, the preparing officer must select study assignments for the

members that will give them a common level of background knowledge. The preparing officer can choose a minimum study assignment of new and review material by analyzing the answers to the following questions.

(1) In view of the purpose of the map exercise and its requirements, what do the students need to know?

(2) How much do the participants already know, based on previous instruction?

(3) For this particular map exercise, what learning is to take place solely in the classroom?

(4) What remains for the participants to learn before they begin the map exercise?

b. The officer also assigns any practical work that the players need to complete before they start the map exercise.

3–35. Checking the Initial Plan

The author has now decided on the requirements necessary to emphasize the training objectives and has devised situations that will lead to their logical presentation. He has made a graphic portrayal of the exercise on the map and has chosen study assignments for the participants. This completes his initial planning, which he should check with the directing authority, if appropriate, before proceeding with the final plan. The author and the directing authority check the following:

a. Outline of presentation to see that the allocation of training time and the method of presentation are practicable.

b. The preparing officer's notes on the requirements and situations to see that they are complete, clearly stated, and plausible.

c. Organization of the exercise area to see that the story of the exercise is clearly revealed and that the terrain has been used adequately and correctly.

d. The study assignment to see that it is pertinent and maintains continuity with other instruction.

3–36. Writing the Exercise

The author is now ready to write the exercise in its final form. He prepares both the situations and requirements that he will present to the players and the administrative requirements. The requirements are as follows:

a. Student Requirements. Realism is of paramount importance in a good requirement whether it is one of tactical decision, strategic planning, or staff work at any level. The correct wording of a requirement is also important and requires considerable thought, skill, and practice. The officer must specifically state, without excess wordage, what is wanted from the students. Appropriate subjects for requirements in a realistic sequence of events are—

(1) An estimate of the situation for use in arriving at a recommendation or a decision.

(2) The development of long-range and contingency plans or portions of them.

(3) The preparation of instructions and orders or portions of them.

(4) The actions taken when subordinate units request modifications in plans, orders, and instructions. Such requests are common and require the use of judgement and knowledge on the part of commanders and staff officers.

(5) The actions and orders of commanders and staff officers during the execution of plans and orders.

(6) Coordination within a staff and between commanders.

b. General Situation. The instructor gives the players the general situation immediately before they start the exercise. It consists of a brief picture of the events that take place immediately before the exercise begins, including a short summary of what the participating unit has been doing, its location at the start of the exercise, and friendly and Aggressor situations. The friendly situation starts with a unit two echelons higher than the participating unit. For example, for a battalion exercise, the statement of the friendly situation starts with the division. The maps that will be used are specified.

c. Subsequent Situations. The officer preparing the exercise now puts his tentatively planned subsequent situations in final form, writing them in such a way that they tell a realistic story. The situations can be described realistically by using complete orders or extracts, estimates, and reports that would be normal in combat. The situations in a map exercise must do more than present a complete set of facts from which a solution may be deduced; they must indicate the status of variable influencing factors in the light of which military principles are applied to arrive at a sound solution. The following are the most commonly used variables:

(1) *Mission.* This is the most important variable. The use of a specific mission in connection with other variables allows the officer to create almost any situation desired. Students must have as much practice as possible in meeting and overcoming the many variables that affect the accomplishment of the mission.

(2) *Relative strength.* Portraying Aggressor as being weaker or stronger in manpower, fire-

power, mobility or materiel ordinarily causes aggressive or passive action on the part of the friendly force being played in the exercise. To create maximum realism, relative strengths should seldom be presented as the single decisive variable.

(3) *Morale.* It is difficult to portray realistically a state of morale and the effect of morale on the combat efficiency of a force. When a situation is based on a force's state of morale, the instructor can only give facts that have a bearing on morale and then require the player to deduce their effect.

(4) *The composition and disposition of forces.* Either one or both of these factors may be made a critical influence. A superiority in friendly artillery, for example, may justify attacking an enemy that is equally strong in other respects. Similarly, a weaker force, mobile and prepared for combat, may make a successful attack against a larger force that is in an unfavorable formation or position. Other variables, such as weather and terrain, are closely related to these factors.

(5) *Reinforcements.* The location of an available reinforcement, along with information that can be used to estimate the time when it can enter the battle, has considerable influence on a decision.

(6) *Environment.* This includes terrain, weather, natural resources, inhabitants (permanent, temporary, or in transit) including demographic configuration (urban, suburban, rural, refugee camps, etc.), manmade works, facilities and institutions, and psychological and attitudinal climate. Maneuver security, the location of military installations, transportation of military units, equipment, and supplies are all affected by the environment. Unnatural assumptions regarding the environment should be avoided in a map exercise. The environment best suited to the instructional goals should be selected. The player should be required to consider the environment as represented on the map and described in an area study and/or situation statement.

(7) *Time and space.* Distance, as an element of time and space, enters into most of the variables mentioned. Distance must always be considered in connection with rates of movement and with time. Varying amounts of daylight and darkness can be used in connection with distances to create a desired situation.

(8) *Combat service support.* The status and continuity of combat service support (administrative services, chaplain services, civil affairs, finance, legal services, maintenance, medical services, military police, replacements, supply, and transportation) can determine the effectiveness of any military force.

(9) *Weather.* This factor and especially the effect it has on observation, fire, and ground mobility, should always be introduced into map exercises.

d. Time Schedule. The officer preparing the exercise makes a time schedule showing the amount of time to be devoted to the orientation, the situations and requirements, and the critique. A rehearsal assists in confirming the time schedule.

e. Assignments. The instructor prescribes the player study assignment in the form of references to standard available texts. He may prescribe supplementary study material in advance sheets when necessary.

f. Advice to Officers Preparing a Map Exercise. Write briefly and clearly. Use simple words and sentences that convey a precise meaning. Keep instructional material to a minimum. In addition:

(1) Do not issue a separate general situation unless it is essential to understanding.

(2) Overprinted maps, if available, are preferable to overlays. As a minimum, use overprinted maps to show the initial situation; subsequent situations may be portrayed by means of overlays.

(3) Consolidate material on overlays as much as possible. Do not use overlays to illustrate unimportant changes.

g. Training Aids. The preparing officer is responsible for providing training aids. All training aids that are used should be appropriate to the subject, should guarantee an economy of time and effort, and should simplify instruction. Small groups do not usually need elaborate aids. For information concerning use and characteristics of training aids, see FM 21–6. Complete instructions for the use of training aids should be included in the lesson plan.

h. Lesson Plan. The author's final major task is to write a lesson plan, which is written in such detail that an instructor who is not familir with the original study and research involved can use it to conduct the exercise. The lesson plan insures a uniform presentation of the exercise to various groups. A more detailed discussion of lesson plans is contained in FM 21–6.

3–37. Conduct

a. Study assignments are issued to the player before the time scheduled for the exercise. The general situation and the opening subsequent situation and requirement may also be issued, and the students may be required to solve the

requirement before the scheduled presentation.

b. The instructor precedes each situation with a short summary of the principles and techniques that are to be applied to it. He gives the players enough time to complete the requirements as they are presented. The instructor requires one or more players to present and discuss their solutions to each requirement. He then tells them the approved solution, summarizes the principles involved, and points out their application to the situation. In addition, the instructor gives the players written copies of more detailed solutions, especially those involving considerable actual or computational information.

c. The preparing officer may have the players solve the requirements individually, by committee (five or six players), or by small staff groups. Individual solutions are appropriate for short requirements that relate primarily to one subject and for which the pertinent factors are already established. Group solutions are appropriate when basic factors must first be considered and when the task can be further divided into subtasks that can be undertaken simultaneously. In deciding whether to use individual or group solutions, the preparing officer considers the time that can be devoted to each requirement. As a general rule, it is seldom profitable to devote less than 1 hour to group work.

d. It is very important to critique a map exercise. The instructor restates all the principles illustrated, discusses the way they were applied to the requirements, and analyzes the lessons learned.

Section IV. CONCURRENT PLANNING AND PREPARATION OF TACTICAL EXERCISES WITHIN LARGE ORGANIZATIONS

3–38. General

Major headquarters normally program essential training activities one or more years in advance. The funds for the exercise, the participants, the maneuver area or facilities, and the general scope of the exerecise are basic factors considered in advance of exercise planning. Early dissemination of this information aids in the planning of training, whether conducted under an Army training program (ATP) or as part of operational readiness training.

3–39. Exercise Planning Program

a. An exercise planning program for the major headquarters charged with the planning, preparation, and conduct of a large tactical exercise is initiated with the appointment of an exercise director. The program outlined in example C–6, is a typical program and follows a normal planning sequence in the determination of what is to be done, when it is to be done, and who is to do it. This program is based on the assumption that a unified, combined or numbered army headquarters is charged with the responsibility for the development and conduct of a tactical exercise, with corps and divisions participating concurrently during preparation and execution. Although the program assumes that 120 days are available for detailed planning, this period of time may be increased or reduced as appropriate.

b. The basic planning sequence follows that prescribed in paragraphs 3–4 through 3–26 and includes the preparation of the exercise directive, planning schedule, outline plan, scenario, and supporting plans. Provision is made during planning for war gaming both player and control plans. The war gaming and feasibility testing of plans verify the adequacy and compatibility of player and control plans.

3–40. Organization for Planning, Preparation, and Conduct

a. An organization that can be used for concurrent planning, preparation, and control of a major tactical exercise is shown in figure 3–2.

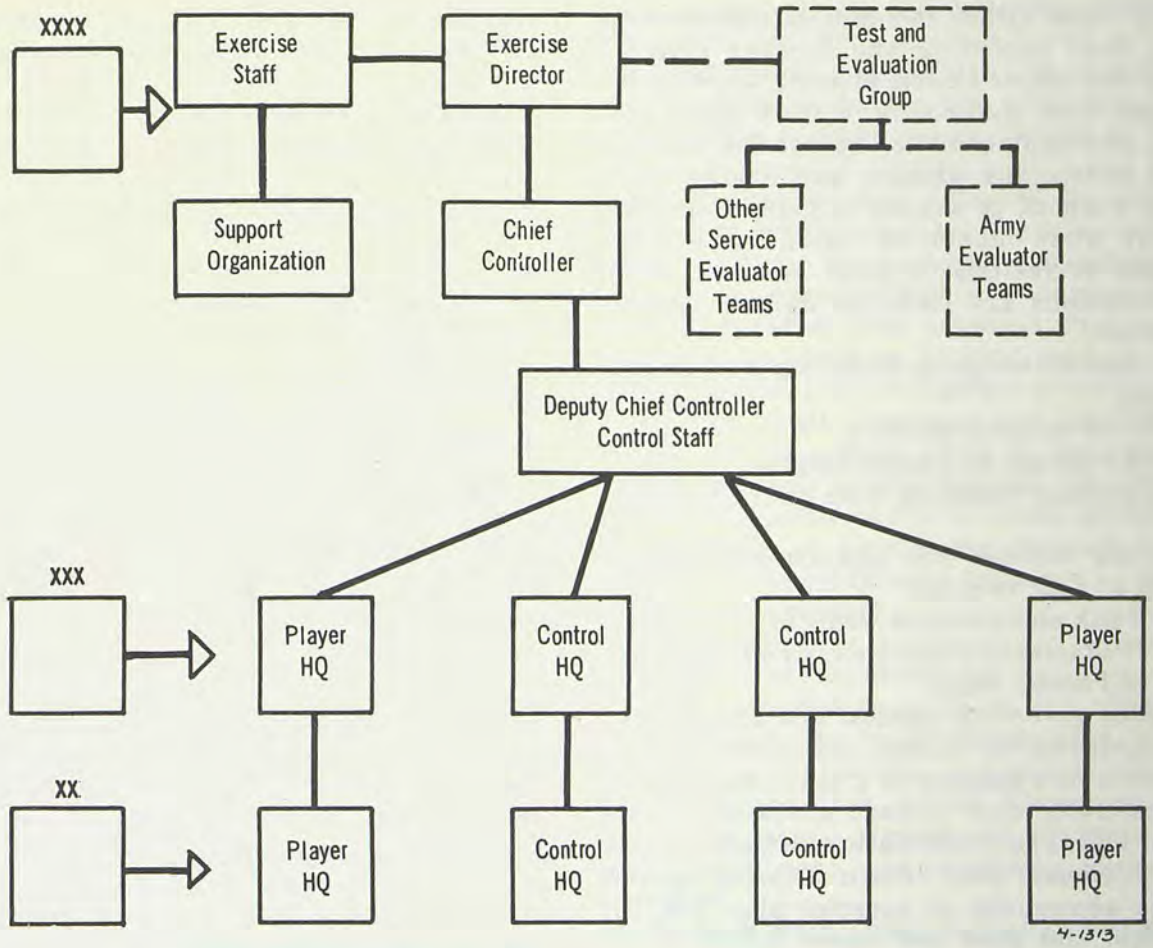
b. The unified, combined or numbered army commander provides the exercise director, exercise staff, chief controller, control staff, and the support organization.

c. The corps commander provides a player staff and appoints a corps controller and staff. A corps exercise directive is published, and plans are made for corps participation in the exercise. The corps controller prepares the corps control plan concurrently with the development of the field army control plan.

d. The division commander provides a player staff and appoints a chief controller and staff. The division exercise directive is published, and plans are made for division participation in the exercise. The division controller prepares the division control plan concurrently with the development of the corps and field army control plans.

3–41. Exercise Objectives

a. Objectives are developed by each headquarters participating in the tactical exercise



NOTES: 1. In joint exercises the exercise staff includes joint representation as appropriate.

2. In joint exercises the control staff includes joint representation as appropriate.

3. Additional control echelons are prescribed for other Service elements participating such as Air Force, Navy, or Marines. Certain joint control echelons or systems are integrated into the overall control system but these generally parallel the joint player agencies involved.

4. The test and evaluation group is added when required. Umpires and controllers may perform as evaluators.

Figure 3–2. A typical exercise organization for control.

in consonance with the tactical setting, concept, and objectives announced by the exercise director. Some objectives established for higher headquarters may not be appropriate for lower headquarters; however, all objectives are accomplished within the capability of each headquarters taking part in the exercise. Subordinate commands may add objectives if they do not detract from the accomplishment of those established by higher headquarters.

b. The scope of objectives should be—

(1) Consistent with the capabilities of the forces involved.

(2) Consistent with resources made available for the exercise.

(3) Limited sufficiently to provide subordinate commanders latitude to include objectives of their own.

3–42. Planning Considerations

a. It is difficult to portray completely all damage inflicted by large forces in combat. If all possible damage is assessed, as in the case of a nuclear strike, many of the participating troops are out of action soon after the exercise begins. Within the guidelines imposed by the requirement to achieve the maximum degree of tactical realism, rules for damage assessment are formulated that are economical of training time and control personnel, portray a sufficient amount of damage, and allow forces to participate in a meaningful manner. Early resolution of these conflicting factors is necessary in the planning of the major tactical exercise. Possible solutions in resolving these conflicts include maintaining a portion of the damage on a book-

keeping basis within the control organization rather than assessing the damage directly against the player forces; phasing the exercise in logical time increments to allow units, personnel, and equipment to reenter the exercise during subsequent phases; and holding back certain weapons or weapon systems from commanders when maneuver conditions are not favorable or realistic. Typical areas in which determinations are made on damage assessment are—

(1) Special weapons, including nuclear and chemical.

(2) Conventional artillery.

(3) Air attack on ground targets.

(4) Damage resulting from guerrilla operations.

(5) Air defense fire against all types of aircraft and air vehicles.

(6) Tank and antitank weapons.

(7) Obstacles and barrier systems to include mines and booby traps.

b. Rules governing tactical and logistic play are established for safety, maneuver damage prevention, the amount of a particular type of play, casualty and damage assessment, the amount and type of simulation, prisoner of war and replacement play, return of casualties and damage equipment to exercise play, play of obstacles, and time and space factors to be used. Early establishment of these rules assists in the determination of the control and umpire system to be used, the resources in personnel and equipment to be provided to operate the control and umpire system, and the preparations to be made by the participating units prior to the start of the exercise.

c. If part or all of the personnel and equipment required to support the exercise are provided from participating units, a compromise can be made between the complexity and sophistication of the control and umpire system and the loss of effectiveness in command and control that the losing units suffer. Communication requirements must be determined in detail to insure that responsive communications can be provided for both participating units and the control and umpire system. All units concerned are informed early in the planning of the support they will provide to permit appropriate adjustments in their training or operating programs.

3–43. Exercise Directive

a. The exercise directive contains the commander's planning guidance necessary for the development of the large tactical exercise. As a minimum, the directive designates the type of exercise, the strategic setting, the director of the exercise, the headquarters responsible for the preparation of the exercise, command structure, exercise objectives, participating units, the Aggressor force if required, areas available, time limitations, assumptions, and funding instructions.

b. On receipt of the training circular, participating and supporting units—

(1) Formulate exercise objectives applicable to their respective units.

(2) Allocate personnel and equipment requirements between player and control elements, and reorganize as required.

(3) Prepare and publish exercise directives.

(4) Prepare scenarios for the exercise. Outline plans are distributed to facilitate concurrent planning by exercise director staffs.

(5) Develop training programs and implementing circular to prepare their respective units to participate in the exercise.

3–44. War Gaming of Plans

All plans connected with the exercise, those involving control and umpiring, as well as player plans, are tested for feasibility early in the planning stages. These tests are completed prior to the umpire training. So far as possible, plans of player units are examined and tested against the umpire/control system to verify that the latter is adequate to support the objectives of the exercise.

3–45. Assembling and Training Personnel

a. Control and umpire personnel are assembled, organized, equipped, and trained prior to the exercise. In addition, player personnel are given an extensive orientation on the objectives and rules of the exercise. Orientation may be necessary for local civilians in the exercise area for a large-scale field exercise or maneuver.

b. The control headquarters moves to its exercise location sufficiently in advance of the conduct of the exercise to insure readiness when the exercise starts. This movement precedes player movement to avoid confusion and congestion and permits control headquarters at all echelons to become operational in field locations, to post maps, to test the communication system, and to conduct necessary umpire/controller training before exercise play begins.

c. Ideally, each control headquarters locates and displaces with its counterpart player headquarters. At division and higher, space limitations, transportation, communication, and logistic support may preclude simultaneous displacement. These limitations may be over-

come by selection of a control site from which control can be exercised as the player headquarters displaces. The controller selects the location of his headquarters after the player headquarters locations have been disclosed during the war gaming phase.

3–46. Installation of Communication Facilities

Because of the frequent shortage of communication facilities and the extensive added requirements for control and umpiring, much signal construction is accomplished in advance, especially cable construction in rear areas and to major headquarters, for both initial and subsequent locations during the exercise.

3–47. Rehearsals

Time and resources must be provided for rehearsals of all control and umpire elements involved in the exercise. Plans for communication, umpire and control organization, and the Aggressor force (if used) can be profitably rehearsed prior to the beginning of play. In large command post exercises, control communication can be tested as part of a control warmup command post exercise. In large map maneuvers, rehearsals are an important part of training the control organization, particularly those elements that must make rapid computations of relative firepower, combat power, losses, and rates of advance.

3–48. Intelligence Preplay

a. The strategic setting and general situation are issued to players during preparations preceding the exercise. The general situation describes how the conflict arose and sets the stage for the combat phase. The analysis of the area of operations is provided for the players unless some special exercise objective precludes it. A great volume of detailed information is provided when staff procedures for handling information is an exercise objective. Conversely, provision of limited and generalized information will require the exercise of staff functions to acquire the necessary information. This permits requisitioning of maps and the preparation of map boards and other special display devices required by players. Players are notified that intelligence summaries will be issued beginning on a specified date (prior to the exercise) and will continue to be issued at specified time intervals. Preparation of intelligence bulletins, reports, periodic intelligence reports, and intelligence summaries by the control staff furnishes the intelligence buildup for the players prior to the exercise. Players can thus become familiar with the enemy order of battle and with enemy operations. Dissemination of intelligence through player channels gives additional training to player intelligence personnel.

b. Timely planning is necessary to insure that sufficient quantities of suitable maps are available and provided to units at the time and places needed. The basic factors that govern this planning are the area of map coverage, the map scales required, initial allowances, and subsequent issues. Procedures for replenishment, replacement, and emergency issues are prescribed.

c. An area study combining all pertinent socio-ethno-politico-economic and psychological factors necessary for preparation of propaganda prepacks and for contingency PSYOP is essential for timely preparation of the PSYOP campaign. When time permits, the area study or detailed analysis of the area of operations should be prepared under the supervision of the G2, but in coordination with the G5 and Engineer Officer for data in their specialized areas, and disseminated by higher echelon intelligence staff sections. This requirement may precede exercise play, but the training value of preparation should be provided intelligence staff sections.

PART TWO

MANEUVER CONTROL

CHAPTER 4

CONTROL OF TACTICAL EXERCISES

Section I. GENERAL

4–1. Definition of Terms

a. Player. Player refers to the individual, element, and unit participating in the tactical exercise as distinguished from the control, umpire, and evaluation element.

b. Control. Control of a tactical exercise is the process of regulating, directing, and guiding the exercise so that its conduct is kept within prescribed limits, and the exercise objectives are accomplished.

c. Umpiring. Umpiring is the function of arbitrating and judging under the system of rules prescribed for the exercise. It includes the application of tactical and administrative judgment to a situation to decide what has happened, to portray the situation for the players, and to cause the exercise to develop in consonance with exercise objectives.

d. Evaluation. Evaluation is the function of determining the quality of performance of individuals, units, staffs, equipment and weapon systems; and the adequacy of concepts, procedures, and techniques applied in the exercise.

4–2. Realism in Tactical Exercises

a. Tactical exercises are carried out under conditions resembling battle as nearly as possible. Realistic training in tactical exercises contributes to success in battle with minimal losses.

b. The realism of tactical exercises is greatly increased through the use of technically and professionally trained personnel as controllers, umpires, and evaluators. The need to provide competent personnel for the control and evaluation function is just as important as the requirement to maintain competent players in the units. Commanders must balance these requirements to obtain maximum training value in training exercises.

c. Umpires contribute to tactical realism by presenting to the participating forces combat situations that are as realistic and challenging as possible; by assessing casualties, equipment damage, and prisoners of war (PW's); and by announcing rulings in a realistic manner.

d. Controllers contribute to tactical realism by—

(1) Simulating agencies, headquarters, and other elements not actually playing in the exercise.

(2) Providing information that cannot otherwise be developed by player elements through player action.

(3) Causing player elements to react to conditions portrayed by the information flow.

e. In tactical exercises involving troop simulation rather than troop participation, the controllers perform the umpire function of arbitrating and judging the tactical situations based on the system of rules for the exercise and the orders of the opposing forces. The realism of the exercise is dependent on prompt, sound rulings and the subsequent painting of the battle picture to the players in such a manner as to describe the outcome of their various actions. Controllers perform their normal control functions in addition to these duties.

Section II. FUNCTIONS

4–3. Control Function

The control function involves keeping abreast of the situation and guiding the exercise so that exercise objectives are achieved, and the play is conducted within the parameters established by the scenario and control plan. The control function is accomplished by designing built-in features of control such as the general and special situations and controller response to player actions. Controllers secure information by visits to player headquarters, periodic reports from players, player briefings and conferences, and by obtaining copies of player orders and messages as shown in figure 4–1. Controllers disseminate the information they obtain through control channels as required to keep lower, higher, and adjacent control headquarters informed. Controllers also furnish information that players could not otherwise obtain because of the simulation in the exercise. They represent nonparticipating agencies, headquarters, and personnel and furnish players with information that they would get from these sources. Some information is provided automatically, that is, given to the player whether or not he requests it or seeks it; and some is provided on a demand basis only, that is, when the player requests the information from the controller or seeks it through his intelligence effort. Controllers do not command play echelons nor do they pass instructions to players with command authority except when the headquarters is functioning in a dual capacity as the senior control headquarters and as the headquarters commanding the participants in the exercise. Controllers become thoroughly familiar with the plans and operational procedures of the units that they control.

4–4. Umpire Function

The umpire function is principally arbitration and judging. Like the controller, the umpire stays abreast of the situation, applies judgment, and "paints the picture" of what has happened to the units on the ground. Umpires are present at battalion and below as shown in figure 4–1 and perform the control function at these levels. The umpire reports what has happened through umpire/control channels and receives information and instructions relating to his control function. Like the controller, he depicts for the unit what it cannot observe because of simulation in the exercise. The umpire maintains contact with the opposing force umpire to anticipate contacts and to rule properly on the actions.

4–5. Evaluation Function

Although the evaluation function is separate and distinct from control and umpiring, it is normally incorporated in the umpire and control system. A separate system may be required when the subjects for evaluation require lengthy and meticulous observations or voluminous and detailed reports, or when they require a degree of knowledge that the average officer or enlisted man does not possess; e.g., ATT's or Army troop tests. In the conduct of an ATT, where the proficiency of the unit is being tested, the evaluation functions require experienced umpires and time for the umpires to make notes or execute special questionnaires during the conduct of the test. In the conduct of an Army troop test, where the purpose is not to test the proficiency of the unit but to evaluate the objectives stated in the troop test directive, qualified personnel will likewise require time and separate questionnaires to evaluate the troop test. In other tactical exercises, the evaluation function serves the purpose of assisting the participating units in deriving training benefits from the exercise.

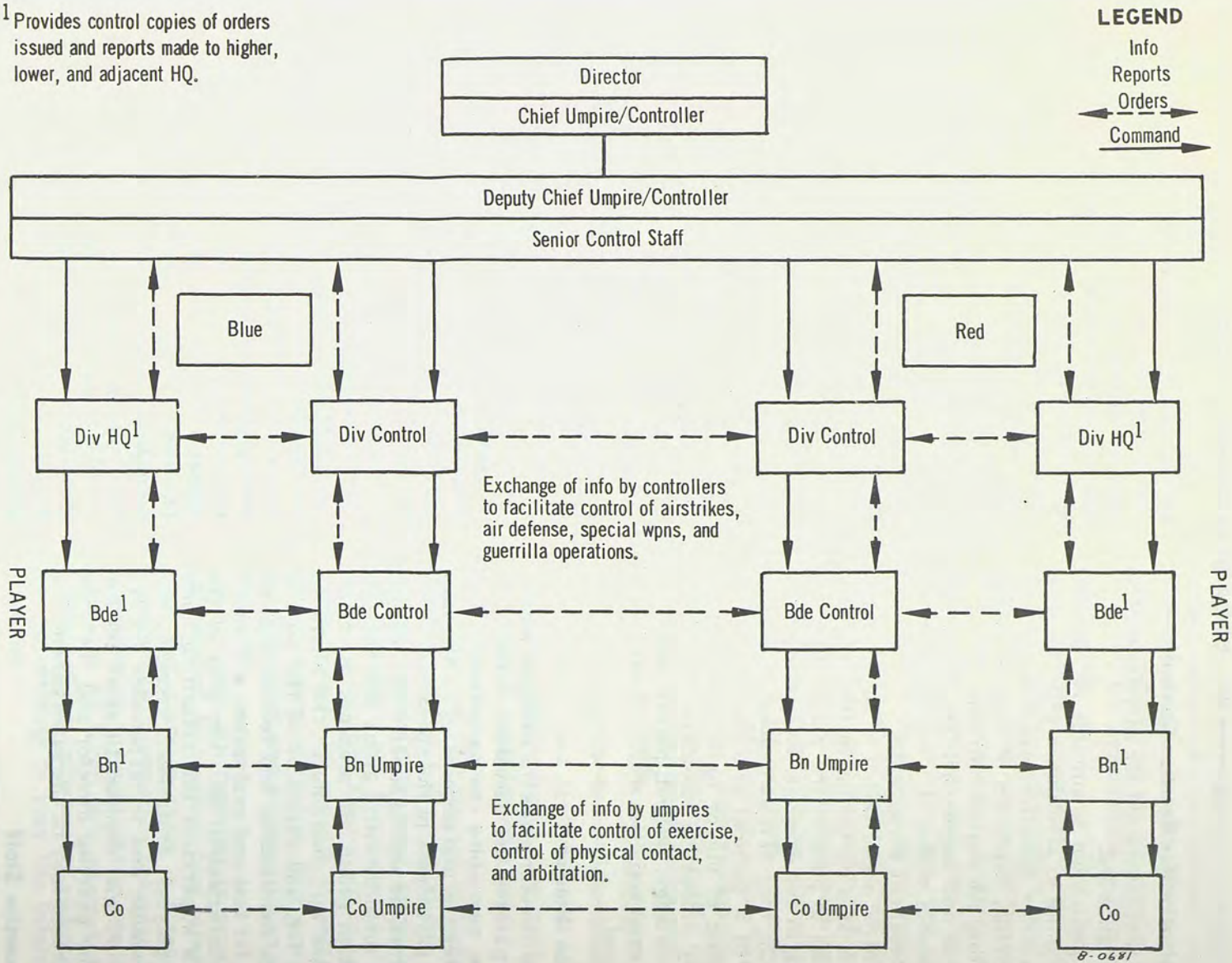


Figure 4–1. Flow of information and orders, control and umpire system.

Section III. ORGANIZATION FOR CONTROL

4–6. Organization for Exercise Control

a. A typical organization for exercise control is shown in figure 3–2.

b. This organization is suitable for detailed exercise planning in accordance with the scenario and exercise directive, exercise support, control planning, execution of exercise plans, and performing the control function.

c. Functions and responsibilities of individuals and elements within this organization are listed in subsequent paragraphs.

d. The control organization is based on the requirements of a particular tactical exercise. It is designed to parallel the player elements participating in the exercise. The principal advantage of the control organization within the framework of a tactical exercise is twofold. First, training of player units and staffs is enhanced by concealing situations from their advance knowledge. Second, player staffs can continue normal activities while the exercise is being prepared.

4–7. Exercise Director

The exercise director plans the exercise, assembles and organizes the necessary support for the exercise, assembles the participants, conducts the exercise, and terminates it. Although he does not participate in the operations of the opposing forces, he acts as superior commander of both the umpire/control group and the test and evaluation group. He presents the situation; initiates and coordinates the planning, preparation for, and execution of the tactical phase; plans, coordinates, and recommends requirements for test and evaluation; and supervises their interjection into the play of the exercise. He supervises the return to home stations of players, controllers, umpires, and support elements and is responsible for the preparation of final reports. In small tactical exercises, the exercise director and the chief umpire/controller may be the same person.

4–8. The Exercise Staff

The exercise staff assists the exercise director in the planning, preparation, and conduct of the exercise.

4–9. The Support Organization

The support organization is formed to provide support for the exercise over and above that provided by the player units in the exercise. It supports the exercise headquarters and the control and umpire elements not attached to player units for support. The support organization provides support to visitors, observers, and representatives of information media as outlined in paragraph 3–19. It provides support in acquisition of real estate and maneuver rights, claims and maneuver damage, and safety activities, and provides combat service support for the participants in the exercise. This organization also provides additional administrative functions and services as required.

4–10. Chief Umpire/Controller

The chief umpire/controller commands the control staff and the subordinate control and umpire elements. In large tactical exercises, he is responsible for preparation of the control plan, other supporting plans assigned by the exercise director, and any checklist required. The chief umpire/controller is responsible for umpire and control training and the control and umpiring of the exercise.

4–11. Control Staff

a. The control staff is organized to assist the chief umpire/controller. Its organization is appropriate to the echelon of command (i.e., field army, corps, division, brigade, or logistical command) represented by the chief umpire/controller. Joint or combined exercises require a joint or combined staff organization at the highest control echelon.

b. In large exercises and maneuvers, the control headquarters is organized and begins to function as soon as the exercise directive has been published. It prepares the control plan and assigned supporting plans incident to the preparation for and conduct of the exercise. The control staff supervises the planning of subordinate control headquarters and monitors the planning of player headquarters.

c. There are two general approaches to organizing a control headquarters. In those headquarters that participate in or conduct several training exercise annually, it may be advantageous to organize a maneuver branch within the G3 section or a separate maneuver staff section. This branch or section then provides a nucleus for the control headquarters. An alternative approach is the organization of a control headquarters for each exercise, using as a nucleus personnel from within the headquarters responsible for the planning, preparation, and conduct of an exercise.

d. The control staff supervises the conduct of the exercise to guide the exercise along the

general lines envisioned in the scenario. In the execution phase, the control staff—

(1) Receives reports and information from subordinate player and control elements.

(2) Issues orders and instructions to subordinate control headquarters to provide control guidance over and above that contained in the control plan.

(3) Represents higher headquarters, adjacent units, and other units and activities not playing in the exercise. This technique affords realism for the player headquarters in the interchange of staff information and reports, facilitates the issuance of orders by the senior control headquarters, and provides for the receipt of orders by player headquarters in a normal command relationship. This technique precludes the lateral issuance of orders by a subordinate control staff to its corresponding player headquarters. Orders are issued only through command channels. Control staffs do not give direct orders to players concerning any aspect of the exercise except when representing a higher headquarters in the chain of command, that is not playing.

4–12. Subordinate Control Headquarters

a. The chief umpire/controller at each echelon in the control organization should be senior to the chief umpire/controller at the next lower echelon, providing a clearly defined command relationship in the control organization. Appropriate ranks for chief umpire/controllers are—

Army group	Major general or brigadier general
Field army	Brigadier general
Corps	Colonel
Division	Lieutenant colonel
Brigades, regiments, groups, installations, or equivalents	Lieutenant colonel or lower commissioned ranks as desired

b. The organization of subordinate control headquarters should parallel that of the player headquarters being controlled.

c. On receipt of the control plan (or planning guidance) from the next higher control echelon and the exercise directive published by the counterpart headquarters of the participating unit, the subordinate control headquarters prepares its control plan and supporting documents. This headquarters further provides an outline plan and planning guidance to the next subordinate control echelon.

d. During the exercise, subordinate control headquarters enhance tactical realism by representing adjacent or lateral agencies, units, and activities that are not playing in the exercise but are appropriate to the echelon being controlled.

e. Control headquarters have the capability to pass reports, information, and instructions up, down, or laterally during the conduct of the exercise. This capability has two important aspects. The first is staff reaction time, which includes staff coordination, and the second is communication in both speed and volume. Control headquarters must possess the capability to secure information, process it, and arrive at decisions or recommendations in sufficient time to serve the requirements of the exercise.

f. Control headquarters are manned to function either continuously or on a basis comparable to that of the player headquarters that they are controlling. Control staffs must possess quality and experience comparable to their opposite player staffs.

4–13. Player-Controller Relationships

a. Players and controllers at all levels conduct the exercise under simulated combat conditions and apply realistic factors to the extent possible.

b. Much of the play of an exercise is self-sustaining. Players are expected to take the action required by their exercise positions. These actions are the same as the ones performed in combat. Data injected by controllers are processed by players in accordance with player operation plans, SOP's, and the prescribed duties and responsibilities of the player positions.

c. Players are required to provide exercise information to headquarters other than their own. For example, there is a requirement to disseminate information obtained from air reconnaissance to all interested agencies. Participants at all levels are interested in certain aspects of this information and must be given the opportunity to play the information thus obtained.

d. Supporting plans for the exercise are distributed to the chief umpire/controller at each echelon in the control organization and are marked FOR CONTROLLERS ONLY. Controllers safeguard the information contained in these supporting plans from player personnel at all times, disseminate it to control staff members on a need-to-know basis, and divulge it to players only as a part of exercise play. These limitations are not intended to restrict controller-player coordination necessary for

the purpose of enhancing the overall efficiency during either the planning or conduct of the exercise.

e. Controllers prepare in advance a checklist of actions to take and items to emphasize. These checklists are based on the training objectives and scenario of the exercise and are appropriate to the headquarters with which the controller is associated.

f. Control plans for each exercise do not necessarily prescribe all the control action required. Control headquarters at subordinate echelons add detail to the control plan from higher headquarters in accordance with anticipated player actions to enhance realism and training.

g. Shortages of personnel and equipment or other economics may, on occasion, require some players to participate in a dual player-controller status within a headquarters. When participating in this manner, the player performs in his normal functional relationship with other players. Since he has access to *control only* information, he monitors his own actions to preclude compromising information.

Section IV. MAP MANEUVERS

4–14. Control Organization

A typical control organization for the conduct and control of a two-sided map maneuver is shown in figure 4–2. The duties and functions of the war gaming section and the intelligence, personnel, operations, logistics, and civil-military operation aspects of control embodied in the control group are discussed in subsequent paragraphs.

4–15. Function of Control in Map Maneuvers

a. The players are presented a general and a special situation and a requirement. The players solve the requirement and submit their orders and instructions to the control group. The control group evaluates the player orders, deploys and moves the player forces, and war games player actions. The results are fed back to the players as reports, information, and intelligence which combine to create a new situation and a subsequent requirement. The players solve the new requirement. The process is repeated until the exercise is terminated.

b. When making announcements, the controllers consider which division staff section (player) would be primarily affected by the information under actual battle conditions. These announcements are designed to make the personnel of the player division aware of the tactical and logistic situations, both friendly and enemy, and of the civilian reaction.

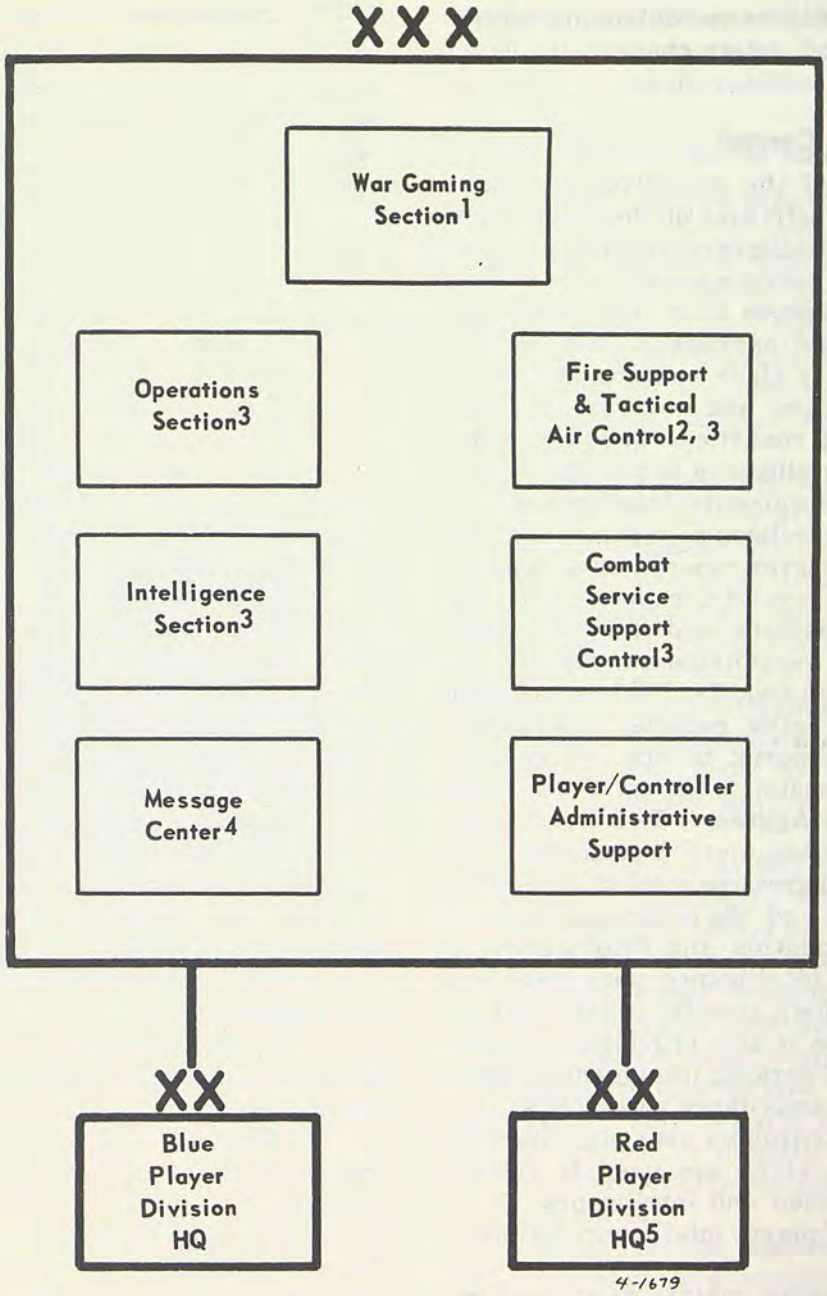
c. Controllers avoid interfering with or harassing player personnel; however, they are allowed free access to player division facilities in order to perform their assigned duties.

d. The control group renders prompt and logical rulings for all tactical and logistic situations that arise during the maneuver play. When contact is made between the opposing forces, the controllers allow the situation to develop until a tactical ruling is indicated or required. These rulings are based on relative firepower, tactical employment, logistic support, dispositions, cover and deception, concealment, terrain, fields of fire, surprise, and maneuver. Controllers do not make tactical decisions that are the responsibility of the player commanders.

e. The controllers decide whether either force is able to advance and portray the situation accordingly. If, for example, the situation is such that the unit would not be able to advance in actual combat, the controllers "paint the battle picture" to indicate intense and accurate hostile fire. When appropriate, controllers portray masses of refugees and displaced persons blocking main avenues of approach as effective deterrents to the unit's ability to conduct operations successfully. If the unit can advance, the controllers depict appropriate enemy fires and activities. This simulation gives the commander information that should lead to a decision to advance.

f. Frequent requests are received from the players for the allocation of additional combat means (troop units and nuclear weapons) and combat service support means. These requests are acted on by the chief umpire/controller personally. The overall effect on the maneuver is carefully considered before additional means are allocated. Additional means are not allocated simply because it appears that a division is about to lose the battle.

g. Since commanders are on the receiving end of control activities, they are frequently in the best position to first detect unsound control activities. These unsound activities may relate to excessive time lags, inadequate flow of intelligence, inadequate knowledge of the dispositions of their subordinate units, improper time-space computations, unrealistic assessment of casualties and damage, or poor control decisions. The chief umpire/controller follows through promptly in the correction of bona fide complaints to resolve little problems before



[1]See figure 5 for sample layout.

[2]May be organized as a tactical operation center to parallel the DTOC.

[3]Includes superior, lateral, and subordinate headquarters representation as needed.

[4]Telephone and teletype communication is also provided players and controllers as needed.

[5]In one-sided exercises, the functions and activities of the opposing force (Aggressor) are performed by control personnel.

Figure 4–2. Map maneuver—corps-controlled division players.

they become big ones. He thereby establishes policy for future control activities and maintains the realism of the map maneuver.

h. Periodic briefings are conducted for coordination within the control group, particularly coordination between the various Aggressor and US controllers and the war gaming section. These briefings cannot be predetermined by a rigid time schedule but are geared to the development of critical incidents. Examples of critical incidents are major penetrations or envelopments that have reached a critical stage, major defensive forces driven from position, employment of chemical, or nuclear weapons,

announcement of policies on control procedures and techniques, and major changes in player plans.

4–16. Intelligence Control

a. The realism of the maneuver is largely contingent on the activities of the intelligence control section. Intelligence control provides player intelligence personnel with all the information and intelligence that they would acquire in actual field operations from sources and agencies under their control as well as from adjacent, higher, and subordinate headquarters. It uses all realistic means to transmit information and intelligence to players. Examples are captured documents; intelligence summaries; periodic intelligence reports; spot reports; artillery observer reports; shell reports; reports from line crossers; reports from Aggressor agents, defectors, and refugees; statements of civilians; reconnaissance reports; imagery interpretation reports; PW interrogation reports; order of battle reports; subordinate unit intelligence reports; tactical air reports; air observations posts; technical intelligence reports; reports on Aggressor TC&D and counterdeception activities; and US Army Security Agency reports. Aggressive intelligence collection by player G2s and S2s is stressed because much of the information and intelligence acquired by player intelligence personnel is a direct result of their specific orders and requests. Information is also provided automatically in the form of periodic intelligence reports or spot reports, in accordance with SOP's.

b. Intelligence controllers visit play G2s (S2s) frequently. These visits are used to release additional information and intelligence and to check the status of player intelligence situation maps.

c. Intelligence control maintains at least two enemy situation maps. One map portrays all information and intelligence released to the Aggressor players (US units and installations) and the other portrays all information and intelligence released to the US players (Aggressor units and installations). The situation maps must be current at all times to avoid unintentionally conflicting releases to players.

d. Although all agencies in the control group release information to players, the chief intelligence controller coordinates the release of all information and intelligence on enemy forces and characteristics of the area of operation. The intelligence releases are coordinated, approved by the chief intelligence controller, and recorded on the appropriate enemy situation map.

4–17. Operations Control

a. Operations control represents commanders of all combat units subordinate to the echelon playing the exercise, as well as the operation sections at adjacent and higher echelons. Operation controllers actively command and fight the brigades and battalions of the opposing divisions.

b. Operations control executes the tactical mission directed by the players. It reports the actions taken to the players and to the war gaming section. This section war games these actions and reports the results to the players through the operation controllers.

c. Maps are maintained in operations control to show the tactical situation of the opposing divisions. Operation control maps should accurately portray the status of all units down to and including units of company size and all special situations such as CBR contamination and mine-fields. Additional maps are provided to aid the planning of the controllers representing the brigades, battalions, and other commanders in the execution of missions assigned by the player divisions.

d. Operations control coordinates with—

(1) The war gaming section (para 4–23) to insure that—

(*a*) The control map accurately portrays the status of units.

(*b*) Proper relative combat power ratios are maintained.

(*c*) Movements are taking place as planned and at rates of advance established for the exercise.

(2) The Artillery controllers to agree mutually on the status and amount of artillery support.

(3) The player division personnel, so they know the location of their subordinate units and the progress of their attack or defense. Overlays are used extensively for this purpose.

(4) The intelligence controllers to determine the enemy situation, so brigade and battalion plans may be developed in a logical manner.

(5) The personnel, logistics, TC&D, and civil affairs controllers so that the impact of these functions can be considered in the development of plans and orders.

(6) The electronic warfare (EW) controllers agree mutually on the status and amount of friendly and enemy EW support so that the impact of this support can be considered in the development of plans and orders.

e. Controllers representing commanders of US and Aggressor brigades and battalions actively plan, command, and fight their units as if

the operation were taking place on the ground. They exercise a commander's normal responsibilities and initiative by—

(1) Attending division planning conferences.

(2) Preparing plans based on missions assigned by the division commanders. These plans may be brief and in outline form. They must be submitted to division as a means of keeping division players informed of what their subordinate units are doing.

(3) Making recommendations to division for the successful accomplishment of the division mission.

(4) Requesting fire support (air, artillery, chemical, and nuclear weapons).

(5) Committing reserves.

(6) Providing the division with situation reports to keep division players aware of the status of their subordinate units.

4–18. Civil-Military Operations (CMO) Control

a. Psychological operations (PSYOP) controllers provide players with realistic background information and continuing situation which allow players to plan and conduct PSYOP in support of military operations; to exercise PSYOP to support attainment of US national objectives as related to the scenario; and to exercise coordination with other military services and US Government agencies played during the exercise. PSYOP controllers insure that players assess the psychological impact of military deployments and operations, integrate PSYOP with other politicomilitary operations; plan and conduct operations to achieve specific psychological objectives; and provide guidance to subordinate players concerning PSYOP objectives and plans.

b. Civil affairs controllers insure that civil affairs and civil affairs activities are considered in all tactical play. Consideration is given to the existence of supplies, labor, and facilities in the area that the player units can use in the accomplishment of their assigned missions and to the use of these assets to overcome combat service support deficiencies. Appropriate play within civil affairs functional areas, such as displaced persons, public health, civilian supply, and civil defense, is permitted to have realistic impact on the tactical situation. In internal defense and development exercises, controllers insure that civil affairs play is carried out, in accordance with the civil affairs plan, by all participating units, and US player units cooperate with and assist host country civilians, US Government (e.g., US Agency for International Development (USAID) agencies) and military agencies in populace and resources control operations.

4–19. Combat Service Support Control

a. Combat service support control represents the commanders of combat service support units subordinate to the echelon playing the exercise as well as the logistic, personnel, administrative and civil affairs sections at adjacent and higher headquarters. This element is responsible for the planning and execution of combat service support missions assigned by the players.

b. Logistic controllers verify that tactical actions taken by players are logistically feasible. Logistic deficiencies are permitted to have full impact on the tactical situation. Realistic time and space factors are applied in the displacement of logistic support units and installations and in supply play. As a rule, maintenance cannot be played completely, but evacuation and repair of damaged equipment can be required. Losses caused by opposing player actions are assessed against the logistic support units.

c. Personnel controllers generate play in the areas of administrative services, maintenance of unit strength, personnel replacements, morale activities associated with the combat zone, and miscellaneous personnel actions. Among the latter, awards and decorations resulting from combat actions and promotions to fill combat losses are appropriate. Controllers request information and reports in these areas and require players to prepare plans and requests to overcome deficiencies injected into the play of the exercise.

d. Combat service support control maintains situation maps for generally the same purposes as intelligence and operations control.

e. Combat service support controllers frequently visit personnel, logistic, civil affairs, and appropriate special staff sections of the player divisions.

f. PSYOP controllers will insure that PSYOP are considered in all tactical play, particularly in support of civil-military operations.

4–20. Fire Support Control

a. Fire support control represents commanders of all fire support units and elements subordinate to the echelon playing the exercise, all elements of the corps and field army tactical operation centers involved in coordination of fire support, the corps artillery fire direction center, the direct air support center (DASC),

and the tactical air control center (TACC). Tactical air control is discussed further in paragraph 4–21. The control of nuclear weapon play is described in chapter 7. Control criteria for the play of nonnuclear fire support, including chemical weapon play, are discussed in chapter 6.

b. Fire support controllers process the requests for fire made by player units. They inform the war gaming section of those requests that are approved or provided and obtain from the war gaming section the results of the fire. The war gaming section integrates the effects of fire when determining relative combat power and assesses casualties and damage. The war gaming section reports the effects of the fire to the players through the fire support controllers.

c. Fire support controllers maintain situation maps to portray the location and status of all fire support means.

d. Fire support control coordinates with—

(1) The chief intelligence controller to determine if the request for artillery fires or airstrikes is valid by reason of—

(*a*) Hard intelligence, which was acquired by the division through intelligence channels, or

(*b*) Intelligence which reasonably could have been acquired due to the close proximity of opposing units.

(2) The war gaming section so that—

(*a*) The control map accurately portrays the location and status of fire support means.

(*b*) The computers are informed of the fire support situation and relative combat power ratios are computed.

(3) The operation controllers to agree mutually on the status of fire support and its employment.

(4) The players so that they know the location and status of their organic attached, and supporting fire support means.

(5) The intelligence controllers for approval of information and intelligence to be released through fire support channels.

(6) The combat service support controllers so that the impact of their functions may be considered in determining the effectiveness of fire support.

e. Fire support controllers establish a check system so that fire support units do not expend munitions in excess of those in basic loads, those provided by announced available supply rates, and those assigned as in the case of nuclear weapons. Realistic time and space factors are played in ammunition resupply.

4–21. Tactical Air Control

a. Tactical air control represents the tactical air force for the echelon (e.g., division) playing the exercise, the G2 air and G3 air at corps, the S2 air and S3 air of all subordinate units, the intelligence acquisition capability of both tactical air and Army aviation, the military intelligence battalion (air reconnaissance support), the air liaison officers and forward air controllers with the players, and the combat support functions of Army aviation.

b. Tactical air controllers process requests for offensive air and air reconnaissance missions initiated by players. They approve those missions that are determined to be logical and appropriate and assess predetermined time lags. The determination of intelligence developed by air missions requires careful correlation between the routes flown and the disposition of units and installations portrayed on the control map. Tactical air controllers must use their professional judgment to evaluate the vulnerability to detection of units and installations and report the results of each mission.

c. Tactical air controllers—

(1) Inform all controllers of the status of airstrikes.

(2) Maintain air mission status charts for both player groups on close air support and on aerial reconnaissance and surveillance missions. These charts show missions that have been flown, missions in process, missions pending, and aircraft availability.

(3) Maintain a close air support situation map and an air reconnaissance-air surveillance situation map of suitable scale. The latter map portrays the routes and areas which are currently being searched and those to be searched in the future. This map also portrays all intelligence released to players that is beyond the scope of the maps maintained by operation controllers.

d. Tactical air control analyzes the general and special situations and determines a reasonable allocation of air support sorties to be made each day to players. Concurrence is obtained from fire support control, the air liaison officer, and intelligence control on the number of close air support and reconnaissance sorties to be allocated to the players.

e. Close air support sorties acquire information that may be disseminated to the ground player units concerned through the ground liaison officer teams located at the airfields. Tactical air control releases the information that would be logically acquired after coordinating it with intelligence control.

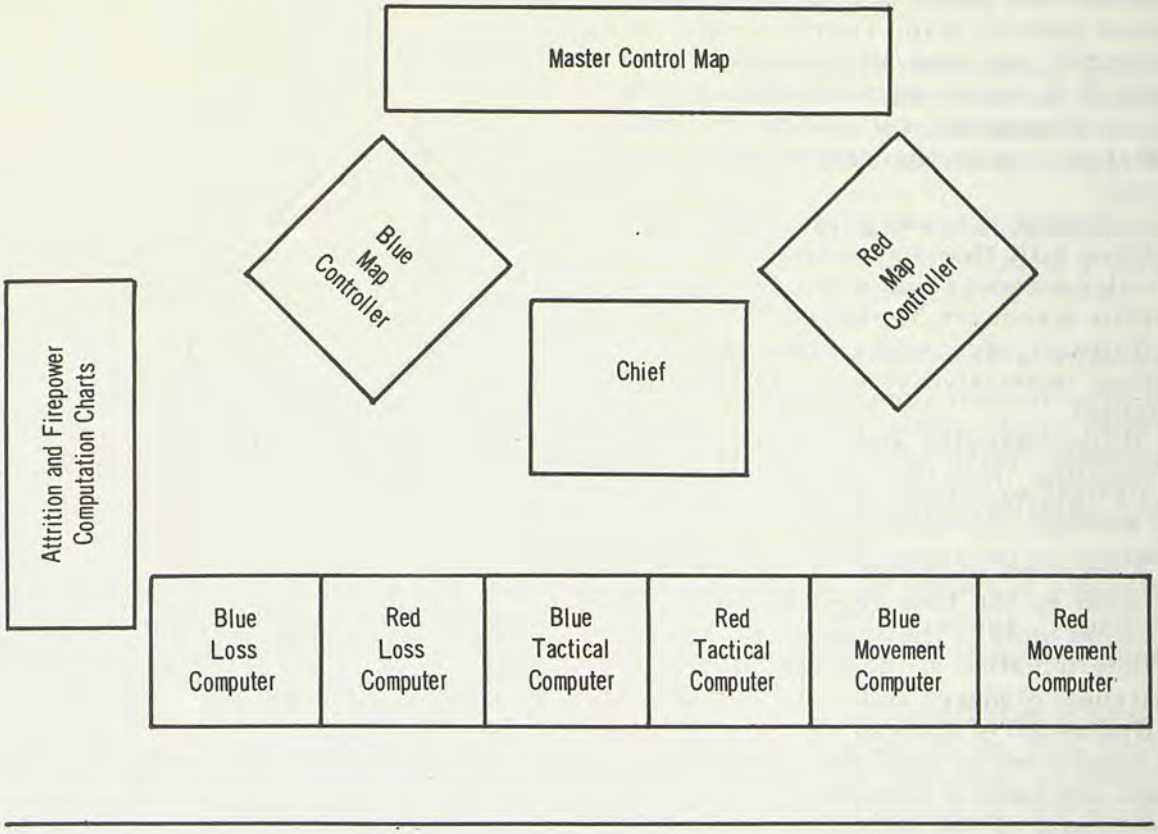


Figure 4–3. War gaming section (sample layout).

4–22. Miscellaneous

a. Additional control is added as necessary in the areas of combat, combat support, and combat service support to expand the scope and simulation of play in the map maneuver. Typical examples are air defense controllers for both friendly and enemy air defense operations; guerrilla controllers for guerrilla operations; provost marshal controllers for PW, traffic control, and straggler control; engineer controllers for combat engineering support in rear and forward areas, including the play of obstacles, main supply route and access road improvement, use of bridging, and employment of atomic demolition munitions (ADM's); medical controllers for control of evacuation means and the handling of mass casualties; nuclear controllers for both friendly and enemy nuclear play.

b. Additional situation maps are required, and coordinating procedures are specified, when additional factors are added to the exercise.

4–23. War Gaming Section

a. A war gaming section is established within the control organization to assist controllers in the visualization of the battle, to perform the necessary computations, and to apply necessary tactical judgment to determine what happens as a result of encounters between player elements. This section maintains the master control map. The war gaming section provides raw data to all control sections. A typical organization and layout of the section are shown in figure 4–3.

b. The principal function of the section is to determine the most probable outcome of actions and orders initiated by players. This determination is made using the control and umpiring criteria in chapter 6, the war gaming techniques in appendix D, and—

(1) Professional judgment.

(2) Strict impartiality between player groups.

(3) Objective analysis of the actions and orders of the player force.

(4) Concept of control.

(5) Nuclear play.

(6) Time and space factors.

(7) Combat power and rates of advance criteria.

(8) Attrition through application of casualty and damage assessment criteria.

c. Action by the war gaming section results in an exact determination of the current status of

player forces. This status is then portrayed on the master control map. There is only one master control map and all controllers refer frequently to it for the current situation. The importance of properly maintaining this map by the war gaming section cannot be stressed too strongly.

d. The chief of the war gaming section, in coordination with the chief umpire/controller, makes major decisions that affect the outcome of the entire maneuver. Typical decisions are—

(1) Rates of advance for units that have successfully penetrated or enveloped the enemy defenses.

(2) Major casualty and damage assessments resulting from the employment of nuclear and chemical weapons or massed airstrikes.

(3) Resolution of critical time and space factors, such as the time required to employ major combat units in the areas of operation.

(4) Determination of the breaking point or ineffectiveness of player units.

(5) Evaluation of shock effect.

(6) Resolution of conflicts between loss, movement and tactical computers.

e. Rehearsals of the techniques and procedures employed by the section are conducted before the map maneuver starts.

f. The map controllers—

(1) Maintain the master control map as directed by the chief of the section and the tactical and movement computers. They portray, using appropriate symbols, all player activities and units. Symbol kits are provided for this purpose. Successful map controllers employ ingenuity and imagination to portray the tactical situation on the control map. The following are some techniques for maintaining a realistic control map:

(*a*) Colored ribbons and arrows are used to portray units in motion. The length of the ribbon or arrow conforms to the actual road space that the column occupies.

(*b*) Reconnaissance screens are portrayed by appropriately colored ribbons and arrows.

(*c*) The size of the area covered by airstrikes cannot be predetermined because it depends on the number of aircraft employed and the configuration of the target. When the appropriate size of the area is determined, controllers cut the proper size rectangle or other shape from paper and post it.

(*d*) Nuclear, mushroom-shaped symbols are prepared to represent nuclear strikes of various yields.

(*e*) Areas contaminated by chemical agent attacks are plotted to show the shape and size of the attack. These are color coded and labeled for different agents (FM 21–30).

(2) Portray on the control map the progress of units in motion as directed by the chief of the section and movement computers.

g. The tactical computers—

(1) Maintain a current record of the firepower scores of all combat units.

(2) Receive units from movement computers when the units begin deploying for combat. They determine relative combat power ratios between opposing forces and the rates at which units may advance. They verify that the results of their computations are accurately portrayed on the control map by the map controllers.

h. The loss computers—

(1) Assess and maintain a record of casualties and major items of equipment damage resulting from all causes. Losses and damage are assessed on all units to include companies and units of comparable size. They provide other controllers with the current strengths of units.

(2) Use techniques, procedures, and criteria given in chapter 6 and appendix D.

i. The movement computers—

(1) Compute and track all tactical troop movements until contact is imminent. Units are then passed to the tactical computers. In addition to mathematical computations, movement computers apply professional judgment to assess delays caused by airstrikes, artillery fires, nuclear fires, chemical agent attacks, obstacles, and traffic conflicts.

(2) Coordinate with—

(*a*) Logistic controllers for the movement of combat service support units to determine whether conflicts exist between combat, combat support, and combat service support unit movements.

(*b*) Map controllers to insure that the control map accurately portrays the status of units in motion.

(*c*) Tactical computers to provide a smooth transition of units between movement computers and tactical computers as the contact of units becomes imminent (approximately when units begin deploying for combat).

(*d*) Players to clarify ambiguous or incomplete march orders.

(3) Maintain a supplemental map to plot and track units in motion that have not yet reached the area covered by the control map. When moving units reach the area covered by the control map, they transfer the symbols for these units from the supplemental maps to the control map.

Section V. COMMAND POST EXERCISES

4–24. General

Many of the aspects of control for the map maneuver that are covered in paragraphs 4–14 through 4–23 apply equally to the command post exercise (CPX). Subsequent discussion in this section expands on the material in paragraphs 4–14 through 4–23 that pertains to the CPX.

4–25. Control Organization

a. A typical control organization for the conduct and control of a one-sided CPX is shown in figure 4–4.

b. The field army echelon of control—

(1) Performs the overall control function for the exercise.

(2) Commands the subordinate echelons in the control organization.

(3) Represents field army headquarters, communication zone headquarters and units, and other nonplaying agencies and activities to subordinate corps, divisions, and combat service support players.

(4) Exercises command of Aggressor forces employed against the field army.

c. The corps and division echelons of control—

(1) Perform the control function appropriate for the echelon, including command of subordinate control echelons.

(2) Represent all nonplaying corps and field army units and, for purposes of rear area security and area damage control, represent all nonplaying units located in the corps and division rear area.

(3) Command Aggressor forces allocated to them by higher (field army and corps) control echelons.

d. The field army combat service support echelon of control—

(1) Performs the control function for field army combat service support units, installations, agencies, and activities playing in the exercise.

(2) Represents subordinate units so that orders may be received from players and from normal information, and reports may be provided to players from these sources.

(3) Coordinates with the field army controllers the play of events, tactical action, and damage resulting from Aggressor action in the field army rear area.

e. The brigade echelon of control—

(1) Performs the control action for brigades playing in the exercise.

(2) Commands Aggressor forces allocated to it by the division control echelon.

(3) Represents subordinate battalions of brigades so that orders may be received from players and from normal information, and reports may be provided to the player brigades from these sources.

(4) When located on the field army flank, provides appropriate information from and liaison with adjacent nonplaying forces.

4–26. Functions and Activities of Control

a. Control represents friendly units that are not playing. Gaps within player echelons are filled by controllers to avoid incomplete play. This is particularly, but not exclusively, true of intelligence and intelligence agencies. Control reports and information from nonplaying units need not always be correct or accurate. Erroneous, incomplete, or faulty reports may be purposely injected for maximum training benefit.

b. The chief umpire/controller at each participating echelon serves as the chief umpire/controller and as the Aggressor commander. His control staff is organized to provide him with information necessary to permit the proper direction of Aggressor resources. Aggressor forces are employed to attain the exercise objectives announced by higher headquarters. Such employment does not preclude the preparation of planned events or of situations to be developed according to the Aggressor scenario. It permits flexibility of Aggressor action and free play of the exercise.

c. As shown in figure 4–1, the CPX controllers obtain orders, reports, and information from players. The controllers depict enemy and player actions and counteractions, war game results of all actions, and prepare the necessary messages and reports incident to player actions. Information given to players is made to flow as realistically as possible. It should come from units in contact (played by control) and from the logical intelligence agencies.

(1) The preparation of messages and reports is accomplished in two ways. Player reaction to the tactical plan, such as commitment of a major reserve at a certain time or place, is predictable. For short exercises and when control resources are limited, all reports, messages, and incidents are planned. For longer exercises in which all situations cannot be or are not desired to be planned, the control organization prepares some of the required reports and messages during the conduct of the exercise. However, regardless of the length of the exercise, messages, reports, and incidents are

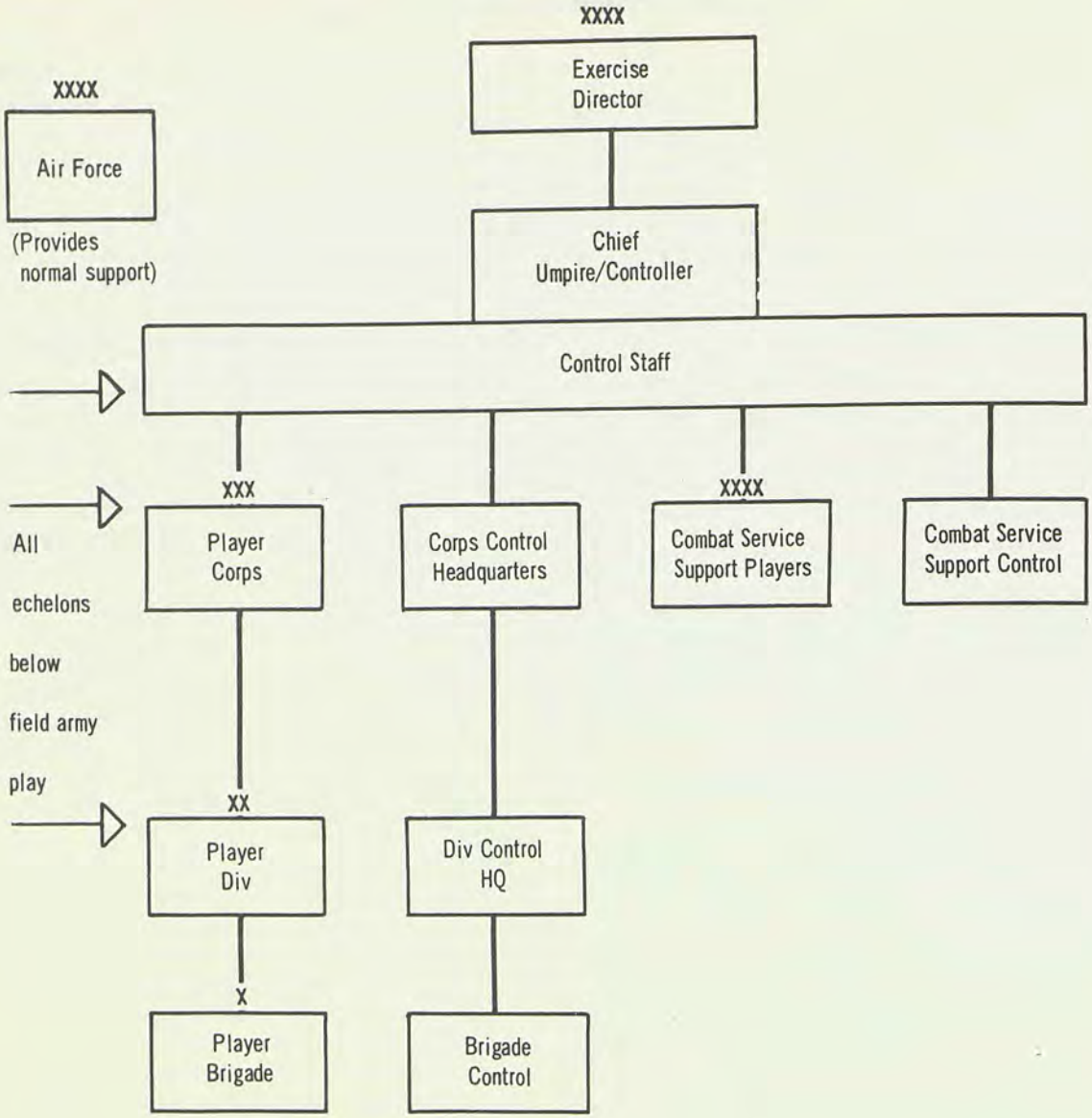


Figure 4–4. Organization for control, field army-conducted CPX.

prepared prior to the exercise so far as is practicable because of the difficulty and confusion that can otherwise arise during the play. Prepared messages and reports also insure the continuity of action.

(2) The control structure must permit quick shifts of control authority. Control of Aggressor formations has to be shifted up, down, or laterally within the control structure during the conduct of the exercise. When the reserve brigade of a player division is committed, the brigade controllers take command of the Aggressor forces against which the player brigade is maneuvering. Division control makes certain that this shift takes place.

d. Movement of Aggressor forces and the employment of Aggressor resources are based on appropriate control staff advice. For example, after intelligence controllers study player deployment and dispositions, they recommend a subsequent Aggressor action to operation controllers, who recommend the adoption of an Aggressor course of action to the chief umpire/controller.

e. Development and injection of Aggressor information is in accordance with the Aggressor scenario announced by higher headquarters. The scenario is part of the intelligence plan. It is published and distributed to subordinate control staffs. Based on the scenario, subordinate control staffs through brigade level prepare schedules of events for the timely insertion of messages to insure continuity of action.

f. Alternative and contingency plans for the employment of Aggressor forces may be pre-

pared for possible use during the conduct of an exercise. Control staffs may recommend the adoption of an alternative or contingency plan based on the developing situation and requirements of the training objectives. Adoption of an alternative or contingency plan may require some adaptation for its implementation. Adoption and modification of an alternative or contingency plan are approved by the exercise director and coordinated with all agencies affected by the change in plan. In stimulating player activity, care must be taken to avoid creating problems that detract from the exercise objectives.

g. An important aspect of control in a CPX is the proper assessment of losses, delays, and penalties against both friendly and Aggressor forces and agencies. Although it is important to make losses as logical as possible, the objectives of the exercise remain the overriding consideration. Losses or delays may be assessed for the sole purpose of achieving exercise objectives.

(1) In exercises that begin after the initiation of hostilities, the assessment of losses and penalties against both troop units and logistic installations is important in properly depicting the action between the opening of hostilities and the beginning of the exercise. Much of the information required in the initial situation of the exercise is prescribed by higher headquarters. However, it may be necessary for subordinate commanders to establish a specific condition, using attrition factors in the form of percentages established by higher headquarters.

(2) Losses are assessed as they might occur in the situation being depicted. For example, in the case of an infantry division described as being 70 percent effective, it is unlikely that the 70 percent would be uniform throughout the division. It is more likely that one or more battalions would have suffered heavy casualties in relation to other units of the division. This same type of assessment applies to combat service support units and installations.

h. Control staffs at all levels monitor player actions, situations, and plans. Monitoring is accomplished in the following ways:

(1) Adherence to the scenario.

(2) Close liaison with players and player headquarters by visits and use of liaison officers.

(3) Attendance at player briefings and conferences.

(4) Receipt of all player messages and documents.

(5) Use of a schedule of events.

4–27. Operations Control

a. Operations control assists the exercise director in preparing the control plan, prepares messages and data to support the scenario, and, in coordination with intelligence control, executes the plan for Aggressor operations.

(1) Aggressor and player actions are begun in accordance with the scenario and the setting of the exercise. Controllers inject information and intelligence into player channels, thereby causing players to take those actions that they would take in an actual operation. Injections are made at the level where the information or intelligence would most likely originate.

(2) Material in support of the scenario is prepared in coordination with other control sections. Major events, such as large-scale nuclear strikes, are identified. Coordination is required so that all effects are incorporated into play and all ramifications of these effects are considered.

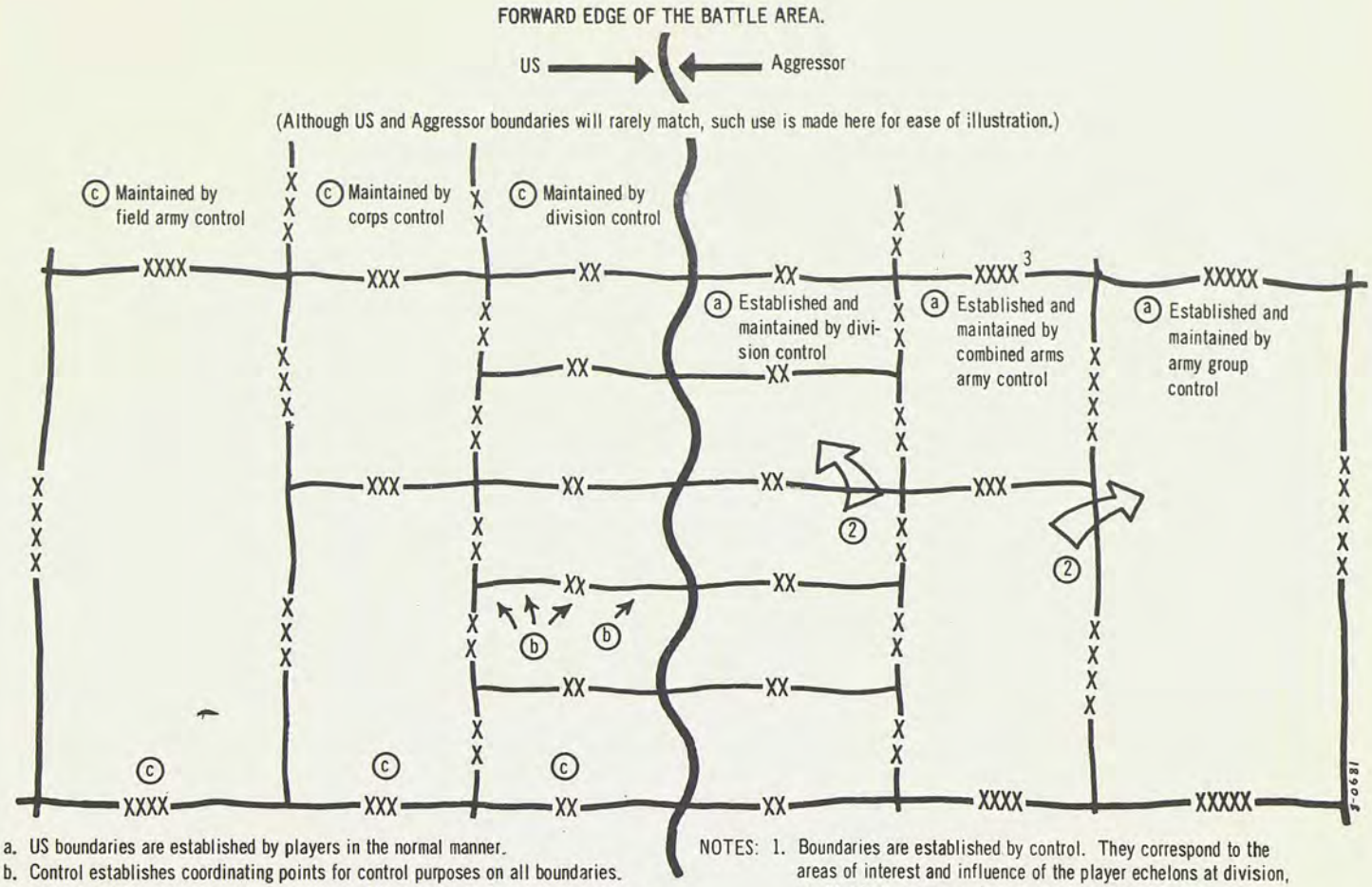
b. Major subordinate controllers assist in developing detailed scenarios and supporting messages and data based on the scenario and control plan for the exercise. Deviations from the exercise scenario are made only with the approval of the exercise director.

(1) Controller actions may be designed to draw both friendly and Aggressor forces into situations resulting in the concentration of forces. This provides a basis for testing the abilities of friendly intelligence agencies to locate suitable targets and gives commanders an opportunity to strike these targets with nuclear weapons before they have time to disperse. Controllers are also alert for concentrations of friendly forces that would be detected by Aggressor and react where feasible with Aggressor nuclear strikes. Allowances of an excess of nuclear weapons to either player force are not permitted, because excessive use of these weapons could prevent the accomplishment of the exercise objectives.

(2) The forward edge of the battle area (FEBA) should remain a trace at all times. There may be salients, surrounded units, and fluid situations impacting on both friendly and Aggressor forces.

(3) Controllers at all levels assess the results of player operations against Aggressor forces, and the results of Aggressor operations against player forces, to make the scenario develop as logically as possible.

(4) When general guidance for Aggressor action is given, e.g., "Guerrillas will attack logistic installations," controllers cause the action to be taken and determine the results



NOTES:
a. US boundaries are established by players in the normal manner.
b. Control establishes coordinating points for control purposes on all boundaries.
c. Control maintains the situation on the flanks at appropriate echelons and provides information to players in the normal flank contact manner.

NOTES:
1. Boundaries are established by control. They correspond to the areas of interest and influence of the player echelons at division, combined arms army, and army group and are maintained at those echelons of control. Boundaries are modified as required to facilitate handling of Aggressor formations.
2. Units or supplies may be moved across boundaries. These movements are coordinated in the normal manner between echelons.
3. Aggressor seldom uses a corps formation.

Figure 4-5. Area responsibilities of control echelons

based on player actions and capabilities and the logical outcome of the action.

(5) When specific guidance for Aggressor action is provided, e.g., "The bridge at _____ will be destroyed on D+3 at 0900Z," controllers cause the action to occur as directed and attribute it to the most logical Aggressor capability. Intelligence control should develop the Aggressor capability to accomplish the event before it happens.

(6) Controllers must consider the effects of Aggressor action on units adjacent to the unit being controlled. For example, prior controller coordination is required in implementing an Aggressor nuclear weapon attack when its effects will extend beyond the boundaries of the unit being controlled.

c. The territory occupied by Aggressor is divided into areas for control of the movement, tactical employment, and logistic play of Aggressor forces. This division of the Aggressor area normally corresponds to the area of interest and the area of influence of the corresponding player headquarters participating in the exercise. These areas are for control purposes and do not limit the ability of player units to obtain information outside the Aggressor control areas. Coordinating points are established along major unit boundaries to permit controller coordination (fig 4–5).

(1) Each control echelon plays the location of every unit assigned within its area of responsibility in accordance with the scenario. If a controller desires to inject intelligence or information from locations outside his area of responsibility, he coordinates the information with the controller who has responsibility for that area.

(2) As Aggressor units and supplies are moved forward or rearward over each boundary, they pass from one control echelon to another. For each unit or specific quantity of supplies so passed, the losing controller informs the gaining controller of the exact time, place, and status of the unit or supplies as they cross the boundary. Units may be passed laterally across boundaries with the concurrence of the controllers concerned.

(3) Controllers play the location of Aggressor logistic installations necessary to support the Aggressor troops.

d. Aggressor activity can be used to govern player activity. If it becomes necessary to slow or hasten advances from time to time to stay within the guidance furnished by the scenario, this change of pace is accomplished by the employment of Aggressor reserves and nuclear weapons—withholding them to hasten player advances and committing them to delay player advances. Poorly executed friendly actions at lower levels may also delay player advances. Controllers keep abreast of both friendly and Aggressor plans, orders, and operations so that actions, when introduced, conform with the general situation and are within the actual capabilities of player and Aggressor forces. The consequences of all friendly combat actions are carefully evaluated so that the impact is reflected in Aggressor reactions. Controllers cause Aggressor units to respond promptly and appropriately to player nuclear strikes, maneuvers, and conventional fires. Credit is given for expeditious and effective employment of friendly units, and corresponding penalties are assessed for slow or inadequate reaction to combat situations. These credits and penalties are in the form of advantages gained or lost in the operation.

e. In the conduct of Aggressor operations, controllers at all echelons adhere to logical rates of movement and employ units only within offensive and defensive capabilities and limitations for the given area of operations. Delays caused by defiles and player actions, such as obstacles, demolitions, and artillery fires, are carefully assessed. Similarly, controllers monitor player actions to the extent practicable to insure that they observe proper time and space factors. Disregard of these factors (e.g., abnormal speed of movement or inordinate defense frontages) is countered by the insertion of additional problem elements such as excessive straggling, lost columns, obstruction by refugees, enemy actions, demolitions, and sabotage.

4–28. Intelligence Control

a. General. There are two basic objectives in preparing the intelligence plan for an exercise. The first is to provide players with a realistic enemy capable of conducting viable opposition to player forces. The second is to tailor intelligence available on the Aggressor and the environment so that all intelligence staffs and agencies are fully exercised. To aid in fulfilling the objectives of the intelligence plan, Aggressor is designed to accomplish four primary purposes as the opposing force during tactical training exercises and maneuvers:

(1) Add realism to training.

(2) Add emphasis to intelligence training.

(3) Provide a common and realistic basis for the development of command post exercises, field training exercises, maneuvers, and other tactical training exercises.

Event numbers	Date-time group	Events	How, when, and by whom injected: Controller	Method	Time	Player reaction anticipated
*	*	*	*		*	*
9	051900 Apr 19__	An explosion at pipeline pumping station site (coord) has been reported. A civilian (male) was found seriously wounded at the scene. He asked to speak with an intelligence officer. He is now in the (*name*) Hospital in (*location*).	Army Combat Service Support	Tel msg	2100	1. Disseminate sabotage information. 2. Inform control staff that an investigation is being conducted to include interrogation of wounded man. 3. Request control staff to furnish results of investigation.
*	*	*	*		*	*
17	052200 Apr 19__	The injured man made the following statement: "My name is Cesareo PLATRONE. I am dying and wish to clear my conscience. I have been working for (*Aggressor*) Intelligence Service. I was first contacted in 1957 in (*location*) by a man called Ramiro ENJUTO. He sometimes goes by the name of Eduardo BRAVO. ENJUTO said he worked as an interpreter for an American Intelligence agency. The (Aggressor) organization arranged for me to be moved to (*location*) in 19__ with a mission of penetrating _____ Headquarters and reporting military information. I received instructions from a man called Antonio VELLA. I have never seen him since all my reporting was done through an intermediary. I had reason to suspect that VELLA worked for (name of Aggressor Intelligence service). We used a radio transmitter in (location) for sending important messages. Such messages were encoded and sent only at 1907 hours. I was given the mission to destroy this specific part of the pipeline at 061730 April 19__. Something went wrong with the timer." (PLATRONE died before completing his statement.)	(Same)	Report	2230	1. Dissemination by player of information of interest to subordinate units in whose area agents are operating. 2. Plan counterintelligence operations to follow-up investigative lead reference, Ramiro ENJUTO (alias Eduardo BRAVO). 3. Follow-up investigative lead reference Antonio VELLA. *Note.* Although play in this example is generated by the intelligence controller, the event itself has wider implications. Control would expect player to coordinate with logistical and operational staff elements and perform comparable coordination prior to release of the event to players. After control coordination, the event is placed in the schedule of events.
*	*	*	*		*	*

Figure 4–6. Sample intelligence events.

(4) Instill an awareness in exercise participants of the basic differences between US and potential enemy forces.

b. Intelligence Controllers. Intelligence controllers at all echelons—

(1) Prepare and introduce situations and events appropriate to their particular levels. These situations and events are designed to exercise players in all phases of intelligence activity, to insure the logical development of intelligence play, to generate full participation by all intelligence staffs and agencies, and to use all intelligence sources and collection agencies. A sample of intelligence events is shown in figure 4–6.

(2) Represent Aggresor forces and their activities (including TC&D and guerrilla activities) within given areas of responsibility. They suballocate Aggressor forces, as appropriate, and supervise the use of Aggressor forces (in conjunction with operation controllers) within their respective areas so that Aggressor actions are realistic and coordinated.

(3) Represent nonparticipating friendly intelligence sources and agencies.

(4) Create situations that require players to plan and direct intelligence collection activities, and develop collection plans, essential elements of information (EEI), and other intelligence requirements (OIR's).

(5) Distribute copies of intelligence events and pertinent individual reports to controllers of the same staff and to other intelligence controllers to coordinate all intelligence activities, to coordinate intelligence activities with other activities, and to monitor player actions.

(6) Create situations that require players to take counterdeception measures.

c. Interrogation. Controller interrogation elements have the twofold mission of submitting interrogation reports to player personnel and simulating the evacuation of PW's to higher echelons by the physical transfer of related documents (normally copies of complete or fragmentary interrogation reports).

(1) Interrogation reports are realistic and provide information that the unit might expect to obtain from PW's, line crossers, and refugees in combat. The information is related only to the assigned enemy forces. Reports may include information taken from documents and technical intelligence.

(2) The intelligence play specifies the simulated PW capture rate. Contents of interrogation reports are provided by the interrogation controller.

(3) Simulated evacuation of PW's from the capturing unit through intermediate units to the highest participating level conforms to the procedures in field SOP's. Evacuation is accomplished by the physical transfer of copies of reports as prescribed in field SOP's. To make full use of an exercise period, incident lists report capture of a reasonable number of border crossers, such as guards or agents, during the intelligence preplay. Interrogation reports are furnished to players by the controller inserting the incident.

(4) Where practicable, essential military police PW unit headquarters are manned. These units play the evacuation of PW's from the collecting points to the rear.

d. Captured Documents.

(1) Captured enemy documents are prepared by intelligence controllers and submitted to players in accordance with field SOP's. These documents may be injected through other than intelligence channels.

(2) The evacuation of captured documents to higher echelons after injection is a player responsibility. To monitor player actions, the injecting controller coordinates all details of the injection with appropriate controllers at other echelons. A copy of the document is supplied to controllers concerned.

e. Captured Materiel. See discussion of technical intelligence below.

f. Intelligence in Special Operations. Play is conducted by personnel under the supervision of the field army intelligence controller. Corps intelligence controllers may request the higher headquarters intelligence controller to inject information through these sources at any time during the exercise. Special operations may include intelligence collection units, aggressive counterintelligence, long-range patrols, and use of all the capabilities provided through intelligence augmentation of the Special Forces units employed.

g. Signal Intelligence and Electronic Warfare. US Army Security Agency units and headquarters participating in the exercise normally participate as player-controllers.

h. Airstrikes. See discussion of the intelligence implications of tactical air support below.

i. Counterintelligence Control.

(1) Counterintelligence activities are conducted in the fields of counterespionage, countersabotage, countersubversion, and counterintelligence security services. These activities range, as required by the situation, from overt to covert, passive to active, and defensive to aggressive. The objective is to generate a lively tempo of counterintelligence activity during exercises to cause the broadest possible exchange of information and requirements among player military headquarters and participating civilian agencies. The nature of injected incidents restricts counterintelligence activity to paper play. Effective play is predicated on the planning and preparation of probable counterintelligence incidents. Unscheduled counterintelligence incidents injected during an exercise are a means of supplementing the planned incidents rather than forming the main basis for play.

(2) Biographical data on persons representing active members of various Aggressor nets operating in the exercise area appear in supporting documents of the intelligence plan. Each person is given an area of operations and either a specific mission or a specialty such as demolitions expert or code specialist. Some biographies bear a title, such as "Operation RED." Persons whose biographies bear the same title are agents of a common net.

(3) Specialists are assigned tasks in their specialty. Aggressor agents operate in the location stated in their biographies. They are allocated to major subordinate commands according to the agent's target area and net. Agents can be moved into another sector by mutual agreement between intelligence controllers concerned and can be given temporary missions different from those stated in the biography.

(4) Play begins by injecting either an event or information designed to stimulate the following types of action by the players:

(*a*) Transmit information to other military headquarters.

(*b*) Transmit information to civilian agencies.

(*c*) Request other civil and military agencies to act on investigative leads or clues.

(*d*) Request information from other civil agencies and headquarters.

(*e*) Plan and execute locally the counterintelligence activities of surveillance, apprehension, interrogation, and development and use of information.

(5) An event that is properly planned is self-generating after the initial injection by control. A player receives the injected event and performs certain required actions, such as those listed in (4) above. In most cases, the player action consists of planning certain physical acts and informing the controllers of details. The controllers feed back to players simulated results of the latter's simulated actions. This feedback results in further activity by players.

(6) The following actions are taken in preparing events:

(*a*) Preparation of the initial event to be injected and designation of the specific time, method, place, and person responsible for injection (fig 4–6).

(*b*) Evaluation of incidents to insure that they generate broad activity.

(*c*) Coordination of events with other controllers to integrate them into the play of the exercise.

(7) Since exercises may not be long enough for players to accomplish many of the actions in counterintelligence investigations and operations, control is generous in the release of information so that a desirable volume of counterintelligence traffic develops during the exercise.

(8) Players at each headquarters receiving the above information report to their respective controllers the action that they would take to follow up clues in their areas. The controllers extract information from the applicable personality file published in the intelligence plan (or developed locally) and release it to players. These releases represent results of player activity. Each controller releases data that are of interest to his players and adds some clues of concern to other areas. In this way a single injection started by the controller can result in activity for a large number of headquarters.

(9) Controllers freely embellish information that they release to furnish clues in other areas. This action need not be coordinated between controllers provided clues are confined to persons listed in biographies. The controller in the area receiving such a clue can handle it as a local action or in any other way that seems proper. When clues are expected to be transmitted from one area to another, the originating controller informs the receiving controller as far in advance as possible.

(10) At the beginning of an exercise, control gives players credit for having developed, through prior counterintelligence (*ci*), certain counterintelligence assets. Examples are informant nets and penetration of certain organizations. Controllers at all levels accept statements of their players on the extent and capability of player *ci* operations. A player may state that his planned reaction to a certain clue received is to ask his informant, who is in a position to determine a reply. In these cases, the controller does not question the informant's capability and gives the player the information.

(11) Following are some additional methods for stimulating counterintelligence play:

(*a*) Injecting a message from a double agent. This is a convenient method for control to rapidly increase the amount of counterintelligence information made available to the player.

(*b*) During the preexercise intelligence play, injecting information from a mythical informant directing suspicion to one of the agents whose biography is available. This type of injection is designed to require surveillance of an individual or installation. The requirement for surveillance is an excellent means of providing a basis for players to coordinate with other military and civilian intelligence and police agencies, since control can have the agent move extensively on foot or by vehicle, rail, or air throughout the area and into other sectors. When moving an agent into another sector, the losing controller notifies the gaining controller well in advance. Surveillance, like most other counterintelligence play, is paper play only.

(12) In the injection of information or intelligence, controller staffs avoid items that may be distasteful or offensive to military or civilian agencies of the United States or to friendly foreign governments. Any incident or succession of incidents that appears to imply a *widespread* Aggressor penetration of an organization (military or civilian) is illogical and unacceptable.

(13) In preparing for counterintelligence activities, a complete file of enemy agents, their biographies, and their operations is compiled for the exercise area. If a comprehensive list cannot be furnished by the highest control echelon, then the following alternative method may be used. Basic personality data and information sheets are prepared at the highest control planning level. After examining the basic

SAMPLE AGENT BIOGRAPHY

OPERATION: Pink
CASE: PLATRONE, Cesareo
HOSTILE SERVICE: Aggressor Military Service
TARGET: Demolitions Expert
DESCRIPTION: 48 years old; height 5 feet 7 inches; weight 130 pounds; frail in appearance; wears eyeglasses, bald; eyes brown.

SUMMARY

Cesareo PLATRONE was born and raised in (*country*). He served in the (*nationality*) Army during World War II and became a prisoner of Aggressor in January 1945. He was a sergeant at the time. PLATRONE met Ramiro ENJUTO while they were prisoners. The two men were repatriated in 1954. PLATRONE was recruited by ENJUTO in 1957 and given training in use of demolitions to capitalize on PLATRONE'S wartime military experience. Although ENJUTO was responsible for recruiting PLATRONE, the latter was used as an independent agent with specialized missions in sabotage. His instructions came from one source only: Antonio VELLA. PLATRONE has no living relatives and lives alone in a rented room in (*district*) (vicinity of (*location*)).

Figure 4–7. Sample agent biography.

personality data and information sheets, intelligence controls at all levels prepare similar personal briefs and agent networks within their areas of interest. Each area of control should have one or more independent agent networks and a number of individual agents who can be assigned special missions. A system is devised to disseminate agent biographies to major control staffs. A sample agent biography is shown in figure 4–7. The format used for the basic source data and information sheet is shown in FM 30–17.

j. Technical Intelligence Control.

(1) The purpose of technical intelligence control is—

(*a*) To train the technical services in the timely handling and evacuation procedures of technical intelligence items.

(*b*) To train technical intelligence detachments in the processing and evaluation of intelligence derived from enemy materiel.

(2) Controllers at each echelon introduce technical intelligence items to players with sufficient frequency and extent to generate realistic participation by all technical intelligence detachments and technical services.

(3) Subordinate controllers receive from higher control echelons an allocation of technical intelligence items prior to the beginning of an exercise.

(4) Technical intelligence items are injected into player channels at the lowest echelon possible and as early in the exercise as practicable.

(5) Player technical intelligence detachments from each technical service are employed—

(*a*) To collect and report information obtained from study of technical intelligence items inserted into exercise play by controllers.

(*b*) To select and report items for intelligence exploitation.

(*c*) To assist in the production of information and intelligence peculiar to the needs of the technical service concerned and the supported unit.

(6) Technical intelligence coordinators and technical intelligence personnel participate in CPX's as players. They assist in supervising the evaluation and dissemination of intelligence from simulated captured enemy material in accordance with SOP's.

(7) The intelligence controller provides adequate technical intelligence play. Technical intelligence control may be an additional duty for a controller in a related field. Field army and corps technical intelligence coordinators should produce in advance of the exercise, sufficient exercise technical intelligence situations for intelligence controllers to adequately exercise technical intelligence players in each technical service.

k. Tactical Cover and Deception Control (TC&D). Controllers at each echelon—

(1) Prepare and introduce TC&D situations and activities appropriate to the various levels. TC&D play can be assured by inclusion of a TC&D mission in the simulated operation order of the initial situation.

(2) Represent Aggressor forces and their TC&D activities.

(3) Represent nonparticipating friendly intelligence sources and agencies for TC&D and counterdeception purposes.

(4) Create situations that require players to plan and conduct TC&D operations.

(5) Evaluate player reaction to Aggressor TC&D and counterdeception and evaluate

player TC&D and counterdeception estimates, plans, and operations.

4–29. Combat Service Support Control

a. Combat service support play responds to both the tactical situation and planned combat service support events. Most combat service support events take place in rear areas and may involve civilian agencies. As a result, it is difficult to insert free play incidents in a realistic manner. The problem is further complicated if both civilian and military channels are involved. These difficulties may be overcome by careful planning and preparation of combat service support events. Normally, all events take place according to the previously determined schedule. Flexibility is achieved by on-call events with an indication of the control echelon authorized to inject each event. The control echelon injecting the event informs other control echelons of the injection and the time and place involved. A sample format and example of combat service support events are shown in figure 4–8. Each echelon of control receives appropriate extracts from the list of combat service support events. Controllers release information at the appropriate time and place, taking into account foreseeable communication delays and player actions.

b. Civil-Military Operations Control.

(1) The realism of civil-military operations play in CPX's depends on the completeness of the civil affairs plan, the adequacy of civil affairs control, and the completeness of civil affairs staff sections and civil affairs unit headquarters participating in the exercise.

(*a*) If sufficient civil affairs personnel and units are not available to provide separate player and controller elements for the exercise, a combined civil affairs player-controller staff section should participate in the exercise.

(*b*) The comprehensiveness and realism of civil-military operations activities in any exercise are also governed by the extent of participation of civil agencies in the exercise area. While this participation is desirable, controllers can represent appropriate civil agencies if participation is not feasible.

(*c*) Some areas for possible play are—

1. Requirements for plans, orders, annexes, directives, estimates, studies, and reports.

2. Recognition and reporting of information and intelligence.

3. Maintenance of files and records.

4. Integration of civil defense into rear area security and area damage control plans.

5. Formal and informal conferences and briefings.

6. Revision of status of forces and civil affairs agreements.

7. Planning for control of refugees and displaced persons.

8. Establishment and implementation of claims service policy.

9. Availability of labor.

10. Conduct and control of civil affairs activities and operations when the civilian population is subjected to chemical, biological, and radiological attacks.

11. Planning for military assistance in support of civic action programs.

12. Civil affairs support in the conduct of police operations against the underground elements of an irregular force.

13. Administration of civil reconstruction and rehabilitation programs.

14. Planning of programs for the removal of the causes of insurgency as part of an overall internal defense and development program.

15. Employment of psychological operation teams or other PSYOP elements in support of civil affairs operations.

16. Organization of civil affairs mobile training teams on a mission basis.

17. Administration of the demobilization and rehabilitation of guerrilla forces no longer essential to the maneuver (war) effort.

(2) Additionally, civil affairs problems and tasks may be injected that involve monitorship of procurement of local resources; civilian charitable, religious, welfare, educational, and medical facilities, monitorship of procurement of local labor; supervision of distribution of civil relief supplies; planning for restoration and supervision of use of public utilities, communication, and transportation facilities; and many other functions throughout the spectrum of government. For detailed discussion of civil affairs functions and responsibilities, see FM 41-series.

4–30. Air/Ground Operation Control

a. General.

(1) Air/ground operation control is centralized primarily at the highest level playing the exercise.

(2) Army controllers and Air Force controllers normally are in the control organization. The control system is superimposed on the player organization for air/ground operations. The organization and functioning of air/ground operation control is a joint matter unless Air

No.	*Date/time*	*Installation and GZ*	*Incident and remarks*	*Injected by*	*Primary control agency*	*Reaction expected*
A–1	D-day H-hour	347691	200 KT—Airburst Highway 403 vic GZ blocked by debris. Highway 3 blocked from 325682 to 352702. Building rubble, impassable at 349690. Tree blowdown 2,300 meters radius from GZ.	Army	Army	1. Take steps to determine detailed assessment of damage. 2. Reroute traffic. 3. Report to higher headquarters. 4. Slow down operations because of rubble and tree blowdown. 5. Request assistance.
		SP 999	90% MOGAS des, 50% AVGAS 115/145 des. Military casualties—105 KIA.	QM gp	Army	1. Report to higher headquarters. 2. Take steps to determine detailed assessment of damage. 3. Evacuate remaining supplies. 4. Relocate supply installations. 5. Request resupply to replenish stocks. 6. Reconstitute supply support.
		Sig prestock point	150 reels spiral four des. 1,000 reels WD–1 on RL–159 Severe damage to storage area.	Sig bn	Corps	1. Report damage. 2. Reconstitute supply support.
L–9	D–day 2000Z	Attack by 30 guerrillas	SP 967 destroyed. POL to support corps critical. Military casualties—15 KIA, 10 WIA.	POL sup co	Army	1. Request required POL support. 2. Request that G4 take action to procure immediate POL supplies from civil sources. 3. Reinforce security measures.
L–30	ON CALL. Can be inserted if required during period D+1 to D+3	Smithville Supply Complex	50 KT Airburst a. Rail station completely destroyed 1 battalion day equivalent necessary to reestablish single track. b. US military personnel 50 KIA and 100 WIA. c. POL depot (059073) completely destroyed. d. Road net, no major damage. e. City of 300 houses destroyed; water, electricity, and utilities severely damaged. Civilian casualties. 700 dead and 400 required hospitalization. f. 1000 persons fleeing west on Highway 4 using carts and trucks.	Army	Army	1. Damaged area to be blocked off by civilian authority. 2. Field army takes steps to reconstitute supply point and destroyed facilities.

Figure 4–8. Sample combat service support events list.

Force headquarters and units are not playing in the exercise.

(3) From the Army standpoint, exercise control operates on a joint basis within the air/ground operation system. Many Army personnel in the air/ground system must operate in

dual player-controller roles. This includes personnel in the highest control staff and liaison personnel at air bases and with air units.

(4) Controllers are prepared to integrate other portions of the air battle into Army play, particularly portions that affect conduct of the ground battle, for example the effects of air defense artillery.

b. Function and activity of the air/ground operation system are a player responsibility. Functions and activities include—

(1) Allocation of the air effort to ground support.

(2) Requesting strike and reconnaissance missions, both immediate and preplanned.

(3) Reporting results of strikes.

(4) Obtaining, receiving, and processing information of intelligence value from airstrikes, reconnaissance in support of ground operations, and other air operations.

c. In superimposing a control system on the existing air/ground operation system, the following are provided for—

(1) Monitoring the functioning of the air/ground operation system without interfering with it.

(2) "Flying" the approved missions that do not abort.

(3) Determining the results achieved from each mission.

(4) Arranging for the results to be fed back to players in the most logical and timely manner and from the most logical source. Players receive neither a time penalty nor a time advantage as a result of the functioning of the control system.

d. Information and intelligence are injected into player channels by several means. Typical means are the inflight spot report, the imagery interpretation report, and the debriefing report.

(1) An inflight report is a concise one-way radio transmission from the pilot reporting significant visual sightings. It contains a brief description of what the pilot sees, the location, and time sighting. Control introduces written inflight spot reports directly into player intelligence channels at the appropriate echelon or wherever players have the capability to monitor the nets.

(2) An imagery interpretation report is either immediate or general and is injected where it would normally occur.

(3) A debriefing report is made after the pilot has returned to base. It is essentially a report of what he saw during the flight. A debriefing report is put into player channels at the reconnaissance airfield and is processed and disseminated through normal channels.

e. Whether the mission is "flown" by Army or Air Force controllers, the "flyer" establishes a flight profile that specifies where the flight traveled and the altitudes flown. The profile is applied to a current situation map to obtain the latest and most complete Aggressor situation. The flyer then determines the results of the mission by applying the factors of aircraft and pilot capability, weather, Aggressor opposition, and target vulnerability.

f. On fixed targets, such as airfields, rail centers, and bridges, reconnaissance results can show a profitable target for either conventional or nuclear strike. On transitory or fleeting targets, such as troop concentrations or movements, information obtained by sources other than true reconnaissance aircraft may need to be confirmed by additional reconnaissance before the target can be considered profitable. Exceptions are those instances where control reports a clearly defined target in the initial reconnaissance results. The timeliness of intelligence injection, especially for fleeting targets, is important.

g. Controllers cause players to abide by the above criteria by significantly lowering strike results when target data are not properly confirmed. To cover the possibility of deficiencies arising in reconnaissance planning, intelligence material on likely targets is prepared in varying degrees of accuracy and completeness to cause players to initiate confirming reconnaissance before striking, especially in the case of planned nuclear strikes.

h. Much intelligence results from air operations, particularly from air reconnaissance missions flown at great distances beyond the FEBA. But control should not favor this means to the neglect of close-in support of the Army aerial surveillance company, visual aerial surveillance, long-range reconnaissance patrols, friendly guerrillas, electronic reconnaissance, and the US Army Security Agency. For exercise purposes, control varies the amount of detail and accuracy furnished in the results of reconnaissance and other types of sorties. Controllers also assess losses on Aggressor forces that are inflicted as a result of the overall air effort.

i. A tabular publication is prepared for controllers to provide a simplified assessment of results from close air support, airstrikes, air attacks, and air reconnaissance. Nuclear strike results may also be shown, particularly if players plan to deliver a significant number of weapons by aircraft. Nuclear missile results may be included in the same tables for conveni-

ence. Strike results include terms to define and specify what is meant by hit, miss, or doubtful. Reconnaissance results have identifying terms to state whether the target is operational or nonoperational, whether the enemy is restoring the target to operational status or not, and whether reconnaissance is ineffective (i.e., results are indeterminate). Rules are developed to simplify and expedite the damage estimation that controllers make. Data are based on either classified or unclassified special weapon effects and include operational failures on the part of player weapon systems, both ground and air. The rules are developed only as a timesaving device. The following tables are suggested:

(1) Nonnuclear damage to airfield. The table is based on standard loads, number of aircraft attacking, and number of hours that the base will be nonoperational.

(2) Nonnuclear damage to aircraft. The table is based on standard loads, number of attacking fighter-bomber aircraft, and the number of aircraft attacked on the ground.

(3) Nonnuclear damage to electronic installations.

(4) Damage to petroleum, oil, and lubricants (POL) facilities.

(5) Nonnuclear damage to ground force targets. The table shows categories of targets, such as infantry companies, artillery batteries, a tank or motor park, command posts, and ammunition supply points or dumps; condition of the target with degree of protection; and the percentages of the targets destroyed or damaged by the attack. Rules can be provided for modification of the percentage figures for multiple aircraft attacks if, for example, the target has air defense protection.

(6) Nuclear damage to Aggressor personnel, equipment and installations.

(7) Chemical agent damage to or contamination of Aggressor personnel, equipment, and installations.

(8) Nuclear effects disruption of friendly and enemy communications.

4–31. Civil-Military Operations Control

a. Psychological Operations. There are three basic objectives in preparing the PSYOP plan for an exercise. First, to provide players with realistic background information and continuing situations which would allow players to plan and conduct PSYOP in support of military operations; second, to exercise PSYOP and civil affairs players to support attainment of US national objectives as related to the tactical and strategic play of the exercise; and third, to exercise PSYOP players to coordinate with other military services and US Government agencies played during the exercise.

b. Civil Affairs. Civil affairs controllers insure that civil-military relations and civil affairs activities are considered in all tactical plans. Appropriate play within civil affairs functional areas, such as displaced persons, public health, civilian supply, and civil defense, is permitted to have realistic impact on the tactical situation. See appendix L, FM 41–10.

4–32. Control of Special Warfare Operations

a. General. In special warfare operations, there may be no area responsibilities of control echelons as shown in figure 4–5. Military boundaries will most often be oriented on and/or parallel to existing political boundaries. Participating units may be mission oriented rather than area oriented, thereby requiring controller personnel to be knowledgeable in the fields of intelligence operations, unconventional warfare civil affairs operations, tactical operations, advisory assistance, populace and resources control operations, and PSYOP.

b. Internal Defense and Development.

(1) The realism of internal defense and development exercises will depend on the degree of participating personnel representing host country military and civilian agencies, host country officials, and host country population, and the insurgents.

(2) If sufficient personnel and/or units are not available to provide separate player and controller elements for the exercise, a combined player-controller staff may be formed to represent host country military and civilian staffs and headquarters, US agencies (such as USAID and US information service (USIS)), and the controlling US headquarters for all US forces.

(3) Controllers at all levels coordinate and inject situations that require the player units to participate in the paramilitary, economic, psychological, and sociopolitical programs as well as to conduct counterguerrilla tactical activities.

(4) Controllers must insure that the following principles of civil-military relationships are practiced, as applicable, by the player units:

(*a*) The people are of paramount importance in combating insurgency.

(*b*) US Army units not only assist the host country in destroying insurgent combat forces, but also contribute to the economic and social development of the host country, principally through military-civic action programs.

(*c*) Use of firepower is selective and restrained to protect the civilian populace and its resources.

(*d*) US Army units may be used to extend USAID, USIS, and other US civilian programs in the host country.

(*e*) Any US Army unit can be employed in any phase of insurgency to support host country armed forces, paramilitary forces, and/or host country civilian agencies.

(*f*) US Army units participate in the countrywide PSYOP programs.

(*g*) US Army units participate in populace and resources control operations.

(*h*) All US Army unit activities must be conducted in support of, and in conjunction with, US/host country military and civilian agency activities.

(5) Intelligence plays a vital role in combating insurgency, and controllers must insure that player units employ those procedures and techniques peculiar to this type of warfare.

(6) Advisory assistance is also a major activity, and controllers should insure that player units perform their armed forces, paramilitary, or civilian agency advisory duties in accordance with basic principles.

(7) For a detailed discussion of internal defense and development operations, see FM 30–, 31–, 33–, and 41–series and FM 100–20.

c. Guerrilla.

(1) Rear area security and area damage control procedures are tested through the use of guerrilla warfare activities. The situation is developed realistically to permit the logical occurrence of these activities. Emphasis will be placed on coordinating operations through the local rear area operations centers (RAOCs) and through the employment of unit resources normally in the rear areas. Subsequent escalation of guerrilla activities should be injected to necessitate the commitment of combat units to counter the threat.

(2) Controllers at all levels coordinate and inject guerrilla warfare problem play. Activities that cause damage to supply installations or disrupt highway and rail traffic are coordinated with the appropriate controllers.

(3) Controllers at each echelon select targets for guerrilla activities within their zones of operation. Results of attacks are determined by controllers after consideration of player plans for local protection and other countermeasures. In some instances, control provides warnings of impending guerrilla attacks. Results of these attacks depend on the friendly actions taken on receipt of the intelligence warnings. Controllers acknowledge the success of players to circumvent or prevent successful guerrilla actions. In some cases, erroneous intelligence warnings are generated and given to players.

(4) Assumptions are made in the intelligence plan as to the scale and type of guerrilla forces and activities. These assumptions are appropriate to the area of operations and the objectives of the exercise. For example, it may be assumed that Aggressor has established small, organized cells of guerrilla fighters throughout the area. These forces are equipped with small arms, hand grenades, automatic weapons, demolitions, and radios. Aggressor airborne supply and personnel drops may be planned and executed to assist his guerrilla forces, but drops should be limited to hours of darkness with single planes at any one place or at any one time.

(5) Guerrillas conduct small-scale operations of short duration and over broad areas by well-dispersed forces making maximum use of surprise.

(6) Guerrilla events are integrated into the schedule of events in the same manner as other events. The degree of control and the necessity for separate plans to cover this aspect will depend on the scale of unconventional warfare introduced into the exercise.

(7) Guerrilla elements carry out sabotage and terrorist actions, and these should be inserted in any exercise involving rear areas. These activities should include sabotage against bridges on main supply routes (MSRs) against POL lines, depots and storage facilities, and terrorist attacks against local civilians who may be cooperating with friendly forces.

d. Other Problem Areas.

(1) Refugee control. Massive refugee problems should be included which will create congestion impeding movement on MSRs, and in cities and villages.

(2) Straggler control. Straggler control problems should be included for play in the rear areas.

4–33. Electronic Warfare (EW) Control

a. Play should be developed to simulate player activities regarding EW planning, and to exercise personnel responsible for the operation of communication, radar, and other electronic devices in ECCM techniques and SIGSEC procedures. Opportunities for the friendly employment of ECM can be created in support of the exercise scenario through intelligence play regarding Aggressor electronic order of battle. Information provided to the players must be of sufficient scope and detail to sup-

port the direction of the ESM collection effort and subsequent ECM targeting. Since one of the major objectives of a CPX is to train communication personnel, subjecting them to the detrimental effects of actual ECM is particularly important. Their ability to cope with an ECM environment impacts critically on command and control capabilities. When radar and other noncommunication devices are organic to participating headquarters elements, they too should be subjected to live ECM.

b. In instances where the use of live ECM is not feasible or practicable, communication and electronic equipment degradation and outages can be simulated through message inputs. Message play should develop requirements for EW planning, including provisions for alternate means of accomplishing the communication and/or noncommunication mission.

c. For most realistic results an ESM/ECM environment should be created with the support of USASA resources and required additional assets such as organic tactical radio and radar equipment and training jammers.

d. Significant aspects in the control of live ECM are timing, safety precautions, and the establishment of positive procedures for halting play.

(1) Live ECM should be injected under various tactical situations involving different degrees of reliance on communications, radar, and other electronic systems, as well as on jamming intensities. ECM play must be coordinated to enable umpires to obtain first-hand observations of player reactions. In addition to stationing umpires in close proximity to the victim receiver, USASA expertise can be used in monitoring operator behavior and ECCM effectiveness. The intensity of ECM should be varied according to the desired extent of degradation; e.g., complete obliteration versus partial blockage of the signal. The duration of ECM should be sufficient to permit complete evaluation of player reactions by the umpire staff.

(2) The use of live ECM requires special precautions to insure that no safety hazards are created by its use. Special attention must be given to avoid jamming or deception on frequencies which could—

(*a*) Jeopardize flight safety of air elements.

(*b*) Degrade control of live fire exercises.

(*c*) Present a hazard to conventional nuclear munitions.

Section VI. FIELD EXERCISES AND FIELD MANEUVERS

4–34. General

a. The basic control and support organization does not change in the conduct of field exercises and field maneuvers. Unit umpires are added at battalion and below to control physical contact, assess damage and losses, and enhance battlefield realism. Additional umpires are added for functional specialties, such as fire marking, and to assist unit umpires in the performance of their duties. The brigade (or equivalent level) controller commands subordinate unit umpires. The missions and duties of umpires are discussed in chapter 7.

b. Most aspects of control discussed previously (para 4–14 through 4–32) apply to field exercises and field maneuvers. The discussion in subsequent paragraphs is limited to aspects of control unique to field exercises and field maneuvers.

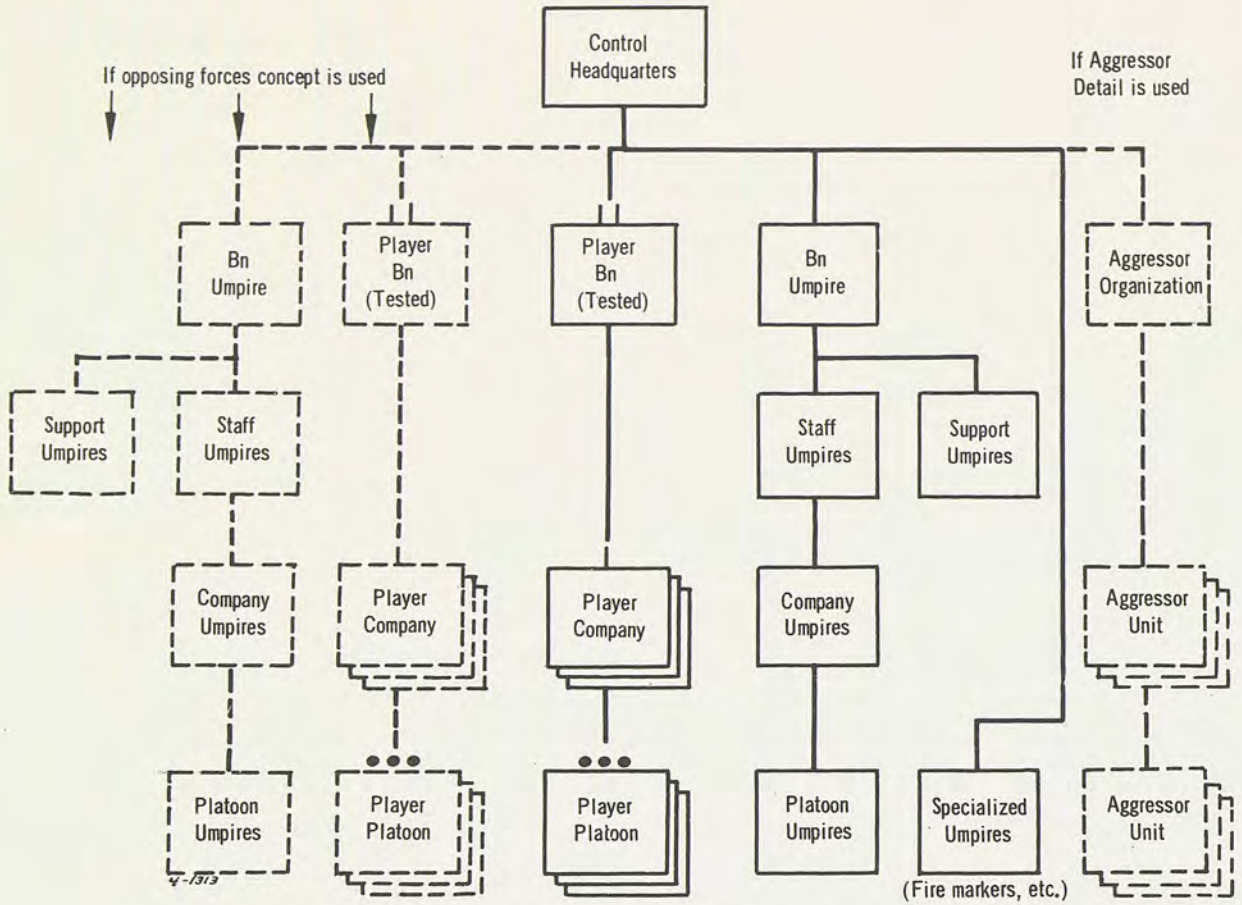
4–35. Control Functions and Activities

The concept of control and the role of the controller during a field exercise or field maneuver are best explained by comparison with the control functions and role of the controller in the conduct of a CPX.

a. In the field exercise and field maneuver, the battlefield picture is continually portrayed to the troops at the lowest level by the umpire. The presence of all troops, the normal reports sent through command channels, and the information passed laterally provide most of the environment of the battlefield that control furnishes during a CPX. During a field exercise, controllers at brigade and higher furnish some information from adjacent units not playing and from intelligence sources not playing, but the amount of this information is small compared with that furnished by controllers during a CPX.

b. During the field exercise and field maneuver, controllers and umpires monitor the progress of player echelons, attend all player briefings and conferences, receive copies of player orders, messages, and reports, and report the progress of the exercise through the control chain of command.

c. The controller or umpire with a playing echelon only observes, reports, and stimulates. He does not direct players unless a safety hazard arises.



NOTE: Army Training Tests may be conducted as stated below. Brigade control commands all elements in the exercise.

1. If the opposing forces concept is used, two battalions maneuver against each other. Duplicate umpire organizations are required. Some specialized umpires may serve both sides.
2. If an Aggressor force is used, Aggressor commanders may act as umpires to control actions of Aggressor forces.

Figure 4–9. Umpire/control organization, battalion army training test (field exercise).

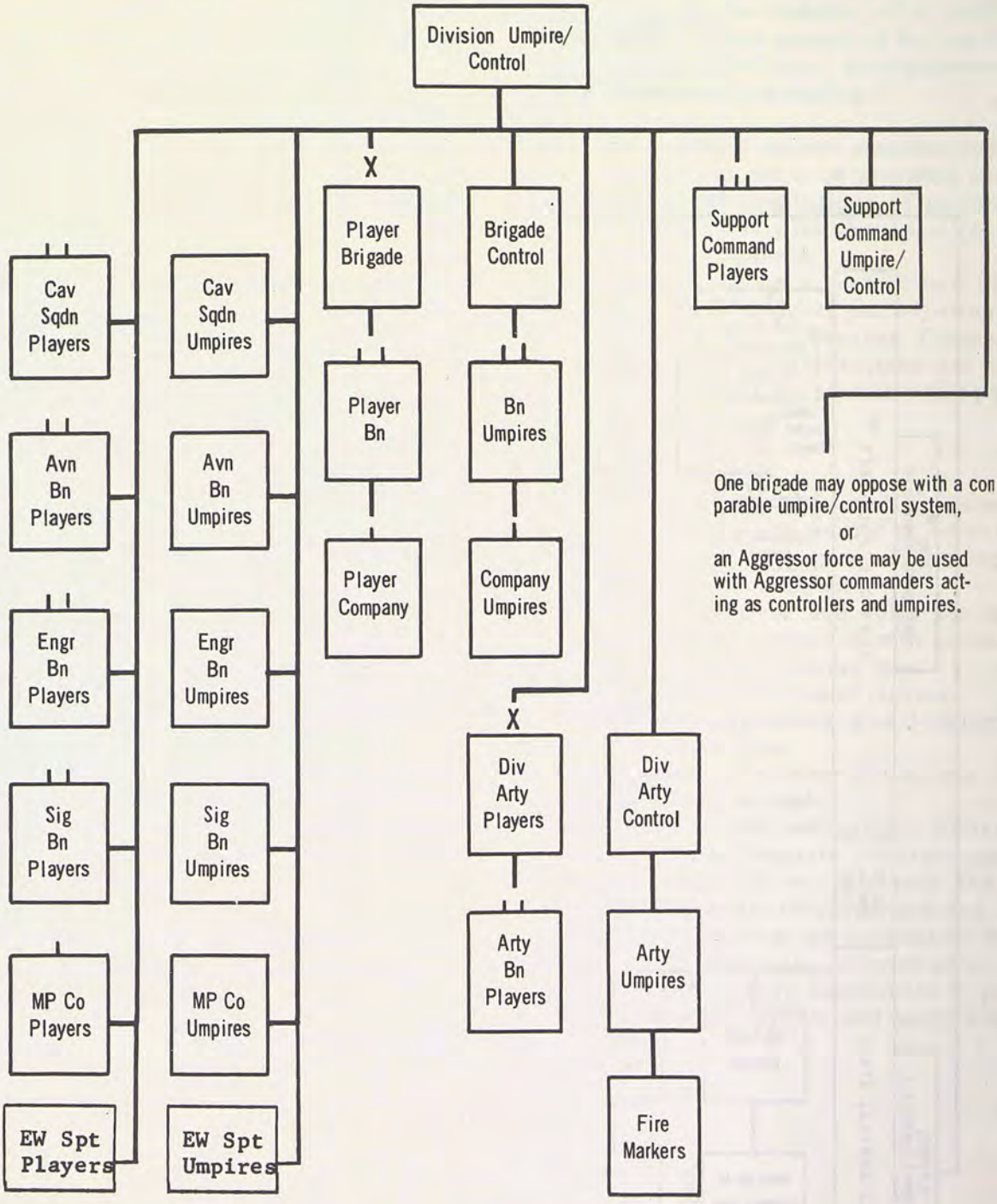


Figure 4–10. Umpire/control organization, division field exercise.

4–36. Control of a Battalion ATT

a. Figure 4–9 shows an example of an umpire/control organization suitable for a battalion undergoing an ATT.

b. When a brigade headquarters conducts the exercise, it functions as the overall control headquarters and does the following:

(1) Represents brigade headquarters for playing battalions, commands all playing battalions and elements, and commands the Aggressor force if used.

(2) Provides for support of all units in the field.

(3) Represents adjacent battalions or units for purposes of—

(*a*) Coordinating operations and intelligence.

(*b*) Maintaining liaison and flank contact.

(4) Represents friendly units for playing

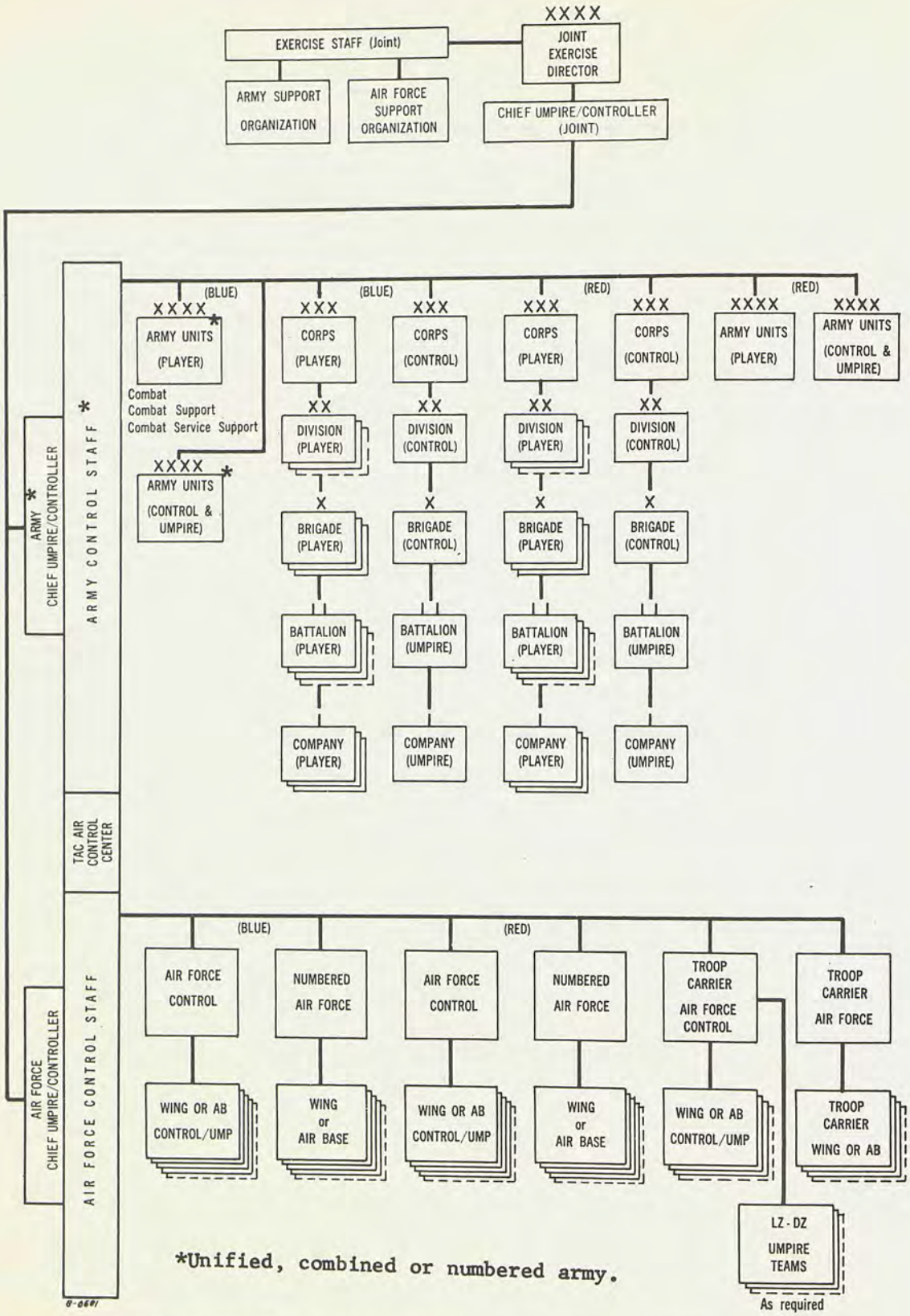


Figure 4–11. Umpire/control organization, field maneuver (joint).

elements for relief, passage of lines, and withdrawals through rearward positions.

(5) Commands the umpires with the tested battalions. The Aggressor commanders function as controllers if the Aggressor unit is not being tested.

(6) Provides additional area and specialized umpires and controllers.

c. Umpire/control communication facilities are comparable to those available to players. At battalion and below, umpires rely on mobile FM radios with sufficient range to contact their own unit umpires and the umpires of the opposing force. Above battalion, additional facilities, such as telephone, teletype, and HF radio, are needed. Controllers and umpires seldom require more than one radio net per unit. Most radio nets must operate 24 hours per day. Use of radio sets equipped with two receivers enables the umpire to monitor player radio transmissions and to operate in umpire radio nets.

4–37. Division Field Exercises

a. Figure 4–10 shows a typical umpire/control organization for the conduct of a division field exercise.

b. The control headquarters (division) represents higher and adjacent nonplaying headquarters and units.

c. To provide realistic play for support command elements, the division arranges for real or simulated higher echelon supply and service installations and facilities to support the exercise.

d. Umpire/control communication is provided as in paragraph 4–36*c*. If no additional communication resources are available to the division, it allocates resources between players and the umpire/control system.

4–38. Control of Unified, Combined or Numbered Army and Joint Field Maneuvers

a. Figure 4–11 shows a typical umpire/control organization for the conduct of a joint field maneuver. The Army portion of the maneuver is conducted by a field army headquarters with corps and army troops playing.

b. The control and umpire organization, concept of control, support to be provided, communication, and representations of nonplaying units are comparable with those tactical exercises previously discussed.

c. Appendix J shows a control and umpire organization for a division participating in a field exercise or field maneuver. Comparable control and umpire organizations are developed for corps and higher echelon units participating in the maneuver.

4–39. Common Faults

An exercise that is dominated by excessive control or by inadequate control at lower echelons is frustrating to players. Following are some causes of this situation:

a. Exercise objectives and rules are not in consonance with each other or with actual maneuver conditions that players face.

b. Insufficient orientation of players.

c. Insufficient experience and judgment of umpires and controllers.

d. An insufficient number of umpires to assess casualties and damage.

e. Failure to provide subordinate controllers and umpires with adequate situation reports and instructions that would enable them to anticipate and prepare for player actions.

f. Insufficient training and orientation of umpires and controllers in the exercise area.

g. Attempts to remedy deficiencies in player operations through control and umpire channels.

CHAPTER 5

UMPIRE ORGANIZATION AND CONTROL

Section I. UMPIRE ORGANIZATION

5–1. General

Two umpire systems are in general use—the area umpire system and the unit umpire system. The two systems may be combined or modified to fit the needs of a particular exercise.

5–2. Area Umpire System

a. In the area umpire system, one experienced officer, the area umpire, evaluates all factors bearing directly on the outcome of a specific engagement and delivers on-the-scene judgment as to the course of the exercise. The area umpires are assisted in this function by resident umpires.

b. An area umpire team consists of an officer and one or more enlisted assistants. It umpires the tactical action in a specified area for a specified period of time or umpires a particular engagement. The composition of teams varies according to the size and scope of the actions that they are expected to umpire. There are two types of teams:

(1) Company action team. This team consists of a major or captain and two noncommissioned officer assistants. Additional enlisted personnel may be assigned as drivers and radio operators. The team is designed to umpire the action between forces of company size. It may operate independently, or it may be placed under temporary control of a group action team.

(2) Group action team. This team consists of a colonel or lieutenant colonel and one noncommissioned assistant. It umpires and controls the action between forces of battalion, brigade, and regimental size. For any specific engagement, it is normally augmented by two or more company action teams.

c. Resident umpires may be assigned to each player headquarters for units of company and larger size. They remain with the same player unit for the duration of the exercise. Their functions are to monitor the orders and actions of their units, report these orders and actions to the chief umpire, assist area umpires in the control of tactical engagements, and evaluate the performance of the unit. The types of resident umpires are—

(1) Senior resident umpire/controller—the resident umpire/controller with the senior player headquarters on each side. The senior resident umpire/controller controls the other resident umpires on his side.

(2) Resident umpire/controller—an umpire with a subordinate combat unit.

(3) Senior combat service support umpire/controller—a resident umpire/controller at the senior headquarters on each side. He is concerned principally with combat service support, including planning and execution of rear area security and area damage control. He monitors combat service support activities of the staff and assesses the feasibility of tactical plans in the light of combat service support plans and actions. He is furnished technical service assistant umpire/controllers as necessary.

(4) Combat service support umpire/controller—a resident umpire/controller at the headquarters of a subordinate combat unit. His functions parallel those of the senior combat service support umpire/controller.

(5) Combat service support unit umpire/controller—a resident umpire/controller with a combat service support unit. He monitors and evaluates all aspects of the operations of his unit.

d. A typical umpire/control organization for a free maneuver of division size is shown in figure J–5. This organization is expanded in larger exercises to preserve an effective span of control at the chief umpire/control level. Figure J–6 shows a suggested composition for umpire teams. This division of the maneuver areas into control areas facilitates the assignment of tasks to area umpires and fire marking teams, promotes the exchange of information with the umpire/control organization, and assists umpires in their reconnaissance. Control areas need not be uniform in size. In those areas

where engagement between opposing forces is anticipated, control areas may be smaller than in remote parts of the maneuver area. Control area boundaries should be easily identifiable. Dominant terrain features should be completely within a control area.

e. Operation of the system is as follows:

(1) Umpire/control plans and dispositions.

(*a*) The chief umpire/controller keeps himself informed of the orders and actions of the player units. He accomplishes this through personal visits and conferences with both sides, the use of assistant chief umpire/controllers in a liaison capacity, and timely reporting by resident umpires. Based on his review of player plans, he attempts to foresee the pattern of development of tactical engagement between the opposing forces.

(*b*) Area umpire teams in appropriate combinations are deployed in preparation for the anticipated initial engagements. Fire marking teams are deployed according to player fire plans and anticipated action. Teams not deployed are held in umpire pool locations for dispatch as required. Area umpire teams arrive at the scene of impending action at least 15 minutes before contact is established between opposing forces.

(*c*) The senior area umpire present in an active sector is responsible for all umpiring in that sector. All umpires operating in the area are subject to his instructions.

(2) Actions of area umpire teams.

(*a*) Before being dispatched, teams are informed of the disposition and plans of the player units.

(*b*) The area umpires familiarize themselves with the terrain and player dispositions on arrival in the area of contact. The senior area umpire establishes contact with resident umpires of the player units, determines the status of their units as it may affect the tactical action, and informs the resident umpires of the assistance that he expects from them during the action.

(*c*) When contact is established between opposing player units, the area umpires, under the direction and supervision of the senior area umpire, assess the combat power developed on each side. They make rulings concerning casualties and movement of units reflected by the combat power ratio.

5–3. Unit Umpire System

a. The chain of command of the umpire organization parallels that of the units participating in the exercise. In addition to the unit umpires, fire marking teams and umpire liaison teams are included in the umpire/control organization to mark fires, augment the unit umpires, and umpire special facets of the exercise or situations that may occur.

b. Typical umpire organizations for a maneuver of division size are shown in appendix J.

c. The senior umpire assigned to a unit is responsible for all umpiring within that unit. When contact is established between opposing units, the platoon and company umpires assess the combat power developed on each side, assess casualties, make rulings concerning movement that realistically reflect the combat power ratio, and report their rulings and the situation to the battalion umpire. The battalion umpire coordinates the actions of the company umpires, makes rulings concerning the movement and actions of the battalion that realistically reflect the combat power ratio, injects information concerning flank units or as otherwise included in the scenario, and reports his rulings and the situation to the brigade or regiment. At this and higher echelons the chief umpire/controller keeps the next higher echelon informed of the situation in his unit. He injects information in the scenario, or as required to force the play of the exercise depicted in the scenario. Disagreements between the umpires of opposite sides are resolved at the lowest echelons practicable in the umpire/control structure. The umpire/control criteria in chapter 6 are used as guides, but the area umpire relies on his judgment and experience to allow the tactical situation to develop realistically.

d. Prolonged actions and those that extend over great distances may be umpired in either of two ways:

(1) The area umpire teams assigned to umpire the action in a particular sector may have their activities limited to that sector. The action passes to the jurisdiction of other area umpires as the action moves into another sector.

(2) The chief umpire/controller may direct that certain area umpire teams follow the action from sector to sector until some player event, such as the completion of a tactical phase, breaks the continuity of the action.

5–4. Fire Marking Teams

Fire marking teams are found in both the unit umpire and area umpire systems. These teams portray the effects of surface-to-surface and air-to-surface chemical, nuclear, and nonnuclear fires. The types of fire marking teams are—

a. Fire marker, ground (FM–G). This team

portrays the effects of nuclear, nonnuclear, and chemical fires in its area of responsibility. It receives information concerning the delivery of these fires from umpire elements associated with the delivering agencies, either directly or through umpire headquarters. Normally, the team will consist of one or two qualified forward observers and a vehicle operator. Each team requires a small ground vehicle with a radio that can transmit on one channel and monitor two channels. The use of additional equipment, such as red flasher lights, red flags, small megaphones, smoke grenades, riot control agent grenades, and air and ground burst simulators, will add materially to realism. A team is capable of marking fires throughout the area normally assigned to a company; therefore, two or three such marking teams should be available for each frontline battalion in an exercise.

b. Fire marker, air (FM–A). This team performs the same function as the FM–G team. Its distinguishing features are that it is airborne in Army aircraft and is normally not limited to a specific sector of the maneuver area. It marks fires while airborne or while on the ground. It is especially useful for marking deep fires and fires delivered into areas not readily accessible to FM–G teams. This team consists normally of one or two qualified forward observers and the required number of pilots for 24-hour operations. The team is best equipped with a light observation helicopter (LOH) type aircraft with radio equipment to transmit on one channel and monitor two channels. In addition, a portable ground type radio will be necessary for dismounted actions. As with the ground marking teams, the use of pyrotechnics, smoke grenades, riot control agent grenades, flags, and air and ground burst simulators will increase the realism of marking procedures. One or two of the air marking teams are required by each direct support artillery battalion to effectively support fire marking operations in an exercise.

c. Fire marker, relay (FM–R). This team is located near an artillery fire direction center. It monitors all fire missions, assesses the effectiveness of the fire delivery operation, and transmits data to the appropriate FM–G or FM–A teams on type, time, volume, impact point, and origin of all fires delivered by the unit. This team also transmits information to the chief umpire/controller concerning delivery of nuclear fires. In effect, this team is a small artillery fire direction center and will require the necessary equipment (vehicle, shelter, radio sets, and office furniture) and personnel (officers in charge, computers, drivers, and radio operators) to man a 24-hour fire direction operation.

d. An example of the procedures employed in completing a surface-to-surface nonnuclear fire mission follows:

(1) The fire direction center (FDC) receives a fire mission.

(2) The FDC processes the mission.

(3) As the FDC processes the fire mission, the umpire at the FDC alerts the umpire with the firing battalion and the fire marker relay team (FM–R).

(4) The umpire at the FDC verifies the firing with the umpire at the firing battalion. He then provides the following information, as it becomes available, to the fire marker relay team:

(*a*) Location and description of target.
(*b*) Number of rounds fired.
(*c*) Type of fuze.
(*d*) Direction from target to guns.
(*e*) Caliber of weapons.
(*f*) Chemical agent, if used.

(5) The fire marking team (FM–T) expeditiously marks the target, furnishes data for shell reports as specified in (4)(*b*) through (*d*) above to the troops fired on, and reports "mission completed" to the unit umpire. Casualties and damage resulting from artillery fire normally are assessed by the umpire with the headquarters or unit concerned based on information received from the team marking the fire. The officer with the fire marking team may assist the unit umpire in assessing casualties. If the number of targets to be marked become too great for the FM–T's to handle the unit umpires can mark fires and the FM–R reports results to players. This situation often occurs during a two-sided exercise.

e. Using umpire/controller and fire request channels, the fire marking team provides the firing unit with information concerning the effects of its fires.

f. The best results are obtained when the FM–A and the FM–G conduct a joint operation. The FM–A can simulate fire adjustment if necessary, and the FM–G can accomplish the fire marking for fires for effect. The aircraft flies to the coordinates or the location specified by the observer in his initial fire request. The aircraft will orbit the initial location until a correction is provided. Depending on initial control instructions for the exercise, the imminent arrival of fires can be simulated by the use of rotating red lights on aircraft or red flasher lights on ground vehicles.

g. Fire marking teams are trained in marking nuclear, nonnuclear, and chemical fires. This

cross-training allows flexibility in the employment of fire marking teams.

h. Procedures for marking nuclear fires are in chapter 7.

Section II. MISSION, FUNCTIONS, AND DUTIES OF UMPIRES

5–5. Mission and Functions of the Umpire

The primary mission and functions of umpires in both the unit umpire and area umpire systems are—

a. To determine and portray the effects of movement, disposition, firepower, and logistics on the development of a tactical situation.

b. To cause the exercise to develop in such a manner that the individual soldier and the unit commander can take action and make decisions.

c. To provide the exercise director a means through which he can influence the operations of the opposing forces.

d. To report, as directed, all current and planned activities of the unit to which assigned.

e. When designated as an evaluator of the exercise, to inject data, material, or factors for test and evaluation as directed by the test and evaluation group.

f. To evaluate the operation and report on the proficiency of the unit or activity that he umpires. In small tactical exercises, an individual umpire generally is both the rater or evaluator and the controller. However, umpire/controllers, particularly in major exercises, may operate with one group functioning primarily as controllers and another as evaluators.

Section III. UMPIRE CONTROL AND PROCEDURES

5–6. Control

a. Control at battalion and lower units is accomplished by umpires assigned to units and activities. The combat responses or actions of participating troops are guided by rulings and direct announcements. Control is exercised by the chief umpire/controller through control channels. Continuous communication is maintained between the operating elements of the umpire/controller organization.

b. When making announcements, the umpire considers whether, in actual battle, the information would affect an individual, a portion of the unit, or the entire unit. These announcements make each soldier and unit commander aware of the tactical and logistic situations, including the nature of friendly and hostile opposition and civilian reaction.

c. Umpires avoid interferring with troops and do not reveal the location of troops by unnecessarily exposing themselves. Unit umpires comply with instructions on cover, concealment, and use of lights. The movements of unit umpires are not restricted to any particular area. They are allowed the freedom of movement necessary to best perform their duties. The only exception to this is in the area of units with a nuclear weapon capability. Commanders of these units must provide physical security; therefore, provisions are made and caution is exercised to avoid conflict with the actual security measures provided for nuclear weapon material. Unit umpires are not required to conform to radio silence, but they exercise caution to prevent revealing the position of the unit.

5–7. Rulings

a. The umpire renders a prompt and logical ruling in any combat, combat support, or combat service support situation that arises during the exercise. When contact is made between opposing forces, umpires allow the situation to develop until a tactical ruling is indicated or required. Rulings are based on relative firepower, tactical employment, combat service support dispositions, cover, concealment, terrain, fields of fire, surprise, and maneuver. Careful consideration is given to these factors so that umpiring is not merely a mathematical computation of relative firepower. The umpire takes precautions to prevent bodily contact and injury or damage to materiel. He makes on-the-spot decisions, based on current local tactical or combat service support situations, and determines and assesses losses to personnel and materiel. The umpire does not make tactical decisions; these are the responsibility of unit commanders.

b. The umpire decides whether either force is able to advance and protrays the situation accordingly. If, for example, the situation is such that the unit would not be able to advance in actual combat, the umpire paints the battle picture by voice or over a loudspeaker to portray intense and accurate hostile fire. In addi-

tion, when appropriate, he states that masses of refugees and displaced persons blocking main avenues of approach are considered effective deterrents to the unit's ability to operate successfully. If the unit would be able to advance, the umpire depicts appropriate enemy fire, affording the commander information that should lead to a decision to advance.

c. Umpires make a ruling when needed for clarification of a ruling previously made. Troops will abide by umpire rulings without hesitation or argument. Umpires assess additional delays, casualties, or damage if commanders or troops do not act in accordance with umpire rulings. The unit umpire advises the next higher echelon in the umpire/control organization of any such incidents.

5–8. Information Provided Umpires

a. Unit umpires will be furnished copies of SOP's in addition to copies of operation and administrative orders of the unit to which assigned. They study the plan of action, scheme of maneuver, and combat service support plan and report needed information to the next higher umpire control echelon through umpire/control communication channels.

b. Information of the strength, disposition, and plans of action of units is furnished the umpires of one side by the umpires of the opposing side. Information is exchanged continuously through direct communication between umpires of opposing sides.

5–9. All Units Subject to Attack

a. All units in a tactical exercise, regardless of their type, mission, or location, are subject to attack. Dismounted attacks against any unit are umpired in a manner similar to that prescribed for infantry. Umpires assigned to combat support units and combat service support units, as well as those assigned to combat units, are prepared to umpire any engagement in which their units are involved. Umpires advise the unit commanders of the importance of keeping umpires informed of contemplated actions.

b. Attack on a classified nuclear weapon activity at any level is controlled by the unit umpires so that attacking elements remain a minimum of 183 meters (200 yards) from any security area. Umpires assigned to combat, combat support, and combat service support nuclear weapon units will be alert to terminate action early to preclude any misunderstanding on the part of security guards. Security areas are appropriately marked. Guards, couriers, and other personnel directly involved are identified as *neutral* during the period that they are concerned with the security of nuclear weapons. When not concerned with the security of the weapons, they may be identified as *player* personnel and subject to the play of the exercise. Umpires assess casualties and losses in the normal fashion regardless of the security and safety restrictions that preclude completing an attack.

5–10. Infantry Operations

a. Infantry umpiring is based primarily on the actions of company and platoon umpires.

b. In carrying out their missions, umpires—

(1) Create the atmosphere of a battlefield by depicting the combat, combat support, and combat service support situations and events and the activities of civilians within the combat area.

(2) Determine and announce the results of contact after considering relative effective firepower, troop dispositions, combat service support, maneuver, and military aspects of the terrain such as observation, cover, concealment, and fields of fire.

(3) Assess military and civilian casualties and damage to material.

(4) Bring to the attention of the commander the effects on the operation created by refugees, displaced persons, and guerrilla activities.

(5) Designate captured personnel to be retained as PW's.

(6) Assist commanders in complying with safety regulations and report violations of safety rules.

(7) Supervise the tagging of simulated casualties, PW's, and damaged, destroyed, or contaminated equipment.

(8) Report on deficiencies as directed.

(9) Cause action to be halted when a combat or combat service support situation threatens to get out of control.

(10) Report plans and dispositions of the unit to the next higher umpire.

(11) Command and supervise activities of subordinate umpires.

(12) Prevent physical contact between troops of the opposing forces. Umpires and controllers exercise extreme caution in controlling opposing forces to prevent accidents and undesirable incidents, especially in the security areas of classified communication areas and special weapon units.

(13) Prevent damage to materiel.

(14) Instruct personnel of the unit to which assigned in umpire methods.

(15) Prepare a critique, and submit a writ-

ten or oral report of the performance of the unit to which assigned.

(16) Evaluate the use of active and passive air defense measures.

c. The umpires at the platoon and company level must "paint the picture." Since battle sounds may not be present in training exercises, announcements are made by umpires to supplement the use of blank ammunition and simulated shell bursts. These announcements also provide the basis for reports to be made by individuals and small units on their own and enemy actions. These reports to higher echelons provide the basis of actions taken at these echelons to maneuver their forces.

(1) Examples of announcements at platoon and company follow:

(*a*) "Bridge to right front—400 meters—four shells exploded close together—four more shell explosions—another four."

(*b*) "A shell just exploded 300 meters in front of you." Two minutes later—"Shell coming; impact 100 meters in front of you."

(*c*) "Fire from a machinegun in the vicinity of that large house (pointing) is searching this area."

(*d*) "Machinegun fire is sweeping directly over you; that rifleman (designating) disabled for 15 minutes by ricochet hit. First aid is required."

(*e*) "Bursts from a light machinegun striking in your immediate vicinity (indicate designated place); fire apparently coming from the direction of that cornfield. Machinegun fire has ceased."

(*f*) "A shell fragment has smashed the sight on your weapon." (After an artillery concentration.)

(*g*) (To a squad leader) "You have been hit; you are wounded in the left leg and it appears that a vein has been cut."

(*h*) "Four shells just exploded upwind of you."—15 seconds later to any unmasked personnel—"You have a tightness in the chest. Your vision is getting dim and you feel dizzy." (Symptoms of nerve agent effects.)

(*i*) "Four shells just exploded 50 meters upwind of you—odor in the air of garlic (or horseradish)."—10 seconds later—"Four more shells have just exploded upwind."

(*j*) "The outlet valve disc on your mask is torn."

(*k*) (To a platoon leader) "Each man in your platoon used the content of their M13 kit as a result of contamination."

(*l*) "A nuclear weapon has just exploded 1,500 meters to your right. You are seriously burned and your right leg is broken by flying debris. Your radio is damaged; you cannot use it." (Assess other casualties and damage in the unit or area as appropriate.)

(*m*) "You just saw a large, bright flash of light on the horizon, which was followed by the appearance of a black mushroom cloud. The azimuth to the burst was 275° and the cloud width after 10 minutes was 2,000 meters."

(*n*) "You heard the sound of tank engines about 1 kilometer from you in a southwesterly direction. This was followed by three or four rounds of heavy, flat-trajectory fire."

(*o*) "A civilian has just reported to you that he has observed the neighbors in his village gathering food and clothing. One resident of the village has been severely beaten because he failed to contribute."

(*p*) "A radio station is known to be operating from deep in a woods that has been used as a camp for local ruffians."

(2) Umpires will not—

(*a*) Fail to give an emphatic and clear description of the situation and the effect of hostile fire.

(*b*) Call out, "You can't advance beyond this point."

(*c*) Reveal the projected course of the exercise.

(*d*) Permit a long exchange of fire without announcing a decision.

(*e*) Give hostile fire data to the leader only, instead of announcing it so that all can hear.

(*f*) Fail to report independent actions of the unit.

(*g*) Permit an attack to succeed without proper fire support or before the enemy withdraws or suffers severe losses.

(*h*) Fail to observe the action of troops.

(*i*) Divulge knowledge of the terrain or show a map to the troops when they have no maps on hand or when the details of the scenario are depicted on it.

(*j*) Permit unit commanders to use umpire radios when theirs are out of action instead of requiring them to solve their own communication problems.

(*k*) Favor the unit that they are umpiring.

(*l*) Hold up the progress of the exercise to discuss the situation instead of portraying a reasonable picture and maintaining realism.

(*m*) Become involved in arguments or be unduly influenced by the unit commander. (The umpire renders impartial decisions.)

(*n*) Fail to be present when unit commanders issue orders, send messages, hold briefings, or prepare plans.

(*o*) Fail to submit complete and accurate reports at prescribed times.

(*p*) Fail to consider fields of fire, concealment, TC&D, cover, surprise, and dispersion in the employment of artillery and automatic weapons.

(*q*) Make tactical decisions that are the responsibilities of the commanders concerned.

(*r*) Provide intelligence not being sought by the unit concerned unless it is called for by the scenario.

d. Battalion umpires are responsible for—

(1) Reporting on the functioning of the whole unit, its staff, and any attached units.

(2) Supervising and coordinating the control exercised by company and platoon umpires. Umpires of small units act to avert physical contact between opposing player forces.

e. The responsibilities of brigade, regimental, division, and higher echelon controllers parallel those of the battalion in *b* above.

f. The employment of supporting fires at all echelons during all phases of an operation is carefully considered when evaluating relative firepower. For example, the fact that an attacker, during the advance to contact, is subjected to the fires of supporting weapons of the defender is considered in computing relative firepower. In such cases, umpires of the defender obtain and transmit to the appropriate attack umpires timely information of the supporting fires employed. Attack unit umpires assess casualties and delays based on this information.

5–11. Armor, Armored Cavalry, and Mechanized Infantry Operations

a. The procedures for umpiring armor, armored cavalry, and mechanized infantry actions are similar to those prescribed for infantry.

b. When umpire transportation capable of keeping up with the platoon is not available, the armor, armored cavalry, or mechanized infantry umpire rides in the tank or armored carrier of the platoon commander. These umpires are provided their own communication facilities and do not use the radios of the unit that they are umpiring. Tanks, armored carriers, and other vehicles that fail to react realistically to enemy fire are ruled out of action by the umpire.

c. Fire duels among tanks, self-propelled guns, and antitank guns are judged on the basis of cover, concealment, position, fields of fire, first aimed shot, caliber of weapons, and whether the tanks are stationary or moving. There is no fixed method of determining the victor. Each action is determined on its merit. In emergencies, green flags (day) or green star clusters (night) are used to halt all tank action to allow proper evaluation of all factors in order to arrive at a ruling.

d. Safety.

(1) The umpire slows or stops all armor action when the lives of personnel on the ground are endangered.

(2) Tanks and armored carriers are not moved unless an observer is in the commander's hatch. If the interphone system is operating, other hatches may be closed. The vehicle should not be maneuvered if the interphone system is inoperative.

(3) The position of friendly and Aggressor forces and the density of the civilian population determines the safety measures to be followed.

(4) Special instructions are issued for nighttime operation of tracked vehicles on roads and across country.

(5) Personnel on the ground stand when approached by armored vehicles. No additional casualties are assessed against personnel who reveal their positions by reason of approaching armor or mechanized vehicles.

5–12. Artillery Umpires

a. Artillery umpires are responsible for—

(1) Observing the tactical employment of artillery units.

(2) Supervising subordinate umpires and fire marking teams.

(3) Authorizing the marking of fire missions when proper artillery techniques are employed, to include complete procedures from start of check to "missile away" in the case of guided missiles and rockets.

(4) Assessing casualties and damage against the unit to which assigned.

(5) Reporting all changes in artillery unit locations and events that influence the exercise play.

b. Among the items observed and checked are—

(1) Planning and coordination.

(2) Intelligence.

(3) Fire direction.

(4) Logistics.

(5) Communication.

(6) Missile and ground support equipment checkout and firing procedure.

(7) Vulnerability of missile units to suppressive fires.

(8) Coordination in the use of airspace.

(9) Ability of air defense and field artillery units to operate under centralized and decentralized control.

(10) Adequacy of the rear area security plan to provide protection for missile units against the activity of special forces.

(11) Operation of the fire support coordination element at the tactical operation center.

(12) Adequacy of the field artillery fire support appendix to the fire support annex.

(13) Chemical fire planning and coordination.

(14) Dissemination of early warning.

(15) Ability to function properly in an EW environment.

5–13. Air Defense Umpires

a. The air defense command post is umpired to determine the effectiveness of fire distribution, the availability of identification information, and the degree of control of friendly aircraft. The chief Army air defense umpire/controller operates at the highest Army air defense command post, assisted as necessary to umpire and control the command post. All Army air defense umpire/controllers are supervised by the chief Army air defense umpire/controller. Air defense group command post umpire/controllers umpire the command post and are assigned as necessary. Command post umpire/controllers supervise subordinate umpires and observe the overall tactical, technical, and administrative performance of the air defense elements. Air defense umpire/controller representation is provided at the airspace control element (ACE) of the tactical operation center (TOC). Air defense umpire/controller activities must be coordinated with the Air Force, Naval and Marine air, and Army aviation umpire/controllers. The air defense annex to the fire support plan is examined for adequacy.

b. Air defense umpiring is based primarily on umpire/controllers located at the Army air defense command post, battalion operations center, ACE, and each ADA fire unit. An umpire/controller team consisting of, as a minimum, an Army air defense officer and an Air Force officer is located at each echelon of air defense command mentioned above. The assessment of whether an attacking aircraft is successfully engaged by air defense means will be made by the Army air defense controller. The Air Force umpire/controller will determine whether the attacking aircraft flew a course that would have allowed effective delivery of its ordnance and will assess any damage to the air defense battery (fig J–4).

c. Umpires with air defense artillery batteries (including headquarters batteries of brigades and groups) perform the following duties:

(1) Observe and report on performance of the air defense unit.

(2) Assess and report the engagement of aircraft by air defense artillery units. Group and brigade umpire/controllers determine the general effectiveness of the defense and assess the number of aircraft allowed to penetrate the defense.

(3) Observe and report on security; reconnaissance, selection, and occupation of positions; preparation for action; and tactical and logistic effectiveness. The umpires' observations should result in an adjectival rating except where direct action against the unit occurs, or failure of a unit to become operational at the proper time has impact on the defense.

(4) If system checks and adjustments are not proper, make appropriate adjustments in scores. Adjustment of scores are not less than 50 percent reduction of effectiveness if procedures are incorrect. Fire unit umpires determine in each engagement whether target detection, acquisition, identification, tracking, and engagement were such that a kill was accomplished and assess a percentage of aircraft casualties accordingly.

(5) Check for understanding of and compliance with brigade or group SOP. At brigade, check compliance with operating procedures and coordinating instructions of higher headquarters.

(6) Check for understanding and observance of conditions of readiness, rules of engagement, fire restrictions, and control by commanders.

(7) Check instructions pertaining to the use of nuclear warheads and compliance with the instructions to include communications blackout of tactical situations. Pass to higher umpire/control headquarters information regarding the use of air defense nuclear warheads at altitudes that will have effects on the ground.

(8) Use simulators to represent the smoke trail that is normally visible during the firing of live missiles. This provides the opposing force a real possibility for locating the air defense unit positions.

(9) Assess the effect of suppressive fires against air defense units that have been located by the opposing force. Air defense units effectively attacked will have an appropriate number of weapons ruled out of action by the umpire for periods up to 12 hours, and casualties will be assessed.

(10) Determine vulnerability of air defense units to special forces or guerrilla action, and the effective integration of local defense into the area security plan. The ability of the sup-

ported force to augment local air defense security elements is also evaluated.

(11) Check for dissemination of early warning information and rules for airspace utilization.

(12) Determine vulnerability of air defense communications and radar equipment to ECM.

d. When employed in the surface role, air defense fires are marked like other surface-to-surface fires. Umpires will note the air defense situation at the time to determine whether diversion from the primary mission was warranted.

e. For air defense weapons employed in a direct fire role in support of ground operations, unit umpires assess and report losses.

f. For divisions with VULCAN/CHAPARRAL (48 fire units) and/or REDEYE (49 to 62 fire teams), the number of air defense umpires required will depend upon the degree to which the air defense role is to be assessed.

5–14. Airborne Umpires

a. Qualified umpires are assigned to airborne units and follow the procedures outlined for infantry umpires. Airborne umpires are located with airborne units prior to movement from the base camp and report on the proficiency of the units in preparing for the airborne operation. Airborne umpires are also located at marshaling areas, departure fields, and landing and drop zones to observe and report on the proficiency of airborne units in marshaling for and conducting airborne operations.

b. Special effort is required by all control personnel to portray realistic situations in airborne operations. Because of training safety requirements, drop zone availability, and the gathering of observers and the press, locations and times of drops are difficult to conceal and can result in an unrealistic disposition of the opposing force around the drop zone. The opposing forces are restrained until the time that they can realistically move into a drop zone area.

5–15. Armored Cavalry Umpires

Armored cavalry units are controlled and umpired in a manner similar to that for the control of armor. Armored cavalry units are umpired as infantry in the event that they operate on foot. See paragraphs 5–10 and 5–11.

5–16. Combat Service Support Unit Umpires

The principal duties of the combat service support unit umpire are—

a. To note the location and operational efficiency of service installations.

b. To require observance of realistic time and space factors in performance of unit missions.

c. To determine whether the unit makes timely displacements forward with advance elements and whether continuous service is maintained during displacements.

d. To note the adequacy and timeliness of information furnished the unit regarding the plans and operations of supported troops.

e. To assess losses in materiel and supplies when installations or movements are subjected to enemy action, and to follow up assessments or losses and damage to ascertain whether proper measures for logistic reconstitution are taken. When damages to essential supplies are assessed, such supplies are released after a reasonable period provided action through normal supply channels is simulated.

f. To assess casualties and damages from nuclear and nonnuclear weapons and to enforce delays warranted by hostile action.

g. To determine the effectiveness of security, cover, concealment, dispersion, multiple supply installations, camouflage, blackout, air defensive measures, rear area security and area damage control measures, evacuation of casualties, and other practices that are necessary in actual combat.

5–17. Tactical Cover and Deception Umpires

a. Qualified TC&D umpires will be designated whenever possible.

b. The duties of the TC&D umpire are to—

(1) Observe and evaluate the execution of the TC&D mission(s) assigned by higher headquarters.

(2) Observe and evaluate the integration of TC&D tactics and techniques with other operations.

(3) Supervise subordinate umpires in assessing TC&D operations.

(4) Determine the state of training in TC&D.

(5) Check the TC&D plans.

(6) Check the counterdeception procedures.

(7) Assess the degree of success of TC&D operations.

5–18. Electronic Warfare Umpires

a. EW umpires are responsible for observing and evaluating—

(1) Staff planning for EW in support of combat operations.

(2) Preventive measures to minimize aggressor ECM.

(3) Defensive measures to combat the detrimental effects of ECM including ECCM procedures and provision for alternate means.

b. Although planning for ECM operations is often centralized at the division's electronic warfare element (EWE), the planning of defensive measures, including ECCM and SIGSEC procedures, is accomplished at all levels of command. It is essential that umpires follow, to the extent possible, all EW staff planning from its origination to implementation. ECCM and other reactions to aggressor-initiated ECM must be carefully evaluated in terms of probable effects on command and control capabilities.

c. Controllers should pay particular attention to player actions in regard to the following:

(1) Planning and conducting ECM operations.

(*a*) Formulation of an EW estimate.

(*b*) Staff coordination to acquire and develop targets from signal intelligence (SIGINT) information and other intelligence inputs.

(*c*) Identification of ECM targets with estimates of the effective radiated power of the associated aggressor emitter.

(*d*) Selection and priority of targets based on the extent of potential degradation of the aggressor command and control capability and resultant advantage to player forces.

(*e*) Awareness of current deployment and status of ECM and ESM resources.

(*f*) Coordination and control of ECM operations relative to—

1. Minimum interference with friendly operations.

2. TABOO, protected, and guarded frequencies.

3. Frequency ranges and prescribed minimum distances from nuclear and conventional weapons.

4. Reports of ECM initiation and termination.

(*g*) Preparation of an EW Annex.

(2) Defensive measures against Aggressor ECM.

(*a*) Circuit or net engineering to minimize ECM occurrence.

(*b*) Maintenance and update of enemy ESM and ECM capabilities.

(*c*) Plans for locating, neutralizing, or destroying aggressor ECM sources.

(*d*) Adherence to proper operating and SIGSEC procedures, including authentication of communication transmissions.

(*e*) Provisions in the communications-electronics standing instructions/communications-electronics operation instructions (CESI)/(CEOI) relative to frequency and call sign changes and instructions for actions to be taken in the event of jamming or deception.

(*f*) Operator proficiency in overcoming ECM through appropriate ECCM.

(*g*) Initiation of interference reports.

(*h*) Plans for alternate means of communications.

5–19. Special Exercises

In special exercises, such as arctic, amphibious airborne exercises, and unconventional warfare, qualified personnel are assigned to the staff of the exercise director to assist in preparing the problem and to the umpire group to instruct the umpires.

5–20. Night Operations

a. Offensive. Umpires of night operations become familiar with the plans and objectives of the unit and make a daylight reconnaissance of the routes and objectives.

b. Defensive. The umpires become familiar with the terrain, organization of the ground, defensive fire plans, counterattack plans, and signals to be employed. Umpires of retrograde operations become familiar with movement plans.

5–21. Unconventional Warfare Operations

Unconventional warfare (UW) operations are conducted in enemy, enemy held, enemy controlled, or politically sensitive territory. Unconventional warfare includes, but is not limited to the interrelated fields of guerrilla warfare, evasion and escape, subversion, sabotage, direct action missions and other operations of a low visibility, covert or clandestine nature. An umpire should be provided for each independent operation. Umpires should be qualified in UW operations. They use the umpire/control communication nets to pass information back to control headquarters. Within the control headquarters, an unconventional warfare controller receives, records, and dispatches information regarding the activities of special forces.

5–22. Civil-Military Operations Activities

a. Planning for and introduction of realistic civil-military operations activities are accomplished from the exercise director's headquarters down through corps and division levels. These activities may include the following, as appropriate to the purposes of the exercise.

(1) Provision of civilian support for and prevention of civilian interference with tactical and logistical operations.

(2) Provision of or support for the functions of government for a civilian population.

(3) Community relations of the military forces.

(4) Military-civic action as part of internal development operations.

(5) Military participation in a populace and resources control program as part of internal security operations.

(6) Military support of civil defense.

(7) Tactical psychological operations.

(8) Consolidation psychological operations.

(9) Provision of military control, care, and quartering of refugees and displaced persons.

b. As an example, control of civilian refugees is stressed. During the field exercise, commanders are required, by the problems imposed on them by the umpire/controllers, to designate routes for the evacuation of refugees and displaced persons, to establish refugee evacuation centers and refugee camps, and to take appropriate action for their care and control. In the event the commander fails to take the required action, the umpire/controller assesses a time delay or other penalty.

5–23. Chemical, Biological, and Radiological (CBR) Umpires

The number of CBR umpires and their assignments will vary with the extent of CBR operations to be included in the exercise. Chemical and biological fires will be marked by the regular assigned fire marker teams.

a. Chemical play by Aggressor and friendly forces is integrated into all tactical exercises. This play tests commanders and staffs in the tactics and techniques of chemical employment, as well as troop proficiency in CBR defense.

b. Requests for chemical fires are forwarded and processed through normal channels to the action headquarters. On approval of the mission, a copy of the fire mission is presented to the umpire at the action headquarters. This umpire will prepare a chemical attack alert notification, which is relayed to the controllers and the unit umpires concerned. The chemical attack alert notification, when completed, will bear the appropriate security markings. Figure I–2 illustrates the form that is used for this notification.

c. When the chemical strike is executed, the umpire at the action headquarters, fire direction center, or delivery unit broadcasts the warning "SHOT" and the "time on target" (*TOT*) over the general broadcast net to the unit umpires. A takeoff time and the estimated time over target are given in the case of airstrikes.

d. On receipt of the alert notification and *TOT* broadcast, unit umpires in the target area use the agent effects data to determine the area affected and to relate it to units on the ground. They coordinate the activity of fire markers to simulate the fires. As the attack is marked, unit umpires make detailed observations of individual and unit reactions. On the basis of these observations and the G, HD, M (Mustard), or V agent tables, the umpire makes casualty assessments and tags casualties. If appropriate, he informs the unit of the situation that would be known in actual battle.

e. The unit umpire prepares a chemical attack loss report, as illustrated in figure I–3, and transmits it to the chief umpire/controller. The report informs control headquarters of losses to units attacked and allows the controllers to inject intelligence information that informs the attacking unit of results achieved.

f. When terrain has been contaminated with persistent effect chemical agents, umpires accompany or precede player units into contaminated areas and evaluate reactions to the hazards present. So far as is possible, simulants are employed so that units are able to observe indications of contamination if they are alert to their surroundings; otherwise, umpire personnel provide the indications verbally. Umpires inform commanders of the time restrictions on the safe use of contaminated areas and assess casualties on the basis of unit reactions, protection, and CBR discipline. Lingering contamination is not played for G agents.

g. In evaluating (see example I–6, for sample CBR control plan) the play of chemical agents, umpires bear in mind the following general considerations:

(1) Limitation of weapons to those suitable for chemical fires.

(2) A commander's cognizance of support from higher headquarters when planning chemical fires.

(3) Employment of G agents (nonpersistent effect agents) for immediate casualties.

(4) HD and V agents employed for direct attack on personnel to cause delayed casualties, for contamination of terrain and materiel, to cause harassment, to create obstacles to traversal or occupation of areas, to restrict the use of materiel, and to contaminate troops as a result of their contact with contaminated terrain and materiel. These agents have a lingering effectiveness that applies to any troops that enter the contaminated area. If advancing ground units arrive at the contaminated area before the end of the period allowed for decay of contamination, they must delay further advance and decontaminate the area, or the commander must accept resulting casualties.

(5) A commander's use of intelligence and security in taking maximum advantage of the

vulnerability and surprise aspects of toxic chemical employment.

(6) Command action taken prior to employment of chemicals to insure that protective masks and other individual protective equipment are in the hands of troops, that masks have been inspected as prescribed, and that replacement protective equipment and supplies are available.

(7) The proficiency with which a commander plans and executes a chemical attack. The effects of attack time, terrain, vegetation, weather conditions, and exploitation are considered. Umpires evaluate the availability of accurate weather information and general intelligence activities incident to the attack.

(8) The umpire considers the variations in effects if the firing units deliver chemical agents in a manner other than that indicated in tables H–6 through H–18, i.e., duration of fire of more than 15 seconds, the employment of G agent in a harassing role (low concentration of GB vapor) only, or the massive employment that will cause a significant effect downwind from the target area. In these cases, the umpire refers to FM 3–10-series manuals for guidance or uses his own judgment to estimate possible casualty effects.

h. Plans for chemical attacks, which are part of the fire support annex, show the targets selected, agents to be used, and delivery means.

i. The time-on-target method of fire is employed when a chemical agent is used for nonpersistent effect. The fires of batteries or battalions are concentrated to arrive on the target area in 15 seconds or less. This type of fire produces casualties through surprise achieved. The original cloud lingering after the 15 seconds of fire and any additional fires beyond 15 seconds duration will have an additional effect over a greater area against personnel with defective equipment or poor CBR discipline. The casualty-producing effectiveness of various weapon systems delivering G agents is shown in tables H–12 and H–13 as a function of the radius of the target and the masking capability of personnel in the target area. Code numbers are assigned to each delivery means to permit rapid dissemination of the alert notification without weapon effects data. Weapon effects data from these tables are distributed prior to the start of the exercise to control personnel, unit umpires, and umpires at headquarters where action is taken on requests for chemical fire missions.

j. Tables H–17 through H–19 provide the data for assessing the effects of attacks with mustard (HD or M) agents. The initial mustard fire mission should be completed in 15 minutes, if possible. Fire missions can be repeated to maintain desired concentration for as long as a commander deems it practicable.

k. Tables H–14 through H–16 provide the data needed to determine the casualty effects caused by V-agent fires against occupied targets and by crossing areas contaminated with V agents. Both V-agent and mustard fires will restrict the use of terrain. A time penalty of at least 4 hours from the time of the fire mission will be imposed on commanders who accept delay rather than to cross, go around, or decontaminate the contaminated area. The umpire may increase the delay time based on existing conditions, the degree of contamination, and the agent used.

5–24. Nuclear Fires

The control and procedures for nuclear weapon play are in chapter 7. Paragraphs D–43 through D–54 provide instructions regarding nuclear play in war gaming.

5–25. Staff Umpires

Umpire/controllers at battalion, brigade, and higher headquarters check the staff functioning and the operations of attached elements. Areas of special interest are furnished by the headquarters of the exercise director in addition to the training objectives stated in the exercise directive.

5–26. Air Umpires

a. Duties of Air Force Umpires. Certain duties and responsibilities of Air Force umpires are general and apply to any type of maneuver in which Air Force units participate. These duties are—

(1) Deciding the results of contacts, taking into account the prevailing tactical factors of control of the air relative forces and firepower, surprise, and unit readiness for action.

(2) Determining the results of air attacks on ground targets either by means of a radar scoring unit or by reference to damage assessment tables.

(3) Determining whether the attacking aircraft flew a course that would have allowed effective delivery of its ordnance.

(4) Keeping the chief Air Force umpire/controller and other unit Air Force umpire/controllers informed by timely reports of the results of maneuver plans of unit commanders; and of movements, actions, and dispositions of Air Force maneuver units and installations, and by notifying control headquarters of planned nuclear attacks.

b. Coordination of Air and Ground Umpire Functions. In any maneuver involving both air and ground action, situations arise in which air and ground operations interact with each other. The airspace controller is responsible for coordination and control of the airspace over the maneuver area. In some cases, the normal functions of the air umpiré tend to overlap those of the ground umpire. Therefore, specific umpiring responsibilities are assigned to air and ground umpires. The following constitute a general guide:

(1) Air Force umpires are responsible for—

(*a*) All air-to-air contacts. Damage is assessed by using damage assessment tables.

(*b*) All troop carrier responsibilities in the airborne assault or logistic support.

(*c*) Air-to-ground targets. The air umpire with a flight transmits to the chief controller through air control channels the following information prior to takeoff:

1. Time of takeoff.

2. Estimated time of arrival at target.

3. Number and type of aircraft.

4. Type of armament.

5. Mission and specific targets.

6. Chemical agent, if used; dosage; and area covered.

(*d*) Damage by hostile attack to airbases and to aircraft on airbases.

(*e*) Logistic support by Air Force aircraft, including—

1. The appropriateness of directives issued for bringing air supply items to loading points.

2. The preparation of loading plans, effectiveness of combat loading, and adequacy of aircraft.

(2) Army umpires are responsible for—

(*a*) The preparations for enplaning, the efficiency of loading plans in supporting tactical requirements of the forces, the actual jump or landing, and operations of the forces thereafter, in an airborne, airlanded, or helicopterborne operation.

(*b*) Damage to ground targets by attacking aircraft.

(*c*) Determination of the results of an engagement between air defense units and hostile aircraft.

(*d*) Damage to attacking aircraft by air defenses.

(*e*) Use and efficiency of logistic support by air.

(*f*) Coordination between Army air defense, Army aviation, and other agencies with respect to airspace utilization.

(3) Joint Army-Air Force team umpires are responsible for—

(*a*) All aerial reconnaissance missions both visual and photographic.

(*b*) Operations of the air control center.

(*c*) Coordination between Army air defense, Army aviation, and other agencies with respect to airspace utilization.

c. Live Flying Scoring. During the live flying portion of an exercise, the Air Force forward air controller (FAC) will perform the dual functions of player and umpire. As an umpire, he will receive strength information from the Army unit umpire prior to the mission time over the target (TOT). He will retain this information and will disseminate it to the pilot and S3/G3 air only after successful completion of mission. To be scored successful, the aircraft must either make at least one effective pass at the target or be "ruled" successful by the FAC. For the FAC to "rule" the mission successful, the aircraft must have established radio contact with the FAC in the vicinity of the target and, in his opinion have been capable of making a successful mission under wartime conditions. If the mission is unsuccessful, the FAC will so inform the pilot, the Army unit umpire, and the S3/G3 air, stating the reason. The Army unit umpire will assess damage to ground troops and equipment according to procedures in paragraphs 6–14 and 6–27. The Army air defense umpire will assess damage to attacking aircraft according to procedures in paragraph 6–28.

d. Army Aviation Umpires. The mission and duties of Army aviation umpires include measuring the effectiveness and responsiveness of Army aviation units in improving the combat and combat service support mobility of the combat arms, in providing effective command and control support, in providing battlefield surveillance and aerial observation, in accomplishing aeromedical evacuation missions, and in providing aerial firepower. The firepower scores of the weapon systems employed by Army aviation are given in appendix E and are considered in the determination of relative firepower. Umpires accompany each flight of armed Army aviation and communicate and coordinate with ground umpires in assessing casualties and damage on ground units and aircraft. Appropriate tables in appendix G provide a basis for assessing casualties and damages inflicted by armed Army aviation elements. Umpiring of Army aviation employed in a combat service support role is based on paragraph 5–16.

5–27. Miscellaneous

a. Umpires are assigned to all operative special units. See paragraph 5–35.

b. Adequate numbers of officer umpires are provided to control and evaluate the following:

(1) Agent mission.

(2) Guerrilla mission.

(3) Raid or infiltration mission (unit umpire may be used).

(4) Reconnaissance patrol (unit umpire may be used).

(5) PW installations at division or higher (to umpire the handling, processing, and exchange of prisoners). (At levels below division, unit or staff umpires may be used.)

c. In internal defense and development activities, the surprise attained is weighed more heavily, and relative firepower plays a lesser role.

d. In principle, the role of PSYOP, during limited or general war is another form of combat support that a commander employs to aid in accomplishing his mission. PSYOP are of particular importance to all commanders in internal defense and internal development operations; therefore, during the conduct of these types of field exercises, commanders are required to employ PSYOP as outlined in FM 33-1.

Section IV. UMPIRE RECORDS AND REPORTS

5–28. Troop Location Reports

Prompt and accurate reports are the foundation of umpire control. Unit umpires at all echelons submit periodic reports. Important changes in the situation or in the location of units are submitted without delay in the form of special reports. Reports state unit designation, location of the command post, current mission or employment, and additional information pertaining to the current situation.

5–29. Daily Report

A daily report on unit operations is prepared by all unit umpires and submitted to the chief umpire/controller through control channels. The period to be covered, the time of submission, and the content or recommendation desired are prescribed by the chief umpire/controller (fig I–4).

5–30. Artillery Control Records

Fire marking and fire marker relay teams keep records of nuclear and nonnuclear fires. Low-altitude air defense nuclear warheads are recorded. These records are kept in a format similar to the artillery control log maintained at the artillery FDC.

5–31. Air Defense Artillery Reports

Air defense artillery (ADA) reports on ADA unit damage and aircraft fills are submitted by the umpire/controllers through ADA control channels as soon as possible after completion of the action. Sources or report data are control van scopes, dials, plotting boards, event recorders, and air/ground radio contact with aircraft flight leaders. Formats for these reports should be prescribed in the exercise umpire/controller instructions. If aircraft destroyed by air defense artillery (ADA) are to be removed from play, aircraft kills must be reported immediately by radio through umpire/controller channels, and the flight control agencies must be notified to recall the aircraft.

Section V. UMPIRE SELECTION, TRAINING, AND ASSIGNMENT

5–32. Personnel Requirements

a. Personnel requirements vary depending on whether the area or unit umpire system or a combination of both is used, whether the exercise is free or controlled, and the extent to which the umpires are used as evaluators.

b. The personnel requirements set forth in figures J–1 through J–4 are a guide to selection of umpires.

5–33. Umpire Selection

a. Every effort is made to obtain personnel with previous experience for key umpire staff and specialist positions. Officers assigned as unit umpires normally belong to the same branch of service as the unit to which assigned.

b. Officers trained in the employment of chemical and nuclear weapons are provided for the umpire/controller organization as required.

c. Personnel with special training or background in special forces activities, TC&D activities, EW activities, internal defense and development activities, PSYOP, and airborne and airmobile operations are selected and function in their areas of specialization.

b. It is generally undesirable to draw umpires from units participating in an exercise, especially those undergoing an ATT. The loss of key

personnel degrades the overall training benefits of the exercise. If, however, umpires must be drawn from participating units, created vacancies are filled by junior personnel.

5–34. Umpire Training

a. General. The degree to which the objectives of any tactical exercise are achieved is directly related to the manner in which the umpires and the umpire organization perform their functions. Trained umpires are required in all units and headquarters conducting tactical training. Umpiring is sufficiently important to be a part of the regular training of units and headquarters and in officer and noncommissioned officer schools.

b. The Umpire School. Plans are made for the conduct of an umpire school early in the planning phase of a tactical exercise. Consideration is given to the type and scale of the exercise and the umpire system to be used. Other factors that are considered are the number of umpires to be trained, their previous experience, the time available, the facilities and funds available for training, and the availability of qualified instructors.

c. Umpire Training Program.

(1) The time required for umpire training may vary from a few hours for a squad or platoon problem to as much as several weeks for a field maneuver.

(2) Umpire training includes classroom conferences and demonstrations followed by a reconnaissance of the exercise area and practice in umpiring with troops. The training is planned to present instruction common to all umpires followed by instruction appropriate to the echelons to be umpired and to those umpires performing special functions. Emphasis is given to schooling umpires to function at each echelon of command and to those concerned in fire marking, toxic chemical, air defense, nuclear weapons, Army aviation, biological, and radiological aspects of the exercise, and the duties and procedures incident thereto.

(3) All umpires are instructed on the umpire communication system.

(4) The conduct of practical exercises and rehearsals during umpire training affords the chief umpire a means of testing the umpires. The exercises are varied so that umpires develop confidence in their ability to handle all situations likely to be encountered. When circumstances permit, it is desirable that umpires work with units in the field to afford them an opportunity to apply and practice the procedures and techniques taught in the classroom. Small unit exercises are particularly valuable for this purpose and for the orientation of troops in umpire methods, procedures, and techniques. This type of exercise may also be used in the training of large groups of umpires. Those not engaged in umpiring may observe and critique the performance of others.

(5) One or more practical exercises are conducted as rehearsals for umpires prior to the conduct of any tactical exercise. These rehearsals should be conducted over the terrain on which the exercise will be conducted. Simulated nuclear bursts, casualty and damage assessment, and reporting procedures incident to the use of nuclear weapons are rehearsed by all umpires. Fire marking procedures and techniques for both ground and air fire marking teams are also rehearsed.

(6) If the umpires are to function as evaluators as well as arbiters or controllers, the checklists to be used for evaluation are prepared prior to conducting the umpire school. Instruction in the evaluation function and in completing checklists is given in the program of instruction.

(7) A typical umpire training program is shown in appendix K.

5–35. Umpire Assignments

a. Annex J outlines typical umpire assignments.

b. Umpires are assigned to all operative special units, such as military intelligence units, civil affairs units, PSYOP units, US Army Security Agency units, counterintelligence units, nuclear delivery and nuclear weapon support units, and special force units.

c. Headquarters, depots, hospitals, and units of a support command are assigned umpires on the same basis as comparable headquarters and units referred to in paragraph 5–32. Umpire requirements are less for those units that stay in the same area for comparatively long periods.

d. Qualified noncommissioned officers are used as assistant umpires and may be used as umpires in small unit exercises.

e. Umpires join the unit or headquarters to which assigned 1 or 2 days prior to the start of the exercise to permit them to become familiar with the unit, its status, and its missions. The unit to which he is assigned provides classes I and III support for the umpire.

Section VI. COMMUNICATION

5–36. General

Umpire communication means normally consist of radio, wire, radio relay, and messenger. Radio communications are necessary for fire marking teams and unit umpires at battalion and below. Wire and messengers are used for routine messages to reduce the volume of radio traffic. For large-scale exercises, communications for umpire/controllers is augmented by the use of helicopters. Normally radio relay systems to provide multichannel communications are required at division and higher echelon control. Access to the multichannel communication system also may be required at division artillery and brigade control points. If there is a well established wire system in the exercise area, accessible leads at terminal points in various localities will provide essential communications between control headquarters and unit umpires. This reduces maneuver control demands upon the multichannel communication system.

5–37. Free and Controlled Exercises

In free exercises, identical communication nets are provided for umpires with both sides. Only the fire marker net is required with the Aggressor force in controlled exercises when unit umpires are not assigned.

5–38. Umpire/Controller Communication Center

An umpire/controller communication center is established in a large-scale exercise to facilitate the review and analysis of umpire reports by the operations section of the control group headquarters. The communication center has sufficient stations to provide one radio for each three battalions or brigades reporting to the operations section. Telephone facilities and teletypewriter circuits are provided as required.

5–39. Radio Nets

Umpire radio nets are organized in the same manner as, and parallel to, player unit radio nets (fig J–7).

5–40. Fire Marking

Fire marking teams maintain radio contact with the unit to which attached. Artillery lines of communication are used for communication between the control team and the FDC's only under exceptional circumstances.

5–41. Nuclear Weapon Communications

a. Special communication nets are required for the handling of nuclear weapons:

(1) General information.

(2) Fire marking net.

b. Existing controller nets are used to transmit strike data, TOT, and low altitude air defense nuclear burst information. This type information is characterized as follows:

(1) Normally transmitted by voice.

(2) Prearranged messages and operation codes are used for security of strike data.

(3) The net control station sends a time check every hour on the hour to check radio operation and the reception of transmissions, enabling the fire marking teams to check the reception in whatever area they may be located.

c. The fire marking net is used for communication between FDC's of artillery or other units having either a prepositioned or nuclear weapon delivery capability and nuclear weapon controllers. The fire marking net is characterized as follows:

(1) The net normally operates on voice but could have the capability of operating on radioteletypewriter (RATT).

(2) Cryptographic devices, prearranged message codes, and operation codes are used for the security of strike data.

(3) Particular attention is paid to propagation charts so the best operating frequency is allotted to this net.

(4) The net is operated on one frequency.

(5) The net is backed up by a wire system.

5–42. Use of Radio Retransmission Stations

Radio retransmission stations are suitably located throughout the exercise area to retransmit messages to the controller operations room, when distance or mechanical difficulties preclude battalion umpires from communicating directly with the controller operations room. Sufficient telephone and teletypewriter circuits between the retransmission stations and the controller communications center will be required to augment radio communications, during periods of peak traffic. Retransmissions stations are augmented by personnel to process messages and maintain a limited situation map for the chief umpire/controller and exercise director.

Section VII. IDENTIFICATION, FLAGS, AND SIGNALS

5–43. Identification of Personnel

Personnel are identified as follows:

a. US Force Troops. The regulation uniform of the Armed Forces of the United States.

b. Aggressor Force Troops. Aggressor uniforms and insignia prescribed in FM 30–102.

c. Umpires, Except Fire Markers. A white cloth loop worn on the left side under the arm and over the shoulder.

d. Fire Markers. A red cloth loop worn on the left side under the arm and over the shoulder.

e. Personnel Assigned to the Headquarters of the Exercise Director. A red and white cloth loop worn on the left side under the arm and over the shoulder.

f. Observers and Other Neutral Personnel. (Including nuclear weapon security forces.) A green cloth loop worn on the left side under the arm and over the shoulder.

g. Guerrilla Force Personnel. Appropriate clothing for the area of operations.

5–44. Identification of Vehicles

a. US Forces. As prescribed in AR 746–1.

b. Aggressor Force Vehicles. As prescribed in FM 30–102.

c. Umpire Group. A white flag approximately 1 foot square on a 4-foot staff fastened to the right front bumper of the vehicle.

d. Headquarters, Exercise Director. A red and white flag approximately 1 foot square on a 4-foot staff fastened to the right front bumper of the vehicle. The upper half of the flag is white and the lower half is red.

e. Other Neutral Vehicles. (Including those vehicles transporting nuclear weapons.) A green flag approximately 1 foot square on a 4-foot staff fastened to the right front bumper of the vehicle.

5–45. Identification of Aircraft

a. Umpire and controller aircraft are marked with four 12-inch bands, alternating white and green, around each wing. Similar markings are placed around the fuselage of helicopters.

b. Nuclear weapon fire marker helicopters are marked with four 12-inch bands, alternating red and white, around the fuselage.

c. Aggressor aircraft bear the Aggressor markings prescribed in FM 30–102.

5–46. Identification of Medical Vehicles and Installations

a. Red Cross markings are used on medical vehicles and installations. On occasion their use is curtailed by the commander for tactical reasons. Medical units and personnel participating in tactical exercises are considered under the protective provisions of the Geneva Convention.

b. Actual casualties and emergency medical supplies are transported in vehicles displaying a Red Cross Flag. These vehicles are permitted complete freedom of movement by all personnel.

5–47. Recommended Flags and Signals

(Each exercise director must establish control measures depending on availability of materials.)

a. Umpire Emergency Signals.

(1) *To stop infantry action.* Yellow flag during the day and a yellow star cluster at night.

(2) *To stop tank action.* Green flag during the day and green star cluster at night.

(3) *To stop all action.* Red star cluster. (The brigade or regimental umpire/controller or higher authority directs the use of the red star cluster and authorizes action to be resumed.) This signal denotes an emergency and is not related to the conduct of the exercise except to stop all action so that measures of an emergency nature appropriate to the situation may be taken.

b. Disabled Vehicles. Orange flag.

c. Simulated Obstacles. Black flag.

d. Aerial Fire Marking. As announced by umpire headquarters.

e. Airstrikes. White smoke grenades.

f. Firing of Tank and Antitank Weapons. When other means of representation are not available, a red flag is waved from the tank or gun position. If a tank or carrier is involved, blinking of the headlights may be used to indicate the firing of the main gun.

g. Nuclear Weapon Strikes. These strikes are indicated by appropriate simulators and augmented by announcements that depict casualty and damage radii over a portable (vehicle or helicopter) public address system.

h. Artillery Fire. Pyrotechnics, simulator, flash, artillery, and other simulators.

i. Forward Edge of the Battle Area.

(1) *United States.* Cerise (red) panels.

(2) *Aggressor.* Yellow panels.

j. Air Landing or Airdrop. Use of colored smoke in the area of a scheduled air landing or airdrop is reserved for the unit making the landing or drop for a period of H−30 minutes to H+1 hour.

k. Chemical Strikes. The strikes are indicated

by delivery of appropriate agent simulants and/or as announced by umpire headquarters.

l. Contaminated Areas. The appropriate standard marker for CBR contamination.

5–48. Emergency Measures

a. If control is lost, the unit umpire halts the action of the unit or units involved. He immediately reports the facts, together with the action he has taken, to the next higher unit umpire who investigates the situation and adopts one of the following courses of action:

(1) Announces his ruling to the unit umpi concerned.

(2) Reports the situation to the next high unit umpire for appropriate action.

b. Action described in *a* above is taken wh any of the following conditions exist:

(1) Safety regulations are violated.

(2) Existing conditions endanger life property.

(3) Exercise boundaries or off-limit are are violated.

(4) Range fires must be brought under co trol.

CHAPTER 6

CONTROL AND UMPIRE CRITERIA

Section I. COMBAT POWER AND RATES OF ADVANCE

6–1. Combat Power

a. Combat power is the total force, composed of destructive and disruptive forces, which a military unit can apply against an opponent. Combat power is not a quality which lends itself to absolute measurement. Rather, it is a combination of the functions of land combat, firepower, mobility, intelligence, command, control, and communications, and combat service support. The physical elements of land combat (weapons, radios and vehicles) are tangible elements, each with measurable characteristics and definite limitations. The human means (the people) are intangible elements of combat power which cannot be measured. The people's ability to use the physical means to perform the functions of land combat are based on their morale, esprit de corps, discipline, mental attitude, and state of training. These factors are, in turn, based on effective leadership, the leadership environment, and the psychological and sociological makeup of the personnel or the moral strength of the command.

b. The physical means and the human means are combined to perform the five functions of land combat in the environment of the battlefield. The elements of the battlefield which will influence the amount of destructive force that can be developed and applied include climate and weather, terrain, manmade resources, natural resources, civilian population, political constraints, and time and distance. The elements of the operational environment can either increase or decrease the amount of destructive force that can be brought to bear on an opponent. For example, for a military unit to accomplish its mission, it must make the most effective use of the terrain (observation and fire, concealment and cover, obstacles, key terrain, and avenues of approach). The proper estimate of the situation, the proper application of approved tactical doctrine, and the proper consideration of the principles of war will help the commander develop the aspects of tactics (what, when, where, how, and why) so that maximum combat power can be developed and applied against the opponent. Of major concern in the development of proper tactics is the appropriate use of the time available and the distances of the battlefield, selection of the time to begin a movement, selection of the rate of movement, and selection of the routes to be used for the movement.

c. The application of destructive force is, therefore, a combination of the ability of a military unit to perform the functions of land combat, the combat effectiveness of personnel, the most effective utilization of the elements of the battlefield environment, and the development of tactics which insure the development and application of maximum combat power.

d. "Combat power is significant only in relation to the combat power of the opposing forces." This statement is true because combat power of only one military force is insignificant by itself. A relationship of the combat power of two opposing forces, or relative combat power, must be developed. To increase relative combat power a military force can increase the physical means available, can improve the combat effectiveness of personnel, can make better use of the environment, and can develop better tactics. Also, to increase relative combat power, a military unit can reduce the combat power of his opponent. The actions taken to reduce the combat power of an opponent are called disruptive forces, or countermeasures. For example, to reduce the effectiveness of the opponent's firepower, a military unit can reduce its vulnerability by making better use of the terrain to provide cover, by increasing the use of armor protected vehicles, or by moving at a faster rate so as to reduce the opponent's ability to find and hit his targets. Other examples of disruptive forces that can be applied against the opponent are—

To reduce ability to perform functions of—	*To employ disruptive forces of—*
Intelligence	Counterintelligence.

To reduce ability to perform functions of—	*To employ disruptive forces of—*
Mobility	Barriers, interdiction.
Command/control/ communications	Electronic warfare.
Combat service support	Denial operations, interdiction.
Leader-led	Psychological operations, surprise, pressure, and harassing fires.
Climate/weather	Time operations when climate and weather are disadvantageous to opponent.
Terrain	Select area for operation which is disadvantageous to opponent.
Resources—manmade and natural	Denial operations, interdiction.
Civilian population	PSYOPS, civil affairs.
Political constraints	PSYOPS.
Time—distance	Battlefield illumination, selection of tactics which will place opponent at a time-distance disadvantage.
Tactics	Tactical cover and deception surprise.

e. Combat power, therefore, is that total force, composed of destructive and disruptive forces, which a military unit can apply against an opponent. In an analysis of relative combat power a commander or staff officer must determine an overall relationship between the two forces. He must determine various strengths and weaknesses in the ability of a military unit to perform the functions of land combat, the combat effectiveness of personnel, the influence of the environment, tactics, ability to perform, and/or vulnerabilities to disruptive forces.

6–2. Effective Firepower

a. Guides for the determination of combat power based on effective firepower are as follows:

(1) If a unit attacks by fire and also maneuvers a portion of its force to strike the opposing force other than frontally, credit the maneuvering element with twice its normal effective firepower.

(2) If the attacking unit strikes the defender's flank or rear with its entire force, credit the attacking unit with three times its normal effective firepower.

(3) If the attacking unit is predominantly armor or mechanized and strikes the defender's flank or rear, credit the unit with from two to five times its normal effective firepower to allow for shock effect.

(4) If the attacking unit secures a high degree of surprise, credit the unit with up to five times the effective firepower that it would otherwise receive.

(5) If the defender occupies prepared positions (good advantage taken of fields of fire obstacles, observation, cover, concealment camouflage, and individual protection), credit the unit with up to five times the effective firepower that it would otherwise receive.

(6) Failure to observe proper tactical procedures or to provide for adequate supplies with which to conduct the operation results in loss of combat power through assessment of greater casualties and damage.

b. Other than casualties and damage, artillery fire affects opposing combat power as follows:

(1) Effective counterbattery fire neutralizes opposing artillery units for the duration of the fires.

(2) Artillery fire neutralizes the firepower of infantry within the impact area for the duration of the artillery fires.

(3) Artillery fire stops infantry movement within the impact area for the duration of the fires.

c. Observed fires of tanks or self-propelled guns neutralize the firepower of dismounted troops and all other firepower not located in armored vehicles or behind effective natural or artificial cover for the duration of the observed fire. Neutralization is limited to the area being fired on.

d. The effect of smoke on combat power is as follows:

(1) Tank and infantry units—reduced 50 percent when unit is being smoked and reduced 30 percent when their target is being smoked.

(2) Observed artillery fire—25 percent reduction when target is covered by effective smoke concentrations.

(3) Antitank fire is ineffective against targets concealed by smoke.

(4) If moving vehicles are obscured by smoke, direct fires against these vehicles are only 10 percent effective.

e. Smoke does not reduce the firepower or effectiveness of guided missiles or of air defense weapons employing electronic fire control.

f. The effects of chemical fires on firepower units are—

(1) Nonpersistent effects agent: Firepower of units is reduced 10 percent while personnel are wearing masks.

(2) Persistent effects agent: Firepower and mobility of unit is reduced until unit can effec

decontamination of equipment or is degraded by degree of protective posture the unit assumes.

g. Nuclear fires neutralize all firepower within areas where 10 percent or more of protected personnel become immediate casualties. The umpire should determine the period of neutralization.

h. The ability of troops to apply firepower against enemy ground targets is neutralized during an air attack. The effects of application of available firepower against the air attack is assessed in accordance with paragraphs 6–14*c*, 6–27, and 6–28.

i. Firepower of units involved in internal defense and development exercises will be affected by the results of the populace and resources control measures. These considerations may not be present in other types of exercises and are important in these internal defense operational environments. In addition to the factors of surprise, mobility, and initiative already considered in *a* and *b* above, the factor of popular support requires emphasis when contact occurs between insurgent and counterinsurgent forces. The populace of an area can have a decided effect on the outcome of a battle, especially when the populace has very strong commitments to one side, the area is densely inhabited, and the hostile force is small in comparison with the friendly force. The populace contributes to the outcome of a conflict by serving as intelligence sources, supply bearers, and guides; and possibly can impede movement by supplying false information. Umpires and firepower computers must assign arbitrary values to these factors, based on judgement, experience, and insight to compute unit firepower scores when contact occurs.

j. Many of the tables in appendix H provide only information regarding the probability of success for a single attack or strike. The probability of success for successive attacks or strikes can be determined from table H–41.

6–3. Rates of Advance

a. The umpire/controllers decide whether a force is able to advance based on considerations of maneuver, firepower, and combat service support. An attacking unit may advance against an opposing unit when it has a combat power superiority of a minimum of 2 to 1.

b. Tables that may be used as guides for determining rates of advance for infantry, armored, and mechanized units are shown in appendix E. In using these tables, umpires consider the following factors:

(1) Other than casualties and damage, artillery fires affect rates of advance as follows:

(*a*) Artillery fire on an attacking nonmechanized infantry unit halts the unit in place for 10 minutes.

(*b*) Artillery fire on a defending unit permits the attacking force to advance at an accelerated rate depending on the type of attacking unit.

(*c*) Artillery fire on mechanized units causes casualties only to exposed personnel—use 5 percent.

(2) Effects of nuclear fires will be determined by target analysis and probabilities.

(3) Failure of the attacking force to maneuver as part of its advance.

(4) Failure of the attacking unit to play combat service support functions, such as the resupply of ammunition.

(5) The extent to which the zone of advance is impeded by civilian refugees, displaced persons, and evacuees.

(6) The effects of obstacles, including chemical contamination of terrain.

Section II. FIREPOWER

6–4. General

a. When contact is made between opposing forces, normally one side is able to apply sufficient firepower to force the weaker side to withdraw or be overrun and destroyed. In the application of firepower, consideration is given to the factors of weather, terrain, morale, leadership, and state of training.

b. This section presents a general concept for determining firepower scores of both US and Aggressor units.

c. Changes in organization and armament of units and concepts of employment may necessitate computation of unit firepower scores for units participating in the exercise. The data in this section provide the basis for such computations. When computations are required, the control headquarters prepares and provides unit firepower scores to unit umpires.

6–5. Firepower Scores—US and Aggressor Weapons

a. To establish a basis for computing the firepower of a unit, a numerical rating or score is assigned to each US and Aggressor weapon. These scores apply only in determining the

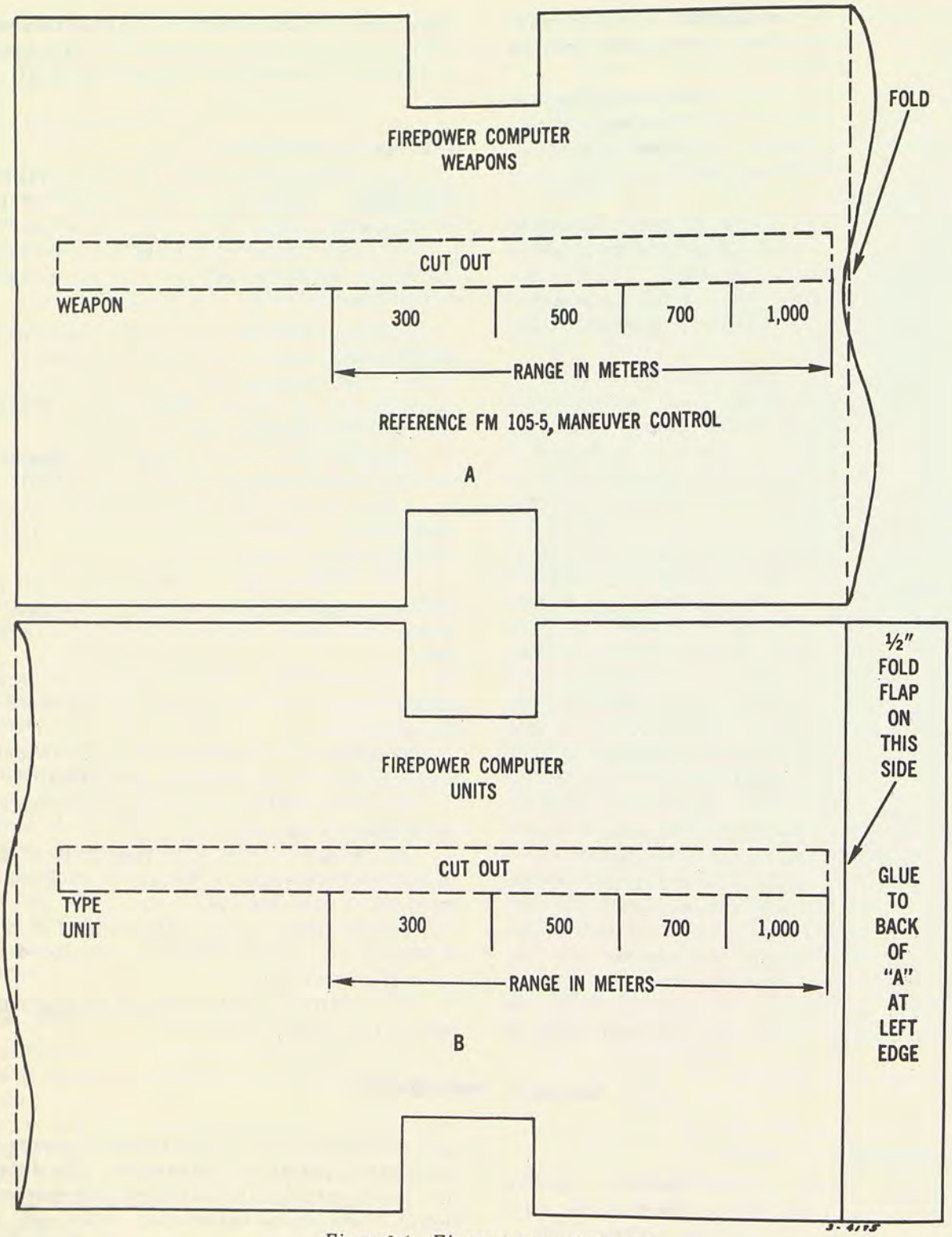


Figure 6–1. Firepower computer cover.

relative firepower of opposing weapons and not for the purpose of assessing casualties.

b. Tables in appendix E provide firepower scores for US and Aggressor weapons. These firepower scores are computed based on sustained rates of fire, effective width of burst, fragmentation area, and effectiveness of the weapon in comparison with other weapons.

6–6. Firepower Scores—US and Aggressor Units

a. The firepower score of a unit is determined by adding the firepower score of each organic weapon within the unit, plus attached and supporting weapons. To simplify computation of firepower, the score is based initially on 100

Firepower computer of Aggressor weapons				
Weapon	300 meters	500 meters	700 meters	1,000 meters
Rifle	1	0.5		
SMG	1			
LMG–7.62-mm	4	4	4	- -
HMG–7.62-mm	6	6	6	4
Mort 82-mm			12	12
Mort 120-mm			20	20
* *	*	*	* *	*
A				
B				
Support battery	300	250	220	220
Mortar battery	100	100	100	100
MG squad	12	12	12	6
MG platoon	40	40	40	20
Rifle squad	10	7	4	2
Rifle platoon	50	30	20	10
Rifle company	200	150	100	40
Battalion	1,200	900	700	500
	300 meters	500 meters	700 meters	1,000 meters

Firepower computer Aggressor mechanized battalion

1990-8

Figure 6–2. Sample firepower computer insert.

percent of tables of organization and equipment (TOE) weapons. In the firepower tables, increased credit has been given to the various echelons above the squad level to make allowances for leadership, massed fires, etc., and to facilitate the computations for umpire/controllers. Firepower scores are reduced as casualties and damages are assessed. Only those weapons capable of engaging the target should be considered in computing the firepower score.

b. The unit umpire maintains, at all times, an accurate record of the effective firepower of the unit that he is umpiring. To do this, he adjusts the initial firepower score of the unit involved by the percentage of the unit's losses and replacements. On the other hand, he must also consider adjustments for such factors as surprise, use of cover and concealment, and disposition of the troops and weapons.

c. Tables in appendixes F and G contain the firepower scores of US and Aggressor units at ranges of 300, 500, 700, and 1,000 meters, based on 100 percent of authorized weapons.

6–7. Firepower Computers

a. Firepower computers can be prepared to provide unit umpires a quick, easy method to determine the firepower of units. The computer consists of a cover and appropriate inserts. The computer cover (fig 6–1) shows the effective ranges of US and Aggressor weapons.

b. Tables listing the firepower scores of US and Aggressor weapons and units are reproduced and used as inserts with the cover. A sample insert is shown in figure 6–2. Additional information concerning firepower and casualty assessment, applicable to both US and Aggressor forces, may be extracted and printed on the back of the inserts.

c. The cover is made from a 4-inch by 12-inch sheet of 100-pound weight white index paper or similar material. When folded and glued, a 4-inch by 5¾-inch cover envelope is formed.

d. Inserts are made from a 5¾-inch by 8-inch piece of paper of the same type as the cover. When folded, a 4-inch by 5¾-inch insert is formed. Information on US forces can be printed on paper of a color differing from that pertaining to the Aggressor or opposing forces for convenience and ready identification.

e. The firepower computer is assembled by sliding the selected inserts into the cover. Firepower scores for US and Aggressor weapons may be read from side A of the cover, and the firepower scores of units from squad through battalion may be determined from side B.

Section III. CASUALTY ASSESSMENT

6–8. General

a. All losses that affect the progress of action, such as casualties in combat, combat support, and combat service support units and destruction or capture of equipment, supplies, and installations, are considered in umpiring.

b. In small unit exercises, the chief umpire maintains a running record of losses assessed. In large-scale exercises, this record is maintained by umpires and controllers at battalion and higher echelons.

c. The firepower of a unit is reduced by the accumulated losses assessed against the unit.

d. The number of casualties to be assessed and tagged depends on the actions of the opposing forces. Casualties are evacuated through either medical or graves registration channels to at least as far as the first medical or graves

registration installation. Personal property, individual weapons, and equipment are retained by the individual unless other official arrangements are made.

e. Losses assessed as a result of enemy action are a matter of judgment. The relative strength of the opposing forces is an important factor because the loss rates for inferior forces will be progressively greater. Casualties and damages assessed as a result of a nuclear burst may eliminate the unit, installation, or activity. These losses can be expected and are played realistically. Prior to assessing unusually heavy losses, umpire/controllers coordinate with the next higher control headquarters if there is any doubt concerning the effects of such assessment on the overall play of the exercise.

f. Casualties assessed in internal defense and development exercises, of both civilian and military personnel, will mainly be a matter of judgment. The umpire/controllers, however, will be guided by factors discussed in this section.

6–9. Assessment of Casualties

a. The assessment of casualties imposes a penalty on combat units by reducing their effective strength. When opposing forces are in contact, casualties are assessed in inverse ratio to combat power. For friendly forces advancing with a combat power superiority of 5 to 1, losses to friendly forces will be about 1/5 of those suffered by the opposing force. Combat power is not a simple addition of unit firepower scores. Consideration must be given to the type of action and method of force employment. Failure to apply proper tactical principles or failure to use concealment and cover, and movement through fields of fire without neutralizing the weapons covering the fields of fire, result in the assessment of a high percentage of casualties.

b. The assessment of casualties provides opportunities for realistic training of medical personnel. Casualties evacuated to and released from medical treatment installations are returned to their units through normal replacement channels. Casualties released from the division graves registration collecting point are sent to the division administration company for return to their units. Casualties are assessed and tagged by unit umpires. The tag shows the name, status (such as "walking wounded" or "litter case"), and the specific nature of the wounds. If casualties are assessed because of a nuclear, or chemical strike, a CBR detection and identification team will determine the type and extent of contamination and make recommendations on entry into the area and protection required. After rescue personnel take appropriate action to determine the hazards in the area, the umpire furnishes the simulated data to permit a decision. If no precautions are taken, umpires assess and tag as casualties medical and other rescue personnel who attempt to enter the area. Appropriate medical care is simulated as casualties are moved to the rear through medical channels.

c. The following ratios of killed to wounded are used as guides in assessing casualties:

	Killed	*Wounded*
Tank elements	1	3
Artillery elements	1	4
Infantry elements	1	4
All other ground force elements	1	4

6–10. Infantry Unit Casualty Assessment

Assessment of casualties against an infantry unit (for other than nuclear weapons) in any one day of severe combat seldom exceeds 15 percent. This percentage is considered in computing the total number of casualties assessed against rifle units. The following loss percentages can serve as a guide under each condition described:

a. Fire by opposing infantry—1 to 3 percent per hour.

b. Overrun by tanks or self-propelled guns. Elements within 100 meters of any tank or self-propelled gun:

(1) Not entrenched—3 percent per tank or 2 percent per self-propelled gun.

(2) Entrenched or in foxholes—1 percent per tank or self-propelled gun.

6–11. Artillery Unit Casualty Assessment

Personnel losses to artillery units subjected to counterbattery fire are negligible. Loss data for infantry are used, as appropriate, in the action considered. When a battery in position is attacked, casualty assessment against attacking and defending troops is based on criteria in paragraph 6–10 and on the relative firepower of opposing forces.

6–12. Armored, Mechanized, and Reconnaissance Unit Casualty Assessment

Personnel losses of these units fighting dismounted are assessed on the same basis as infantry losses. Personnel casualties resulting from vehicle losses are assessed as follows:

a. Tanks—two casualties per vehicle lost.

b. Armored Personnel Carriers—70 percent casualties of personnel occupying vehicle when loss occurs.

c. Self-Propelled Artillery—50 percent casualties of personnel occupying vehicle when loss occurs.

d. Armored Reconnaissance Vehicle—50 percent casualties of personnel occupying vehicle when loss occurs. Vehicle losses of these units are assessed as prescribed in paragraphs 6–22 through 6–30.

e. Helicopters—70 percent casualties of personnel occupying aircraft when loss occurs.

6–13. Casualties from Nuclear Fires

a. Procedures for assessment of casualties from nuclear bursts are in chapter 7.

b. Casualties are assessed in units if they are located in, or if they cross, fallout-contaminated areas and do not take proper measures or exceed safe stay times according to dosage level set by umpire/controller or scenario.

c. Contaminated areas of significant dose rates are identified by coordinates or by use of a radiac survey training set.

6–14. Casualties from Air Action

a. General. On confirmation of an air attack, either by tactical air or Army aviation, the umpire/controller marks the target and assesses casualties in accordance with the following. Casualties assessed as a result of an air attack fall into two categories. The first category covers situations where the primary target is materiel, e.g., tanks, self-propelled artillery, armored personnel carriers, and truck convoys. The second category covers situations where personnel rather than equipment are the primary targets, e.g., infantry in defensive positions, dismounted infantry attacks, or units in concealed assembly areas.

(1) *Category 1 targets.* Casualties are assessed after determination of equipment destroyed. Use procedures outlined in paragraph 6–27 to determine the number of vehicles lost in the action. Then use table H–6 with table H–40 or table H–7 to determine the casualties.

(2) *Category 2 targets.* Casualties are assessed based on a uniform distribution of the personnel in the unit area, comparison of the unit area, the area covered by the attack, and the type of ordnance carried by the attacking aircraft. Use tables H–6 and H–23 or table H–7 to determine the percentage of casualties suffered by the unit.

b. Airstrikes on Installations. Casualties resulting from attacks on installations such as supply dumps, maintenance facilities, and bridges are a matter of judgment. Consideration should be given to such factors as the type of supplies (an exploding ammunition or fuel dump will cause a higher percentage of casualties than a destroyed engineer equipment park), bridge traffic at the time of attack, or type of building used to house the facility.

c. Effect of Air Defense. Consideration must be given to the effects of active air defense missions in all cases of casualty and damage assessment. This consideration is applied by reducing ground force losses after determination of attacking aircraft losses per paragraph 6–28.

d. Aircraft Armament. In the case of preplanned airstrikes, information on aircraft ammunition load is provided to the umpire. For target of opportunity strikes, a standard load will be assumed. Exercise directives will include standard ammunition loads for all types of aircraft.

e. Table H–6 has an attached example to provide more flexibility in assessment procedures. Table H–6 is recommended for use when a more analytical approach to casualty assessment is desired and fast assessment is not required. Table H–7 is recommended for use in the field by small unit umpires or controllers. In addition, table H–7 is a sample of what can be prepared by exercise director control personnel prior to an exercise when presumably the types of aircraft and ammunition loads to be employed in the forthcoming exercise are known.

f. Preplanned Strikes.

(1) *Using table H–6.* With the basic strike information outlined in paragraph 5–24, the ground umpire uses table H–6 to determine each single-shot probability that conforms to each weapon to be delivered against specific targets. If specific targets are not known, umpires should estimate an aiming point that conforms to the flight path of attacking aircraft. Since it is extremely unlikely that a single aircraft with one single ammunition load will attack only once, the umpire uses table H–41 to determine accumulative probability for a specified number of attacks against each specific target.

Example: One aircraft drops two 750-pound bombs in one pass on semiprotected troops.

Step 1: Read kill factor from table H–6 as .20.

Step 2: With a straight line connect .20 on left scale of table H–33 with 2 on the right scale, and read .34 on the middle scale. This is the accumulative casualty percentage.

Step 3: Refer to radius of effects in table H–6. Thirty-four percent of troops within

an 8-meter radius of the estimated impact point are killed. The remaining 66 percent are wounded. In addition, 34 percent of the troops in the area 8 to 13 meters from the point of impact would be wounded. The remaining 66 percent would be safe.

(2) *Using table H–7.*

(*a*) Once the strike has been determined to be successful, the ground umpire assesses casualties in accordance with table H–7.

(*b*) Notice that table H–7 is based on flight of four high-performance aircraft loaded with napalm, 750-pound GP bombs, 2.75 HEAT rockets, and 20-mm cannon. Different aircraft and ammunition loads would require different tables. In addition, the example contains the premise that ground troops would employ normal evasive passive air defensive measures after being surprised by the first pass. Ground troops failing to take proper evasive actions could be assessed higher casualties until these actions were taken. On the other hand, ground troops that had taken the proper actions before the aircraft attacked should be assessed casualties on the additional pass rate.

g. Target of Opportunity Strikes. Exercise instructions will include standard ammunition loads for all types of aircraft. When the ammunition load is unknown to the ground umpire, the umpire will assume that the standard load is all expended and will use procedures outlined above.

6–15. Casualties from Artillery and Mortar Fires

a. Artillery Fire. Losses from artillery fire are related to the caliber of the weapon, the area covered, surprise achieved, fuze employed, number of weapons fired, and the number of volleys fired. Tables H–8 through H–10 list the percentage of loss for each artillery weapon using nonnuclear projectiles. In determining losses incurred and the area effectively covered by air defense artillery, tank, and other weapons used in a field artillery role, use the effects data for the weapon most closely corresponding in caliber with the one being used.

b. Mortar Fire. Eight rounds of light or medium mortar (81-mm) or six rounds of heavy mortar (4.2-inch) are considered equivalent to a 105-mm battery volley.

6–16. Casualties from Mines and Boobytraps

a. With the use of the standard family of practice mines which contain different colored smoke indicators for each basic type of mine, the umpire assesses casualties as follows:

(1) Blast AP mines (green smoke indicator). Only the man who steps on the mine is assessed a casualty. If he is operating a mine detector, it is not considered destroyed or damaged.

(2) Fragmentation AP mines (blue smoke indicator). Fifty percent of the personnel within a radius of 10 meters are assessed as casualties. Any mine detector being operated within this radius is considered destroyed.

(3) Chemical AP mines (yellow smoke indicator). Fifty percent of the personnel within a radius of 10 meters are assessed as casualties. Any mine detector being operated within this radius is considered contaminated.

(4) Blast AT mines (white smoke indicator). The vehicle which actuates the mine is considered to have received severe damage.

(*a*) If a tank actuates the mine, 10 percent casualties are assessed to the crew, and 50 percent casualties are assessed to personnel outside the tank within a radius of 10 meters.

(*b*) If an APC or truck actuates the mine, 30 percent casualties are assessed to all persons riding in the vehicle and 50 percent to personnel outside the vehicle within a radius of 10 meters.

(5) Penetration AT Mines—M21, M24 types (black smoke indicator). Any vehicle that actuates or is hit by the mine is considered to be destroyed, and 90 percent of the personnel inside the vehicle are assessed as casualties. Ten percent of the personnel outside the vehicle, within a radius of 10 meters, are assessed as casualties.

b. When manually breaching a minefield containing antipersonnel and antitank mines, the following is used:

(1) Assess one casualty per 50 meters of depth when a force breaches a two-lane path 3 meters wide; one casualty per 100 meters of depth when breaching a one-lane path 1.5 meters wide; and two casualties per 50 meters of depth when breaching one 7-meter vehicle lane.

(2) If the minefield is covered by fire, casualty assessment is based on the type and amount of covering fire.

(3) When integrated HE chemical minefields are breached, the presence of chemical mines increases the breaching time by 50 percent. Failure to wear protective clothing will result in additional delayed casualties.

c. When hasty breaching is used by armor, mechanized, or infantry units, table H–11 is used as a guide in assessing casualties.

6–17. Assessment of Casualties from Flamethrower Action

Losses resulting from flamethrower action are based on the following:

a. Impact Areas.

Portable flamethrower ... 10 × 49 meters
Mechanized flamethrower 15 × 175 meters

b. Casualties Assessed.

Twenty-five percent of personnel in the open.

Fifty percent of personnel in bunkers or fortifications with open embrasures and doorways.

6–18. Chemical Casualty Assessment

a. General. Losses from chemical attack are shown separately from other losses. However, if personnel are in the open, the fragmentation effects of cannon artillery chemical shells are considered as 1/2 the effects of an equivalent HE shell. In G-agent attacks, casualty percentages are determined largely by availability of masks and the ability of troops to mask rapidly following an attack if not masked at the time that the agent is delivered into the target area. In mustard attacks, percentages depend on the state of CBR discipline, exposure time, and protective clothing available. In V-agent attacks, the casualty level depends on the state of CBR discipline, clothing worn at the time of the attack, and the time in a contaminated area. When a chemical attack alert notification is used, unit umpires will be prepared to observe unit and individual reactions from the moment the attack starts. They can thus make more realistic casualty assessments. After a unit umpire applies assessment data from *b*, *c*, or *d* below to the local situation, he reports the chemical attack loss through umpire channels. Umpires should stress the importance of unit detection, warning SOP, and satisfactory CBR discipline in reducing personnel losses while making casualty assessments.

b. Casualty Assessments from G-Agent Attack.

(1) G-agent casualty assessments are based on the data in tables H–12 and H–13. Use of these data, in conjunction with effects templates, simplifies computation of weapon effects. The target radii given in the tables for artillery munitions and bombs represent 1/2 the long dimension of the target. If the aiming point of the delivery unit corresponds to the center of the area occupied by the umpired unit, the casualties are assessed on the basis of the percentage casualties shown for the smallest target radius of a circle that will just enclose the umpired unit. When the aiming point does *not* correspond to the center of the area occupied by the umpired unit, casualties are assessed on the basis of the data shown for the smallest target radius of a circle, drawn around the aiming point, that will just enclose the umpired unit. For example, a G-agent attack is to be made with one 115-mm RL, M–91 (code designation N9) with the aiming point (desired center of impact) at the location indicated in figure 6–16 below. By placing the center of the effects template over the aiming point on a map of the area, the umpire determines that the data shown for a 200-meter target radius should be used in assessing casualties against A company personnel and that the data shown for a 750-meter target radius should be used in assessing casualties against B company personnel.

(2) The empire of a unit that sustains an artillery-delivered chemical agent attack receives the chemical attack alert notification. At the scheduled time for commencement of fires, he has the fires marked by means of simulators, smoke, or riot control agent grenades. By using the weapon effects template, the G-agent tables, and his own judgment, and by observing the reactions of the attacked troops, he determines the casualties achieved by the attack. If a unit does not mask within 30 seconds after the initial rounds, the unit is treated as unmasked.

(3) Casualty assessment for G-agent sprayed from aircraft.

(*a*) Aerial spray of chemical agents may be simulated; or actual aicraft may spray a simulant or riot control agent, such as CS (FM 21–48). The unit umpire is alerted by the chemical attack alert notification and places himself where he can best observe the reaction of troops in the area. Casualties are based on the data contained in tables H–12*b* and H–13*b* and are a function of the downwind depth of the umpired unit or units and the masking capability of personnel in the area. The line of aircraft flight is the edge of the effects area since the agent must flow downwind. The chemical weapon effects template can be used by the umpire as an aid in determining the casualty level to be assessed against units located at various distances downwind of the aircraft spray release line.

(*b*) If the aircraft spray (or ground-delivered aerosol) is delivered off target to float on the target and no discernible simulant agent is being used, the unit umpire prepares individuals to simulate the G-agent symptoms. This action would be the first warning of such an attack. Casualty effects are estimated based on the unit reaction to this warning and the G-agent weapon effects tables.

(4) The casualties to be assessed for the fragmentation effect of G-agent artillery rounds are 50 percent of those achieved by the

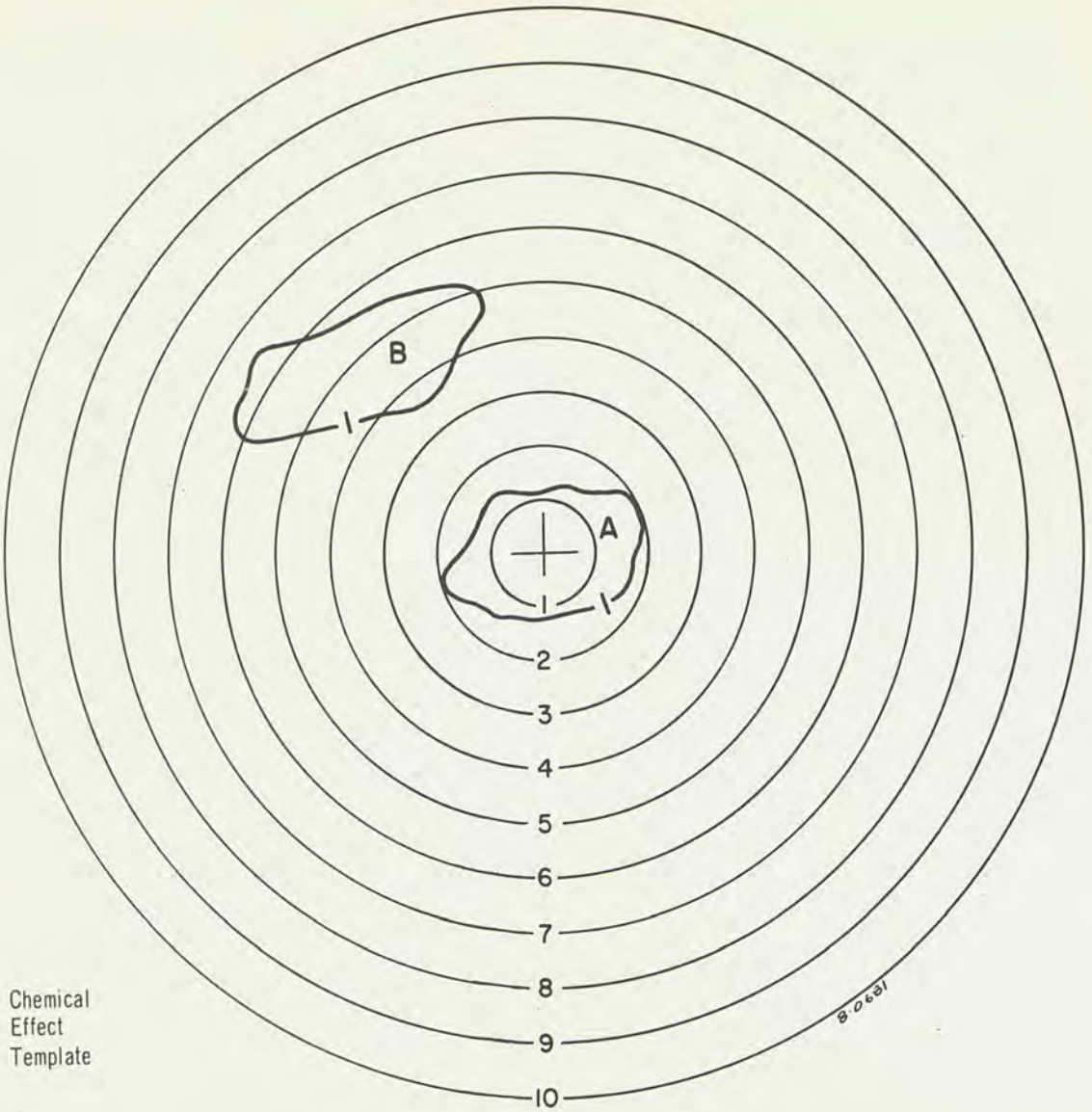


Figure 6–3. Visual selection of target radius.

equivalent HE round. These casualty levels are determined as for HE fires and reduced by half. They are applied only to those troops that survive the G-agent attack. For example, a company of 100 men in the open subjected to a G-agent artillery attack receives 30 percent casualties from GB; the casualty level assessed against the troops from the equivalent HE shells is 12 percent. The number of troops that are GB casualties is 30; the casualties from fragmentation are 6 percent of 70 (the unaffected personnel), or 4.2 percent. Therefore, four additional casualties are caused by the fragmentation effect; and the total casualties are 34.

(5) Based on unit strength in the area attacked with G-agent, the umpire tags the appropriate proportion of personnel as casualties. To add realism to the training situation, a representative percentage of casualties assessed are tagged "chemical agent" and put into the medical treatment and evacuation system. Approximately 25 percent of the casualties resulting from a G-agent attack require evacuation. Of these capabilities, 25 percent will be considered dead if treatment is given, 75 percent will be considered dead if no treatment is given.

c. Casualty Assessment from V-Agents.

(1) V-agents can be employed directly on personnel for casualty effects or on terrain to restrict its use by threat of casualty effects on troops who enter. Direct V-agent attacks on personnel also contaminate the terrain and may result in casualties among additional

troops who enter the area after delivery of the agent.

(2) Casualty assessment among troops who are in the area at the time of delivery of V-agent is based on tables H–14 and H–15. These tables give the data that relate the casualty level to the radius of the target, type of uniform and protective equipment worn (protection category), time of stay in the area subsequent to attack, activity in the area, and CBR discipline of the unit. The time lapse between agent delivery and entry of troops into the contaminated area is an additional factor in casualty assessment among troops who are not in the area at the time of agent delivery but who enter the target area after delivery of the agent.

(3) As with G-agent attacks, the umpire uses the chemical weapon effects template to determine the radius of target for use in extracting casualty effects data from tables H–14 and H–15. In addition to the target radius, the casualty level obtained from these tables depends on the type of uniform and protective equipment worn (protection category). In assessing casualties the umpire multiplies the casualty level obtained from the V-agent weapon effects tables by the appropriate adjustment factors (table H–16), based on his own judgment and observation of the attacked troops. If the troops are present in the attacked area at the time of agent delivery, adjustment factors shown in table H–16A for 0-hour time since area was contaminated are used in conjunction with appropriate adjustment factors from table H–16B.

(4) When a unit enters or crosses a contaminated area, the umpire gives the personnel concerned any information regarding the contamination that they would be able to determine based on observation, symptoms, and use of detector kits. Based on the conditions, time of stay in the area, time the agent was delivered, and protection category and activity of the unit, the umpire uses tables H–14 through H–16 to assess casualties. Casualty levels are determined from table H–14 or table H–15 in the same manner as though troops had been occupying the area at the time of attack. This casualty level is then adjusted for the time since the area was contaminated (table H–16A), troop activity in the contaminated area (table H–16A), and the umpire's judgment and evaluation of the unit's CBR discipline.

(5) V-agent casualties are then delayed from 1 to 24 hours after exposure, with the spread in time being distributed among the personnel tagged as casualties. Twenty-five percent of V-agent casualties are considered dead if treatment is given; 75 percent are considered dead if no treatment is given. (Treatment consists of simulated syrette injection, artificial resuscitation, or other stimulation means. 2-Pam Chloride should be added to the treatments required of the medical personnel.)

d. Casualty Assessment from HD and M.

(1) As with V-agents, HD and the Aggressor equivalent agent M can be employed directly against personnel in the target area at the time of attack or to contaminate terrain. Factors affecting casualty assessment among troops exposed to HD or M are the degree of contamination, the temperature, the duration of stay in the contaminated area, protection available, troop activity in the area, CBR discipline, and the time since area was contaminated.

(2) Munition requirements for area coverages for attacks with HD and M are given in tables H–17 and H–18 respectively. The casualty levels given in table H–19 are based on the degree of employment with the specified area coverage. If the number of rounds fired into the specified area is less or greater than that shown, the casualty levels given must be adjusted proportionally. For example, if the area requires 120 rounds and only 60 rounds are employed, all casualty levels resulting from the use of table H–19 are cut in half.

(3) If the HD or M-agents are sprayed or fired on troops, the casualty effects are read in the 0-hour—"time since area was contaminated"—column. When a unit enters or crosses a contaminated area, the umpire gives the troops any information that they would be able to determine in an actual situation. Based on observation of the personnel concerned, the umpire assesses casualties using table H–19. HD and M casualties are all incapacitating (no deaths) from 4 to 24 hours following exposure, with the spread in time being distributed among the personnel tagged as casualties. Although HD will produce only incapacitation in the majority of the cases, it can be lethal. A 2-percent lethality may be assessed.

6–19. Chemical Weapons Effect Template

The use of the chemical weapons effect template by unit umpires and controllers will simplify the computation of weapon effects. The template is easily prepared by copying figure 6–4 on transparent material. Clear acetate of .050-inch thickness is recommended for continual field use.

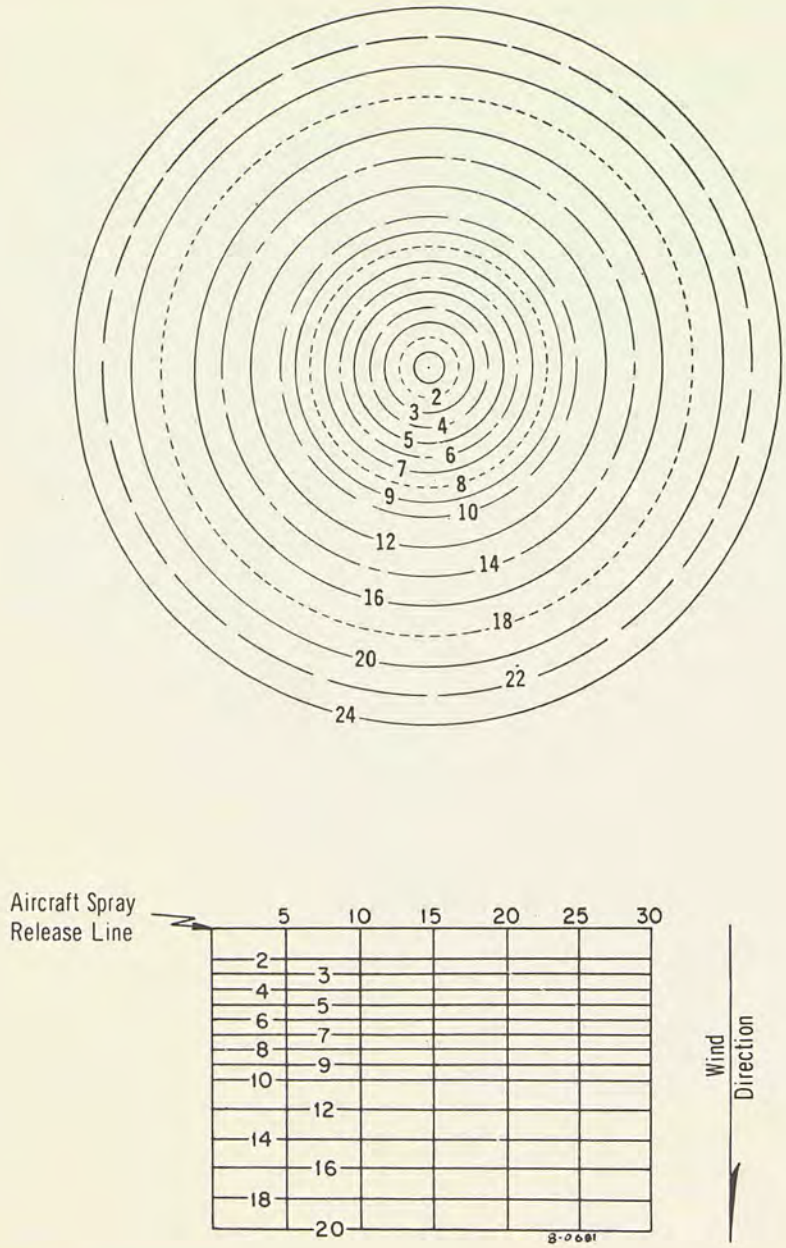


Figure 6–4. Chemical weapons effects template, scale 1:50,000.

6–20. Assessing Casualties from Radioactive Fallout and Induced Radiation

Assessment of casualties among personnel exposed to residual radiation (fallout and induced radiation) is based on the total simulated dose received. When fallout or induced radiation results from a nuclear burst, control determines the area and intensity of actual contamination (chap 7). The total dose that is received by troops occupying or entering a contaminated area is computed using tables H–36 through H–39 or the Radiac Calculator, ABC–M1A1, and is a function of the time of entry, time of stay, radiation intensity, and shielding. The percentage of casualties to be assessed is determined from table H–40.

6–21. Civilian Casualty Assessment

Umpires assess simulated civilian casualties resulting from both nuclear and nonnuclear fires in all types of conflicts. Civilian casualties from nuclear fires are assessed by following the procedures in chapter 7. Civilian casualties from chemical and biological fires are assessed by following the procedures outlined in paragraphs 6–18 and 6–19. The approximate number of casualties are provided by unit umpires to the nearest military unit for necessary action.

Section IV. DAMAGE ASSESSMENT

6–22. Materiel Damage Assessment

a. Umpire/controllers assess vehicles and other materiel damaged or destroyed on the basis of a reasonable loss expectancy in a similar combat engagement. The umpire informs the occupants and operators of the severity of the damage and completes a damage tag.

b. Damage to mail trucks and to ambulances carrying actual casualties or emergency medical supplies is not assessed.

c. Cargoes of vehicles ruled out of action may be transferred to other vehicles by using unit, provided such cargo has not been ruled as destroyed.

6–23. Damage from Artillery Fires

Vehicles passing through or remaining within artillery or mortar fires of battalion size or larger are assessed losses as follows:

a. Armored vehicles _____ one-third of 1 percent per battery volley (155-mm or larger weapons).

b. Unarmored vehicles _____ 3 percent per battery volley.

6–24. Damage from Nuclear Fires

a. Materiel damaged by nuclear bursts is assessed using the procedures described in chapter 7.

b. Materiel contaminated by fallout from a surface or near surface burst is considered to have the same intensity of radioactivity as the area in which it is located at the time of contamination. The decay rates apply to the materiel in the area until it is decontaminated.

6–25. Damage from Chemical Contamination

a. Materiel (except class I supplies) contaminated by chemical agents is assessed as slightly damaged; class I supplies are assessed damage according to the degree of contamination. Personnel handling contaminated materiel are required to wear the protective masks and appropriate protective clothing and gloves until simulated decontamination is accomplished; otherwise, additional casualties are assessed based on the umpire's judgment. Vehicles and weapons contaminated with VX or HD must be decontaminated, or operating personnel must continue to wear protective equipment for a minimum of 6 hours after contamination. Usual time for decontamination of a vehicle is 30 minutes. Materiel in the target area during a G-agent attack is not normally assessed as damaged by contamination, but a portion should be assessed as slightly damaged by fragmentation effects.

b. Normally only class I supplies that are not packaged or canned at the time of attack are assessed as materiel losses from biological attack.

6–26. Damage from Tank and Antitank Fires

a. Fire duels at great range are difficult to umpire. Losses are assessed only when, in the opinion of the umpire, a fair decision can be made.

b. Guns of comparable size are scored on the basis of position as follows:

(1) Ground gun behind natural or artificial cover—two.

(2) Vehicular-mounted gun (armored) behind natural or artificial cover—four.

(3) Ground gun unprotected by natural or artificial cover—one.

(4) Vehicular-mounted gun (armored) unprotected by natural or artificial cover—three.

c. Guns must be laid accurately on the targets. If blank ammunition is not available, a red flag is waved to simulate firing.

d. A method of collective scoring is used if the number of guns or vehicles, or both, engaged in the fire duel is sufficient to render the foregoing method of scoring impracticable. The umpire determines the total score of each side and rules all or a portion of the weaker side destroyed. Terrain, tactical employment, and duration of the action are considered. Losses to the stronger side are assessed in the inverse ratio of the total scores. For example: Friendly force score is 40; Aggressor score is 30; 20 Aggressor vehicles are ruled destroyed; 3/4 of 20, or 15, of the friendly vehicles are ruled destroyed.

e. When tanks maneuver against tanks, the losses are computed in the inverse ratio of participating tanks of the opposing forces provided they are within effective range. Consideration is given to cover, concealment, position, first aimed shot, caliber of weapons, part of tank exposed, and whether tanks are stationary or moving.

6–27. Damage from Air Action

a. General. Consideration must be given to the effects of active air defense measures prior to the assessment of damage from air attack.

Aircraft losses are determined in accordance with paragraph 6–28; damages to ground units are then assessed after applying aircraft losses to the aircraft attack strength.

b. Tables H–23 and H–24 and random numbers outlined in appendix H or example H–1 are used for assessing damage to ground targets by aircraft, either tactical air or Army aviation.

c. Using table H–24—

(1) Tables H–24 and H–41 are utilized to determine single-shot and accumulative probabilities in the manner outlined in paragraph 6–14 for casualties resulting from air actions. Once probabilities have been determined, random number procedures are utilized to determine whether the target has been destroyed. If the random number is greater than the probability found, the target is safe.

(2) Against multiple targets that have been determined to be destroyed, apply radius/area of effects to assess total damage. All targets of similar or a lesser degree of hardness within the inner area indicated are destroyed. Those in the outer area receive damage.

d. Using example H–1, once the airstrike has been declared successful, the ground umpire will assess damage using procedures outlined in paragraph 6–14*f*(2). The rationale used in paragraph 6–14*f*(2) on the raising or lowering of assessments due to air defense measures taken by ground troops will remain the same.

e. Exercise instructions will establish out of action time of destroyed and damaged equipment.

6–28. Aircraft Destroyed by Ground Fire

a. Duties of air defense battery umpires are prescribed in chapter 5. Adequate air ground communications must be provided so that the air defense battalion umpire can report losses to the flight leader. When determining the losses to be assessed against aircraft resulting from ground fire, all types of weapons that engage the target to include surface-to-air missile (SAM) units, forward area air defense weapons, and small arms are considered. Procedures for determining system capabilities are listed in FM 44–1, FM 44–1–1, FM 44–1A, and FM 44–3.

b. Losses to simulated flights engaged by SAM units are assessed as follows:

(1) Using coverage diagrams and techniques outlined in FM 44–1–1, determine the total number of missiles capable of being fired against a particular aircraft or flight.

(2) Using the factors listed in table H–21, which introduce assumed weapon kill probabilities, calculate the total number of aircraft that could be destroyed.

c. Losses to actual flights due to simulated engagements by operational SAM units are assessed as follows:

(1) Monitor and determine the validity of the engagement in the control center of the battery.

(2) Use the factors listed in table H–21 as in *b*(2) above.

d. Losses of flights engaged by light air defense weapons are the sum of the losses incurred from each type of fire. Criteria for assessment of losses are determined by umpire personnel based on the existing situation. Consideration is given to the approach corridors used by the aircraft, coverage of such corridors by defensive weapons, types of aircraft, number of weapons in the defense, reaction time available to the defense, and engagement time (table H–22).

e. Friendly aircraft, when not properly identified, are considered Aggressor; and losses are assessed accordingly.

f. As a general rule, a ground unit employing organic nonair defense weapons has a kill probability for each aircraft coming within a 300-meter range, provided airborne suppressive fire does not neutralize ground fires. This general rule is modified by probability of kill multipliers for various types of aircraft found in table H–23. Scores for different ground weapons are in appendix E under the 300-meter column. A random number must be selected and compared with computed probability of kill for each aircraft under attack to determine kill or safe for each aircraft.

(1) The ground score is the difference between the ground firepower score and the airborne suppressive fire score.

(2) Aerial rocket artillery, surface-to-surface artillery, and airstrikes neutralize ground fires against other ground units during the time of the strike.

g. A ground unit employing REDEYE has a kill capability for each aircraft coming within the REDEYE launch envelope (FM 23–17A) providing airborne suppressive fire does not neutralize REDEYE fires. This general rule is modified by the probability of kill multipliers for various types of aircraft (FM 23–17A). A random number must be selected and compared with computed probability of kill for each aircraft under attack to determine kill or safe for each aircraft.

6–29. Damage to Civilian Communities and Property

a. Damage to civilian communities and property during the conduct of combat operations is realistically portrayed by unit umpires so that appropriate civil affairs play may be accomplished.

b. Effective control for all participants can be uniformly handled by the publication of consolidated damage assessments at the director's level.

6–30. Area Damage Control

a. Realistic umpiring of area damage control operations is essential to proper maneuver control.

b. Umpiring of damage resulting from a nuclear attack requires assessment of appropriate delays in related tactical or logistic activities and umpiring actual area damage control operations.

c. Fire marking teams are provided sufficient personnel to block all routes into the blast area and to halt all movement until essential area damage control measures have been implemented. These personnel are posted at the line of visible damage and are prepared to describe to unit umpires the damage that has resulted from the blast. Umpires of any unit entering the blast area require the unit to take necessary action and to impose appropriate time delays before allowing the unit to proceed.

d. Area damage control operations.

(1) *Prestrike actions.* The umpire examines the unit SOP and area damage control plans to determine their adequacy. The unit's ability and readiness to implement the plans are also evaluated.

(2) *Poststrike actions.* The umpiring of area damage control operations requires initiative and imagination on the part of the umpire. He visualizes the damage that has occurred and is prepared to describe it to the commander in detail. He immobilizes the unit, severs its communications, and takes other action to reduce its effectiveness commensurate with the degree of damage inflicted. Because of this requirement, the umpiring of an area damage control play in a free tactical exercise is difficult. It is easier in a controlled tactical exercise where a scenario is provided to the umpire to enable him to supervise area damage control play. Umpires of unaffected units outside the area of damage are also able to observe and evaluate the relief and rescue operations of the units that they are umpiring.

Section V. CAPTURE OF PERSONNEL AND MATERIEL

6–31. Capture of Personnel

a. Selected personnel, nuclear delivery units, nuclear logistic units, insurgents, and counterinsurgent personnel may be injected into the exercise for capture by either side as a part of the intelligence play and to provide training in the proper methods of PW evacuation, treatment, interrogation, and processing. In the interest of realism, only personnel who can speak a foreign language should be included.

b. PW are guarded just as in an actual situation; however, live ammunition is not issued to guards.

c. The chief umpire/controller arranges for frequent exchange of prisoners to avoid keeping too many men out of training. Prisoners being repatriated during exchanges are considered as noncombatants. They are returned to their parent units through replacement channels.

d. When an entire unit or the major portion thereof has been captured, the umpire authorizes the retention of selected individuals as PW's. He directs that the remainder of the captured personnel be moved to a designated location and kept out of action for a specified time. Umpires require capturing units to evacuate PW's promptly. Prepared prisoners make themselves known to the umpire so that they can be designated for retention as PW's to be processed. However, as many as possible of the captured personnel are processed as PW's if the time out of action permits and if facilities and personnel are available. Special instructor teams are provided to conduct the training listed in *e* below for entire captured units. These teams are composed of two or three qualified individuals operating from the headquarters of the exercise director.

e. When prisoners are detained (by either side), they should be held long enough to receive concentrated instruction in—

(1) Code of Conduct.
(2) Methods of PW camp organization.
(3) Escape and evasion.
(4) Survival (including in-camp survival).
(5) Rights of prisoners of war.

f. PW's retain their personal property, individual weapons, and equipment during processing. The capturing or holding unit provides rations and emergency medical care to PW's.

g. Capturing forces or units subject maneu-

ver prisoners to interrogation, indoctrination in opposing force concepts, and exploitation in respect to questionnaires, broadcasts, and written statements, but do not subject them to indignities or physical pressure. Captors remain responsible for the health and welfare of prisoners. In considering the circumstances of capture, proper recognition is given to surprise, aggressiveness, stealth, ambush, and mobility so that these factors are tactically rewarded in the play of the exercise. When appropriate, umpires include the following additional items in their daily reports:

(1) Actions of prisoners while under control of the opposing force.

(2) Treatment accorded prisoners by their captors.

(3) Prisoner knowledge of provisions of the Code of Conduct and Geneva Convention of 12 August 1949.

h. In exercises where there will be internal defense and development play, the exercise control instructions must contain information to guide umpire/controllers on procedures for the handling of prisoners. Umpire/controllers will use their judgment, initial control instructions, and the provisions of *b* through *g* above, to determine the impact on participants resulting from the capture of personnel.

6–32. Capture of Installations and Materiel.

a. Selected items of equipment or materiel may be injected into the exercise for capture as part of the intelligence play and to provide training in the proper methods of examination, tagging, and evacuation of captured materiel. Umpires/controllers should evaluate the capturing units' processing and handling of captured equipment.

b. Installations.

(1) Medical installations that are captured by either side are returned to parent units as soon as practicable.

(2) Depots, supply points, railheads, distribution points, and dumps captured by either side are ruled out of action for the duration of the exercise or for such other period determined by the chief umpire/controller.

(3) Installations, supply points, or other activities with classified nuclear materiel and classified communication facilities specifically identified are not subject to actual capture but are ruled out of action for the duration of the exercise or for such other period determined by the chief umpire/controller.

c. Materiel.

(1) Vehicles, Army aircraft, weapons, pneumatic equipment, dummy equipment, decoy items of equipment, and sonic equipment (except that with fire marking teams) are subject to capture except as noted in (2) and (4) below and are processed with their drivers and crews to avoid loss or damage to government property. Vehicles, Army aircraft, and weapons ruled captured are held in place and out of action for a designated period or are dispatched to a PW installation and held there for the time designated by the umpire. They are returned to exercise play through normal supply channels. At no time is the driver or crew separated from the vehicle, and all weapons, ammunition, and explosives will be secured in accordance with the provisions of AR 190–11.

(2) Kitchen trucks and ration trucks are returned to parent units without delay. However, in the interest of realism, minimum delays are assessed. Mail trucks, and ambulances carrying actual casualties, are not subject to capture.

(3) Cargoes of vehicles processed with prisoners remain with the vehicles. Transfer to other vehicles is prohibited except that gasoline and blank ammunition may be taken by the capturing unit.

(4) Tampering with Army aircraft and removal of aviation gasoline are prohibited.

(5) Security of classified nuclear weapon and classified communication material will not be violated. Personnel and forces responsible for the security of the material will not be replaced, harassed, molested, or interfered with.

d. Internal Defense and Development Exercises. The capture of materiel and/or installations in this operational environment will not have the same implication or impact on operations as in limited and general warfare. The loss of these assets by the insurgent or friendly forces must be judged by the umpire/controller on the basis of the immediate impact on the local situation, overall situation, countermeasures taken by the insurgent and the friendly forces, and the initial exercise ground rules.

Section VI. OBSTACLES

6–33. General

a. Obstacles may be simulated or created, if permissible, on the terrain being used. Obstacles are employed to canalize, direct, restrict, delay, or stop the movement of an opposing force. However, obstacles affect friendly as well as enemy troops, and umpires impose appropriate delays in all cases. If the obstacle is to be simulated, the necessary materials and personnel must actually be on hand and checked by the umpire. The obstacle is marked when the time estimated to be required to complete it has passed. Partial obstacles for which insufficient time exists for completion are rated as to effectiveness and marked by the unit umpire at the time work is assumed to have ceased. The state of effectiveness of an incomplete obstacle is noted on the Certificate of Obstacle, figure I–5 (e.g., partial demolition of a bridge reduces the capacity from 40 tons to 5 tons; a partially completed minefield is effective only where mines actually have been laid.

b. The unit that completes or partially completes a simulated obstacle furnishes a guard who is given umpire authority and identification so that he can enforce compliance by all troops. A suggested means of identification is white strips of engineer tape tied around the headgear and left arm of the guard. Guards remain on duty at obstacles until relieved by the umpire or until the end of the exercise. After the opposing force has reduced an obstacle, the unit relieves the guard who is then returned administratively to his unit.

c. When a simulated obstacle is completed or work is assumed to have ceased on a partially completed obstacle, the unit umpire furnishes the guard one copy of the completed Certificate of Obstacle. If an umpire is not present, a unit officer signs the certificate and advises the unit umpire of his action. The umpire checks the form as soon as practicable; however, the statement on the form is valid with the signature of a unit officer. The unit executing a simulated obstacle places a black flag at each end of the obstacle.

6–34. Reducing Obstacles

a. The time required to reduce an obstacle is determined by the nature of the obstacle, which can be determined from the description contained in the Certificate of Obstacle. If the obstacle is covered by fire, the time required by the opposing force to reduce the obstacle is greater, and casualties are assessed in accordance with instructions contained in paragraphs 6–9 through 6–16.

b. Time required to breach minefields.

(1) When minefields comprise practice of simulated mines, the opposing troops are required to breach the minefield using approved techniques.

(2) When the minefield is simulated, the time required for breaching can be calculated from appendix H.

6–35. Engineer Data

The time for completion of various engineer tasks, including breaching data, construction data, and repair of obstacles, can be calculated from FM 5–35, 20–32, and 101–10. Realistic time-distance factors involved are used and are added to the completion times as appropriate.

6–36. Delays and Casualties

a. Obstacles that result from air action, nuclear attack, toxic chemical, and radiological contamination are marked by the ground umpire who assesses the damage. He completes the certificate, places the flags, and details a guard from the nearest unit.

b. Troops may go around an obstacle provided the movement is actual. The umpire with a delayed unit does not modify the provisions of the certificate of an obstacle under any circumstances.

c. Areas contaminated by chemicals and fallout must be recognized by combat elements. Units failing to avoid contaminated areas or take the necessary precaution are assessed appropriate casualties.

d. Marching columns or convoys attacked by air, armor, or artillery and prevented from reacting logically by administrative restrictions are assessed delays equivalent to the time required to disperse and assemble.

e. Personnel working on bridges, roads, or other projects who are subjected to massed mortar or artillery fire or an air attack are required to cease work for the duration of the concentration or attack. Work may continue if the area is subjected to interdiction fire only, but no work can be carried on in an area subject to direct small arms fire.

6–37. Obstacles from Air Action

Air attacks against bridges, and the delays resulting from the inflicted damage, influence the progress of a tactical exercise. Prior notice of air attacks on bridges is furnished Army controllers by Air Force controllers in order for an umpire to be at the bridge site at the time of the attack. When the bridge is defended by an

Bomb weight	Delay (after) arrival of men and material	Requirements for repair
100 lb	None	None
300 to 600 lb	2 hr	1 engineer plat; 3 trailer loads timber or equivalent
1,000 to 2,000 lb	4 hr	1 engineer plat; 6 trailer loads timber or equivalent

Figure 6–5. Delay and requirements for repair-steel truss and concrete bridges of substantial construction.

air defense unit, the air defense unit umpire is designated to act as the umpire at the bridge site. The number and weight of bombs and the number of hits on target are given the umpire at the bridge site through umpire channels. The umpire uses the following as a guide in assessing delays and damage to bridges:

a. Steel Truss and Concrete Bridges of Substantial Construction (Fig 6–5).

b. Wooden Highway and Railroad Bridges. A 100-pound or heavier bomb causes the same delay and requirements for repair shown for 300- to 600-pound bombs in figure 6–5.

c. Ponton Bridge. A 100-pound or heavier bomb requires a 1-hour delay after material for 1/3 (or four spans) of the bridge is placed at the site.

d. Conditions in *a*, *b*, and *c* above are for one hit; for more than one hit, delay and requirements for repair are increased accordingly.

6–38. Obstacles and Delays from Nuclear Fires

Following procedures stated in chapter 7, the fire marking teams inform unit umpires of the actual ground zero and damage effects criteria for the weapon. From this information, the unit umpire determines the extent of obstacles or other damage and casualties in his particular area. He uses this information in umpiring situations in the affected area. Delays are assessed in accordance with time required to clear the obstacle. The rate of clearance of simulated tree blowdown resulting from a simulated nuclear burst is 250 meters square per engineer bulldozer and associated equipment per hour.

Section VII. CASUALTY AND DAMAGE TAGS

6–39. Casualty Tags

Umpires use figure I–6 when assessing casualties.

6–40. Damage Tags

a. Slightly Damaged. A green tag bearing the words "slightly damaged" (fig I–7) is used to denote slightly damaged materiel.

(1) The umpire assessing the damage fills out the front of the tag and enters time, date, and place that the equipment was damaged. The unit and the bumper number (or other equivalent number) are entered in the spaces provided. The nature of the damage is briefly described. The driver or noncommissioned officer (NCO) in charge of the vehicle or equipment signs on the back of the perforated stub. The umpire signs the tag and the stub. The stub is retained by the umpire, and the tag is tied to the equipment or vehicle. All stubs are forwarded to umpire/control headquarters. An orange flag is displayed on the damaged vehicle or equipment.

(2) The driver or NCO in charge determines a course of action to be taken to repair the vehicle or equipment. The individual completing the repair fills out the back of the tag. An officer or NCO in charge of the repairing unit, or the operator, if one is assigned, repairs the item and signs the tag. The tag and the orange flags are removed from the vehicle or equipment and turned over to the umpire of the unit making the repairs. The umpires send all tags with their reports to umpire/control headquarters where a check is made to ascertain that all vehicles and equipment tagged as slightly damaged have been properly repaired (simulated) and that proper logistic factors are taken into account.

b. Severely Damaged. A red card bearing the words "severely damaged" (fig I–8) is used to denote severely damaged materiel.

(1) The umpire's procedure in filling out this tag is the same as in *a*(1) above.

(2) The driver or NCO in charge of the equipment or vehicle contacts his unit commander to have the equipment or vehicle evacuated for repairs. The unit making the repairs fills out that portion of the back of the tag pertaining to repairs. An officer or NCO of the unit making the repairs signs the tag. If it is decided to replace the item, that portion of the tag pertaining to replacement is completed. An officer or NCO of the issuing unit signs the tag. In either case, the completed tag is turned over to the unit umpire who forwards it to umpire/control headquarters. A check is made to see that all vehicles and equipment tagged "se-

verely damaged" have been properly evacuated and repaired (simulated) or replaced and that proper logistic factors are taken into account.

c. Destroyed. A white tag bearing the word "destroyed" (fig I–9) is used to denote destroyed materiel.

(1) The umpire fills out the tag as in *a*(1) above.

(2) The driver or NCO in charge of the vehicle or equipment remains in place for 1 hour. The unit reports the combat loss through channels. When the replacement item is available at brigade trains, the unit is notified to come to pick up the replacement. The vehicle or equipment is taken to the point of delivery where the tag is removed and the equipment is placed in service. An officer or NCO of the issuing office fills out the back of the tag, signs it, and turns it over to the unit umpire. The tag is forwarded to umpire/control headquarters where a check is made to see that all destroyed vehicles and equipment are properly replaced.

d. Contaminated. A blue tag bearing the word "contaminated" (fig I–10) is used to denote contaminated materiel.

(1) The umpire fills out this tag as outlined in *a*(1) above.

(2) Personnel equipment is decontaminated by the individual. The driver or NCO in charge of contaminated equipment or vehicles performs first echelon decontamination. He contacts his unit commander to arrange for second or third echelon decontamination. The unit performing the decontamination fills out that portion of the tag pertaining to decontamination and signs the tag denoting the method used in decontamination. The completed tag is turned over to the unit umpire for forwarding to umpire/control headquarters.

e. When an item of equipment or materiel is both damaged and contaminated, two tags are placed on the item and proper action is taken as outlined above.

f. Tags and stubs are numbered serially prior to issue to facilitate matching at umpire headquarters.

CHAPTER 7

CONTROL OF NUCLEAR WEAPONS

Section I. PLAY OF NUCLEAR WEAPONS IN TACTICAL EXERCISES

7–1. Scale of Warfare

Since the employment of nuclear weapons varies with the type of warfare, not all tactical exercises include nuclear weapon play. For those exercises that employ these weapons, their destructiveness and lingering effects are considered in the planning and conduct of the exercise.

7–2. Relation to Player Activity

Control activity corresponds closely to the amount of player activity in nuclear weapon play. Figure 7–1 shows the relationship between the type of exercise and the relative amount of player activity in the various categories of nuclear weapon activity.

7–3. Control Function and Activities

a. The umpire/control organization has a role in each category of activity shown in the left-hand column of figure 7–1. Control must either calculate effects or furnish players appropriate information so players can calculate effects. Information on civilian casualties and damage must be considered. Control integrates initial attack (or burst) reporting and radiological survey, monitoring, and control into the play.

b. To feed data back to players, control uses a technique comparable to backward planning. Control anticipates what information and data players must have and then works backward through the sequence that players use to gather information in order to plan the step-by-step release of information to players.

c. Control techniques and procedures closely follow those that players use in the employment of nuclear weapons. The umpire/control organization is also in a unique position to evaluate player performance in each category of player activity, particularly in the planning and coordination of employment of nuclear weapons and in the reporting procedures connected with their employment.

d. The function of control is further explained by examples of nuclear weapon employment in different tactical exercises in subsequent sections of this chapter and in appendix D.

7–4. Control Organization

When nuclear weapons are played in any tactical exercise, the umpire/control organization must be compatible with player organization and staffing. The umpire/control organization is generally organized along the same lines as players in the special weapons area at each player echelon. For example, if players use the

Activity	*Type of exercise*				
	Map exercise	*Map maneuver*	*Command post exercise*	*Field exercise*	*Field maneuver*
Target acquisition and poststrike reconnaissance	X	X	X	X	X
Planning and coordination of employment	X	X	X	X	X
Reporting procedures		X	X	X	X
Nuclear, chemical and biological initial reporting			Partial	X	X
Radiological monitoring and survey			Partial	X	X
Effects					
Casualties	X	X	X	X	X
Damage	X	X	X	X	X
Obstacles	X	X	X	X	X
Fallout	X	X	X	X	X
Contamination	X	X	X	X	X

X indicates training benefit.
A blank indicates insignificant benefits.
Partial indicates some benefits may accrue.

Figure 7–1. Player activity in the employment of special weapons.

fire support coordination element and the CBRE of the tactical operation center, then control must be prepared to parallel the player organization.

7–5. The Exercise Directive

The exercise directive specifies the type and scale of nuclear weapons play, and sets the stage by stating in the general and special situations the reasons for employment of nuclear weapons. The directive may specify the level of nuclear weapon play, allocating weapons to each side and informing the opposite side in appropriate intelligence documents of the opposition's capabilities for employment.

Section II. MAP MANEUVERS

7–6. Employment of a Nuclear Weapon by a Player Division

a. The sample incident presented below illustrates the control procedures to be followed in the nuclear weapon play of a map maneuver.

b. The US player division in this instance has a nuclear weapon assigned and is carrying this weapon in its special ammunition load. In the play of the maneuver, the US player division has developed a suitable target in the Aggressor player division's reserve, and through the normal processes the US commander has decided to fire the weapon.

c. In accordance with the corps SOP and his own (US) division SOP, the US division commander notifies corps and his subordinate units of the planned use of the weapon and alerts the delivery unit. Therefore, control receives notification through several channels that a nuclear event is to take place. The control staff should have anticipated the US commander's decision because of the intelligence buildup that control furnished US units and by monitoring the planning action of the US division.

7–7. Initial Control Actions

a. As a consequence of its monitoring actions, the control staff is in a position to judge whether US player procedures for the employment of special weapons are sound. Evaluation and critique of either Aggressor or US player procedures may be an assigned task of the control staff.

b. On receipt of the notice that the US division plans to employ a nuclear weapon, the chief controller alerts all control staff sections to the imminence of the nuclear strike. Each section completes its preparations for the actions that will be required by the strike.

7–8. Action by the War Gaming Section and the Fire Support Coordinator Control Section

a. The nuclear strike is integrated into tactical play by the war gaming section based upon data provided by the fire support coordinator control section.

b. The fire support coordinator control section, using the appropriate field manual determines if the round detonated was a dud, the height of burst (if appropriate), and the actual ground zero (where the round actually detonated). The fire support coordinator control section also determines when it detonated.

c. The war gaming section, using the nuclear play calculator, calculates the effects and applies them to the tactical situation existing at the time of detonation. If fallout or other contamination results from the burst, additional control actions are taken. The section then evaluates the effects from the burst by applying the appropriate radius of damage template to the target at the time of detonation. Casualties, damage to vehicles and equipment, and obstacle effects are assessed. The effects assessed against the target then become the basic data for transmission of information to players and for reports by various controllers.

d. The war gaming section uses standard forms and formats to set up data for use by all controllers.

(1) The basic data worksheet (fig I–11), when completed, becomes the basis for the preparation of figure I–12 and example I–1, Observer's Initial Report, NBC 1; for control and assessment team (CAT) reports; for normal unit status reports; and for other appropriate reports. Other tables are useful in completing figure I–11, Nuclear Burst Worksheet. Table H–27, Exposure Criteria, may be used as specified, or the protected versus exposed criteria modified by the conditions in the exercise may be used. Tables H–32 through H–35 assist in working backward to obtain the sighting reports discussed below.

(2) Players receive Observer's Initial Report, NBC 1 (fig I–12 with example I–1) so that they may determine where and when the round landed and its characteristics. A minimum of three NBC 1 observer reports are prepared by the controller responsible for the nuclear event for introduction of each nuclear strike into the

play. If the burst can be observed by both Aggressor and US player elements, an additional minimum of three NBC 1 reports are prepared and introduced. Generally, injection is at the company and battery level in order to exercise the reporting system, except in those exercises where participation does not extend to this level. Each event is injected into a minimum of three different units that can observe the burst. Basic information to be inserted for any one strike does not exceed the true reporting capability of the players to whom it is released. For example, for the unequipped and untrained observer, the time of detonation and a general direction (expressed no closer than the 16 points of the compass) are perhaps the only information that is injected; while for units such as artillery, the injection includes such information as flash-to-bang time, direction within 100 mils, cloud top height in mils from the observer post, and surface, air, or low air bursts. The information released to different players for any one strike is not necessarily in complete agreement. Elements vary so that perfect triangulation does not result. However, for exercise purposes, the time of burst in every case is the same for any one strike. By keeping variations within reasonable limits, the correlation of raw material provides effective play for player staffs while still not making correlation impossible.

e. When fallout results from a nuclear burst, the war gaming section prepares Figure I–13, Worksheet for Radiological Fallout, secures or prepares the necessary fallout plots, and—

(1) Assesses personnel casualties in the contaminated area.

(2) Prepares data for release to players so they can determine the area of anticipated and actual contamination.

f. Standard formats that players use and expect to receive from control are figure I–12 and examples I–1 through I–5; DA Form 1971–R (Radiological Data Sheet (Monitoring)); and DA Form 1971–1–R (Radiological Data Sheet (Ground and Aerial Survey)) (FM 3–12). These formats apply to the various phases of radiological reporting. Radiological data sheets are prepared to comply with player orders to subordinate elements for survey and monitoring. Effective wind messages are continually disseminated by the control staff to players. If problem weather is predetermined, controllers may prepare in advance a set of radiological contamination diagrams. (See explanation following figure I–12.)

g. Tables H–32 through H–36 are used in calculations of casualties and survey data.

h. When the war gaming section has completed assessment of all casualties and damage to units and posted its status boards, assessed obstacles created within the area, and applied the fallout and obstacle plots to the master control map, the staff and unit controllers can proceed to pass information to players.

7–9. Subsequent Control Actions

a. From the data and plots developed by the war gaming section, staff and unit controllers prepare reports to be given to players. Controllers follow through and monitor player actions to insure thorough play of the problem. In the example in paragraph 7–6 the controllers prepare and submit to players the report discussed above, using the formats in appendix I. Next, the player unit against which the weapon was used (Aggressor) initiates actions in accordance with its (Aggressor) SOP to determine the extent of damage and to reestablish control. Controllers prepare reports, corresponding to those made by the control and assessment teams (CAT) or area damage control units, as their work progresses (see discussion of damage, below). Control, representing subordinate Aggressor player units, receives orders from Aggressor player division headquarters for reconstituting the reserve, evacuating casualties and dead, evacuating damaged equipment, control of stragglers, and other orders as appropriate. Control, representing the corps headquarters, receives special strength reports, status of equipment reports, correlated survey data, requests for assistance, and similar related actions.

b. Controllers assess damage realistically, and resultant conditions, such as effects on communication in the area; damage to roads, railroads, and buildings; tree blowdown and fires; cratering; and rubble, are described in detail. When effects extend into other areas, the initiating control staff member is responsible for coordination. The logical control agency is responsible for inserting loss and damage information developed by the control staff into player channels. Damage evaluation should be provided to the players in two degrees of completeness:

(1) The first is a "hasty evaluation" giving a rough estimate of the damage received. This hasty evaluation is stated in broad terms and contains some inaccuracies and many omissions. It is released to players after they have initiated actions that could have resulted from the hasty evaluation.

(2) The "refined evaluation" of damage is developed and injected in much the same man-

ner as the hasty evaluation. However, this evaluation represents considerable player work in determining, to a relatively accurate degree, the estimated extent of damage; therefore, it is released at a later time, after controllers have simulated the necessary actions that would result in this more detailed and accurate evaluation. In order that play of reporting damage evaluation may be conducted within the time of the exercise, refined evaluations are not withheld from players longer than 8 hours after the strike. When players have taken no reasonable action to obtain a damage estimate, controllers may release incomplete data or make requests from higher headquarters in order to stimulate players. Actual release times are determined by controllers based on severity of damage and degree of player simulation of actions to evaluate damage.

c. The player division that fired the weapon (US division) also attempts to assess damage and to integrate this information into its plans for fire and maneuver. After dispatch of the initial burst reports, control anticipates US player's employment of various means to determine the success of his strike and his preparations to play these means against the opposing counterreconnaissance efforts by the Aggressor division.

Section III. COMMAND POST EXERCISES

7–10. General

a. Compared with the map maneuver discussed above, the sequence of actions in a one-sided CPX does not change appreciably. Nuclear weapon play is accomplished in the appropriate Army staff sections in accordance with current doctrine. Subordinate controllers integrate nuclear weapons in a manner similar to their corresponding player echelons.

b. Control must be capable of assessing nuclear weapon effects on the Aggressor forces it is playing, as well as on player forces.

c. The control staffs should prepare as much nuclear weapon data as possible prior to the beginning of the exercise. These data can be correlated with the schedule of events explained in chapter 6. If these events involve Aggressor employment of nuclear weapons, the majority of the effects can be precalculated to facilitate injection when the strike occurs.

d. Application of nuclear weapons play is further illustrated by examples of employment described below.

7–11. A Preplanned Aggressor Weapon Delivered in the Army Rear Area

a. Actual firing and control of the major actions in nuclear weapons play are assigned to the controllers in whose area the burst occurs. The assignment of preplanned Aggressor strikes is made in the schedule of events.

b. Reports shown in appendix I are prepared in advance and released to players. Damage reports that player control and assessment teams and area damage units develop are also prepared in advance. Survey and monitoring reports are released to players after their initiation of appropriate actions to obtain this information.

c. The schedule of events also indicates expected or anticipated player actions to counteract the effects that Aggressor has achieved, such as destruction of supplies, casualties among personnel, and damage to installations, equipment, or lines of communication.

7–12. Aggressor Strikes on Targets of Opportunity

a. Aggressor strikes on targets of opportunity are more difficult to portray because of time limitations in computing data. Some time can be saved by precomputing fallout plots. Since control employs this type of strike to guide or regulate play during the conduct of the exercise, only those effects necessary to that end need be assessed against players.

b. Care is taken that Aggressor use of weapons remains within the parameters of availability of weapons, accuracy of delivery systems, ability to acquire targets, and response of the delivery system. Effects assessed correspond to the environment of the problem, such as weather and winds.

7–13. Request by Player Corps for Air-Delivered Weapon Against Aggressor

a. Initially, the exercise activity generated by play of this type involves Army controllers acting as players in processing and approving the strike. It is assumed that the intended target lies within the Aggressor area for which the corps (or combined arms army) control echelon has responsibility (fig 4–5). Execution of the strike against Aggressor is then passed from army (or army group) control to corps (or combined arms army) control, using air/ground agencies at both levels. As in a map maneuver, controllers use the appropriate nuclear play

calculator to determine if the weapon detonated and where and when the detonation took place.

b. Corps controllers determine the effects of the burst and fallout data (if appropriate) and apply them to Aggressor forces in the target area and to subsequent Aggressor operations if residual effects are present. Players may make poststrike reconnaissance or other efforts to determine the results of their strike. These efforts are handled as normal intelligence activities.

c. Control coordinating procedures are established and adhered to in keeping track of Aggressor losses and in recording damage, obstacles, and contamination in areas of exercise play. Corps control informs field army control, subordinate division controllers, and adjacent corps of losses and effects.

Section IV. FIELD EXERCISES AND FIELD MANEUVERS

7–14. General

a. Nuclear weapon play in field exercises and field maneuvers is integrated with other supporting fire effects. The troops and units on the ground are informed expeditiously by the umpire/control system of nuclear weapon effects and contamination.

b. The procedures for integrating nuclear weapon play into the control system at brigade and higher is similar to the nuclear weapon employment procedures used by player units.

c. The lowest level at which effects are calculated by the control organization is normally battalion umpire level for both combat and combat support units. In addition, close cooperation between artillery and combat unit umpires is necessary for successful portrayal of the situation resulting from the employment of nuclear weapons.

d. A weapon employed against a combat unit attached to a brigade in a two-sided field exercise is used below to illustrate integration of nuclear weapon play into a field exercise. The umpire/control system employed is shown in figures J–1 through J–3.

7–15. Control and Umpire Actions

a. US brigade control is informed by its opposite (Aggressor brigade) control or its own umpires (directly from battalion or division) that a nuclear weapon is to be employed against one of its subordinate (US) battalions. Opposing (Aggressor) control has already employed the nuclear play calculator to determine if and where the round will detonate, and has determined when it will detonate. US brigade control takes into account the yield of the weapon, anticipated time of delivery, and the tactical situation in determining which control or umpire echelon will have primary responsibility for execution. In this example, it is assumed that the US brigade assigns the responsibility to its supporting artillery battalion and notifies the battalion under attack and adjacent unit umpires.

b. Using the first section of the nuclear burst worksheet (fig I–11), the artillery battalion umpire determines the effects from the nuclear play calculator and assigns an appropriate number of fire marking teams to assist unit umpires in portraying the strike and in assessing casualties and damage. The artillery umpire informs the battalion umpire concerned and adjacent unit umpires of the effects to be assessed. The artillery umpire secures additional fire markers or action teams from division artillery if required. US brigade control monitors to insure adequate portrayal of the nuclear strike. The fire marking teams also inform unit umpires of the effects and assist unit umpires in assessing casualties and damage as required.

c. Umpires and fire markers use simple criteria for casualty and damage assessment given in chapter 6. Umpires carry prepared tags to expedite assessment. Personnel and vehicles receive specific individual effects as appropriate, such as "wound in the left shoulder," "killed by radiation," or "antenna and windshield torn off." A notation "85-percent damaged" would not be sufficient.

d. In cases where units suffer serious attacks to the extent that mass casualties and serious damage are created, umpires must be prepared to portray the effects to incoming player CAT's and area damage control units.

e. The umpires and controllers with Aggressor forces (which fired the weapon) are prepared to respond to Aggressor poststrike reconnaissance efforts to obtain the results of the strike. Since tree blowdown, personnel casualties, and equipment damage will not actually be visible, Aggressor umpires must paint the picture for the players.

f. If radiological monitoring and survey become necessary as a result of the employment of atomic demolition munitions or the occurrence of surface or near-surface bursts, controllers and umpires provide appropriate instrument readings from surveys and monitoring

stations that players would employ. Generally, it is not feasible for controllers or umpires to provide readings to players for immediate transmission as surveys are being made. Players are required to outline for the umpire the route to be traversed, to actually traverse the route, and on return receive the appropriate completed format. In this manner, control has time to calculate the fallout pattern based on current (not planned) wind data and to plot the survey route against the fallout pattern to determine what the readings would be. Control prepares fallout plots at an echelon high enough that adequate workspace and personnel can be provided. This work is seldom accomplished below division.

7–16. Field Maneuvers

The techniques and procedures for the employment of special weapons in field exercises apply equally to field maneuvers.

7–17. Air-Delivered Weapons

An additional control factor is considered when nuclear weapons are delivered by Air Force means. Since the delivering agency determines whether the weapon was delivered, what yield was achieved, and where and when delivery was accomplished, Air Force controllers pass this information expeditiously to Army controllers so that effects can be incorporated into ground play. If this cannot be done, Army controllers may simulate Air Force delivery and perform the required nuclear play calculations using the appropriate nuclear play calculator.

7–18. Air Defense Nuclear Weapons

The effect of air defense nuclear weapons on ground forces will be assumed as negligible, unless such weapons are employed below the minimum normal burst altitude (MNBA). Weapons employed below the MNBA over ground installations and troops will have their ground effects computed as appropriate for the weapon yield and height of burst.

APPENDIX A

REFERENCES

A–1. Army Regulations (AR)

105–86	Performing Electronic Countermeasures in the United States and Canada
(C)105–87	Electronic Warfare
190–11	Physical Security of Weapons, Ammunition, and Explosives
210–21	Training Areas and Facilities for Ground Troops
220–55	Field and Command Post Exercises
310–25	Dictionary of United States Army Terms
310–50	Authorized Abbreviations and Brevity Codes
350–1	Army Training
350–30	Code of Conduct
380–5	Safeguarding Defense Information
(C)380–40	Department of the Army Policy for Safeguarding COMSEC Information (U)
380–41	Control of COMSEC Material
405–10	Acquisition of Real Property and Interests Therein
530–1	Operations Security (U)
746–10	Marking of Selected Clothing and Equipment

A–2. Department of the Army Pamphlets (DA Pam)

108–1	Index of Army Motion Pictures and Related Audio-Visual Aids

A–3. Field Manuals (FM)

3–8	Chemical Reference Handbook
3–10	Employment of Chemical Agents
3–12	Operational Aspects of Radiological Defense
3–22	Fallout Prediction
5–20	Camouflage
5–34	Engineer Field Data
6–10	Field Artillery Communications
6–20	Field Artillery Tactics and Operations Field Artillery Techniques
6–40	Field Artillery Cannon Gunnery
19–40	Enemy Prisoners of War and Civilian Internees
20–32	Mine-Countermine Operations
21–5	Military Training Management
21–6	Techniques of Military Instruction
21–10	Field Hygiene and Sanitation
21–30	Military Symbols
21–40	Chemical, Biological, Radiological, and Nuclear Defense
21–41	Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare
21–48	Chemical, Biological, and Radiological (CBR), and Nuclear Defense Training Exercises
21–60	Visual Signals
23–17	REDEYE Guided Missile System

(C)23–17A	REDEYE Guided Missile System (U)
24–1	Tactical Communications Doctrine
24–16	Signal Orders, Records, and Reports
27–10	The Law of Land Warfare
30–5	Combat Intelligence
30–17	Counterintelligence Operations
30–20	Aerial Surveillance—Reconnaissance, Field Army
30–102	Handbook on Aggressor Military Forces
30–103	Aggressor Order of Battle Book
30–31	Stability Operations—Intelligence
(S)30–31A	Stability Operations—Intelligence Collection (U)
31–16	Counterguerilla Operations
31–20	Special Forces Operational Techniques
(C)31–20A	Special Forces Techniques (U)
31–21	Special Forces Operations, US Army Doctrine
31–23	Stability Operations, US Army Doctrine
(C)31–40	Tactical Cover and Deception (U)
31–73	Advisor Handbook for Stability Operations
31–85	Rear Area Protection (RAP) Operations
(C)32–5	Signal Security (SIGSEC) (U)
(S)32–10	USASA In Support of Tactical Operations (U)
(C)32–20	Electronic Warfare (U)
33–1	Psychological Operations—US Army Doctrine
33–5	Psychological Operations—Techniques and Procedures
41–5	Joint Manual for Civil Affairs
41–10	Civil Affairs Operation
44–1	US Army Air Defense Artillery Employment
(S)44–1A	US Army Air Defense Artillery Employment (U)
44–1–1	US Army Air Defense Artillery Operations
44–2	Air Defense Artillery Employment Automatic Weapons M42/M55
44–3	Air Defense Artillery Employment, CHAPARRAL/VULCAN
44–6	Procedures and Drills for Forward Area Alerting Radar (FAAR) and Target Alert Data Display Set (TADDS)
44–95	Air Defense Artillery Employment, NIKE HERCULES
44–96	Air Defense Artillery Employment, HAWK
61–24	Field Manual Division Communications
61–100	The Division
100–5	Operations of Army Forces in the Field
100–10	Combat Service Support
100–20	Field Service Regulations—Internal Defense and Development (IDAD)
100–26	The Air-Ground Operations System
101–5	Staff Officer's Field Manual: Staff Organization and Procedure
101–10–1	Staff Officers' Field Manual: Organizational, Technical, and Logistical Data, Unclassified Data
101–10–2	Staff Officers' Field Manual: Organizational, Technical and Logistical Data Extracts of Nondivisional Tables or Organization and Equipment
101–31–1	Staff Officers' Field Manual: Nuclear Weapons Employment, Doctrine and Procedures
(S)101–31–2	Staff Officers' Field Manual: Nuclear Weapons Employment Effects Data (U)
101–31–3	Staff Officers' Field Manual: Nuclear Weapons Employment Effects Data

A–4. Joint Chiefs of Staff Publications (JCS Pub)

1	Dictionary of US Military Terms for Joint Usage
(0)2	Unified Action Armed Forces (UNAAF) (U)

A–5. Miscellaneous Publications

APC 125	Communications Instructions—Radio Te'ephone Procedures
ATP 20–5	Army Training Program for Fie'd Exercises and Maneuvers
STANAG 2103	Reporting Nuclear Detonations, Radioactive Fallout, and Biological and Chemical Attacks
STANAG 2112	Radiological Survey

APPENDIX B

SAMPLE DOCUMENTS FOR A PLATOON FIELD EXERCISE

Example B–1. Typical Battalion Directive

DEPARTMENT OF THE ARMY
1ST BATTALION, 70TH INFANTRY
Fort Benning, Georgia 31905

23 October 19__

SUBJECT: Preparation of a Rifle Platoon Field Exercise

TO: CPT Daniel O. Brown
Company A, 1st Battalion, 70th Infantry
Fort Benning, Georgia 31905

1. The 1st Battalion, 70th Infantry, will conduct rifle platoon field exercises during the period 10–14 November 19__. This exercise will involve the rifle platoon on a daylight attack, using live ammunition in the assault phase. You will prepare and direct the exercise.
2. Situations will be developed to provide training in the following:
   a. Proper troop-leading procedures.
   b. Use of combat formations.
   c. Fire and maneuver.
   d. Assault, reorganization, and consolidation.
   e. Preparation for continuing the attack.
3. Related individual training will be integrated whenever practicable.
4. The conduct of the exercise will be limited to 3 hours for each rifle platoon.
5. The Hitchcock Range area has been reserved for the exercise. Firing limitations and safety requirements are outlined in the post range regulations.
6. Ammunition available for each exercise:

Type	*Amount*
7.62-mm	1,520 rd
7.62-mm (tracer)	48 rd
7.62-mm (blank) (belted)	1,000 rd
Hand grenade simulators	20 ea
Smoke streamers, green	2 ea
Smoke grenades, red	3 ea
Electric blasting caps	25 ea
TNT	10 lb

7. Direct coordination with units and staff members of this command is authorized.

1 Incl
Hitchcock Range
exercise area map
(omitted)

/s/John H. Warner
JOHN H. WARNER
LTC, Infantry
Commanding

Example B–2. Field Exercise for a Rifle Platoon in the Attack

SCENARIO

1. GENERAL SITUATION

"Your company has been advancing to the southeast along EIGHTH DIVISION Road against light enemy resistance. The point and the advance party have reached a location about 250 meters southeast of the RJ EIGHTH DIVISION—HOURGLASS Roads, where they were pinned down by fire from an Aggressor force located in BARDMAN Hill. Your platoon, the leading platoon of the company, is located here at point C, approximately 350 meters northwest of RJ EIGHTH DIVISION—HOURGLASS Roads. Your platoon leader has been called forward by the company commander."

Note. The general situation is issued to all members of the platoon. Upon issuance of the general situation, the problem becomes tactical. The situation is normally issued in the assembly area immediately after arrival of the platoon, using a map or sketch of the area as required.

2. INITIAL SITUATION

When the platoon arrives in the assembly area, the chief umpire, acting as the company commander, will take the platoon leader to point X and will issue the following attack order:

"You are now 50 meters west of the RJ EIGHTH DIVISION—HOURGLASS Roads. That direction (pointing) is north. That ridge running across our front at a range of 500 meters is HITCHCOCK SPUR. As you can see, it is part of BARDMAN Hill to the right front at a range of about 100 meters.

"An estimated Aggressor squad occupies positions on BARDMAN Hill. The squad still has its machine gun.

"There is no change in the friendly situation.

"We will attack and secure BARDMAN Hill.

"The 2d Platoon will attack BARDMAN Hill. 1st Platoon will support the attack from present positions. 3d Platoon will be prepared to support the attack on order.

"2d Platoon will attack and secure BARDMAN Hill and will be prepared to resume the advance on order.

"1st Platoon with antitank squads attached will support the 2d Platoon from present positions.

"Weapons Platoon with mortars, in general, will support from positions in vicinity of VICTORY Pond. Initial targets will be Aggressor positions on BARDMAN Hill.

"Antitank squads will be attached to 1st Platoon.

"3d Platoon will assemble in draw west of EIGHTH DIVISION Road 300 meters from RJ and will be prepared to assist in the attack on order.

"LD is HOURGLASS Road. Time of attack will be * * *

"Co ASP will be on EIGHTH DIVISION Road at deserted mine southeast of VICTORY Pond. Route of evacuation will be EIGHTH DIVISION Road.

"Signal to shift support fire will be a green smoke streamer. I will be with the 2d Platoon.

"Time is now * * *."

3. FIRST REQUIREMENT

Actions and orders of leaders. Movement across the line of departure.

4. SUBSEQUENT SITUATIONS

a. Second Situation.

The platoon moves across the line of departure. As it reaches the vicinity of area 2, it is hit with enemy mortar fire. Umpires fire simulated hand grenades in the vicinity of the platoon to indicate this fire. this fire.

b. Second Requirement.

Actions and orders of leaders. Reaction of the platoon to mortar fire. Change or maintenance of formations.

c. Third Situation.

The platoon passes through the enemy mortar fire. As the lead element reaches the vicinity of area B, it comes under fire from BARDMAN Hill. Automatic small arms and rifle fire is indicated by the target detail firing simulator devices located on BARDMAN Hill. Silhouette targets representing approximately an enemy squad are displayed in the vicinity of point 1. A surprise target of two silhouettes in the same area is used to represent the automatic weapon and is shown intermittently for 1-minute periods.

d. Third Requirement.

Action of the security element. Actions and orders of leaders. Fire and maneuver of the platoon.

e. Fourth Situation.

After the platoon has reached a suitable assault position in the vicinity of area A and the assault is launched, enemy fire from BARDMAN Hill becomes weak and sporadic. Fire is controlled by the chief umpire by radio.

f. Fourth Requirement.

Actions and orders of leaders. Conduct of the assault.

g. Fifth Situation.

BARDMAN Hill is captured.

h. Fifth Requirement.

Actions and orders of leaders. Actions of the platoon during reorganization and consolidation. Preparation for continuing the attack.

5. TIME SCHEDULE

a. Troop orientation and issuance of company and platoon orders in initial situation—60 minutes.

b. Second situation—10 minutes.

c. Third situation—20 minutes.

d. Fourth situation—20 minutes.

e. Fifth situation—20 minutes.

f. Critique—30 minutes.

g. Total—2 hours and 40 minutes.

Example B-3. Control Plan for Rifle Platoon Field Exercise

1. UMPIRES

a. Number. Two officers (one chief umpire, one assistant chief umpire) and four NCO (squad umpires).

b. Uniform and Identification. Fatigues, steel helmet, and shoulder loop under the left arm and over the shoulder.

c. Equipment.

(1) Radio.

(2) Umpire checklist.

(3) One pencil.

(4) One red smoke grenade.

(5) Five simulated hand grenades.

d. Duties.

(1) General instructions.

(a) Umpires will be familiar with chapter 5, FM 105–5.

(b) Casualties will not be declared.

(c) Remain as tactical as practicable.

(2) Chief umpire.

(a) Normally will be with the platoon leader.

(b) Makes all decisions that will affect the advance of the platoon.

(c) Orients the platoon leader and issues him the general and initial situations at point X.

(d) Collects the umpire checklist and conducts the critique at point 1.

(3) Assistant chief umpire.

(a) Orients the platoon and explains the general situation.

(b) Performs other duties assigned by the chief umpire.

(4) Squad umpires.

(a) Each places himself to best observe the actions of the squad and records observations on the umpire checklist.

(b) Will not inject new situations unless approved by the chief umpire.

2. SAFETY PERSONNEL

a. Responsibility.

(1) The chief umpire and the platoon leader will have overall responsibility for safety. The assistant chief umpire is chief safety officer.

(2) Squad umpires and the squad leaders will be responsible for safety within the squads.

(3) The NCO in charge of the target detail will be responsible for safety of that detail.

b. Uniform and Identification. (Same as para 1b).

c. Duties of the Safety Officer.

(1) Insures that the range flag is properly displayed during conduct of the exercise.

(2) Posts and instructs the road guards.

(3) Verifies the placement of roadblocks.

(4) Posts and instructs the aid men.

(5) Places the target detail in the pits at point 1 and issues safety instructions.

(6) Supervises collection of unexpended ammunition and safety inspection prior to the critique.

(7) Explains safety rules to the platoon at point A.

d. Safety Rules.

(1) All weapons will be locked until ready to fire.

(2) Red and white panels will mark safety boundaries.

(3) Fire will be in a southeasterly direction between the two panels.

(4) No firing will be permitted until the line of departure is crossed.

(5) On signal to cease fire, all weapons will be locked and cleared.

(6) Signal to cease fire will be a red smoke grenade. All umpires will have authority to stop the problem in event of accident, injury, or exceptionally dangerous conditions.

(7) When the signal to cease fire is given, all action will stop and will not resume until ordered by the chief umpire.

(8) Any injuries will be reported to the nearest umpire. An umpire receiving a report of accident or injury relays that report immediately to the chief umpire. Reports of injury or accident take precedence over all other radio traffic.

(9) Simulated grenades: Before removing the safety clip, the firer selects the area where the grenade is to be thrown. He verifies that no personnel is within 15 meters of the spot where the grenade is to be thrown and that no one is moving toward that area. The grenade explodes 6 to 10 seconds after it is ignited, with sufficient violence to project sticks and stones through the air with enough force to inflict serious injury on personnel within a radius of 15 meters.

e. Road Guards.

(1) Personnel. Three enlisted men, located at points M, N, and O.

(2) Uniform and identification. (Same as paragraph 1b.)

(3) Equipment. Belt, rifle or pistol, canteen, telephone TA–312/PT.

(4) Duties. Allow only those persons authorized by the chief umpire to enter the exercise area. Direct authorized visitors to point X and instruct them to remain at point X until met by an umpire. Notify either the chief umpire or the assistant chief umpire of any visitors entering the area.

3. ENEMY REPRESENTATION (TARGET DETAIL)

a. Personnel. NCO and three PVT.

b. Uniform and Identification. (Same as paragraph 1b.)

c. Equipment. Radio sets AN/PRC–4, AN/PRR–9, and AN/PRC–77; telephone TA–312/PT; red smoke grenade.

d. Duties and Conduct.

(1) The enemy will be represented by painted silhouette targets showing helmet, face outline, and shoulders. The targets will be placed in camouflaged foxholes. The machine gun will be indicated by emplacement of a mock weapon and grouping of targets to represent the crew.

(2) The target detail will simulate enemy fire by remotely controlled munitions at the target position. A remotely controlled machine gun emplaced near the mock weapon will indicate machine gun fire.

(3) The target detail will operate in a plainly marked, covered pit located near the panel on the southwestern slope of BARDMAN Hill. Simulated fire will commence and cease as directed by the chief umpire. On termination of each problem and verification that the range is clear, targets will be replaced or repaired, camouflage will be restored, and remotely controlled firing devices will be reloaded.

4. COMMUNICATION

a. Personnel. Two AN/PRC–77 radio operators, one for the chief umpire and one for the assistant chief umpire.

b. Uniform and Identification. (Same as paragraph 1b.)

c. Equipment.

Type	*Quantity*	*Use*
Radio set AN/PRC–77	3	1 each chief umpire, assistant chief umpire, target detail
Transmitter set AN/PRT–4	4	1 each umpire, target detail, 1 spare
Receiving set AN/PRR–9	8	1 each umpire, target detail, 1 spare
Telephone set TA–312/PT	8	Located at points A, B, C, M, N, O, X, and 1 spare

5. TROOP ORIENTATION

a. Location. In the assembly area, vicinity of point C.

b. Personnel to Attend. All members of the platoon and selected umpires.

c. Time. Immediately after the platoon arrives in the assembly area.

d. Personnel to Conduct. Assistant chief umpire.

e. Scope.

(1) Purpose of the exercise.

(2) Identifications.

(3) Safety rules.

(4) Special instructions.

(5) General situation.

6. CRITIQUE

a. *Location.* On the objective, vicinity of point 1.

b. *Personnel to Attend.* All members of the platoon and all umpires except the assistant chief umpire.

c. *Time.* Immediately following the exercise.

d. *Personnel to Conduct.* The chief umpire will conduct the critique, basing his remarks on his own observations and a consolidation of the comments made by the assistant umpires on their checklists.

e. Scope.

(1) Review of the purpose of the exercise and the situation.

(2) Plans, actions, and orders of the leaders.

(3) Actions of security elements.

(4) Conduct of attack; formations and execution of the assault.

(5) Troop information (to include adequacy of troop orientation on mission, rules of engagement, conduct towards civilian personnel or refugees, and information of key facilities, e.g., CP, aid station, PW collection point).

Example B–4. Typical Umpire Checklist[1]

For Rifle Platoon Field Exercise

UNIT: _____ DATE: _____

Actions	*Yes*	*No*	*Remarks*
1. INITIAL SITUATION			
a. Did the platoon leader arrange for movement of his unit?	___	___	
b. Did the platoon leader plan his reconnaissance?	___	___	
c. Did the platoon leader select a position from which to issue his order?	___	___	
d. Was his order clear, concise, and timely?	___	___	
e. Was the platoon leader's plan and initial information sound?	___	___	
f. Were the orders of the squad leader clear, concise, and timely?	___	___	
g. Did the platoon maintain its formation while moving to the LD?	___	___	
h. Was the security element alert during the initial advance?	___	___	
i. Did all leaders maintain control? Coordination?	___	___	
j. Were the following promptly carried out?	___	___	
(1) Reconnaissance, formulation of plans, and decisions	___	___	
(2) Issuance of orders	___	___	
2. SECOND SITUATION			
a. Did the platoon react properly to mortar fire?	___	___	
b. Did leaders maintain control?	___	___	
c. Were formations:			
(1) Changed?	___	___	
(2) Maintained?	___	___	
(3) Controlled?	___	___	

[1] The umpire checklist is a guide for the umpires and provides a systematic means of recording observations. It is an elaboration of the requirements in the scenario. A different checklist is required for each exercise to cover each of the requirements.

Actions	*Yes*	*No*	*Remarks*
3. THIRD SITUATION			
a. Did the security element react in a positive manner when fired?	—	—	
(1) Did the unit move forward aggressively?	—	—	
(2) Did individuals use cover and concealment?	—	—	
(3) Did squad leaders control volume of fire returned?	—	—	
b. Did the platoon leader—			
(1) Move unit to cover?	—	—	
(2) Make a reconnaissance?	—	—	
c. Was the platoon leader's order clear, concise, and timely?	—	—	
d. Did the platoon leader's plan of attack include—			
(1) A base of fire?	—	—	
(2) A maneuver element?	—	—	
(3) Coordination measures?	—	—	
e. Were the orders of the squad leaders clear, concise, and timely?	—	—	
f. Did the base of fire—			
(1) Use cover and concealment?	—	—	
(2) Occupy good firing positions?	—	—	
(3) Engage surprise targets promptly?	—	—	
g. Did the maneuver element—			
(1) Use cover and concealment?	—	—	
(2) Move aggressively and promptly?	—	—	
(3) Achieve surprise?	—	—	
h. Did the platoon leader make use of supporting fires?	—	—	
4. FOURTH SITUATION			
a. Were the maneuver element and the base of fire coordinated from the beginning of the assault?	—	—	
b. Was the assault aggressive?	—	—	
c. Was the fire controlled during the assault?	—	—	
d. Did leaders have control of their units during the assault?	—	—	
5. FIFTH SITUATION			
a. Were the squads effectively located during consolidation?	—	—	
b. Did the squad leaders check for:			
(1) Casualties?	—	—	
(2) Replacement of key individuals?	—	—	
(3) Ammunition requirements?	—	—	
(4) Redistribution of ammunition?	—	—	
c. Did the platoon leader effectively consolidate the position?	—	—	
d. Did the platoon leader send a message to the company commander on:			
(1) Platoon situation?	—	—	
(2) Casualties?	—	—	

Actions	*Yes*	*No*	*Remarks*
(3) Ammunition requirements?	——	——	
e. Did the platoon leader prepare to continue the attack or repel counterattack by—			
(1) Providing security?	——	——	
(2) Completing consolidation?	——	——	
6. GENERAL			
Did the platoon accomplish its mission?	——	——	

Example B–5. Typical Battalion Training Circular

DEPARTMENT OF THE ARMY
1ST BATTALION, 70TH INFANTRY
Fort Benning, Georgia 31905

CIRCULAR

NO. 350–5

1 November 19__

(Effective until 30 November 19__ unless sooner rescinded or superseded.)

EDUCATION AND TRAINING
RIFLE PLATOON FIELD EXERCISE

1. REFERENCES.
   a. FM 7–10.
   b. FM 105–5, paragraphs 142 through 148.
   c. AR 385–63.
   d. Post range and safety regulations.
2. OBJECTIVES.
   The objectives of this exercise are to train the rifle platoons of the battalion for a daylight attack. This will be a combat firing exercise designed to provide training in the following:
   a. Initial and subsequent orders of troop leaders.
   b. Combat formations.
   c. Fire and maneuver.
   d. Conduct of an assault.
   e. Reorganization and consolidation.
   f. Preparation for continuing the attack.
3. SCHEDULE.
   a. 6 November—1st Platoon, Company A—rehearsal unit.
   b. 10 November—1st and 2d Platoons, Company A.
   c. 11 November—3d Platoon, Company A, and 1st Platoon, Company B.
   d. 12 November—2d and 3d Platoons, Company B.
   e. 13 November—1st and 2d Platoons, Company C.
   f. 14 November—3d Platoon, Company C.
4. TROOP ORIENTATION.
   The platoons will be oriented in the exercise area by the umpires immediately after arrival in the exercise area. The orientation will cover the purpose of the exercise, safety instructions, identification of control personnel, special instructions for conduct of the exercise, and the general situation.
5. CONTROL PERSONNEL.
   a. The chief umpire and safety officer will be CPT Daniel O. Brown, Company A.
   b. Additional personnel will be furnished by each company as follows:
      (1) Company A—two radio operators, AN/PRC–25.

(2) Company B—one officer for assistant chief umpire, one NCO, and three privates for target detail.

(3) Company C—two NCO for assistant umpires, and three privates for work detail.

(4) Headquarters Company—one NCO for assistant umpire, and three privates for road guards.

c. Requirements:

(1) Names of the above personnel will be furnished the battalion S3 no later than 030900 November.

(2) Control personnel and work detail will report to Captain Brown at Company A orderly room, 050800 November, for initial briefing and instructions. All control personnel will be available, on call, to Captain Brown for the period 1–19 November, inclusive.

(3) Rehearsal unit: The 1st Platoon, Company A, is available to the chief umpire on 6 November.

6. ADMINISTRATIVE DETAILS.

a. Time and Place for Participating Units to Report.

(1) One exercise will begin at 0805 and another at 1305 each day. Companies will have one platoon at the detrucking point at 0800 and another at 1300 on the days scheduled.

(2) The detrucking point is on EIGHTH DIVISION Road, 400 meters northwest of RJ EIGHTH DIVISION and HOURGLASS Roads.

b. Route. FIRST DIVISION Road—EIGHTH DIVISION Road.

c. Uniform and Equipment. Class "D" uniform with combat pack. Equipment—per field SOP.

d. Transportation. The battalion motor officer will make available to the chief umpire the following transportation:

(1) Two 2½-ton trucks, one ¾-ton truck, and one ¼-ton truck for control personnel and equipment.

(2) Three 2½-ton trucks to transport the platoons to exercise area.

e. EQUIPMENT AND SUPPLIES.

(1) The battalion S4 will provide the following items to the chief umpire by 041000 November:

13 white shoulder loops
1 MG, 7–62-mm with blank attachment
6 disappearing E and F targets
18 E-silhouette targets
36 F-silhouette targets
4 roadblocks
2 shovels
2 picks
2 axes
2 hammers
1 crosscut saw
2 pounds of assorted nails
2 batteries BA–279/U

(2) The battalion S4 will provide the following ammunition for each platoon to the chief umpire by 1630 on the day prior to the problem:

1,520 rounds rifle, 7.62-mm
48 rounds rifle, 7.62-mm, tracer
1 linked belt, 1,000 rounds, 7.62-mm (blank)
20 simulated hand grenades
2 green smoke streamers
3 red smoke streamers
25 electric blasting caps
10 pounds of TNT

(3) The battalion communication officer will provide the following equipment to the chief umpire by 050900 November:

3 radio sets, AN/PRC–77
8 transmitting sets, AN/PRT–4
8 receiving sets, AN/PRR–9
8 telephone sets, TA–312/PT
1 mile of telephone wire

f. EVACUATION. The battalion medical platoon leader will provide one truck ambulance and one aid man to the chief umpire at the detrucking point prior to the starting time for each exercise. The aid man will be equipped with a field medical kit. Evacuation will be via EIGHTH DIVISION and FIRST DIVISION Roads to Station Hospital.

FOR THE COMMANDER:

/s/Charles M. Millam
CHARLES M. MILLAM
CPT, Infantry
Adjutant

APPENDIX C

DOCUMENTS RELATED TO THE LARGE UNIT TACTICAL EXERCISE

Example C–1. Typical Directive for Division Field Exercise

DEPARTMENT OF ARMY
HEADQUARTERS, 20TH INFANTRY DIVISION
Fort Leavenworth, Kansas 66027

14 May 19__

SUBJECT: Division Field Exercise

TO: BG James E. Hays
Assistant Division Commander

1. The division will conduct a 3-day controlled field exercise during the period 16–18 June 19__. You will direct the planning and preparation for the exercise and act as the chief umpire/controller. The division will be portrayed as part of a four-division corps in an active nuclear and chemical situation.
2. The objectives of the exercise are—
   a. To provide training in—
      (1) Occupation of assembly areas during darkness.
      (2) Advance to contact.
      (3) Execution of a coordinated attack.
      (4) Penetration of an enemy position and exploitation.
      (5) Combat service support.
      (6) Preparation of estimates, plans, and orders.
      (7) Active and passive air defense.
      (8) Rear area security and area damage control.
      (9) Civil-military operations.
      (10) Tactical cover and deception operations.
      (11) Electronic warfare.
   b. To evaluate and test the division SOP for its adequacy in an active nuclear situation.

3. Other information is as follows:

a. The exercise director staff will consist of the G1, G2, G3, G4, G5, and signal officer. Representatives of the special staff and support command will be provided as required.

b. The terrain to be used is shown on the attached map. Movement of troops out of the exercise area will be prohibited for the duration of the exercise. Movement to and from the area will be by organic transportation.

c. The entire division will participate in the exercise except for those persons required for safety and protection of the garrison area.

d. Sufficient field exercise funds will be available to support the exercise.

e. The necessary umpire personnel, vehicles, drivers, and umpire communication support will be provided by the 17th Infantry Division. An early report of the specific requirements should be made to the Commanding General, 17th Infantry Division, for staff planning.

f. A brigade of one tank and two infantry battalions will be furnished by the 17th Infantry Division to act as the Aggressor force. This brigade will be attached to the 20th Infantry Division from 151200 June to 181200 June for the conduct of the exercise. Plans for the preparation and rehearsal of the Aggressor force prior to the exercise will require coordination with the Commanding General, 17th Infantry Division.

g. All classes of supply will be physically played as far as practicable. Class V play will be accomplished by the use of sand-filled boxes and blank ammunition.

1 Incl
Map of Ft Riley
(omitted)

/s/John M. Vance
JOHN M. VANCE
Major General, USA
Commanding

See chart in back of manual

Example C–2. Director Staff Activities in Preparing Exercise Plans

Example C–3. Sequential Planning and Preparation for the Large-Unit Field Exercise

1. Preparation and issue of the directive. (By higher headquarters or the unit commander.)
2. Study of reference material and issue of planning guidance. (By exercise staff and director.)
3. Preparation of the planning schedule. (G3.)
4. Development and approval of the outline plan. (G3, G2, and exercise director.)
5. Issue of warning orders. (Exercise director.)
6. Preparation of the scenario. (G3.)
7. Preparation of the major supporting plans. (Entire staff.)
8. Preparation and issue of the training circular. (G3 and director.)
9. Procurement of additional personnel, supplies, and equipment. (G1 and G4.)
10. Preparatory training conducted by—
    a. Units to participate.
    b. Director headquarters, controllers, and umpires.
    c. Aggressor force.
11. Accomplishment of support missions—
    a. Acquisition of terrain.
    b. Schooling of umpires and controllers.
    c. Preparation of exercise area by Aggressor force and technical teams.
    d. Press release to the public.
12. Orientation of player personnel. (By exercise director and staff.)
13. Conduct of the exercise. (By chief umpire/controller.)
14. Supervision of the exercise by—
    a. Director headquarters.
    b. Unit commander or higher headquarters.
15. Critique of exercise. (By exercise director and selected umpires.)
16. Unit critiques. (By respective unit commanders.)
17. Submission of afteraction reports. (By exercise director.)

Example C–4. Development of Planning Schedule by Process of Backward Planning

Date of exercise: 16–18 June 19__.
Date of commander's concept for the exercise: 10 May 19__.
Date directive received: 14 May 19__.
Period available for planning and preparation: 14 May through 15 June 19__. (33 days).

	Starting dates (1st approximation)	*Completion dates (refined)*
1. Conduct of exercise (3 days)	16 June	18 June
2. Final preparation and unit movement (5–7 days)	9 June	15 June
3, Player orientation (1 day)	8 June	10 June
4. Accomplish support missions[1] (7–10 days)	29 May	6 June
5. Preparatory training[1, 2] (7–14 days)	25 May	9 June
6. Process incoming personnel and equipment (1 day)	24 May	27 May
7. Publish unit training circular (0–1 day)	23 May	26 May
8. Prepare supporting plans and training circular (4–5 days)	18 May	26 May
9. Prepare scenario (2 days)	16 May	22 May
10. Approval of outline plan; warning order issued (1 day)	15 May	20 May
11. Develop outline plan (2 days)	13 May	19 May
12. Prepare planning schedule (1 day)	12 May	17 May
13. Research and study of reference material (2 days)	10 May	16 May
14. Receipt of directive	10 May	14 May

[1] Concurrent activities.
[2] Training and rehearsals by players, umpire/controllers, and Aggressor force.

Example C–5. Distribution of Plans for Command Post and Field Exercises

Item	Prepared by	Director group	Distribution		Player units
			Umpires	Aggressor [1]	
Training Circular	G3	X	X	X	X
Annex A, Scenario	G3	X	X	X	
General Situation [2]	G3	X	X	X	X
Appendix 1, Initial and Subsequent Situations	G3	X	X	X	
Appendix 2, Situation Overlay	G3	X	X	X	
Appendix 3, Corps OPORD (Extracts)	G3	X	X	X	X
Tab A, Intel Annex, to Corps OPORD	G2	X	X	X	X
Tab B, Op Overlay, to Corps OPORD	G3	X	X	X	X
Appendix 4, Plan for Intelligence	G2	X	X	X	
Tab A, Information Distribution Plan	G2	X	X	X	
Tab B, Aggressor Plan and Situation	G2	X	X	X	
Tab C, Directive to Aggressor Commander [3]	G2	X	X	X	
Tab D, Gen Instructions for Aggressor [3]	G2	X	X	X	
Appendix 5, Schedule of Events	G3	X	X	X	
Annex B, Control Plan	G3, chief umpire/controller	X	X	X	
Appendix 1, Umpire Assignments	G1, chief umpire/controller	X	X		
Appendix 2, Schedule of Umpire Orientation and Tng	G3, chief umpire/controller	X	X		
Appendix 3, Umpire Checklist	G3, chief umpire/controller	X	X		
Appendix 4, Umpire Communication Plan	Chief umpire/controller, Div Sig Off	X	X		
Annex C, Orientation and Critique Plan	G3, chief umpire/controller	X	X	X	X
Annex D, Plan for Administration	G1, G4	X	X	X	X
Appendix 1, Army ADMINO (Extracts)	G1, G4	X	X	X	X
Appendix 2, Claims Plan [4]	G4, Claims Off	X	(Primary interest; claims off)		
Appendix 3, Civil-Military Operations	G5, G4, IO	X	X	X	X
Annex E, Public Information Plan [3]	G1, IO	X	X	X	X

[1] For controlled field exercise.
[2] May be made an annex to the training circular to facilitate advance issue.
[3] For field exercise only.
[4] Since an administrative plan is not usually issued in a CPX, the claims plan then becomes an annex to the training circular.

Example C–6. Concurrent Planning and Preparation for the Large-Unit Field Exercise

Time schedule	Unified, combined or numbered	Corps		Division	
		Player	Control	Player	Control and umpire
E–120	Publish exercise directive. Organize exercise planning staff and exercise support staff (minimum manning).				
E–110	Publish warning orders	Publish exercise directive. Organize exercise planning staffs.	Designate personnel. Man sufficiently to begin planning.		
E–100	Conduct exercise planning conference. Coordinate control details and allocation of resources.	Issue warning orders.			
E–90	Complete preparation of annexes to training circular.			Issue warning orders.	
E–85	Publish training circular (less movement plan).	Publish training circular.			
E–80		Publish player plan	Publish control plan	Publish training circular.	
E–75				Publish player plan	Publish control plan.
E–60 to E–50	Conduct exercise planning conference. War game player plans.				
E–50	Publish final exercise movement plans (administrative move).				
E–45 to E–30	Conduct control war game		Conduct control war game. Report results to army.		Conduct control war game. Report results to corps.
E–30	Begin installation of communication system in exercise area.	Begin specific exercise orientation of all participants.			
E–25	Conduct briefing and orientation of all personnel. Begin intelligence preplay.				
E–20	Publish final changes to control plan based on control war game.		Implement final changes to control plan.		Implement final changes to control plan.
E–14	Begin and supervise major moves to exercise area.	Players move to exercise area.	All supervise.		
E–10	Fully augment control and support staffs.				
E–7 to E–4	Conduct umpire school, including umpire tactical rides.			Close into exercise area. Conduct reconnaissance, tactical rides, test communication system.	
E–3	Conduct control CPX until E-day		Control CPX		Control CPX.
E–day to E+7	Conduct and support exercise	Participation	Control	Participation	Control.
T–day exercise terminates.	Exercise director terminates exercise			Furnish recommendations for critique.	Furnish recommendations for critique.
T+1	Conduct critique	Attend critique—participate (selected personnel).	Attend critique—participate (selected personnel).	Attend critique (selected personnel).	Attend critique (selected personnel).

Example C–6. Concurrent Planning and Preparation for the Large-Unit Field Exercise—Continued

Time schedule	Unified, combined or numbered	Corps		Division	
		Player	Control	Player	Control and umpire
T+2 through T+10	Supervise return to home station of participating units, repair maneuver damage, conduct processing of claims, dismantle communication system; prepare final report; reduce staff to planning level.				
T+14	Submit final report to exercise director for approval; publish; disseminate; submit follow-up schedule for staff.				

APPENDIX D

WAR GAME TECHNIQUES

Section I. GENERAL

D–1. Purpose

This appendix provides guidance for a simplified method of war gaming division and corps-sized actions. The methodology applied in this appendix reduces many combat variables to a numerical value and integrates these values into graphical and tabular forms. The primary use of this appendix is in map maneuvers as discussed in chapter 4, but the methods apply equally to the war gaming of any plans.

D–2. Methodology

a. The data and procedures in paragraphs D–1 through D–61 are intended to war game combat between player divisions. Paragraphs D–62 and D–63 present techniques specifically designed to war game corps problems. Procedures differ only where detail must be aggregated to simplify handling in the larger number of units found at the higher level. Paragraphs D–64 through D–74 pertain to all types of exercises using war game techniques. Aggressor data may be used if one force is using Aggressor organization, equipment, and tactics. The organization and duties of the war gaming section that will apply the war gaming procedures are described in chapter 5. The map maneuver outlined in chapter 4 will not necessarily employ all actions described in this appendix, but they are included for completeness. In the play of nuclear weapons, the detail of processing and assessing effects will depend primarily upon the purpose of the exercise. In some cases, the nonavailability of the nuclear play calculator or other circumstances may cause the war gaming section to use the more detailed procedures depicted in this appendix rather than the simplified techniques discussed in chapter 7.

b. Figure D–1 outlines some of the key steps in preparing for a war game.

c. The chief controller determines the length of exercise time periods based on the occurrence of critical events between the two forces. The figure below shows the action to be taken during exercise time periods.

D–3. Controller Judgment

a. Controllers should "play" the problem in accordance with players' orders and actions as closely as practicable. Excessive preoccupation with detailed computations delays the problem unnecessarily and results in extended periods of inactivity for the player teams.

b. Because all the various factors affecting a situation cannot be included in tables, controllers must apply experience, reason, and logic in deriving new situations to be presented to the players for their actions and decisions.

c. In the final analysis, the judgment of the controllers remains the principal factor in determining the results of player actions in any given situation.

Step	*Responsible activity*	*Item*	*Reference*
1	Player	Prepare initial estimates of the situation (mental).	
2	Player	Submit plans, overlays, task organizations, and sequences of predicted events for the initial deployment of forces based on mission assigned.	
3	Control	Transmit initial intelligence to player teams, including time at which information is known.	Section IV, "Intelligence".
4	Player	Review initial deployments, orders, and task organizations, in view of intelligence received, and propose changes if indicated.	
5	Control	Adjust initial intelligence furnished respective player teams if there are major changes in dispositions.	See 3 above.
6	Player	Sumbit fire support plans for preparation and counterpreparation if situation warrants.	Section V, "Combat Power and Movement;" Section VI, "Casualty Assessment".
7	Control	Assess effects of preparatory and counterpreparatory fire.	See 6 above.

Figure D–1. Preparatory tasks.

Step	Responsible activity	Task	Exercise time	Reference
1	Control	Notify the player teams of the initial friendly and aggressor situation at the beginning of the period.	Beginning of period.	Section V, "Combat Power and Movement".
2	Control	Submit contact intelligence to player teams at the beginning of the period.	Beginning of period.	Section IV, "Intelligence".
3	Player	Notify control of projected actions for the period—	Beginning of period.	Section III, "Timelags".
4	Control	Furnish intelligence to the player terms periodically throughout the period as professional judgment indicates.	Throughout period.	Section IV, "Intelligence".
5	Control	Notify player teams of movements accomplished and losses (personnel and materiel) sustained during the period.	End of period—	Section V, "Combat Power and Movement"; Section VI, "Casualty Assessment".
6	Control	Recalculate and notify player teams of new force ratios and effectiveness of units.	End of period—	Section V, "Combat Power and Movement".

Figure D–2. Tasks for one time period during exercise.

Section II. PROBABILITIES AND RANDOM NUMBERS

D–4. Determining Outcome

In war gaming, there are several possible outcomes to be considered for starting as well as continuing the action. The most common are—

a. Assumed Outcome. In war gaming, a definite outcome may be assumed. An assumption can be used to narrow the problem or to isolate it. Obviously, any assumption affects the validity of the overall results, but any such qualification of the outcome is announced and recognized.

b. Sure Event (Deterministic). There are events whose outcomes are certain. For example, if a shot is fired into the air, it always comes down. Sure events either definitely happen or they do not; there is no doubt about the outcome. In such situations, decisions are based on logic and on knowledge of the situation.

c. Chance Outcome (Probabilistic or Stochastic). Sure events and assumed outcomes are relatively uncommon as compared with the vast gray zone where events can produce a variety of results. An outcome in this spectrum cannot be predicted accurately; it is determined by the net cumulative effect of all the factors influencing the outcome. For example, in an assumed combat situation, a reconnaissance patrol covers a certain area; the question may arise as to whether the war game controllers should give one side any new intelligence from the patrol action and, if so, what intelligence; or is the patrol captured before returning? For the purpose of war gaming, specific outcomes can be assigned based on the overall probability of each outcome.

D–5. Probabilities

War gaming relies on the use of probabilities in implementing many control procedures. The value of any probability is expressed as a decimal from zero to one, inclusive. (It may also be expressed in either percentage or fraction form; but its value can never be greater than its unity.) A probability of *one* means that any event having this probability always occurs. A probability of *zero* means that the event never occurs. If an event occurs a given percentage of times, on the average, the probability of occurrence equals the percentage.

Note. Deterministic events described in paragraph D–4*b* have an occurrence probability of *one* or *zero*. Stochastic events described in paragraph D–4*c* have a probability of between *zero* and one.

D–6. Chance Devices

Any valid chance device may be used to determine the random outcome of any event. Some of the more common devices are coins, dice, cards, and random number tables. The first three devices are useful and provide valid outcomes; however, the number of different outcomes is limited by the number of coins, dice, or cards. A random number table, with numbers (normally two digit) arranged at random in every direction, is one of the most versatile and convenient chance devices for manual selection of probabilities.

D–7. Use of Random Numbers

To use a random number table, enter the table (example D–1) at any starting point; for example, row 12, column 21. The number encountered is 15. Additional random numbers are taken in order from this starting point in any direction. When the end of a row or column is reached without having the required amount of random numbers, proceed to the next row or column, in order, until the desired quantity of random numbers is obtained. In the following

table of random numbers, 00 should be read as 100 since the numbering starts with one and not zero. Examples for using the random number table follow:

Example D–1. Sample Random Numbers Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	22	17	68	65	84	68	95	23	92	35	87	02	22	57	51	61	09	43	95	06	58	24	82	03	47
2	19	36	27	59	46	13	79	93	37	55	39	77	32	77	09	85	52	05	30	62	47	83	51	62	74
3	16	77	23	02	77	09	61	87	25	21	28	06	24	25	93	16	71	13	59	78	23	05	30	16	25
4	78	43	76	71	61	20	44	90	32	64	97	67	63	99	61	46	38	03	93	22	69	81	21	99	21
5	03	28	28	26	08	73	37	32	04	05	69	30	16	09	05	88	69	58	28	99	35	07	44	75	47
6	93	22	53	64	39	07	10	63	76	35	87	03	04	79	88	08	13	13	85	51	55	34	57	72	69
7	78	76	58	54	74	92	38	70	96	92	52	06	79	79	45	82	63	18	27	44	69	66	92	19	09
8	23	68	35	26	00	99	53	93	61	28	52	70	05	48	34	56	65	05	61	86	90	92	10	70	80
9	15	39	25	70	99	93	86	52	77	65	15	33	59	05	28	22	87	26	07	47	86	96	98	29	06
10	58	71	96	30	24	18	46	23	34	27	85	13	99	24	44	49	18	09	79	49	74	16	32	23	02
11	57	35	27	33	72	24	53	63	94	09	41	10	76	47	91	44	04	95	49	66	39	60	04	59	81
12	48	50	86	54	48	22	06	34	72	52	82	21	15	65	20	33	29	94	71	11	15	91	29	12	03
13	61	96	48	95	03	07	16	39	33	66	98	56	10	56	79	77	21	30	27	12	90	49	22	23	62
14	36	93	89	41	26	29	70	83	63	51	99	74	20	52	36	87	09	41	15	09	98	60	16	03	03
15	18	87	00	42	31	57	90	12	02	07	23	47	37	17	31	54	08	01	88	63	39	41	88	92	10
16	88	56	53	27	59	33	35	72	67	47	77	34	55	45	70	08	18	27	38	90	16	95	86	70	75
17	09	72	95	84	29	49	41	31	06	70	42	38	06	45	18	64	84	73	31	65	52	53	37	97	15
18	12	96	88	17	31	65	19	69	02	83	60	75	86	90	68	24	64	19	35	51	56	61	87	39	12
19	85	94	57	24	16	92	09	84	38	76	22	00	27	69	85	29	81	94	78	70	21	94	47	90	12
20	38	64	43	59	98	98	77	87	68	07	91	51	67	62	44	40	98	05	93	78	23	32	65	41	18
21	53	44	09	42	72	00	41	86	79	79	68	47	22	00	28	35	55	31	51	51	00	83	63	22	55
22	40	76	66	26	84	57	99	99	90	37	36	63	32	08	58	37	40	13	68	97	87	64	81	07	83
23	02	17	79	18	05	12	59	52	57	02	22	07	90	47	03	28	14	11	30	79	20	69	22	40	98
24	95	18	82	06	53	31	51	10	96	46	92	06	88	07	77	56	11	50	81	69	40	23	72	51	39
25	35	76	22	42	92	96	11	83	44	80	34	68	35	48	77	33	42	40	90	60	73	96	53	97	86
26	26	29	13	56	41	85	47	04	66	08	34	72	57	59	13	82	43	80	46	15	38	26	61	70	04
27	77	80	20	75	82	72	82	32	99	90	63	95	73	76	63	89	73	44	99	05	48	67	26	43	18
28	46	40	66	44	52	91	36	74	43	53	30	82	13	54	00	78	45	63	98	35	55	03	36	76	68
29	37	56	08	18	09	77	53	84	46	47	31	91	18	95	58	24	16	74	11	53	44	10	13	85	57
30	61	65	61	68	66	37	27	47	39	19	84	83	70	07	48	53	21	40	06	71	95	06	79	88	54
31	93	43	69	64	07	37	18	04	52	35	56	27	09	24	86	61	85	53	83	45	19	90	70	99	00
32	21	96	60	12	99	11	20	99	45	18	48	13	93	55	34	18	37	79	49	90	65	97	38	20	46
33	95	20	37	97	97	27	37	83	28	71	00	06	41	41	74	45	89	09	39	84	51	67	11	52	49
34	97	86	21	78	73	10	65	81	92	59	58	76	17	14	97	04	76	62	16	17	17	95	70	45	80
35	69	92	06	34	13	59	71	74	17	32	27	55	10	24	19	23	71	82	13	74	63	52	52	01	41
36	04	31	17	21	56	33	73	99	10	87	26	72	39	27	67	53	77	57	68	93	60	61	97	22	61
37	61	06	98	03	91	87	14	77	43	96	43	00	65	98	50	45	60	33	01	07	98	99	46	50	47
38	85	93	85	86	88	72	87	08	62	40	16	06	10	89	20	23	21	34	74	97	76	38	03	29	63
39	21	74	32	47	45	73	96	07	94	52	09	65	90	77	47	25	76	16	19	33	53	05	70	53	30
40	15	69	53	82	80	79	96	23	53	10	65	39	07	16	29	45	33	02	43	70	02	87	40	41	45
41	02	89	08	04	49	20	21	14	68	86	87	63	93	95	17	11	29	01	95	80	35	14	97	35	33
42	87	18	15	89	79	85	43	01	72	73	08	61	74	51	69	89	74	39	82	15	94	51	33	41	67
43	98	83	71	94	22	59	97	50	90	52	08	52	85	08	40	87	80	61	65	31	91	51	80	32	44
44	10	08	58	21	66	72	68	49	99	31	89	85	84	46	06	59	73	19	85	23	65	09	29	75	63
45	47	90	56	10	08	88	02	84	27	83	42	29	72	23	19	66	56	45	65	79	20	71	53	20	25

a. Example 1. If 10 percent of all aircraft within range of radar are detected in flight, each aircraft has a 0.1 probability of being detected. If 12 aircraft are dispatched, select the first 12 random numbers encountered in the table and assign them, in order, to the 12 aircraft. All aircraft assigned a number of 10 or less are considered detected. Had the detection probability been 0.8, all aircraft with assigned random numbers of 80 or less would be detected.

b. Example 2. If a single aircraft has a probability of 0.6 being shot down by a missile, the random number table is entered at a random place. If the number obtained at the point of entry is 60 or less, the aircraft is considered shot down. Any number above 60 would indicate that the aircraft is not shot down.

Note. If the random number is less than (or equal to) the probability, the event takes place (or answer is affirmative).

c. Example 3. To select which three of a group of 10 tanks are destroyed in an action assign each number from 1 through 10. Random numbers are then taken from the table one at a time and assigned progressively to the 10 tanks until three numbers of 10 or less are selected. These three numbers point out the destroyed tanks. It may be necessary to choose more than 10 random numbers before three numbers less than 10 are encountered.

Section III. TIMELAGS

D–8. General.

Timelags are delays that controllers assume for actions at headquarters being represented by control personnel. Hypothetical timelags do not apply to echelons represented by players.

a. Timelags in the processing of information are assessed in accordance with the rules listed below.

(1) Staff and commander reaction time—the total elapsed time from the instant that information is received at an echelon or headquarters until the start of transmission of reaction information to another activity or echelon. The total time required for evaluation, interpretation, and necessary staff coordination, as well as the commander's decision, is included in this figure.

(2) Nuclear delivery preparation time—the total time required for weapon assembly, checkout, and warning of friendly troops and aircraft.

b. When two or more headquarters must react *in succession* before a specific action can begin, the total staffing timelag is the sum of the reaction times of the headquarters. However, if concurrent staff action can be assumed, the longest staffing and reaction time is used. (In each case, controllers decide which timelag pertains.)

c. Usually, transmission timelags are inconsequential. However, in cases where substantial delays can be expected (e.g., when communications are precluded by displacement of communications equipment), assign a reasonable range of time delays to the spectrum of probabilities determined by professional judgment, and consult random numbers.

D–9. Staff and Commander Reaction Times

For general guidance as to average staff and commander reaction times for routine actions, see table H–1. Increase the times as appropriate for major actions (i.e., issuance of a new operation order).

D–10. Nuclear Delivery System Response Times

The nuclear delivery system response times listed in table H–2 are from the time of decision to deliver a weapon (by the commander possessing that authority) until the weapon is detonated in the target area. To determine the total timelag for nuclear weapon delivery, the appropriate staffing and reaction times shown in table H–1 are added to system response times.

Section IV. INTELLIGENCE

D–11. General

In war gaming, as in the real life conflicts that it represents, intelligence and its proper portrayal are absolutely essential.

D–12. Passage of Intelligence

Fundamentally, the availability of all intelligence is based on both logic and professional judgment. In the vast area where intelligence may or may not be made available, the determination is based on the probability that the opposing force situations could be detected by the respective opposing force commanders. This probability of detection is normally applied only to those units and installations portrayed on the operation map.

D–13. Intelligence Procedures

a. The control group must decide on the accuracy of the intelligence or information to be furnished. It is seldom desirable to present a complete intelligence picture or an entirely accurate picture because this would be unrealistic. Location errors, for example, should be injected into the play.

b. Specific sources of information and methods of collection are simulated. It is assumed that the information furnished is the product of an integrated intelligence system. The amount, accuracy, and timeliness of information are determined by the control group, based on the situation. Factors considered include—

(1) Tactical situation and relative combat power.

(2) Intelligence means and security available to each side.

(3) Command interest in intelligence by each side.

(4) Effectiveness and aggressiveness of intelligence effort by each side.

D–14. Intelligence Play

From the point of view of time, two major subdivisions of intelligence are played: pregame intelligence, and information or intelligence passed by the control group during the play of the game.

a. Pregame intelligence is furnished each side prior to the start of the actual play.

b. Information and intelligence during the game is given to each side throughout the play of the game as part of a continuing intelligence situation. The control group feeds this information or intelligence to each side in accordance with appropriate timelags and the capabilities assumed for each side and in consonance with the intelligence acquisition efforts of the players. Written or oral spot summaries of all or portions of the battle may be used. In addition, periodic intelligence summaries may be furnished to each side, especially in regard to forward area or contact situations. The use of overlays is recommended.

c. To facilitate the determination of intelligence, a zonal intelligence assessment procedure is used. The areas in which the opposing forces are deployed are each divided into three zones, each with an associated probability of detection level. Zone I is the contact zone where patrol action and ground observation are possible. Zone II is the area where major reliance is placed on ground electronic sensory devices, long-range patrols, and air reconnaissance. Zone III is the area where the primary sources of information are air reconnaissance, long-range sensory devices, communication-electronic intercept, and clandestine activities. The depth of zone I is variable, depending on the terrain, troop deployments, and the nature of combat. Generally speaking, zone I varies in depth between 2,000 and 10,000 meters. The depth of zone II is variable, depending on the characteristics of sensory devices and the factors that affect the depth of zone I. Generally, zone II varies in depth from the rear of zone I to a maximum of 20,000 meters. Zone III extends from the rear of zone II to the distance of the commander's interest. Length of time of an element in a zone determines its probability of detection: the longer the time, the greater the probability.

d. The probability method is used to determine the distribution of information or intelligence when the detection success or failure is a chance outcome. In this method, each enemy element to be considered is numbered and taken in sequence. The predetermined intelligence level percentage is applied, as a probability of detection, in turn to each of the enemy elements being considered. Then, by use of a random device, it is determined whether some information is available on each numbered element shown on the operation map. After it is determined which enemy elements are to be reported, professional judgment is used to determine how the elements selected are to be described. This determination is based primarily on the degree of aggressiveness applied in the intelligence effort by each side, and secondarily on an assumption as to the influence of such factors as cover and concealment, capabilities, dispositions, and recent movements.

e. Information or intelligence to be passed to each of the two player teams after play has commenced is controlled as follows:

(1) Contact intelligence. As units advance and come in direct contact with enemy elements, these enemy elements are identified as to size, estimated strength, and unit.

(2) Movement and change intelligence. This type of intelligence refers to that obtained on major troop movements and actions and is furnished on the basis of the probabilities of detection of specific items, modified by professional military judgment as to whether the movements, changes, or activities would be detected. Degradation of detection capabilities due to smoke, darkness, and other concealment is applied as determined by professional judgment.

(3) Air reconnaissance. There is no detailed play of air reconnaissance. All intelligence sources are aggregated. Player intelligence requests will include air reconnaissance as well as other intelligence gathering means.

(4) Subdivisions of targets. When probabilities are applied to targets, the size, the area covered, and other characteristics of each target are considered. If appropriate, targets may be subdivided into segments; to each segment the probability of detection is applied. Professional judgment is relied on to determine the proper division of targets into segments.

D–15. Rules of Play

a. Pregame Intelligence. Intelligence prior to the start of actual play in a war game is given in the general and special situations. After

Time in contact	*Probability level*
0 to 1 day	0.25
1 to 2 days	0.35
2 to 3 days	0.40
3 to 4 days	0.45
4 to 5 days	0.50
5 to 6 days	0.55
6 to 7 days	0.60
More than 7 days	0.60

Figure D–3. Zone I intelligence.

Note. Once active play has commenced, commanders may request intelligence on specific priority targets (in zone). The probabilities listed above may be applied to the target or to segments of the target.

Time in contact	*Probability level*
0 to 1 day	0.15
1 to 2 days	0.25
2 to 3 days	0.30
3 to 4 days	0.35
4 to 5 days	0.40
5 to 6 days	0.45
6 to 7 days	0.50
More than 7 days	0.55

Figure D–4. Zone II intelligence.

submission of plans by the opposing forces, intelligence is passed by the control group based on the rules below. Accurate locations are always given for units and activities in zone I. Location of units and activities in zones II and III may be offset to represent location errors in accordance with procedures contained in paragraph D–16 and figure D–5.

b. Intelligence During the Game. The following types of intelligence are provided during the play of the game:

(1) Contact intelligence. See paragraph D–14*e*(1). Locations are accurate in all cases.

(2) Movement and change intelligence. See paragraph D–14*e*(2). Probability levels and location accuracies are determined as shown below.

c. Zone I Play. The probability of an intelligence agency's obtaining information in response to a specific request varies with the zone and the length of time in that zone. The probability levels for zone I are shown in figure D–3.

d. Zone II Play. The probability levels for zone II are given in figure D–4.

Note. See note following figure D–3.

e. Zone III Play. A constant 0.10 probability level is furnished for zone III to opposing forces. Once active play begins, each player team may request intelligence of specific priority targets in zone III. The same method of determining the intelligence play for zones I and II is used for zone III. The note following figure D–3 also applies to zone III.

D–16. Location Errors

In this simplified method of war gaming, locations of elements identified in zone I are always reported accurately. Locations of elements identified in zones II and III may be reported to the opposing player teams in accordance with data contained in figure D–5. Select a random number for each element identified. In the random number table, obtain the first number which is 20 or less. Enter figure D–5 with this number and find the corresponding error in range and direction. This procedure gives the location that is reported to the player team concerned. Repeat for each element identified. Results are furnished to players without reference to validity of locations reported.

Note. Accuracy in location of moving targets in zones II and III is especially important when assessing effectiveness of nuclear weapons fired.

Zone II			Zone III		
Number	Range error (meters)	Direction	Number	Range error (meters)	Direction
1	800	SE	1	7,000	WSW
2	500	ESE	2	2,200	SW
3	---	---	3	4,500	S
4	200	NE	4	6,000	ESE
5	700	ENE	5	2,500	N
6	600	WSW	6	5,000	ENE
7	2,000	WSW	7	2,000	NW
8	400	WNW	8	300	SE
9	100	SW	9	200	SW
10	500	SE	10	600	WNW
11	700	S	11	2,400	E
12	600	N	12	4,000	ESE
13	3,000	SW	13	4,000	WNW
14	400	SSE	14	2,300	SW
15	600	SE	15	3,000	ENE
16	2,000	WNW	16	5,000	WSW
17	1,000	E	17	1,000	SE
18	4,000	NW	18	4,000	S
19	400	NNE	19	6,000	NE
20	700	W	20	5,000	NW

Figure D–5. Intelligence location errors.

Section V. COMBAT POWER AND MOVEMENT

D–17. Relative Combat Power

Normally, one side is able to apply sufficient combat power to force the weaker side to withdraw or to be overrun and destroyed in detail. Relative combat power is based on the tactical employment of forces to include surprise, maneuver, dispositions, TC&D, effective EW, fields of fire, observation, obstacles, and effective firepower, and on adequate supplies to conduct the planned operation. Obviously, all these tactical factors should be considered; but in war gaming, since this is an impossibility, only the several most significant factors are evaluated, with the others being assumed to "average out." Yet consideration must be given to all important tactical factors, not merely to the mathematical computation of relative firepower. It is frequently necessary to supplement or modify these data on the basis of knowledge of the situation and professional judgment.

D–18. Firepower Scores

a. To establish a basis for computing firepower, a numerical rating is assigned to each unit. The numerical rating or firepower score for a particular unit is based on the effectiveness of that unit's weapons that would be firing in a heavy engagement. The values listed are a summation of unit weapons. Increased firepower may be credited to the various echelons above the squad level based on umpire/controller evaluation of leadership, massed fires, etc. In any case, in comparing firepower of opposing units, surprise, cover and concealment, disposition of troops, and other factors should cause appropriate adjustments in firepower scores to be made by the umpire/controller.

b. The control group maintains an accurate record of effective firepower at all times. (Charts are provided for this purpose.) The control group promptly adjusts the firepower score of organizations using the percentage of the units' personnel losses and replacements. The firepower score of attached and supporting units is added to that of the supported organization. Only those units actually engaged in the firefight or in position to support the actions are considered.

c. Firepower scores are shown in tables in appendixes F and G based on 100 percent of table of organization and equipment (TOE). Firepower scores are reduced as casualties and damages are assessed. The method normally used is to reduce the tabular firepower score by the ratio of actual strength to authorized strength (which is percentage TOE strength).

D–19. Firepower Scores for Supporting Artillery

a. General. Artillery is normally subdivided into two major categories for play in a war game.

(1) The *first category* includes artillery that is in direct support, reinforcing, or attached to the brigades by the divisions (players).

(2) The *second category* includes all artillery battalions assigned a general support or a general support-reinforcing mission by the divisions.

b. Crediting Artillery Fires.

(1) The basic firepower computations made by the control group (tactical computers) for the brigades should include the firepower score given in appendix G for all conventional first category artillery (direct support, reinforcing, and attached). Therefore, this artillery is already receiving firepower credit; the effects of separate targets fired are *not* computed or plotted.

(2) Artillery targets fired by *second category* artillery (general support and general support-reinforcing artillery battalions) are computed and plotted on an individual basis.

c. Temporary Effect on Rate of Advance. The firing of general support or general support-reinforcing artillery by the attacker or by the defender causes changes in the rate of advance for a short period. A battalion three-round attack on the defender allows the attacker to move an additional 100 meters during a period of 15 minutes. A similar attack fired by the defender reduces the attacker's rate by 150 meters during a 15-minute period.

D–20. Firepower Scores—Air Support, Air Force, and Navy

These fires are computed and scored on an individual basis using the methodology given in paragraphs D–34 and D–35.

D–21. Firepower Scores—Nuclear Weapons

These fires are computed and scored on an individual basis using the methodology given in paragraph D–43 through D–59.

D–22. Conversion of Firepower to Combat Power

a. A unit's combat power varies, depending primarily on direction of attack and the protection afforded the defender. The judgment of controllers is paramount in applying the values of figure D–6 to various situations.

Firepower ratio (attacker: defender)	1:1		2:1		3:1		4:1		5:1	
	Combat ratio (attacker: defender)									
Direction of attack	*Front*	*Flank*	*Front*	*Flank*	*Front*	*Flank*	*Front*	*Flank*	*Front*	*Flank*
Defender in open	2:1	3:1	3:1	6:1	4:1	9:1	5:1	12:1	6:1	16:1
Defender in hasty defense	1:1	3:1	2:1	6:1	3:1	9:1	4:1	12:1	5:1	16:1
Defender in fortified positions.	1:1	2:1	2:1	4:1	3:1	6:1	4:1	8:1	5:1	10:1

Figure D–6. Conversion of firepower ratio to combat ratio.

(1) A ratio expressed as 2:1 indicates a relationship of two for the attacker to one for the defender.

(2) If a predominantly mechanized or armored attacking unit strikes the defender's flank or rear, controllers may allow for shock effect by crediting the unit with a combat ratio of twice the normal combat ratio.

b. General procedure for determination of relative combat power:

(1) Determine the total firepower score as appropriate for units committed in a sector or zone.

(2) For the organizational level at which firepower is being totaled or aggregated (e.g., battalion level, with firepower scores being totaled for a division sector), assume that the unit's firepower is being employed uniformly throughout the sector or zone, provided the situation does not indicate otherwise. (Use actual distribution of firepower, if known or deduced.)

(3) When opposing force boundaries do not coincide, estimate the portion of the total firepower score being employed in a particular sector or zone.

(4) Determine the firepower ratio of the forces engaged by sector and reduce to a simple ratio, such as 2:1.

(5) Enter figure 25 within the firepower ratio. Based on the direction of attack and the defender's degree of protection, determine the relative *combat power* (i.e., combat ratio) of the opposing forces.

D–23. Rates of Advance, Deployed Units

a. Minimum Combat Superiority for Advancing. After determining the firepower scores, combat power, and the combat ratios, the control group then decides whether an attacking force is able to advance. Normally, an attacking force can advance when it has a minimum combat ratio superiority of 2:1.

b. Rates. Rates of advance for attacking units are shown in tables H–3 and H–4. In simplified war gaming the rates are based only on combat ratios and characteristics of the terrain. For mechanized and armored units, when terrain precludes or limits their normal employment (i.e., full use of all firepower, mobility, shock effect, protection of personnel, etc.), their rates of advance are adjusted downward as appropriate.

(1) When only dismounted infantry elements of a mechanized or armored force can advance—

(*a*) Firepower scores (and combat ratio) are reduced accordingly.

(*b*) Rates of advance for infantry units (table H–3) apply.

(*c*) Armored personnel carriers and tanks follow and support the infantry units as terrain, roads, and construction effort permit.

(2) When normal employment of mechanized and armored units is limited, controllers use professional judgment to adjust rates of advance.

c. Effect of Nuclear Obstacles. Rates of advance are influenced by obstacles created by detonation of nuclear weapons. See paragraph D–55 for effects of nuclear weapon employment on rates of advance.

d. Effect of Barriers. Barriers reduce the rate of advance of a force from 10 to 50 percent of its normal rate, depending on the time allowed for construction of the barriers and on the materials used. After the barrier is breached, the force is credited with its normal rate of advance.

D–24. Reserves

a. Reserve units are those not in contact. In defense, units that have broken contact and are forced back are considered as moving at the rate of speed designated for reserve units.

b. All mechanized and armored *reserve* units are assumed to have the capability of moving on roads during daylight hours at the rate of 32 kilometers per hour (16 kilometers per hour during darkness, without lights); armored personnel carriers have the capability of moving cross-country in open and median types of terrain, during daylight, at the rate of 24 kilometers per hour (8 kilometers per hour during

darkness, without lights). Tanks can move cross-country at the rate of 16 kilometers per hour during daylight hours (4½ kilometers per hour during darkness, without lights) (table 2–4, FM 101–10–1).

c. Other units are considered to have the capability of moving cross country at speeds that visibility and terrain allow. Specific speeds are based on controller judgment.

d. Obstacles created by nuclear weapons should be played realistically and considered when determining movements of any type.

D–25. Illustrative Problem—Rate of Advance

The following is an *illustrative problem* to determine the rate of advance for a force.

a. Hypothetical Situation. US mechanized infantry battalion is attacking Aggressor rifle company.

b. Assumptions.

(1) No surprise is involved; attack is frontal.

(2) Cover, concealment, and fields of fire are approximately equal; defender is in hasty defense.

(3) Type of terrain is median.

(4) Opposing forces are 300 meters apart.

(5) Both forces have adequate logistic support.

(6) Computations.

United States

Known data:

(*a*) A tk co is attached; no other attachments or detachments

(*b*) One 155-mm how bn is firing in spt of the bn

(*c*) Co A and B are attacking frontally

(*d*) Tk co is attacking on a flank

(*e*) Co C is in bn res

Co A (table G–7, 540)	540
Co B (table G–7, 540)	540
Tk co (table G–9, 600) × flank attack factor of 2	1,200
155-mm how bn (table G–10)	−1,100
Total	3,380

Firepower ratio:

3380 ÷ 1040 = 3:1

Aggressor

Known data:

(*a*) No attachments or detachments

(*b*) One 105-mm how bn is firing in spt of the co

Rifle co (table G–6, 540)	540
105-mm how bn (table G–10) 500	500
Total	1,040

Combat ratio:

For firepower ratio of 3:1, frontal attack, defender in hasty defense; combat ratio = 3:1

(7) *Conclusion:* Since the combat ratio is 3:1 and the terrain is median, the US battalion is permitted to advance at the rate of 750 meters per hour (per table H–4) or 190 meters per 15 minutes.

Section VI. CASUALTY ASSESSMENT AND MATERIEL DAMAGE

D–26. Casualty Assessment

Casualties are assessed as a result of nuclear weapons, air attack, conventional artillery (to include supporting mortars), direct fire, and small-arms fire (to include automatic weapons).

a. Assessment of casualties imposes a penalty on combat forces by reducing their effectiveness (by reducing their strength). (In simplified war gaming procedures, actual strength is the sole basis for determining unit effectiveness; any decrease in firepower and maneuverability, and any loss of equipment or of logistic support, are assumed to be reduced in proportion to net cumulative personnel losses.)

b. Professional judgment is paramount in applying the data in the tables to battle casualties.

c. Assessment of nonbattle casualties is also a matter of controller judgment.

d. In the absence of information to the contrary, casualties should be assessed in the following percentages:

	Infantry units	*Mechanized and armored units*
Killed in action	16.5	18.0
Wounded in action	70.0	72.0
Missing in action	13.5	10.0

Type unit and activity	*Area description (in meters)*	*Area (square meters)*
(1) Rifle co[a]—def pos	R–600 x 150	90,000
attacking area	R–300 x 250	75,000
assy area	C–300	283,000[b]
(2) Tk co[a]		
def pos	R–1,000 x 200	200,000
attacking area	R–500 x 625	313,000[b]
assy area	C–250	197,000[b]
(3) Mech inf bn[a]—def pos	R–2,400 x 1,500	3,600,000
attacking area	R–1,000 x 1,000	1,000,000
assy area	C–750	1,700,000
(4) Tk bn[a]—def pos	R–1,800 x 1,500	2,700,000
attacking area	R–1,000 x 1,000	1,000,000
assy area	C–700	1,500,000
(5) Arty btry—firing pos	C–250	197,000[b]
assy area	C–250	197,000[b]
(6) Arty bn—firing pos	C–750	1,770,000
assy area	C–750	1,770,000
(7) All other type bn—operating area	C–500	785,000
assy area	C–500	785,000
(8) Command posts—bn	C–50	8,000[b]
bde	C–100	32,000[b]
div	C–250	197,000[b]

LEGEND

R—rectangular area, width x depth in meters.
C—circular area, radius in meters.

[a] If reinforced with tanks or infantry, add areas as appropriate.
[b] Figures rounded to next higher 1000 meters.

Figure D–7. Areas occupied by units.

D–27. Nonnuclear Casualties in Ground-Gaining Units

a. Division casualties caused during the assault are assessed at a rate of between 1 to 7 percent per day.

b. Nonnuclear casualties in infantry, armor, mechanized (and engineer units when employed in a ground-gaining role) brigades and battalions seldom exceed 15 percent per day of severe combat.

D–28. Effects of Small Arms and Automatic Weapons

Assess casualties in battalions advancing in contact caused by small arms and automatic weapon fires at the rate of 1 to 3 percent per hour. Consider relative firepower, disposition of forces, and cover and concealment. To determine the casualty rate for a unit exposed to small arms and automatic weapon fires *and* artillery and mortar fires, add the percentage from this paragraph to the percentage established by paragraph D–29.

D–29. First Category Artillery and Mortar Fires (Para D–34 and D–35)

Casualties resulting from the fires of organic mortar units and from the fires of artillery units that are in direct support of, reinforcing, or attached to a brigade are computed at the rate of 4 to 6 percent per hour depending on the number and type of artillery battalions employed. Consider also the factors listed in paragraph D–28. The casualty rate established in accordance with this subparagraph is added to that set forth in paragraph D–28 above when the unit has also been exposed to small arms and automatic weapon fire.

D–30. Defender Casualties

Defender casualties caused by small arms, automatic weapons, mortars, and category one artillery are assessed in accordance with table H–10.

c. Artillery area coverage data for the assessment of casualties are shown in figure 27.

Unit	Radius in meters of area covered by volley	Area in square meters (πr^2)
105-mm how bn	200	125,600
155-mm how bn	200	125,600
155-mm/8-inch how (comp) bn	210	138,500
155-mm how btry	150	71,000
8-inch how btry	150	71,000

Figure D–8. Nonnuclear artillery area coverage.

Posture	Percentage[1]
Erect	10
Prone	6
Entrenched	1
In trucks	6

[1]Percentages apply to number of personnel actually in the area covered by the volley.

Figure D–9. Nonnuclear casulaties per battalion volley of artillery fire.

D–31. Category Two Artillery

a. Casualties resulting from battalion volleys fired by general support and general support-reinforcing artillery are computed on a per-volley basis. (Do not compute battery volleys separately.)

b. To compute casualties resulting from the attack of artillery, compare the size of the area covered by the volley with the size of the area occupied by the units. Figure D–7 provides uniform data as guidance in determining size of areas occupied by various types of units under various conditions in order to assess realistically casualties resulting from nonnuclear artillery fires.

c. Artillery area coverage data for the assessment of casualties are shown in figure D–8.

d. Nonnuclear casualties per battalion volley of artillery fire are shown in figure D–9.

e. The following is an example of how to determine casualties resulting from an artillery battalion volley:

(1) *Situation.* Aggressor artillery battalion fires a volley on a US rifle company.

(2) *Known.*

155-mm howitzer battalion

One volley

Area covered by battalion volley (circular, 200-meter radius = 125,600 sq meters) (fig D–8).

Rifle company in assault (vulnerability = 10 percent) (fig D–9).

Size area occupied by rifle company (rectangular, 300 × 250 meters = 75,000 square meters) (fig D–7).

Company strength—199.

(3) *Assumption.* Personnel of the rifle company are uniformly distributed throughout the area.

(4) *Computations.*

$$\frac{\text{troop occupied area covered by bn volley*}}{\text{area occupied by rifle company}} \times \text{vulnerability percentage} \times \text{unit strength} \times \text{number of battalion volleys} = \text{casualties } \frac{125{,}600}{75{,}000}$$

Use $1.0 \times (0.10) \times (199) \times (1) = 19.9$

(5) *Conclusion.* Twenty casualties.

D–32. Vehicle Damage From Nonnuclear Artillery Fires.

Losses to vehicles passing through or remaining within an artillery battalion concentration are assessed as follows:

a. Armored vehicles—1 percent per battalion volley (155-mm or larger weapon).

b. Unarmored vehicles—9 percent per battalion volley.

D–33. Nonnuclear Casualties From Air Action

a. General. If the objectives of the exercise include making detailed analyses of particular-type targets, the procedures outlined in method 1 of paragraph 6–14 should be used in the assessment of casualties. However, the majority of exercises employing war gaming techniques will have predetermined aircraft attack formations and ammunition loads; therefore, the use of previously constructed tables as outlined in paragraph 6–14 will result in faster computations by controllers.

b. Tables. Example D–2 is another sample of the type of table that exercise planners can prepare prior to an exercise to be used as a guide for the assessment of casualties inflicted by one aircraft making one pass. The area of coverage is assumed to be approximately 50 × 800 meters (40,000 square meters); however, the dimensions of the area must be adjusted to conform to the configuration of the target. In assessing casualties, consideration should be given to visibility, air defense, cover and concealment, and the ordnance employed by the attacking aircraft.

*Value of this factor may not exceed 1.0.

Example D–2. Nonnuclear Casualties From Airstrikes

Personnel targets	Casualties for initial sortie within area of airstrike coverage	Casualties for each additional sortie up to a maximum of three additional sorties
Marching column (dismounted)	60 percent	15 percent
In APC's	70 percent per APC destroyed[a]	50 percent per APC destroyed[a]
In tanks	2 persons per tank destroyed[a]	1 person per tank destroyed[a]
In trucks	70 percent of persons in truck(s) destroyed.	50 persons per truck destroyed
Supply convoys	1 person per truck destroyed	1 person per truck destroyed
In assembly area (dismounted personnel)	35 percent	25 percent
Deployed for attack	20 percent	10 percent
In defense (foxholes)	0.7 percent	0.7 percent

[a] Determine number of vehicles destroyed in accordance with paragraph D–36.

D–34. Nonnuclear Damage From Airstrikes

a. Damage. Using the considerations discussed in paragraph D–33*a*, examples 14 and 15 are applicable to assessment of damage caused by flight of four aircraft making one sortie. In computing damage resulting from airstrikes, consider visibility, air defense in target area, cover and concealment, and ordnance employed by the attacking aircraft.

Example D–3. Nonnuclear Damage From Airstrikes (By Four Aircraft)

Target	Damage per two sorties
Unarmored vehicles	14
Armored vehicles (smart bombs)	11[a]
Artillery pieces (CBU)	12[b]
Artillery pieces (bombs)	6
Missile launching site (CBU)	1[b]
Missile launching site (2.75-inch rockets)	12
Petroleum, oils, and lubricants (POL) dumps (open storage)	100 percent
POL dumps (revetted)	50 percent
Ammo dumps (open storage)	100 percent
Ammo dumps (revetted)	40 percent
Supply dumps (small) using 20-mm strafe	60 percent
Supply dumps (small) using CBU rockets	100 percent[b]
Supply dumps (large) using 20-mm strafe	30 percent
Supply dumps (large) using CBU	75 percent
Bridge (smart bombs)	Bridge dropped[c]

[a] Smart bombs, i.e., electrooptical or laser-guided, 90 percent effective against all targets.
[b] Cluster bomb units (CBU) may be armor-piercing, antimateriel, or anti-personnel.
[c] To damage the main structure of a bridge extensively enough to drop a span, one pass by 12 aircraft (three flights out of 4) is required if general purpose bombs are used.

b. General Guide to Aircraft Employment. (D–35 above and example D–4.)

Example D–4. General Guide to Damage Assessments for Close Support Air Strikes (By Two Aircraft)

Note: The indicated number of aircraft (two) to engage a particular type of target is for *general* guidance only. Numerous factors, such as type of aircraft, types and combinations of ordnance loads, construction of target, target defenses, and weather, will cause variances in the following table.

Type of target	Ordnance	Expected damage criteria based on two sorties (percentage)
1. Tk plt (5 tk) in column on road	*a.* Smart bombs[a]	95 immobilized
	b. CBU[b]	35 immobilized with CBU alone
2. Mech inf plat (mtd) in 4 APC in column on road	*a.* Smart bombs	95 immobilized
	b. CBU	50 immobilized with CBU alone
3. Tk plat (5 tk) in assembly area 150 m × 150 m	*a.* Smart bombs	95 immobilized
	b. CBU	25 immobilized with CBU alone

See footnotes at end of table.

Note: The indicated number of aircraft (two) to engage a particular type of target is for *general* guidance only. Numerous factors, such as type of aircraft, types and combinations of ordnance loads, construction of target, target defenses, and weather, will cause variances in the following table.

Type of target	Ordnance	Expected damage criteria based on two sorties (percentage)
4. Mech inf plat (mtd) in 4 APC in assembly area 150 m X 150 m	*a.* Smart bombs *b.* CBU	95 vehicles immobilized or destroyed, 80 casualties
5. Tk plat (5 tk) in defensive position, line formation	*a.* Smart bombs *b.* CBU *c.* 500-lb GP bombs	80 immobilized
6. Inf co (dsmtd) in the attack	*a.* CBU *b.* 500-lb GP bomb *c.* Napalm *d.* 20-mm cannon	55 casualties
7. Tk plat (5 tk) in the attack	*a.* Smart bomb *b.* CBU	80 immobilized
8. Arty (105-mm, 155-mm, and 8-in) deployed by btry	*a.* CBU *b.* 500-lb bomb	70 immobilized 100 immobilized
9. HJ bn—4 launchers, each launcher separated	*a.* CBU *b.* 500-lb bomb	75 destroyed

[a] Smart bombs consist of electro-optical or laser-guided weapons, such as the AGM–65 Maverick.
[b] Cluster bomb units (CBU) may be armor-piercing or antipersonnel, such as Rockeye II.

D–35. Casualties From Tank Action

a. Assess 1.5 crewmen casualties for each tank severely damaged or destroyed.

b. When infantry companies are overrun by tanks, assess infantry casualties as follows:

(1) Not entrenched—3 percent of the company's strength per tank.

(2) Entrenched—1 percent per tank.

D–36. Assessment of Tank Losses

a. General. Tanks and antitank weapons used against tanks are considered in the determination of tank losses. Antitank weapons include tanks, antitank mines, and other tank-killer weapons within range, when properly employed.

b. Maneuvering Tanks.

(1) When tanks maneuver against tanks with neither side in defensive positions (provided they are within effective range), tank losses are assessed in the inverse ratio of participating tanks.

Combat ratio			*Tank losses (per platoon (5 tanks) per hour)*	
Attacker	:	*Defender*	*Attacker*	*Defender*
1	:	1	2	1
2	:	1	2	1
3	:	1	1	1
4	:	1	1	2
5	:	1	1	3

Figure D–10. Tank losses—exposed attacker versus protected defender.

Example: Aggressor attacks with 20 tanks and is opposed by a US Force employing 10 tanks. Tank losses are then assessed in the ratio of one Aggressor tank to two US tanks per hour.

(2) Terrain, tactical employment, and duration of the action must be considered in determining the number of losses to be assessed.

(3) When parity exists between each side, assess losses to both forces at the rate of one tank per platoon engaged per hour.

c. Exposed Attacker Versus Protected Defender. When the attacking tank force is exposed in an attack on tanks behind cover in a defensive position, assess tank losses generally at the rate shown in figure D–10. Adjust this rate appropriately to take into account circumstances such as use of smoke by the attacker or use of antitank mines by the defender.

Example: Aggressor tank company (10 tanks) attacking two protected US tank platoons (10 tanks). The Aggressor would lose two tanks and the US unit would lose one tank per hour.

D–37. Assessment of Casualties and Materiel Damage from Nuclear Strikes.

Compute in accordance with paragraphs D–43 through D–59 and chapter 7.

Section VII. EFFECTIVENESS OF UNITS SUSTAINING CASUALTIES

D–38. General

a. The effectiveness of units (firepower scores) in attack and defense is continually re-evaluated to allow for casualties. These scores are also changed as replacements are received.

b. The largest unit *evaluated* by this method, as to firepower score, is the battalion. Supporting artillery, engineers, and armored cavalry are *credited* with firepower scores.

c. Units whose missions require them to occupy a position in defensive operations (e.g., an engineer group) are credited with firepower scores.

d. All types of units displacing forward on the approach march are considered attacking units.

e. All types of units on the march rearward are assumed to be in a defensive role.

f. A unit's effectiveness after recuperation from a nuclear attack (if recuperation is possible) is determined basically by the number of survivors. In these simplified war gaming procedures, the percentage of materiel still serviceable is considered to be the same percentage as that of survivors.

Attack

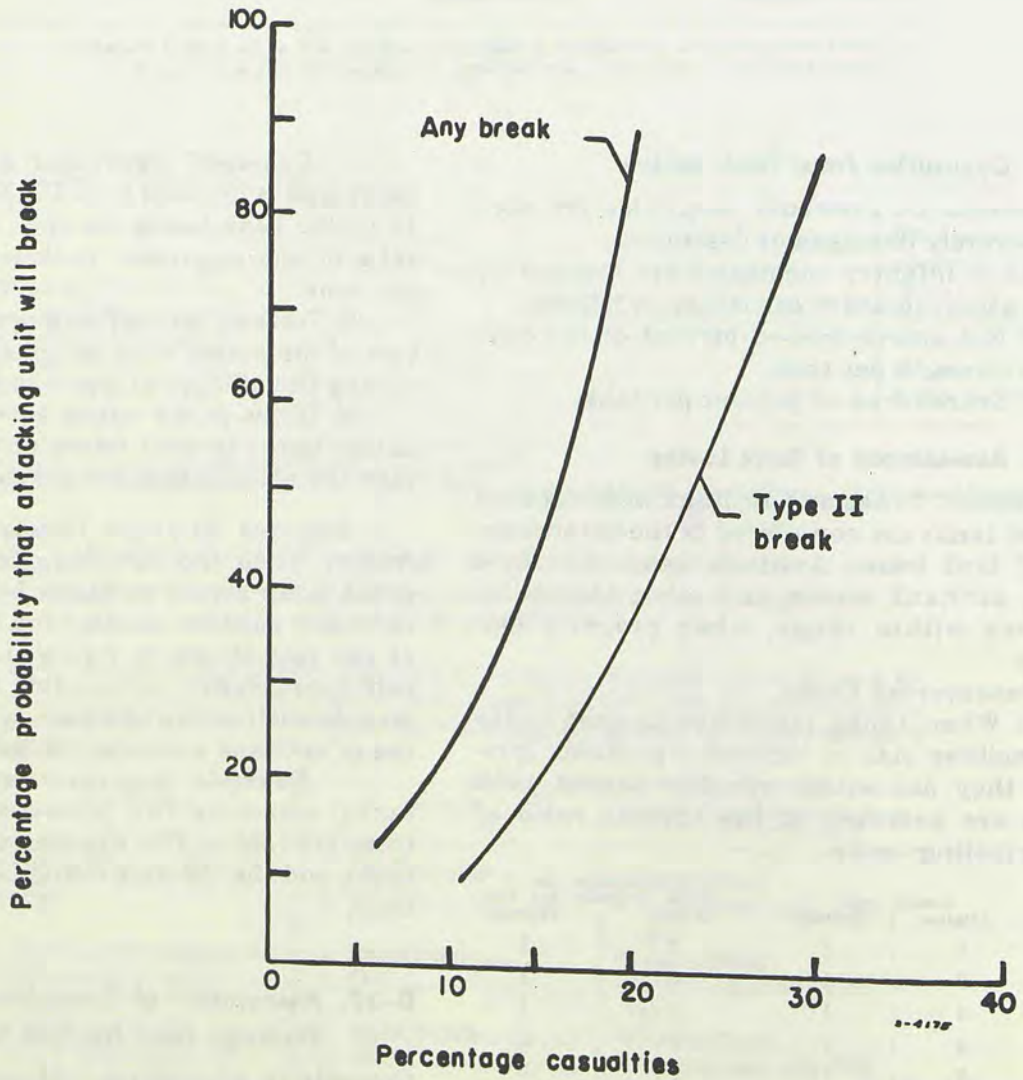


Figure D–11. Probability of attacking unit breaking.

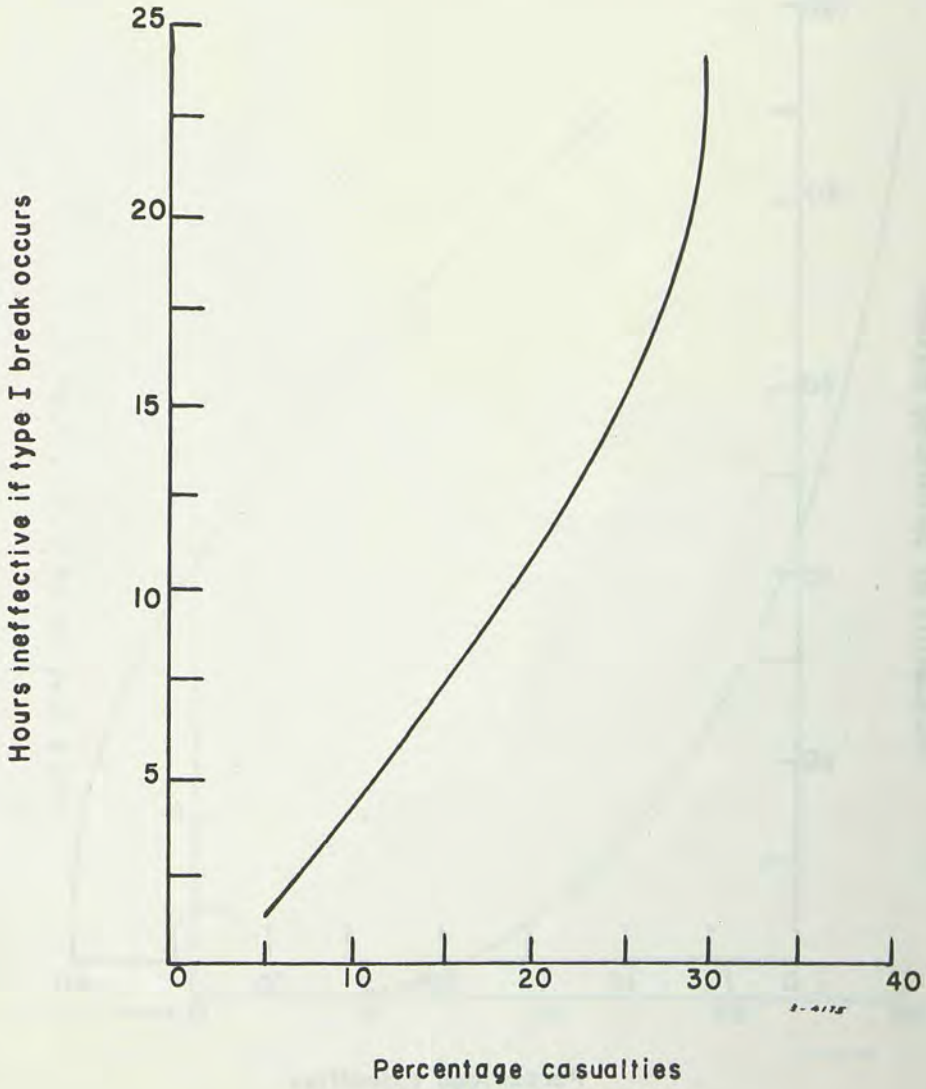


Figure D–12. Ineffective time for attacking units.

D–39. Attacking Units

a. Casualties in an attacking force can have one of three results:

(1) The attack is continued without delay by the survivors (without the attacking force's halting).

(2) A type I break occurs. In this case, the attacking unit (division) breaks or is forced to withdraw in partial disorder, but is able to reorganize in 2 to 48 hours and to continue the attack successfully. The division is able to organize a defensive after 1 hour if terrain and distance permit.

(3) A type II break occurs. In this case, the attacking division requires at least 2 days to recuperate before being able to resume the attack. Figure D–13 can be used to determine whether the unit can accomplish a defensive mission. If it can, a time delay based on casualties sustained is imposed (fig D–14). If it cannot, professional judgment is made on its future potential, ranging from the division's remaining in rear area in excess of 2 days for recovery, to using the unit for individual replacements.

b. The specific result that occurs is determined in the following manner: enter figure D–

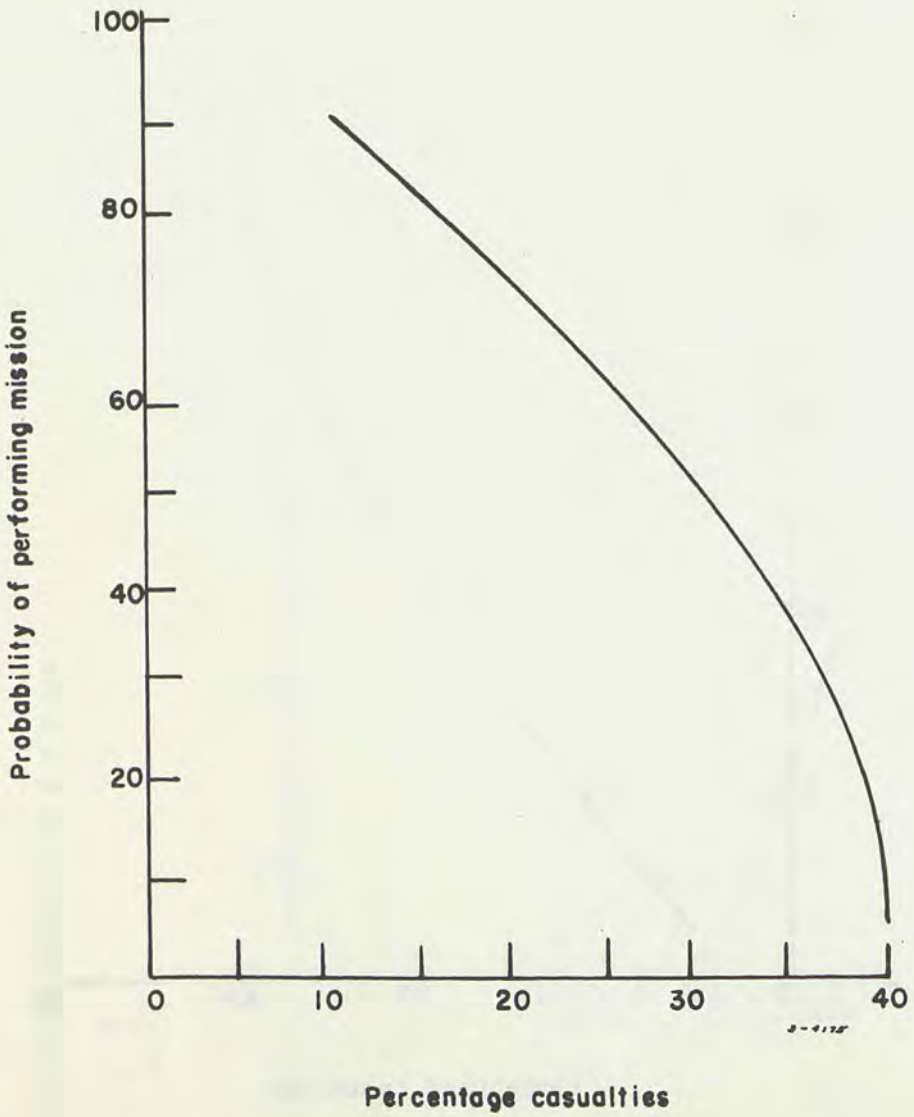


Figure D–13. Probability of defending unit continuing to perform mission.

11 at the percentage of casualties; and, using the curve labeled "any break," determine the probability of whether the unit continues the attack or breaks. This probability is used in conjunction with the table of random numbers to determine whether a break occurs. If the unit does not break result *a*(1) above occurs.

c. If the unit breaks, the next random number is used to determine whether the break is a type I or type II. First the curve labeled "type II break" in figure D–11 is entered at the percentage of casualties to determine if the break is type II. If the break is type II, *a*(3) above applies. If it is a type I break, the percentage of casualties in figure D–12 is entered to determine the period for which the unit will be ineffective as a fighting force. At the end of this period, the survivors are considered to be fully effective once again.

D–40. Defending Units

a. Casualties in a defending force can cause one of three results:

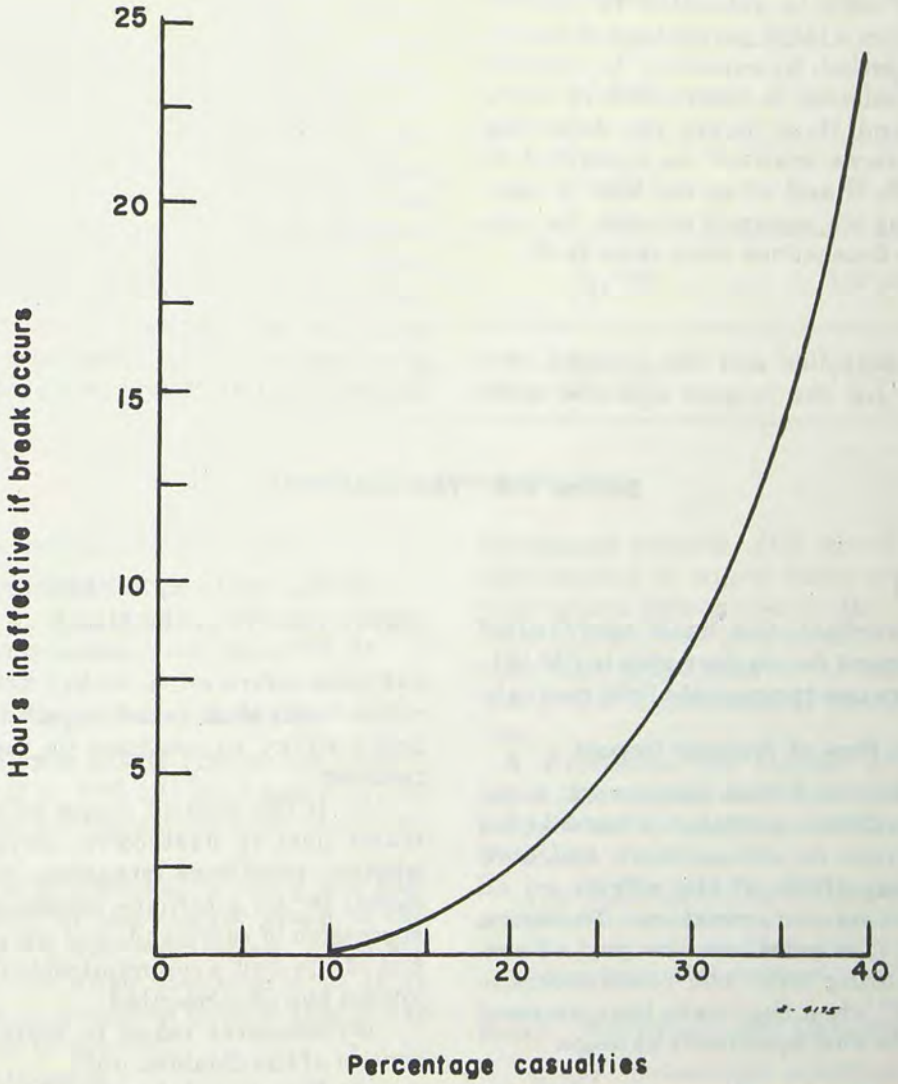


Figure D–14. Ineffective time for defending units.

(1) The defense is continued without interruption by the survivors.

(2) The defending unit requires up to 48 hours to recuperate before being able to resume the defense in another position. (It must withdraw to a rear position.)

(3) The defending unit is totally ineffective and either must be replaced immediately or risk being overrun.

b. The particular result that occurs is determined in the following manner. If the percentage of casualties is 25 percent or less, result *a*(1) above occurs. If the percentage of casualties is 40 percent or greater, result *a*(3) above occurs. If the percentage of casualties is greater than 25 percent but less than 40 percent, the percentage is entered in figure D–14 and the probability for the unit to continue defending without a delay is found. This probability is used in conjunction with the table of random numbers to determine whether the event occurs. If the decision is affirmative, the unit can continue to defend without interruption.

c. If the decision is negative, result *a*(2) above occurs. In this case, the percentage of casualties is entered in figure D–14 to determine the period that the unit is ineffective as a defending force. At the end of this period, the survivors are considered fully effective once again.

D–41. Artillery

If an artillery unit is subjected to nuclear attack and suffers a large percentage of casualties in a short period, its capability to continue to perform its mission is determined by using figures D–13 and D–14 (curve for defending units) in the same manner as described in paragraph D–40. If and when the unit is capable of continuing its assigned mission, its tube effectiveness is determined from table H–28.

D–42. Armor

a. The tank battalion and the armored cavalry squadron are the largest armored units whose effectiveness is evaluated by the method described below.

b. Armored units in all types of action, except when under nuclear attack, can continue on their assigned missions until suffering 40 percent tank losses.

c. The capability of an armored unit to continue its assigned mission after being subjected to nuclear attack is determined by using figures D–13 and D–14 as described in paragraph D–40. If and when the unit is capable of continuing on its mission, its tank strength is the actual number of serviceable tanks remaining. In estimating the number of serviceable tanks remaining after a nuclear attack, the likelihood must be considered that many mechanically reliable tanks become unusable because of radiation. In general, it is assumed for war game play that tanks occupied by personnel who have been declared casualties as a result of excess radiation doses are too "hot" for further use until decontaminated.

Section VIII. NUCLEAR PLAY

D–43. General

For player personnel, the basic unclassified reference document for nuclear play is FM 101–31–3. Controllers use appropriate field manuals.

D–44. Realistic Play of Nuclear Impact

In all war games and map maneuvers, a nuclear attack should be permitted to have its full impact to impress on commanders and staff officers the magnitude of the effects on all aspects of planning and operations. Therefore, forceful action is required on the part of controllers in requiring units and commanders to "play the game" when they have been assessed heavy casualties and equipment damage.

D–45. Effects of Nuclear Weapons on a Force

The effects of the detonation of a nuclear weapon on a given force are determined in accordance with FM 101–31-series.

D–46. Effect of Nuclear Weapons on Command Action

a. When a unit is hit by a nuclear strike, the control group must also evaluate the command action taken. Points to be considered are—

(1) Measures taken to determine combat efficiency of the unit.

(2) Timeliness of the dispatch of a control and assessment team to the area of the strike.

(3) Reports to higher headquarters of information relative to the attack.

(4) Whether the commander, as a result of available information, makes necessary modification to his plan, to include a decision as to the unit's ability to continue its mission or to be replaced.

(5) If the control group rules that a command post is destroyed, determination of whether provisions (standing operation procedures) for an alternate command post for the succession of command, and assumption of control of the unit's communications system, were known and implemented.

(6) Measures taken to maintain or regain control of the disabled unit.

(7) Measures taken for the care and evacuation of the wounded.

b. If proper command action is not taken, the control group assesses penalties by imposing additional delay, casualties, and damage.

D–47. Hypothetical Weapon Systems

For training and demonstrational purposes only, the weapon systems played are assumed to have the same nuclear yields and ranges as the respective associated hypothetical systems in FM 101–31–1 and FM 101–31–3.

D–48. Nuclear Weapon Employment Times

Use employment times cited in table H–2.

WEAPON RANGE TABLE

Delivery System	Minimum Range (meters)	Maximum Range (meters)
155-mm how short-range cannon (SRC)	2,000	10,000
8-inch how medium-range cannon (MRC)	2,000	20,000
Honest John free flight rocket (FFR)	5,000	40,000
Lance (light-guided missile)	15,000	110,000
Sergeant medium guided missile (MGM)	50,000	150,000

Figure D–15. Weapon range table.

D–49. Nuclear Weapon Employment Warning Times

Comply with the provisions of the major unit SOP.

D–50. Division Player Team Activities

a. Division player teams employ the various techniques cited in FM 101–31–1 and FM 101–31–3 in planning for the employment of nuclear weapons.

b. Each division must notify corps (fire support coordinator) in the control group of the following items when requesting a nuclear strike by corps or when notifying corps of its decision to fire an allocated weapon that it has been authorized to expend:

(1) Yield (kilotons).
(2) Desired height of burst (meters).
(3) Desired ground zero (DGZ) (military grid).
(4) Delivery systems.
(5) Location of delivery unit (military grid).
(6) Time on target.

D–51. Determination of Weapon Performance.

a. General. To make nuclear play more realistic, the control group determines, in the case of each nuclear strike, how the weapon probably would have performed had it been fired in actual battle; that is, whether it would have functioned reliably, and where (at what grid and height) it would have detonated. After making this determination, the control fire support coordinator (FSCOORD) control section then reports the data to the loss computers for the actual assessment of damage and casualties.

b. Procedure. On receipt of the necessary input data (para D–50*b*), the FSCOORD proceeds with the analysis and the determination of effects.

Note. There are several methods for selecting chance outcomes as outlined in paragraphs D–4 through D–7, depending on the chance device used. Below are illustrations using the method explained in the FM 101–31–series.

D–52. Illustration—All Delivery Systems

Step1. Determine whether the target is within range of the delivery system. From input data, determine distance from delivery system to desired ground zero (DGZ). Minimum and maximum range capabilities of delivery systems are cited in weapons range table (fig D–15). For detailed information refer to chapter 2, FM 101–31–3.

Step 2. Determine whether the round is a dud. Cast two dice to establish a two-digit number. If the resultant number is listed on the dud probability table (fig D–16) for the applicable delivery system, the round is a dud. It is not necessary to establish why the round is a dud. The round may abort on launching, be jammed, be intercepted in flight, malfunction in flight,

Delivery system	Dud occurs if one of these dice combinations is rolled
155-mm how (short-range cannon)	1,1
8-inch how (medium-range cannon)	2,2
Honest John (large free rocket)	3,3; 4,4
Lance (light-guided missile)	1,2; 3,4; 5,6
Sergeant (medium-guided missile)	1,2; 3,4; 5,6

Figure D–16. Dud probability table.

or fail to detonate on arrival in the target area. The dud probability table simply amalgamates all these malfunctions into one overall relative system reliability.

Step 3. Determine actual height of burst. Cast two dice and establish a number by determining the sum. Correlate the resultant number in the vertical error (PE_h) table (fig D–17 for direct PE_h reading and whether high or low). Determine the actual height of burst error by multiplying number of PE_h (from vertical error table) by the size of one PE_h (in meters) obtained from the appropriate tactical system error data in chapter 2, FM 101–31–3. Next determine actual height of burst by adding or subtracting the vertical error to/from the desired height of burst.

Example. Assume the sum of a two-dice cast is 10. From the vertical error table below, determine that the weapon is detonated two PE_h below desired height of burst. "Input" data indicate a free flight rocket, FFR/10–KT

Vertical Error (PE_h) Table

	Two-dice throw (sum)	*Vertical error (PE)*		*High/low*
	2	4	H	
	3	3	I	
	7	2	G	
Desired	5, 8	1	H	Desired
height of	6, 9	1	L	height of
burst	4, 10	2	O	burst
	11	3	W	
	12	4		

Figure D–17. Vertical error (PE_h).

weapon is to be delivered by LANCE delivery means, against protected personnel for prompt casualties, at a range of 19,000 meters and the desired height of burst is 397 meters (low airburst). The size of one PE_h is 95 meters. (FM 101–31–3). Because two PE_h occurred, the weapon detonated 190 meters (95 × 2) below the desired height of burst of 397 meters, or the detonation occurred at a height of (397 – 190) 207 meters.

Step 4. Determine actual horizontal offset distance as a function of multiples of circular error probable (CEP). Roll two dice and establish a number of determining the sum. Correlate the resultant number in the CEP table (fig D–18) for direct CEP reading. Determine actual CEP by multiplying number of CEP (from CEP table) by the size of CEP (meters) for the appropriate system and range taken from FM 101–31–3.

Example. The sum of a two-dice cast is 8. By direct reading from CEP table (fig D–18), determine the weapon is detonated one CEP from the target (DGZ). "Input" data indicated the delivery system to be employed is the free flight rocket. The circular error probable (CEP) for this delivery means is 268 meters at 19,000 m range. (FM 101–31–3). Because one CEP oc-

CEP Table

Two-dice throw (sum)	*CEP*
5, 6, 8, 9	1
4, 7, 10	2
3, 11	3
2, 12	4

Figure D–18. Circular error probable (CEP).

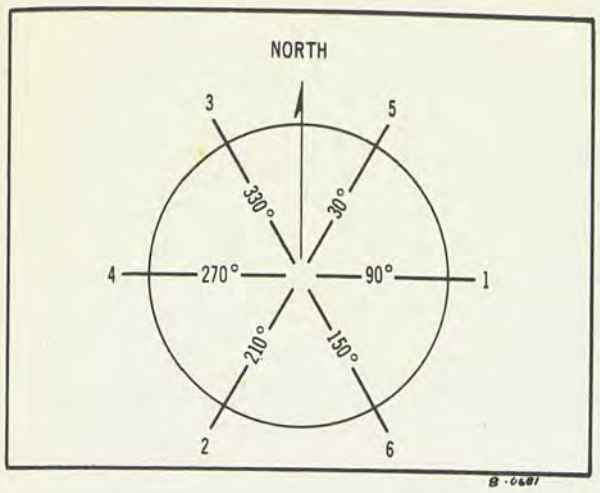


Figure D–19. CEP directional offset.

curred, the weapon detonated (1 × 268) or 268 meters from the target (DGZ).

Step 5. Determine actual GZ. This is done by determining the direction in which to measure the actual horizontal offset distance computed in step 4 above.

Roll a die to establish a number. Apply the resultant number to the CEP directional offset table (fig D–19) for direction of horizontal offset distance.

Example. The distance to be offset is 268 meters as determined from step 4 above. The number established by a one-die cast is 4. Offset actual GZ 268 meters due west from DGZ.

Step 6. Report actual GZ and actual height of burst to the loss computers (control group) as soon as computed and report the same data to the initiating player team 15 minutes after the weapon is detonated.

D–53. Assessment of Nuclear Casualties and Damage

a. Loss Computers (Control Group). On receipt of actual GZ and actual height of burst from the fire support coordinator control section, the loss computers assess casualties and damage.

b. Techniques. The visual method for determination of casualties and damage is employed. (Use the appropriate manual of the FM 105–6-series or app B, Tab B–II–2, FM 101–31–1. A circular map scale is provided the control group as the control map. Radii of effects are obtained from the appropriate casualty and damage table using the actual height of burst (HOB). If the actual height of burst is below the indicated $HOB_{(fs)}$ (height of burst, fallout safe), as determined by the casualty and damage tables, use the radii of effects for the actual height of burst, and treat as a surface burst to determine the area covered by fallout.

Forces	Depth from FEBA (km)	Offense (troops per sq km)	Defense (troops per sq km)
Troop units at 91—100 percent of full strength			
Covering	0–20	--	20
Forward area defensive forces.	0–10	--	40
	11–30	--	20
	31–100	--	5
Main attack	0–40	60	--
	41–80	30	--
	81–100	15	--
Supporting attack	0–40	30	--
	41–80	15	--
	81–100	8	--
Reserve	(Any location)	40	40
Troop units at 81—90 percent of full strength			
Covering	0–20	--	17
Forward area defensive forces.	0–10	--	34
	11–30	--	16
	31–100	--	4
Main attack	0–40	50	--
	41–80	25	--
	81–100	12	--
Supporting attack	0–40	25	--
	41–80	12	--
	81–100	6	--
Reserve	(Any location)	40	40
Troop units at 71—80 percent of full strength			
Covering	0–20	--	15
Forward area defensive forces.	0–10	--	30
	11–30	--	14
	31–100	--	3
Main attack	0–40	45	--
	41–80	23	--
	81–100	10	--
Supporting attack	0–40	22	--
	41–80	10	--
	81–100	5	--
Reserve	(Any location)	40	40

[1]The majority of the casualties (e.g., 75–80 percent) forward of the division's rear boundaries are assessed against the divisions.

Figure D–20. Density of all troops with a corps (US and Aggressor).

c. Exposure Criteria. To assess realistic casualties and damage resulting from the employment of nuclear weapons, it is necessary to establish general exposure criteria. Controllers must use professional judgment to modify the guide cited in the exposure criteria table (table H–27) if the player teams institute special measures to minimize troop vulnerability. (These criteria are provided as a guide only.)

d. Areas Occupied by Units. For assessment of nuclear casualties and damage, assume units are actually occupying the size areas portrayed

Qualitative	Quantitative[1]
DESTROY: To render completely ineffective as a unit (or installation) through extensive loss of key personnel, command and control facilities, or materiel; requires withdrawal from action, complete reorganization, replacements, resupply, and retraining	At least one-third coverage of target (personnel casualties or material damage fraction)
NEUTRALIZE: To render ineffective for a time through random loss of key personnel, command and control facilities, and/or materiel; requires reorganization, replacements, and resupply	Between one-tenth and one-third coverage of target

[1]The quantitative figures should be considered as a guide, not as inflexible figures.

Figure D–21. Ineffectiveness of units.

on the control map. If the size area that a unit is occupying cannot be determined from the control map, use figure D–7.

e. Ineffectiveness of Units (Fig D–21).

D–54. Nuclear Weapon Contingent Effects

a. General. Contingent effects tables of the FM 101–31-series apply. (For reference to induced radiation tables, in the absence of other data, assume soil is type II. In tree blowdown tables, assume trees are type II. For using fire tables, assume class I forest fuels in a damp climate environment.)

b. Effect on Rates of Movement. Rates of movement for units and vehicles through tree blowdown areas are governed by the following simplified rules:

(1) *Interstate-type highways through tree blowdown area.* There is no reduction of rate of movement on these highways.

(2) *All other types of roads through tree blowdown areas.* For all other roads through forested areas, the movement rate is reduced in accordance with (3) below. In addition, wheeled vehicles are assumed to have no capability for moving through tree blowdown areas until paths are cleared. Tree blowdown presents little obstacle to tracked vehicles unless the trees are larger than 15 centimeters in diameter. The rate of troop movement by foot is reduced, particularly during periods of low visibility.

(3) *Tree blowdown clearance capability.* A path through forests with moderate-to-severe tree blowdown can be cleared for passage of wheeled vehicles as shown in table H–29.

c. Forest or Brushwood Areas Expected to be Ignited by Fires.

(1) *Step 1.* Determine radius of expected burned area, considering type of weapon and yield.

(2) *Step 2.* In this simplified methodology, allow for burned areas by arbitrarily adding to the circle area determined in step 1 a burned area that is caused by fires spread by prevailing winds, assuming that these winds always blow from the southwest. To determine the extent of this area, draw a line north of the circle of base ignition and a line east of this

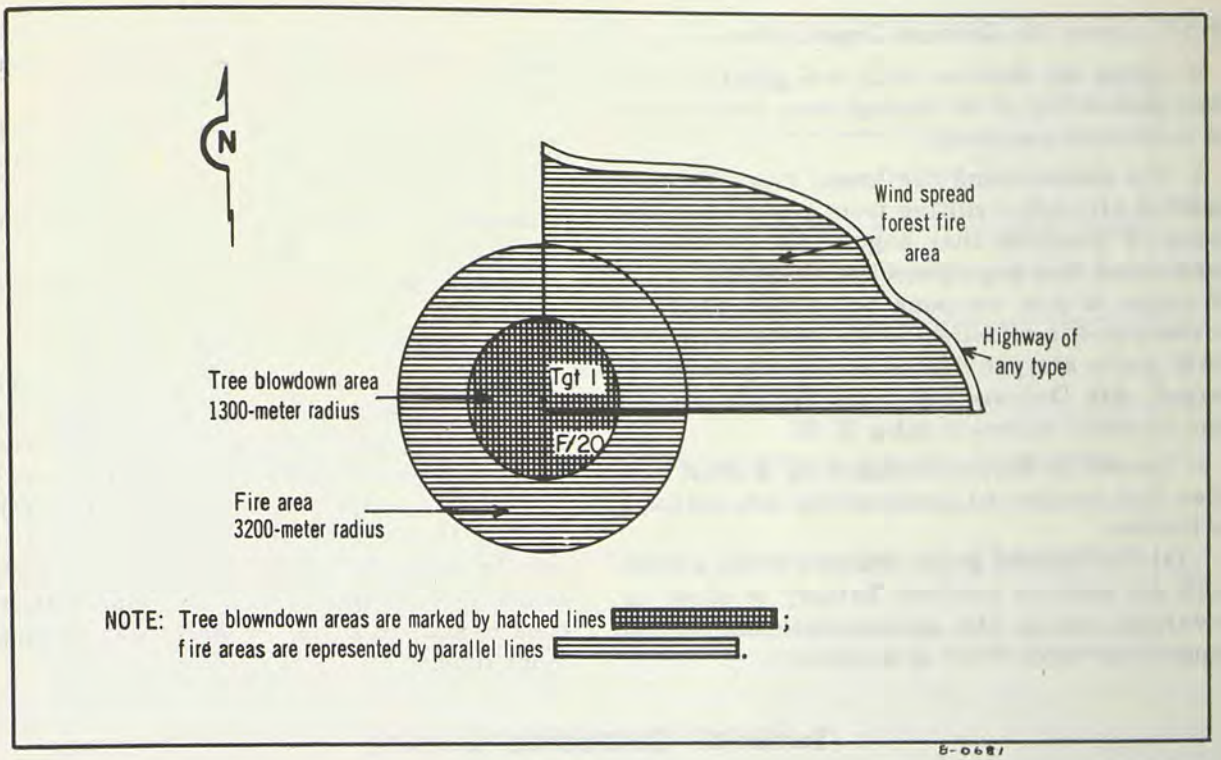


Figure D–22. Tree blowdown and fire areas.

circle. Stop these lines at the first highway of *any* width that the two lines cross. Thus, any *forest or brushwood* area northeast (north to east) of the circle of expected ignition to the closest highway is an additional burned area.

d. Display of Contingent Effects. In war games, controllers and each player team should each maintain an overlay of fired nuclear weapons showing the tree blowdown area; ignition of wild land fuels (fire areas); and the areas where forest fires spread, causing loss of all concealment therein. An example of portraying contingent effects resulting from detonating a free flight rocket, 10–KT weapon (delivered by a medium guided missile) is shown in figure D–22.

e. Rubble Clearance. Hypothetical clearance time required to effect passage through *rubble* is as shown in table H–30.

f. Reduction of Crater Obstacles. Clearance time required to effect passage through the center of a crater is as follows:

(1) The total delay to movement usually depends on the methods employed to overcome the obstacle. Often bypasses, to include bridge construction time, will be the most effective way of beginning movement through the general area.

(2) Hypothetical data are given in table H–31.

Section IX. AIR DEFENSE

D–55. General

Air defense capabilities are played to include the combined capabilities of the Army and Air Force (and Navy, if applicable). This play should be handled in such a manner that it does not vitiate the objective of a war game designed primarily to play ground units. Professional judgment determines the effectiveness of the air defense if it played other than as presented below.

D–56. Air Force Capabilities

a. Air Force units (both ground and air) are given a detection probability of 0.8 (80 percent) for all opposing aircraft dispatched during clear weather. The probability drops to 0.6 (60 percent) in bad weather. (These flights are detected by radar and air patrols.)

b. Air Force units are given a "shootdown" capability of 0.1 (10 percent of *detected* planes are shot down) if they fly over the field army area.

D–57. Army Air Defense Capabilities

a. Army air defense units are given a detection probability of 0.8 during clear weather (0.6 in inclement weather).

b. For determining the losses to be assessed against aircraft resulting from ground fire, the types of weapons that engage the target are considered. For example, when the target is out of range of gun weapons but within range of surface-to-air missile (SAM) units, only the SAM units are considered to be engaging the target. Air Defense batteries provide protection to zones shown in table H–20.

c. Losses to flights engaged by guided missiles and number of penetrations are assessed as follows:

(1) The control group draws a circle around each air defense artillery battery to show its coverage, using the appropriate horizontal range from table H–20 as a radius.

(2) Using table H–21, which introduces assumed SAM weapon kill probabilities, calculate the total number of aircraft kills.

(3) Compute the number of aircraft penetrating the defense based on the number of enemy aircraft in the raid, less the kills. When nuclear warheads are used, controllers modify the conventional warhead factors to incorporate the higher kill probability of the nuclear warhead.

d. Losses of flights engaged by light air defense weapons are the sum of the losses incurred from each type of fire. Criteria for assessment of losses are determined by control personnel, based on the existing situation. Consideration is given to the approach corridors used by the aircraft, to coverage of such corridors by defensive weapons, to types of aircraft, number of weapons in the defense, reaction time available to the defense, and to engagement time.

Section X. ELECTRONIC WARFARE

D–58. General

In all war games and map maneuvers, electronic warfare (EW) should be permitted to have its full impact to impress on commanders and staff officers the magnitude of EW effects on all aspects of planning and operations. The effectiveness of EW cannot be quantified in an imitative atmosphere. The degree of success or failure is directly dependent upon the actions, whether accidental or intentional, the opposing force implements prior to, during, and subsequent to friendly EW activities.

D–59. Loss Determinations

During free play, assessment can be based on what actually transpires. In all other instances, professional judgment must be the basis for determining the effectiveness of EW play. Considerations include:

a. Presumed or actual ECCM operations of both forces.

b. Presumed or actual ECM capabilities of both forces.

c. Presumed or actual ESM production capabilities of both forces.

d. Presumed or actual impact of EW operations on command and control of both forces.

e. Presumed or actual impact of loss of effective use of specified radars or other noncommunication emitters.

f. Presumed or actual impact on intelligence products of both forces.

Section XI. LEADERSHIP

D–60. Limitations on Portraying Leadership

a. The effectiveness of leadership, like morale, esprit, the will to win, etc., cannot be quantified in the imitative atmosphere of a war game. Participants must keep this limitation well in mind. Normally forces engaged on each side are assumed to have equally good leadership. Under such assumption, the effect of leadership on combat effectiveness, and hence combat power, balances out and may be disregarded.

b. However, combat research shows that leadership is one of the major influences if not the major influence on success or failure on the battlefield. Units that have sustained but minor casualties have broken and failed to accomplish their mission when their leadership has been poor. On the other hand, troops excellently led, have succeeded against phenomenal odds.

c. Only one of the many examples of leadership is the length of time it takes a commander and his staff to reorganize a nuclear-hit unit and to continue with the mission. Should the

Random number	Action[1]
01--10	Reduce estimated average time by 67 percent
11--25	Reduce estimated average time by 33 percent
26--75	Make no change in estimated average time
76--90	Increase estimated average time by 33 percent
91--00 (100)	Increase estimated average time by 67 percent

[1]Take action indicated for random number used.

Figure D–23. Effect of leadership on reorganization time.

control group wish to illustrate how this element bears on overall combat effectiveness, they may increase or decrease reorganization time from estimated average times, using random numbers.

D–61. Effective Leadership

The time required to reorganize an attacking brigade or recuperate a defending brigade or division must be estimated. To reflect the effect of leadership on the time required, use random numbers (fig D–23).

Section XII. WEATHER

D–62. Conditions

See example D–5.**

Example D–5. Weather Conditions Example

Date	*Conditions*
30 May	Ground fog until 1000, otherwise clear
31 May	Rain
1 June	Clear
2 June	Clear
3 June	Clear
4 June	Clear
5 June	Ground fog until 1000, otherwise clear
6 June	Ground fog until 1000, otherwise clear
7 June	Clear
8 June	Rainshowers afternoon, otherwise clear
9 June	Clear
10 June	Clear
11 June	Rainshowers all day
12 June	Clear
13 June	Clear
14 June	Clear
15 June	Clear
16 June	Ground fog until 1000, otherwise clear
17 June	Ground fog until 1000, otherwise clear

** Vary for problem locale and period.

Example D–5—Continued

Date	Conditions
18 June	Ground fog until 1000, otherwise clear
19 June	Rainshowers afternoon, otherwise clear
20 June	Ground fog until 1000, otherwise clear
21 June	Clear
22 June	Clear
23 June	Clear
24 June	Ground fog until 1000, otherwise clear

D–63. Forecasts

Normally, 72-hour and 24-hour forecasts are given to players.

Section XIII. WAR GAMING AT CORPS

D–64. Aggregating

When war gaming at corps level, the essential question is the detail in which the game is played. The more detail to be considered, the nearer the game portrays reality; yet, it is neither possible nor practicable to show all aspects of real-life battle or to simulate completely. The inclusion of detail is costly in terms of manpower, time, money, processing equipment, and facilities. Therefore, in war gaming, a conflict frequently arises from the fact that considerable detail is required for a valid representation of the situation, whereas the more details that are introduced, the more the game is complicated and delayed.

a. Larger Force Operations. With detail increasing as the size of the forces involved grows, the method of showing only the cumulative result (in aggregate) is used to the extent practicable. Limitations in this regard, however, are imposed by the minimum requirements for a valid game. With some compromise the overall net effect can be obtained. This process is called *aggregating.* It is not necessarily averaging, *nor* does it mean that a force has an effectiveness (firepower score or combat power) proportionate to its strength or composition. The aggregated effect applies only to the force as an entity.

b. Example of Aggregating. A mechanized division (91-to-100 percent strength), when employed in the offense, might be assigned a cumulative effective firepower score of 25; whereas, in a similar environment, a separate armored brigade might be given a cumulative firepower score of seven. In either organization, one or more companies may be ineffective, an artillery battery may be displacing, other batteries may be firing at the maximum rate; yet representative aggregate firepower scores are respectively 25 and 7.

D–65. Rapid Analysis

For manual (hand-operated) gaming, a simplified procedure has been designed for incorporating considerable detail; but, with most of it aggregated, the procedure is adaptable to larger command operations and to joint and combined operations. Arithmetic computations are minimized; values are averaged to the extent practicable; charts and graphs are used to the maximum; and the play is relatively fast moving.

a. This method of rapid analysis is suitable:

(1) Where large forces are involved (i.e., corps).

(2) When game results must be arrived at quickly.

(3) At low echelons where there is minimum concern for details.

b. Rapid analysis also utilizes many of the simplified procedures shown in preceding sections, plus other approximations suitable only for large forces. Accordingly, the remainder of this section contains one simplified, but complete, method for controlling corps map maneuvers.

D–66. Firepower Scores

The primary consideration is professional judgment. For general guidance, however, follow the example tables as indicated below.

a. Combat Forces. Firepower scores for combat elements in contact are computed as stated in paragraph D–17. For firepower scores, see example D–6.

b. Artillery.

(1) A force's firepower score is increased in accordance with example D–6 for each attached or reinforcing artillery group.

Example D–6. Firepower Scores, Committed Combat Units[a]

Unit	Unit at 91–100 percent strength and equipment		Unit at 81–90 percent strength and equipment		Unit at 71–80 percent strength and equipment	
	Offense	Defense	Offense	Defense	Offense	Defense
Inf div	20	18	15	14	0	9
Mech div	25	20	20	15	0	10
Armd div	30	15	23	11	0	8
Inf bde	5	5	4	4	0	2
Mech bde	6	5	5	4	0	2
Armd bde	7	4	6	3	0	2
Armd cav regt	3	6	2	4	0	3
Arty gp	3	4	2	3	1	2
Engr gp	1	2	0	2	0	1

[a] These hypothetical scores are for demonstrational purposes only.

[b] Any unit of brigade size or larger, sustaining over 30 percent casualties, has firepower score cut to half the value given when it becomes operationally spent, when it is out of communication, has no knowledge of its situation, or has no tangible relief or possibility of resumption of friendly contact.

Example D–7. Firepower Scores, Fired Nuclear Weapons[a]

Weapon	Fired by	
	Offense	Defense
0.5 KT	.2	.4
1 KT	.4	.6
2 KT	.6	.8
5 KT	.8	1.0
10 KT	1.0	1.4
20 KT	1.2	2.0
50 KT	1.4	2.4
100 KT	1.6	2.6
200 KT	2.0	3.0
500 KT	3.0	4.0
1 MT	4.0	6.0
2 MT	6.0	8.0
5 MT	8.0	10.0

[a] These hypothetical scores are for demonstrational purposes only.

Note. Nuclear weapons affect the outcome of battle only when fired. In corps map maneuvers when only the corps headquarters is played, there may be cases when the control group has insufficient personnel to plan the fires of nuclear weapons allocated by corps to divisions (represented by the control group). *In such cases only,* weapons allocated to divisions by corps, and authorized to be expended, are *assumed* to be fired. Therefore, in these instances, example D–7 is used as if the weapons were *known* to have been fired.

(2) Likewise, the firepower of artillery remaining under corps control is prorated among committed units using a firepower score per artillery group in accordance with example D–6.

c. Close Air Support.

(1) Close air support increases the supported unit's firepower score by 0.1 per sortie *flown.*

(2) Firepower scores for sorties retained by corps (player teams) are applied when specific missions are requested by corps.

(3) Where close air support sorties are employed against units not in contact, reduce to a realistic level the firepower score of the unit being attacked.

(4) Effects of air-delivered nuclear weapons are computed in accordance with example D–7.

d. Passage of Lines. The firepower score in the zone of units executing a passage of lines is increased, based on the situation, as a result of the fire support provided by the unit being passed through. This increased firepower score diminishes as the attack progresses beyond the effective range of small-arms fire and artillery fires of the passed unit.

e. Follow and Support. The degree to which an organization executing a follow and support mission affects the firepower score of the attacking force is largely dependent on the success of the attack. If the combat ratio is such that the attacker is unable to advance, the organization following and supporting exercises little or no influence on the action. However, if the attack progresses rapidly, the effect of a unit in a follow and support role is to

significantly increase the rate of advance of the attacking force.

f. Nuclear Weapons.

(1) *Weapons allocated to units and authorized to be expended.* The firepower of a force using nuclear weapons is increased as shown in example D–7.

(2) *Weapons scheduled for firing by corps headquarters (player teams).* Controllers count the firepower of these nuclear weapons when *fired* (or assumed to be fired) in determining firepower ratios of forces involved. The individual nuclear strikes are plotted, and simplified target analysis procedures are used. The effectiveness of units receiving a nuclear strike is reduced in proportion to its strength reduction.

D–67. Conversion of Firepower to Combat Power

For basis and procedure, see paragraph D–22. For conversion, see figure D–6.

D–68. Rates of Advance

For computation, see paragraph D–23. For rates, see tables H–3 and H–4.

D–69. Nuclear Play—Weapons and Yields

a. Use the weapons, delivery systems, and effects data contained in the appropriate field manual of the FM 101–31-series.

b. Weapons that are allocated by corps to subordinate units (divisions, separate brigades, armored cavalry regiments) and are authorized to be expended are not analyzed individually but are considered in determining a unit's total firepower score (included in example D–6).

c. For purposes of this methodology, it is assumed that each *fired* nuclear weapon hits the desired ground zero *although target intelligence may not always be accurate or timely.* Each weapon detonates in a manner producing maximum casualties. Each delivery is timed, and the time of burst is known. Any delivery can be canceled, but a staffing and reaction time of 15 minutes is required to insure cancellation. (In the event of scheduling that affects troop safety, a probability number of 60 is used to determine whether a cancellation can be accomplished.)

d. The operations controller determines whether a weapon is fired in accordance with the timing presented in the fire plan. It must be realized that if one side fires numerous planned nuclear weapons prior to firings by the other side, certain major command posts (CP) (specific locations known by the controllers), as well as launchers, radars, radios, supplies, vehicles, and personnel (specific locations not known by the controllers) may be destroyed. The earlier detonation of nuclear weapons by one side hinders the ability of the other side to fire according to its plan. Because of time and space limitations, the location of corps and division command posts and alternate command posts are the only tangible information plotted and available to assist the controller in determining whether nuclear weapons can be fired. Decisions are made based on judgment and on a consideration of the percentage of command and alternate command posts for the headquarters of division and corps not neutralized by enemy nuclear strikes (example D–8).

Example D–8. Effect of Operational Command Posts on Firing of Nuclear Weapons

Percentage of CP's in operation (corps and divisions)	*Percentage of nuclear wpn allocated to divisions/corps that can be fired on schedule*
91–100	100
81–90	75
71–80	66
0–70	0 to 50

As a result of the above, the operations controller determines whether the planned firing of nuclear weapons can be accomplished by a division or corps and, if not, what time delay results before the weapons can be fired. (This information is necessary for arriving at the firepower score.)

e. Detailed casualty and damage effects tables contained in FM 101–31–3 are not used directly in this simplified methodology. (These effects, however, have been used in developing the simplified procedures shown below.)

f. Instructions to delivery units (represented by controllers) for scheduled or planned fires should contain:

(1) Yield.

(2) Delivery means (designation of unit).

(3) Type of burst desired.

(4) Desired ground zero.

(5) Troop safety requirements, when necessary.

g. Target overlays may be used to show desired ground zero and to assign target numbers

D–70. Disposition Assumptions

Example D–9 gives the percentages of personnel assumed to have the equivalent of foxhole protection (protected personnel) under the conditions indicated.

Example D–9. Percentage of Personnel Assumed to Have Equivalent of Foxhole Protection

Status	Dismounted	Motorized	Armored personnel carriers	Tanks
Attacking	15		85	95
Defending (actively engaged)	65		75	85
In assembly areas	75		75	75
Approach march	10	25	95	95

D–71. Nuclear Delivery Response Times

To preclude the unrealistic portrayal of the capabilities of the delivery units, the assumed planning times shown in table H–2 are used (para D–10).

D–72. Nuclear Casualties

a. General.

(1) As a rule, the majority of total casualties sustained in an active nuclear environment results from nuclear weapons.

(2) The following charts and procedures are used to assess military and civilian casualties. Modifications may be made by control personnel when conditions warrant.

b. Basis for Assessing Military Nuclear Casualties. Military casualties are assessed in the following manner:

(1) *Step 1.* Determine types of weapons employed; and from example D–10, obtain the area coverage of the weapon in square kilometers.

Example D–10. Yield Versus Area Coverage

2 KT—2 sq km	200 KT—12 sq km
10 KT—4 sq km	500 KT—20 sq km
20 KT—5 sq km	1,000 KT—30 sq km
50 KT—7 sq km	2,000 KT—50 sq km
100 KT—10 sq km	5,000 KT—90 sq km

(2) *Step 2.* Determine, at location of burst, the density of corps troops from figure D–20. (These troop density figures are average; you assume that large units are dispersed into smaller elements in random fashion. Other portions of the area are occupied, and parts of the rear areas are occupied by troops from Army and by other supporting forces.) Figure D–20 shows hypothetical troop densities for all troops with a corps.

(3) *Step 3.* Determine by multiplication the number of corps casualties under conditions present.

Example: A small free rocket/ECHO/10 KT burst on the main attack force of infantry units at full strength (60 troops per square kilometer).

Refer to example 21 for weapon area coverage.

A 10-KT nuclear weapon causes casualties in an area of 4 square kilometers.

60 troops/sq km × 4 sq km = *240 troops* who become prompt and delayed casualties (average total).

c. Basis for Assessing Civilian Nuclear Casualties. Civilian nuclear casualties can be calculated by the density per square kilometer expected in the area of detonation. The population density figure is estimated as shown in example D–11.

Example D–11. Assessing Civilian Nuclear Casualties

Zone	Density of civilians
A	40 kilometers from line of contact: all civilians evacuated.
B	Greater than 40 kilometers from line of contact: 50 civilians per square kilometer in open or forested terrain. Casualties in built-up areas of 25,000 or more inhabitants are calculated if the nuclear weapon strikes that built-up area.

d. Nuclear Casualties in Supporting Units. If a division is subjected to a nuclear attack in which it suffers a relatively large percentage of casualties in a short period, its supporting or attached artillery groups, engineer groups, and/or armored cavalry regiment accrue casualties and have effective strengths as reflected in example D–12.

Example D–12. Nuclear Casualties in Supporting Units

Percentage casualties of division	Percentage of loss in strength artillery group, engineer group (and armored cavalry regiment, when in supporting role)
5–10	5
11–20	10
21–30	20
31–40	25
More than 40 (division is ineffective)	More than 30

e. Nuclear Casualties in Subordinate Units. If a division is subjected to a nuclear attack in which it suffers a relatively large percentage of casualties in a short period, its brigades are assumed to accrue casualties as shown in example D–13.

Example D–13. Nuclear Casualties in Subordinate Units

Percentage casualties of division	Percentage casualties in brigades [1]
1–10	1–20
11–20	21–30
21–30	31–40
31–40	41–50
More than 40 (division is ineffective)	More than 60

[1] Applies also to armored cavalry regiment when attached to a division and occupying a portion of the front, similar to a brigade.

Section XIV. MISCELLANEOUS

D–73. Message and Message Control

a. General.

Message blanks are coded by color and overprinted with participant's position for ease of identification as follows:

Umpires _____ White message blanks
United States _____ Blue message blanks
Aggressor _____ Pink message blanks

b. Written Messages.

(1) All written messages should be prepared in three copies. One copy is retained for file and two copies are forwarded to message center (one copy for action addressee, one copy for control action).

(2) Messages are to be addressed to the commander of the unit. If applicable, the writer indicates the staff section of primary interest and the color code, for example, "To: Commanding General, 10th US Corps (Attention G3)."

(3) The classification block on field message forms is to be left blank.

c. Oral Messages. All participants sending or receiving oral messages, by telephone or direct contact, are to make such messages a matter of record by notation of substance of message on *a summary of communication form.* (Blank forms are provided.)

D–74. Maneuver Time

Participants should always know the time and game increment being played (maneuver time or game time) and how they are delineated. As for playing time, increments can be measured either by intervals of time or by the happening of certain events. The methods may vary during the exercise, depending on the objectives sought.

a. Maneuver time is kept flexible to facilitate the play of the problem at all times. The ratio of maneuver time to actual time may be 1:1; less than 1:1, greater than 1:1; or the "maneuver clock" may be stopped or advanced, when desired by the chief controller.

b. Analytical war games and map maneuvers use both maneuver time and actual time (time-step method) and the happening of certain events as the basis for continuing play. However, perhaps map maneuvers use time more often, and analytical war games use events more often as the basis for measuring increments of the action played.

Example D–14. G1 Controller Checklist

Note. This checksheet is to be used as a *guide.* It does not cover all situations that may arise during the play of a maneuver. It does contain major points to be brought out during the maneuver if appropriate to the situation. Other items to stimulate play may be found in FM 101–5. Insure that once an action has been started, it is carried through to a logical conclusion.

Requirement	Problem
1. United States and Aggressor Alert installations for impending move.	Has G1— *a.* Obtained general location of the command post from G3?
	b. Alerted headquarters commandant and provost marshal?
2. United States and Aggressor Perform normal G1 duties	*a.* Does G1 include pertinent G1 information in his estimate to the commanding general or chief of staff? If not, why not?
	b. Is the personnel daily summary— (1) Submitted on time? (2) Based on losses actually assessed?
	c. Does G1 prepare appropriate portions of the administrative annex to include— (1) Location of division prisoner of war collecting point? (2) Location of division graves registration collecting point? (3) Location of straggler collecting point? (4) Location of army post office?
	d. Does G1 requisition replacements for actual shortages shown in personnel situation?

Example D–14—Continued

Requirement	Problem
3. United States and Aggressor Perform normal G1 duties	*a.* Has G1 insured that installations for which he is primarily responsible are displaced forward as the situation permits?
	b. Is action on project_____complete?
	c. Is G1 making continuous estimates?
4. United States and Aggressor Plan for replacing military personnel with civilian labor.	*a.* Are the plan and comments coordinated with the general staff, staff specialists, and troop units affected?
	b. Does the plan provide for— (1) Allocation of civilian labor to units and description of duties to be performed? (2) Administration of the civilian labor on both division and unit level?
5. United States and Aggressor Plan for employment of civil police.	G1 should approve the recommendations and, in coordination with the G5, arrange for use of civil police. The plan should spell out— *a.* The duties and authority of civil police.
	b. Provision for military guidance of the civil police through the G5.
6. United States and Aggressor Plan for regulation of combat troops in towns and villages.	*a.* Are towns put off limits to combat troops?
	b. Are provisions made for regulating combat troops in towns?
7. United States and Aggressor Prepare plans for receiving and accommodating war correspondents. (Initiated by submitting the following situation to the division G1: "Corps reports nine accredited war correspondents representing newspapers in the homeland will visit your division for 3 days, arriving on 3 Aug. Transportation furnished by Army."	*a.* Does the plan provide for— (1) Housing and messing with officers of unit being visited? (2) Guides from units to be visited? (3) Reception by the information officer? (4) Introduction to the commanding general, assistant division commanders, chief of staff, major unit commanders, and information personnel? (5) Briefings on operation? (6) Planned itinerary to insure full coverage in the time available? (7) Interviews with personnel from the cities represented by correspondents? (8) A conference with the correspondents to insure the arrangements above are satisfactory?
	b. Is the plan coordinated with other staff officers? If not, why not?
	c. Is the plan disseminated to all interested persons?
8. United States and Aggressor Take proper action in matter requiring leadership. (Initiated by submitting the following situation to division G1: "Corps G1 reports commander engineer battalion is making a nuisance of himself by visiting the replacement battalion and personally interviewing replacements.")	*a.* Does G1 investigate matter?
	b. Does G1 refer to commanding general for command action if necessary?
	c. Does commanding general take command action and advise corps?

Example D–14—Continued

Requirement	Problem
9. United States and Aggressor Perform normal G1 duties.	*a.* Does SOP for processing of replacements adequately cover— (1) Records? (2) Equipment? (3) Indoctrination? (4) Assignment as to branch and military occupational specialty?
	b. Are officers requested by name for higher headquarters disapproved?
	c. Are requisitions for replacements based on anticipated losses returned without action and accompanied with instructions on correct procedure?
	d. Are division G2, division provost marshal, and army G1 notified that corps requires all field grade officer prisoners for interrogation?
	e. Is there a division SOP for movement of command post?
10. United States and Aggressor Plan for providing Catholic chaplain support to_____Bde. (Information should be provided to division G1 that the division chaplain (a Protestant) is the only chaplain available in division headquarters at this time and AG has received information that the replacement battalion does not anticipate any chaplain replacement in the near future). Only one Catholic chaplain is now present for duty with the division, and he is with_____ Bde.	*a.* What action does the G1 initiate?
	b. What are the recommendations of the division chaplain (provided by G1)?

Example D–15. G2 Controller Checklist

Note. This checksheet is to be used as a *guide*. It does not cover all of the situations that may arise during the play of a maneuver. It does contain major points to be brought out during the maneuver if appropriate to the situation. Other items to stimulate play may be found in FM 101–5. Insure that once an action has been started, it is carried through to a logical conclusion.

Requirement	Problem
1. United States and Aggressor Prepare the division counterintelligence plan for security of the right move.	*a.* Has G2 provided for security of night move?
	b. Does the counterintelligence plan include counterreconnaissance and counterdeception measures?
	c. Is the counterintelligence plan coordinated within the division staff?
	d. Are the counterintelligence instructions disseminated?
2. United States and Aggressor Perform normal duties of G2.	*a.* Does G2 maintain a current intelligence estimate during the operation, based on intelligence available to him?

Example D–15—Continued

Requirement	Problem
	b. Does G2 follow through on his requests to insure receipt of either positive or negative information?
	c. Does G2 provide for air reconnaissance and airphotos for division staff and units? (See air and artillery controller checksheet.)
	d. Does G2 disseminate to units concerned, intelligence available to him as soon as it is available and without waiting to be asked?
	e. Does G2 evaluate and interpret information before disseminating it as intelligence? (Insert false information.)
	f. Does G2 develop and submit EEI for approval? If not, why not?
	g. Does G2 insure that necessary maps have been requisitioned?
	h. Does G2 prepare a collection plan?
	i. Does G2 make requests to units following completion of the collection plan?
	j. Does G2 limit his estimate to terrain and enemy immediately involved in the situation?
	k. Does G2 forward information to higher headquarters?
	l. Does G2 prepare an intelligence annex to the operation order?
	m. Does G2 submit ISUM's on time?
	n. Does G2 recommend to G3 anticipated nuclear targets to include likely areas for future targets and types of targets to be presented?
3. United States and Aggressor Action taken in case of security violation. (Initiated by submitting the following situation to division G2. Corps reports TOP SECRET radio message sent in code to division has been relayed by division radio in the clear. Message was released by the chief of staff assistant.)	*a.* Does G2 investigate violation?
	b. Does G2 personally reprimand the offender? (Improper G2 action.)
	c. Does G2 refer matter to commanding general with recommendation for command action?
	d. Does commanding general take command action and advise corps?
4. United States and Aggressor Action to be taken in case of orders issued through staff channels. (Initiated by corps G2, ordering division G2 to send a company-size patrol to _____to investigate a reported civilian riot.)	*a.* Does G2 report the matter to commanding general, requesting him to take action with corps to send such requests through command channels?
	b. Does commanding general take command action by informing corps commander of corps G2's actions and requesting that orders for division be sent through command channels?

Example D–16. G3 Controller Checklist

Note. This checksheet is to be used as a *guide*. It does not cover all of the situations that that may arise during the play of a maneuver. It does contain major points to be brought out during the maneuver if appropriate to the situation. Other items to stimulate play may be found in FM 101–5. Insure that once an action has been started, it is carried through to a logical conclusion.

Requirement	Problem
1. United States and Aggressor Prepare plans for the night move.	*a.* Are warning orders issued to all units?
	b. Are warning orders issued to all staff sections?
	c. Are fragmentary orders issued upon basis of commander's concept?
	d. Are fragmentary orders issued upon receiving commander's decision?
	e. Is coordination accomplished with all staff sections? with corps for route clearances?
	f. Is movement begun as soon as possible?
	g. Is adequate security force provided for in plan?
	h. Is the new location of the command post designated?
2. United States and Aggressor Prepare operation order	*a.* Is the order clear, concise, and complete?
	b. Are all combat units assigned a mission?
	c. Are unit missions in consonance with fragmentary orders previously issued?
3. United States and Aggressor Prepare plans to develop the situation.	*a.* Are missions planned for combat units moving into the area of operations?
	b. Are orders issued to units to cease advance on terrain favorable for defense of the objective?
	c. Is a piecemeal attack (if situation is favorable) employed?
	d. Is the available artillery (to include ADA) fully employed?
	e. Are decisions made as the situation progresses so that all troops are disposed favorably for attacking or strengthening present defensive positions?
	f. Is aggressive reconnaissance made immediately by division units when security elements cannot penetrate a given position?
	g. Is maximum use made of air support? air liaison officers? air control teams?
	h. Is aggressive reconnaissance made to determine location of enemy positions?
4. United States and Aggressor Prepare plans for defense of command post. (Initiated by message from	*a.* Are combat troops, in addition to elements of headquarters company, required in the plan?

Example D–16—Continued

Requirement	Problem
corps—"command post of adjacent division over-run by enemy combat patrol."	*b.* Is plan disseminated to all concerned?
	c. Is plan sound?
5. United States and Aggressor **Perform normal G3 duties.**	*a.* Does G3— (1) Designate general location of command post? (2) Establish liaison with higher, adjacent, and subordinate units? (3) Coordinate with staff and establish priorities for allocation and issue of regulated or critical items? (4) Establish allocation of replacements to major subordinate units? (5) Submit required reports?
	b. Does G3 keep division headquarters and higher and lower units informed? If not, why not?
6. United States and Aggressor **(Depending on situation developed.)** **Prepare plans for attack.**	*a.* Are preparations and plans for attack based on results of the reconnaissance?
	b. Are warning orders issued to all units of the impending attack?
	c. Are troop units moved to positions from which they will launch the attack?
	d. Does the plan include— (1) A coordinated attack or a piecemeal attack? (2) Main and supporting attacks? (3) Missions for all combat units? (4) Minimum reshuffling of troops? (5) Nuclear and chemical weapons? (6) Electronic countermeasures (ECM)? (7) Deception plan? (8) TC&D plan?
	e. Are continuing decisions made during the execution of the attack to include— (1) Movement of the reserve? (2) Use of available artillery support? (3) Use of available air support? (4) Use of the reserve? (5) Nuclear and chemical weapons? (6) Electronic countermeasures (ECM)?
	f. Are all units informed of decisions as they are made?
	g. Are plans and preparations made during the attack for defense of the objective on seizure?
7. United States and Aggressor **(Depending on situation developed.)** **Prepare plans for defense.**	*a.* Does G3 issue warning orders to all units to include— (1) Halting the advance on favorable defensive terrain? (2) The pending defense mission?
	b. Are tentative plans disseminated to major combat units so they can begin their planning?
	c. Is coordination accomplished with G4 for procurement of necessary fortification materials?

Example D–16—Continued

Requirement	Problem
	d. Are arrangements made for relief of elements of the armored cavalry squadron?
	e. Are the following included in the plan for the GOP? (1) Does it consist of units of all arms? (2) Is it highly mobile? (3) Is the command and signal organization set up to do the job adequately?
	f. Does the defense provide for— (1) All-round defense? (2) Strong points located in logical areas with respect to enemy avenues of approach? (3) Proper use of nuclear weapons? (4) Artillery fires to support the forward defensive area forces? (5) Planned areas to trap and destroy the enemy?
	g. Does the plan for reserves include— (1) Adequate forces? (2) Locating the reserve centrally with respect to time and in accordance with counterattack plans?
	h. (1) Are barrier plans prepared to include— (*a*) Obstacles in front of and on the flanks of the GOP? (*b*) Obstacles between the GOP and the forward edge of the battle area to protect assembly areas and deny use of avenues of approach to enemy? (*c*) Obstacles for protection of rear positions? (2) Is a priority for construction of the barrier plan established?
	i. Counterattack plans. (1) Does the plan provide for an easily identified line of departure? (2) Does the plan provide for a favorable direction of attack? (3) Does the plan provide for a suitable objective? (4) Are plans for nuclear fires included? (5) Is the plan disseminated to all units? (6) Will proper execution of the counterattack plan accomplish the mission?
	j. Are trails and roads in the defense sector designated for widening, repair, or maintenance to facilitate movement of counterattack force?
8. United States and Aggressor Proper action in matter requiring leadership. (Initiated by submitting the following situation to division G3.—"A member of corps G3 section making a staff visit to _____Bde noticed the attack was not moving forward. The commander was making no use of his reserve and complained that division was giving him no support."	*a.* Does G3 investigate the report?
	b. If G3 verifies the report, does he make a decision and take action on his own?
	c. Does G3 investigate report and recommend appropriate action?
	d. Does commanding general take command action?

Example D–16—Continued

Requirement	Problem
9. United States and Aggressor Prepare nuclear fire requests.	Do the division nuclear fire requests include— *a.* Warning? *b.* Target-damage required? *c.* Desired ground zero? *d.* Altitude of desired ground zero? *e.* Height of burst? *f.* Yield? *g.* Time on target? *h.* Means of attack? *i.* Troop safety? *j.* Type of analysis? *k.* Remarks? *l.* Concentration number?

Example D–17. G4 Controller Checklist

Note. This checksheet is to be used as a *guide*. It does not cover all of the situations that may arise during the play of a maneuver. It does contain major points to be brought out during the maneuver if appropriate to the situation. Other items to stimulate play may be found in FM 101–5. Insure that once an action has been started, it is carried through to a logical conclusion.

Requirement	Problem
1. United States and Aggressor Plan logistic support for the night move.	*a.* (1) Are warning orders issued to support command for the movement? (2) Are any instructions for reconnaissance of new area given to support command commander?
	b. Are movement orders issued to support command commander including— (1) Route to be used? (2) Area into which they are to move? (3) Time of closing in new area?
2. United States and Aggressor Perform normal G4 duties.	*a.* Does G4 include pertinent information in his logistic estimate? If not, why not?
	b. Does G4 take action to eliminate shortages of class III and V supplies?
	c. Does G4 request priority of allocation for items in short supply?
	d. Does G4 take action to evacuate division clearing station?
	e. Does G4 coordinate with G2, G3, and support command commander on the movement?
3. United States and Aggressor Prepare the administrative annex.	*a.* Is the annex clear, concise, and complete?
	b. Will the proper execution of the instructions contained in the administrative annex accomplish the logistic mission without placing undue burden on division units?
4. United States and Aggressor Prepare the division traffic circulation plan. (Initiated by submitting the following situation to the division G4. —Corps requests the division circulation plan in order to coordinate it	*a.* Does the traffic circulation plan include— (1) Routes to be used? (2) Direction of movement on each route? (3) Limitations on loads to be carried over each route? (4) Alternate routes?

Example D–17—Continued

Requirement	Problem
with the corps plan and plans of other divisions.)	b. Does the division traffic circulation plan tie in with the plan prepared by corps?
	c. Is the plan disseminated to all units of the division, adjacent division?
5. United States and Aggressor Prepare the division periodic logistic report.	a. Is the report clear, concise, and complete?
	b. Is the report accurate and does it reflect the solution to problems created by— (1) Limited available supply rate? (Item 5, G3 controller checksheet.) (2) Protection for supply and service installations?
	c. Is the report submitted on time?
6. United States and Aggressor Perform normal G4 duties.	a. Does G4 maintain continuous estimate of the situation?
	b. Does G4 maintain an up-to-date status chart to all vehicles/tactical equipment?
	c. Does G4 maintain continuous coordination with other members of the the coordinating and special staffs? If not, why not?
	d. Does G4 recommend location of division rear boundary to G3?
7. United States and Aggressor Prepare plan for inspection and maintenance of vehicles. (Initiated by submitting the following situation to division G4. —The Commander, _____Bn, requests authorization to perform DS maintenance on vehicles as _____Maint Bn reports an abnormal backlog of work. He further reports he has equipment and mechanics capable of doing the job.)	a. Does G4 investigate reason for backlog at maintenance battalion?
	b. Does G4's plan provide for— (1) Division directive to subordinate units— (*a*) Stressing command responsibility for maintenance? (*b*) Providing for division teams to assist in maintenance instruction? (*c*) Providing for division spot check inspections? (*d*) Delineating maintenance responsibilities of division subordinate units—pointing out that mechanics doing work above their responsibility normally cause neglect of organizational maintenance? (*e*) Requesting daily vehicle/tactical equipment deadline report? (2) Request to army (through corps) for an additional direct support ordnance company?
	c. Does G4 take action? If so, is the action feasible?
8. United States and Aggressor Preparation of plan for construction, repair, improvement, and maintenance of roads. (Initiated by submitting the following situation to the division G4. The Commander, _____Engr Bn, requests instructions for the construction, improvement, repair, and maintenance of roads.)	a. Does the plan consider— (1) Maintaining the main supply route? (2) Improving trails to provide one two-way road or two one-way roads from the division supply points to each brigade in the forward area? (3) Improving routes required for execution of counterattack plans?
	b. Is the plan coordinated with G3?

Example D–17—Continued

Requirement	Problem
	c. Does G4 request corps to maintain a portion of the road net in the division rear area?
9. United States and Aggressor Proper action in matter requiring command action. (Initiated by submitting the following situation to division G4. Commander,_____ S&T Bn, reports S4,_____Engr Bn, despite repeated warnings, submits emergency requisitions for clothing at the same time his supply trucks are turning in like items, some still in original wrappings, as salvage. He further states that battalion S4 is not balancing turn-ins from one company against requisitions of another company.)	*a.* Does G4 investigate the matter and advise S4,_____Engr Bn, to fill company requisitions insofar as possible from turn-ins of other companies within the battalion?
	b. Does G4, on verifying the facts, recommend to Commander,_____Engr Bn, that his supply personnel will comply with normal supply procedures and supply economy?
	c. Does G4 inform chief of staff of action taken?
	d. Does G4 recommend a division directive be disseminated to all subordinate units outlining the procedure in *a* above to preclude further instances of the same nature?

Example D–18. G5 Controller Checklist

Note. This checksheet is to be used as a *guide.* It does not cover all situations that may arise during the play of a maneuver. It does contain major points to be brought out during the maneuver if appropriate to the situation. Other items to stimulate play may be found in FM 101–5 and FM 41–10. Insure that once an action is started, it is carried through to a logical conclusion.

Requirement	Problem
1. United States and Aggressor Government functions.	*a.* Governmental affairs: (1) Is G5 fully aware of the relationship between the military forces and existing governmental agencies? (2) Does G5 recommend retention or dismissal of local governmental officials? (3) Have adequate measures been taken to control the civilian populace (restrictive measures, such as curfew and travel restrictions)? (4) Have adequate PSYOP measures been taken to make onerous control measures more palatable to the populace by publicity?
	b. Legal: Has G5 ascertained the policy concerning the functioning of civil courts?
	c. Public safety: (1) Does G5 have a plan to publicize and enforce proclamations, laws, ordinances, notices, and directives? (2) Has G5 considered the desirability of reestablishing the local police? What action is being taken to accomplish this? (3) Has action been taken to reestablish fire departments? (4) Has action been taken to take implements of war in the hands of civilians into custody? (5) Have positive, clear measures been taken to maintain military routes clear of civilian traffic?
	d. Public health: (1) Have adequate procedures been established for the control of contagious

Example D–18—Continued

Requirement	Problem
	diseases that risk losses in military commands? (Associated problems are acquisition of civilian doctors from surrounding communities, treatment of civilians in military facilities, provision of medical supplies from army stocks, inoculation, immunization, and dusting.) (2) Are measures taken for the restoration of essential sanitation systems? (3) Are provisions made for burial? (4) Are necessary measures taken to insure that civilian food and water supplies are not contaminated?
	e. Public welfare: Has G5 initiated action to determine whether local resources are sufficient to maintain minimum standards for food, clothing, and shelter? (What are the local resources? What are the minimum standards?) *f.* Labor: (1) Has G5 prepared the civilian labor plan to include— (*a*) Location of labor camps? (*b*) Method of recruiting labor? (*c*) Transportation for labor units? (*d*) Food and clothing? (*e*) Pay? (*f*) Screening of applicants? (2) Does G5 coordinate with G1 on civilian labor policies and procedures? (3) What action does G5 take to provide personnel for labor units?
	g. Civil defense: (1) Does the G5 have a plan and procedures for providing military support to the national or regional civil defense agencies and local civil government? (2) Has the G5 established and maintained liaison to advise and assist in carrying out civil defense programs? (3) Has the G5 coordinated and integrated civil defense measures with rear area security and area damage control plans?
	h. Public education: Has the G5 ascertained the policy concerning the supervision of or assistance to educational programs and instructions and public libraries?
	i. Public finance: Has the G5 analyzed, reviewed and recommended control, supervision, and audits of indigenous fiscal resources, budget practices, taxation, expenditures of public funds, currency issues, and the banking agencies and affiliates?
2. United States and Aggressor Economic functions.	*a.* Has policy been established and disseminated for utilization of local supplies?
	b. Does G5 institute necessary safeguards for designated vital industries? (All clothing manufacturing plants have been designated as vital industries because of the great civilian clothing shortage.)

Example D–18—Continued

Requirement	Problem
	c. Has G5 determined and disseminated measures to control US currency and to discourage black-market operations?
	d. Food and agriculture: Has the G5 surveyed, made estimates and recommendations of civilian production, processing, storage and distribution of funds to reduce the importation of food for military and civilian consumption?
	e. Property control: Has the G5 developed a uniform and orderly system for the custody and control of property to protect it within established limits and preserve negotiable assets and resources?
3. United States and Aggressor Public facilities functions.	*a.* Public communications: Has a policy been established for the restoration and supervision of essential communications where feasible?
	b. Public transportation: Are provisions made for restoration of minimum essential transportation?
	c. Public works and utilities: Has the G5 surveyed and analyzed requirements for supervision and operation, where required, of such facilities as buildings and dams; water, gas, waste disposal, electrical, and other similar systems; and restoration or introduction of such services?
4. United States and Aggressor Special functions.	*a.* Refugees: Is G5 taking adequate measures to resolve the current refugee problem, and what are future plans for control and administration of refugees?
	b. Displaced persons: Is G5 taking adequate measures to resolve the current displaced person problem, and what are future plans for control and administration of displaced persons?
	c. Civil information: Have measures been taken to safeguard and close when deemed necessary, all public and private information media until taken over by competent civil affairs or psychological operations personnel?
	d. Arts, monuments, and archives: Is G5 aware of national policy to protect arts, monuments, archives, and religious buildings from unnecessary destruction or damage?
	e. Religious relations: Has the G5 assessed the significance of the religious and the culture of the assigned area, and analyzed the effect religious and cultural factors will have on the various operations of the civil affairs missions?
5. United States and Aggressor Evacuations.	Has the division G5 fully analyzed all the ramifications of evacuating the civilian population? *Note.* Considerations are discussed in FM 41–10.

Example D–18—Continued

Requirement	Problem
6. United States and Aggressor Rear area security.	Is G5 exploiting the important contribution that local civilian inhabitants can make to rear area security?
7. United States and Aggressor Area damage control.	Is G5 exploiting the important contribution that local civilian inhabitants can make to the area damage control plan? (Firefighting equipment, laborers, and heavy and light equipment.)
8. United States and Aggressor Administration.	*a.* Administrative annex: Does G5 prepare the civil affairs paragraph of the administrative annex to include— (1) Location of civilian collecting points? (2) Location of displaced persons and refugee camps? (3) Availability of civilian labor? (4) Allocation of civil affairs units? (5) Other appropriate items? *b.* Periodic civil affairs report: Is the periodic civil affairs report due _____submitted— (1) On time? (2) With adequate content? *c.* SOP: Is G5 aware of the generalized nature of the division SOP for civil affairs functions? Normally, an SOP must be revised to conform with the situation in a particular theater of operations.
9. United States and Aggressor General.	Do all military units and individuals know the need for a positive civil affairs program which will facilitate establishing control over the peoples and territories of the zone of action? Does the conduct of units and individuals reflect support for the policy of giving advice and assistance, and using troops for civic action whenever appropriate or practicable? Does the conduct of staffs, units, and individuals reflect the full use of PSYOP to further civil-military operations?

Example D–19. Air and Artillery Controller Checklist

Note. This checksheet is to be used as a *guide*. It does not cover all of the situations that may arise during the play of a maneuver. It does contain major points to be brought out during the maneuver if appropriate to the situation. Other items to stimulate play must be originated. Insure that once an action has been started, it is carried through to a logical conclusion.

Requirement	Problem
1. United States and Aggressor Provide for air support during planning and movement phase and prepare additional preliminary plans to support operations subsequent to the planning and movement phase with available air and artillery.	*a.* Does G2 air in coordination with the (FSCOORD)(G2)— (1) Request airphotos of objective area? (2) Request night photographic reconnaissance missions to cover previously reported assembly areas of enemy troops? (3) Request night photographic and visual reconnaissance mission to cover major intersections on routes between objective area and last reported locations of enemy assembly areas? (4) Request visual reconnaissance missions of routes to objective area to be made prior to darkness_____? (5) Request specific route and area search by visual reconnaissance to be made on_____? (6) Request daily forward area cover in objective area?

Example D–19—Continued

Requirement	Problem
	b. Does G3 air— (1) Request immediate strike on known enemy targets? (2) Submit preplanned requests for offensive air support? (3) Recommend request to corps for forward air controllers? (4) Request night offensive airstrikes on targets disclosed by air reconnaissance?
	c. After receiving warning order from division, does division artillery commander— (1) Select position areas for the general support artillery support operation plan? (2) Estimate time each battalion can be in position ready to fire?
	d. Does commanding officer, division artillery— (1) Prepare a fire support annex based on the commander's decision? Is this annex consistent with the operation order? (2) Insure fire support is coordinated with available air support?
2. United States and Aggressor Perform normal duties of providing air and artillery support.	*a.* Does G2 air, in coordination with the G2, continue to request specific air reconnaissance missions as the situation develops?
	b. Does the FSCOORD have the following accomplished? (1) Examine each request for air or artillery support to determine— (*a*) The target's suitability for air or artillery. (*b*) Whether the target request is within the capabilities of the aircraft. (2) Before requesting an immediate mission, consider using organic or attached artillery on the target?
	c. Does G3 air submit requests for immediate missions to include— (1) Specific location of target? (2) Time of attack desired? (3) A priority if more than one request is included?
	d. Does G3 air— (1) Develop a plan for marking targets for approved immediate air missions? (2) Make provisions for air safety? (3) Provide for air control team to direct flight?
	e. Does the FSCOORD provide suitable artillery for counter flak?
	f. Does G3 air prepare and submit (through corps to TACC) requirements for following day for preplanned missions which include— (1) Specifically located targets? (2) Targets that cannot be engaged by other weapons available to division? (3) Targets that are within the capability of aircraft? (4) Time of attack? (5) Priority to be given to various targets?

Example D–20. Tactical Cover and Deception Controller Checklist

Note: This checklist may be used as a guide by members of umpire teams to evaluate the status of TC&D training of units participating in field training exercises and tests. To insure a comprehensive evaluation of unit effectiveness in TC&D, this checklist includes checkpoints on related fields, such as camouflage and concealment.

1. UNIT PREPARATION

a. Are members of the staff familiar with basic TC&D doctrine?

b. Has the unit staff received training in TC&D planning and techniques? If so, how much?

c. Are TC&D instructions properly published as annexes to operation orders? If so, are the annexes prepared correctly?

d. Have all personnel been indoctrinated as to individual camouflage measures?

e. Are individual camouflage measures enforced during exercises?

f. Is the unit adequately equipped with standard camouflage and TC&D items of supply?

g. Does the unit effectively use terrain and natural materials for concealment?

2. PREPARATION FOR THE MANEUVER OR EXERCISE

a. What are the TC&D resources, capabilities, and potentialities of the tested unit and its attachments?

b. Has the unit established any TC&D standing operating procedures (SOP) and patterns (signatures) in other exercises?

c. Has the unit considered and are they prepared to adjust their camouflage and TC&D activities to the exercise restrictions?

3. TC&D INTELLIGENCE OF THE OPPOSING FORCES

Does tested unit know—

a. What type and size unit is opposing this organization?

b. What surveillance devices are available to the opposition?

c. If the opponent's surveillance operators are well-trained?

d. How the surveillance devices are normally employed?

e. If the opposition has any established patterns or SOP's?

f. If the opposition uses camouflage? If so, have there been indications of recent emphasis?

g. If the opposition habitually uses deception?

h. The opposing commander? Has his profile been established?

i. If the enemy S2/G2 and S3/G3 have characteristics that can be capitalized upon to help sell the deception story?

j. If the opposition's communications are vulnerable?

k. If it would be advantageous to use imitative deception against the opposition?

l. How the opposition normally uses its reserve?

m. If the opposition favors day or night operations?

n. If civilians within the exercise area can be used as unwitting agents to help sell the deception story to the opposing commander?

o. If friendly troops can be used as unwitting agents?

p. If controlled agents can be played? If so, has the necessary action been taken to request this support?

4. PLANNING THE TC&D OPERATION

a. Did the next higher headquarters (initial situation) give the commander any TC&D missions or guidance?

b. Did the commander state the deception objective and cover TC&D aspects during his initial planning guidance?

c. If stated, did the deception objective visualize desired enemy reaction as opposed to what the enemy was to think?

Note. The commander should visualize specifically how he wants the enemy to react.

d. Were only the minimum number of the staff informed that deception was to be used?

e. Is the TC&D planning area secure?

f. Was TC&D planning conducted concurrently and coordinated with operations planning?

g. Was the TC&D estimate presented only to those personnel with a need to know?

h. Did the estimate follow the recommended format of FM 31–40?

i. Was a roster maintained of all personnel given access to the deception plan?

j. Did the commander and selected staff personnel analyze the risks involved in using TC&D?

k. Did the commander and staff determine if the opposing force was capable of observing the desired deception (notional) activities?

l. Did the commander and staff evaluate the degree to which the opposing force was vulnerable to deception?

m. Did the unit provide adequate security for the planned deception activities and areas?

n. Did the commander and staff recognize and consider all the logical opportunities for deception?

o. Does the unit have adequate resources to support the planned deception operation?

p. Is there adequate time to portray the deception activities realistically, and for the enemy to observe and react to same?

q. Did the commander and staff consider how the opposing force normally reacts to such situations and if they are likely to react in the desired manner?

r. Were all personnel involved in the deception planning briefed on the security requirements?

s. Did the commander consider his staff's deception recommendation? Did he refine his deception objective and elaborate on the recommendation in his concept of the operation?

Note. The deception story is the intelligence estimate the commander desires the enemy to formulate as a result of his deception activities. The staff deception estimate should provide the basic deception story.

t. Is the deception story (cover plan) feasible, and is it logical that the enemy will accept it as a possible friendly course of action?

u. Does the deception plan fit logically into the overall tactical situation?

v. Does the deception plan appear to tie in logically with previously known plans and directives?

w. Does the deception plan tie in with previous and ongoing training, equipment, and the known friendly logistical capabilities?

x. Has the next higher commander been informed of the deception plan, and has any possible interference of planned deception operations with the operations of adjacent units been considered and eliminated by coordination?

y. Was distribution of the deception annex limited to need to know?

z. Did the TC&D plan include an implementing schedule?

aa. Was the TC&D plan in accordance with the format in FM 31–40?

5. EXECUTION

a. Were the critical TC&D activities adequately briefed and, if necessary, rehearsed?

b. Were deception activities effective?

c. Was camouflage and concealment used effectively?

(1) Was discipline of individual soldiers sufficient to insure consistent practice of camouflage and concealment techniques for which they are trained, regardless of the situation and/or personal comfort and convenience?

(2) Was unit training adequate to prepare for effective cover and concealment of unit equipment and operations?

(3) Was unit leadership and discipline adequate to insure proper tactics and techniques of camouflage and concealment?

(4) Was the clothing and equipment of the individual soldier compatible with camouflage and concealment?

(5) Did the available equipment meet the camouflage and concealment and the TC&D requirements of the exercise?

6. SUMMARY

a. Was the deception operation a success?

b. Could the operation have been improved if a different deception approach had been taken?

c. Was imagination and ingenuity used to the maximum?

d. Are there any additions that need to be made to this checklist so it will be of greater value?

e. Are there any other comments?

Example D–21. Electronic Warfare Controller Checklist

Note. This checklist is to be used as a guide by members of umpire teams to evaluate the status of EW training of units participating in field training exercises and tests.

1. ELECTRONIC COUNTER-COUNTERMEASURES

a. Estimate of Enemy Capability.

(1) Is a daily estimate of the enemy SIGINT/ESM and ECM capabilities maintained by the unit?

(2) Upon receipt of new information regarding the enemy ESM/ECM capability, is the estimate updated?

(3) Does the estimate include the disposition of known or suspected enemy units that could impede the success of the unit's mission through the use of EW?

(4) Does the estimate include the frequency coverage and modulation capability for enemy ESM and ECM operations?

(5) Are locations of known or suspected enemy communication and noncommunication intercept sites plotted on a map overlay to the situation map?

(6) Are locations of known or suspected enemy communication and noncommunication jammers plotted on a map overlay to the situation map?

(7) Are probable areas of coverage of enemy jammers shown on a map overlay to the situation map?

b. System Planning Considerations.

(1) Are periods when unit is critically reliant upon specific electronic systems identified?

(2) Is there an estimate of enemy capabilities to use SIGINT/ESM and ECM against these critical systems?

(3) Have alternatives to these critical systems been specified?

(*a*) Are provisions made for alternate routing or alternate channels for radio communications?

(*b*) Are provisions made for alternate means of target acquisition and battlefield surveillance?

(4) Was the effect of alternatives of the mission considered?

(5) Is the deployment of line of sight transmitters prescribed to provide for side lobe absorption and target background?

(6) Does the signal officer maintain a unit radio net profile?

(7) Are provisions made to avoid peaks and valleys in the unit radio net profile?

(8) Are communication nets so oriented that the strongest possible

signals will be received at all stations while keeping distances between stations as short as possible?

c. Provisions in Unit Plans/Orders (SOI, SSI, SOP, EW Annex, Signal Annex).

(1) Is the meaconing, interference, jamming, and intrusion (MIJI) report format specified?

(2) Are MIJI reporting procedures prescribed, including frequency if radio is employed?

(3) Are radio frequencies, including alternate frequencies, and call signs assigned in a random manner?

(4) Are all authentication systems authorized?

(5) Are conditions prescribed under which authentication is mandatory?

(6) Are authorized low-level cryptosystems made available to all communications operators?

(7) Are adequate instructions on the use of authentication tables and low-level cryptosystems made available to all users?

(8) Are cryptonetting procedures and instructions provided?

(9) Are procedures established for advising communication/noncommunication operators of enemy jamming?

(10) Are actions detailed which the communication/noncommunication operator must take in the event of actual or suspected hostile ECM?

(11) Is a provision included to change call signs whenever frequencies are changed, and frequencies whenever call signs are changed?

(12) Are instructions outlining changing of call signs and radio frequencies available to all radio operators?

(13) Are preformatted messages provided possible?

(14) Are maintenance call signs and frequencies provided?

(15) Are adequate procedures established for declaring and observing emergency radio silence?

d. Radio Station Procedures.

(1) Are antennas sited to make use of soft or hard target backgrounds, circumstances permitting?

(2) Are antennas sited to minimize radiation into enemy territory?

(3) Are dummy antennas used, where available, for transmitter tuning and maintenance?

(4) Is radiated power output adjusted to the minimum level consistent with reliable communications?

(5) Are communications personnel aware of the enemy's EW capability?

(6) Are low-level cryptosystems properly used by communications personnel?

(7) Is authentication properly performed by communications personnel?

(8) Do stations request authentication when ICD is suspected?

(9) Do stations authenticate when challenged or requested?

(10) Do net control stations (NCS) authenticate when directing emergency silence?

(11) Do stations break radio silence to authenticate?

(12) Do NCS authenticate when using plain language cancellation of emergency silence?

(13) Do stations authenticate when making contact, sending amplifying reports in plain language, or using brevity codes?

(14) Do stations authenticate when transmitting plain language communications instructions?

(15) Do stations authenticate when making initial radio contact?

(16) Are call ups and length of transmissions held to a minimum?

(17) Do operators transmit unnecessarily or engage in chatter?

(18) Are preformatted messages used whenever possible?

(19) Do operators use plain language instead of authorized prosigns and operating signals?

(20) Are call signs and radio frequencies changed as prescribed in the unit SOI/SSI?

(21) Is the transmitter turned off whenever frequencies are changed?

e. Radar Site Procedures.

(1) Are surveillance and target acquisition radars sited to make use of hard or soft target background?

(2) Are radars placed in defilade where possible?

(3) Are geographic locations of transmitters changed at nonperiodic intervals in accordance with the SOI?

(4) Are radio and pulse repetition frequencies changed in accordance with the SOI (on a daily basis, if possible)?

(5) Is the emitter turned off whenever radio frequencies are changed?

(6) Is the radiated power output adjusted to the minimum level consistent with satisfactory operations?

(7) Are radar emissions kept to the absolute minimum consistent with tactical requirements?

f. Reactive Measures.

(1) Radio.

(*a*) Do radio operators recognize deliberate jamming?

(*b*) When radio operators experience actual or suspected jamming, do they:

1. Continue to work through, if possible?

2. Attempt to improve signal-to-jamming ratio?

3. Transmit prearranged dummy deceptive traffic, if applicable?

4. Change to an alternate frequency only as directed?

(*c*) Do NCS's monitor and control the communication activities of their nets to assure compliance with ECCM instructions?

(*d*) Do NCS's take immediate action to correct ECCM discrepancies when they are noted?

(*e*) Do NCS's immediately report SIGSEC and ECCM deficiencies which were noted and corrected?

(*f*) Do radio operators follow established procedures to prevent disclosure of jamming or deception incidents over unprotected communications?

(2) Radar

(*a*) Do radar operators recognize deliberate jamming?

(*b*) When radar operators experience actual or suspected jamming, do they:

1. Attempt to work through the jamming without using antijamming features of the radar equipment?

2. Continue to operate the radar on the same frequency until instructions are received?

3. When applicable, attempt to improve signal-to-jamming ratio?

4. Maintain a continuous search for targets, particularly in the jammed area and along the edges of the jammed sector?

5. Change location of the radar, if possible, together with change in frequency?

2. ESM AND ECM PLANS AND OPERATIONS

a. Provisions in Plans and Orders.

(1) Do plans and orders clearly specify authority and constraints relative to the conduct of ECM, as well as, ON/OFF controls?

(2) Is the use of ECM considered and support requested, where appropriate, in planning all tactical operations?

(3) Have procedures been devised for conducting target-of-opportunity jamming?

(4) Does the EW Annex include the list of TABOO, PROTECTED, and GUARDED frequencies?

(5) Does the unit attempt to conduct electronic deception without proper authority?

(6) Does the electronic deception plan include time for the enemy to collect and analyze the deceptive intelligence and react to the electronic deception situation?

(7) Is enemy reaction to the electronic deception plan possible?

(8) Is the electronic deception plan written as a part of an overall TC&D plan?

(9) Does the electronic deception appear to be authentic?

(10) Are plans made for the successful completion of the mission in the event that the deception plan fails?

(11) Where manipulative deception is prescribed, does the unit retain the capability to carry out its tactical mission?

(12) Are only key personnel who have a need to know briefed regarding the deception plan?

(13) Are personnel who have a need to know thoroughly indoctrinated regarding their part in the deception operation?

(14) Are manipulative deception operations conducted in conjunction with other deceptive activities?

(15) Is dummy traffic considered, and when appropriate, prepared and disseminated for use in manipulative deception operations?

(16) Is intentional radiation of communications-electronics emitters prescribed in the plan?

(17) Is a preformatted message or other signal prescribed to halt the deceptive operation immediately in the event of failure of the plan?

(18) Are intelligence and surveillance activities targeted against the enemy to measure his reaction to the deceptive operation?

b. Electronic Warfare Element Operations.

(1) Does the EWE maintain an estimate of the enemy EW and cryptologic capability including:

(*a*) Communications OB?

(*b*) Radar OB?

(*c*) Estimates of effective radiated power and of communications and noncommunications emitters?

(2) Is enemy radio frequency usage and modulation included in the estimate?

(3) Is map overlay, which shows the approximate location and estimated power output of enemy communications-noncommunications emitters, maintained and updated whenever new intelligence is received?

(4) Are procedures established for the EWE to recommend the G2 or G3, as applicable, changes or adjustments of missions as required to support the combat commander's concept of operation?

(5) Does the EWE have an SOP established for tasking subordinate units to perform ESM/ECM missions?

(6) Does the EWE maintain an equipment availability list of organic communication-noncommunication emitters that can supplement ASA resources during ESM/ECM operations?

(7) Are procedures established for the EWE to maintain the current deployment and operational status of ESM/ECM teams?

(8) Can the EW Officer estimate the potential of proposed ECM operations with respect to probable jamming effectiveness?

Example D–22. Firepower Control Sheet

FIREPOWER CONTROL SHEET

(United States) (Agressor) FORCES

Time Period _____ to _____

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Task org	Auth str	Actual str	Percent eff	Firepower score	Losses/Gains (Casualties Replacements etc.)	Percent eff	Adjusted Firepower score	Losses/Gains (Casualties Replacements etc.)	Percent eff	Adjusted Firepower score	Losses/Gains (Casualties Replacements etc.)	Percent eff	Adjusted Firepower score

APPENDIX E

FIREPOWER SCORES, US AND AGGRESSOR WEAPONS

Table E–1. Firepower Scores, US Weapons, Direct Fire

Weapon	Range			
	300 meters	500 meters	700 meters	1,000 meters [a]
Armament pod, aircraft, 7.62-mm mg, M18A1	12	12	12	8
Armament subsystem, helicopter, 7.62-mm mg, door mtd, M23 or M24	10	10	10	10
Armament subsystem, helicopter, 7.62-mm mg, high rate, XM 2761	12	12	12	12
Armament subsystem, helicopter, 7.62-mm mg, 40-mm grenade launching, M28A1	17	17	17	17
Armament subsystem, helicopter, XM 35	40	40	40	40
Armament subsystem, helicopter, TOW, 2M, XM 26	65	65	65	65
Launcher, rocket aircraft, 2.75 in XM 200[b]	40	40	40	40
Gun, machine, cal. 50	10	10	10	10
Gun, machine, 7.62-mm	6	6	6	6
Gun, submachine, cal. 45	0.5			
Gun, 20-mm Vulcan	30	30	30	30
Gun, 40-mm AW (SP)	15	15	15	15
Gun, 90-mm (SP)	15	15	15	15
Launcher, grenade 40-mm	5			
Rifle, 5.56-mm, XM 16E1	1	0.5		
Rifle, 5.56-mm, XM 16E1 (M)[c]	4	2	1	
Rifle, 7.62-mm M14	1	0.5		
Rifle, 7.62-mm M14 (M)	4	2	1	
Rifle, 90-mm	15	15	7	
Rifle, 106-mm	20	20	20	20
Tank, 76-mm gun[d]	28	28	28	26
Tank, 90-mm gun[d]	30	30	30	28
Tank, 105-mm gun[d]	32	32	32	30
Tank, 120-mm gun[d]	34	34	34	32
Armored recon/airborne 551 Sheridan assault vehicle XM[d e]	40	40	40	40
Dragon	50	50	50	50
TOW, all mounts	60	60	60	60
Howitzer, 105-mm	20	20	20	20
Howitzer, 155-mm	30	30	30	30
Gun, 175-mm	75	75	75	75
Howitzer, 8-inch	100	100	100	100

[a] Firepower score is extended to limit of effective combat range.
[b] Firepower score reduced in proportion to number of FFAR in other systems.
[c] When equipped for and used in an automatic rifle role.
[d] Includes secondary armament.
[e] Type ammunition of main armament may reduce or increase equivalent firepower, depending on range and type of target.

Table E–2. Firepower Scores, US Weapons, Indirect Fire

Weapon	Range (meters)	Firepower score
Mortar, 81-mm	100—3,650	12
Mortar, 4.2-inch	777—5,486	15 (20)[a]
Howitzer, 105-mm, all	0—11,500	20 (30)[a]
Howitzer, 155-mm	0—14,600	50 (70)[a]
Howitzer, 155-mm, M109 (SP)	0—18,000	50 (70)[a]
Howitzer, 8-inch	0—16,800	100 (150)[a]
Gun, 20-mm Vulcan	0—2,800	8
Gun, 175-mm	0—32,700 (assumed)	75
Tank, 76-mm gun	0—14,320	10
Tank, 90-mm gun	0—18,150	13
Tank, 105-mm gun	0—22,290	20
Tank, 120-mm gun	0—18,200	35
LANCE	15—110,000	
HONEST JOHN[b]	5,000—38,000	110 (150)[a]
SERGEANT[b] [c]	46—104 km	(170)[a]
PERSHING[b] [c]	185—740 km	
NIKE-HERCULES[b] [c]	50—150 km	
115-mm rocket launcher	2,740—10,600	(120)[a]

[a] Chemical ammunition.
[b] More detailed information is contained in FM 101–31–2.
[c] Unless otherwise indicated in other tables, the use of these weapons will be confined to the delivery of nuclear fires.

Table E–3. Firepower Scores, Aggressor Weapons, Direct Fire

Weapon	Range			
	300 meters	500 meters	700 meters	1,000 meters[a]
Rifle, 7.62-mm	1	.5		
SMG, 7.62-mm	1			
LMG, 7.62-mm	4	4	4	
HMG, 7.62-mm	6	6	6	4
14.5-mm air defense mg (dual)	20	20	20	20
14.5-mm air defense mg (quad)	30	30	30	30
37-mm air defense gun	20	20	20	20
57-mm air defense gun	23	23	23	23
57-mm air defense gun (dual) SP	32	32	32	32
57-mm antitank gun (SP)	23	23	23	23
57-mm antitank gun	20	20	20	20
76-mm mountain gun (howitzer)	22	22	22	22
82-mm squad antitank launcher	10			
82-mm recoilless rifle	15	7		
85-mm gun	28	28	28	28
85-mm antitank gun	28	28	28	28
85-mm antitank gun (SP)	28	28	28	28
85-mm air defense gun	28	28	28	28
100-mm gun	30	30	30	30
100-mm antitank gun (SP)	30	30	30	30
100-mm air defense gun	30	30	30	30
107-mm recoilless rifle	20	20	20	20
122-mm howitzer	35	35	35	35
122-mm gun	35	35	35	35
122-mm gun (SP)	35	35	35	35
130-mm gun	40	40	40	40
152-mm gun/howitzer	50	50	50	50
152-mm gun (SP)	50	50	50	50
203-mm gun/howitzer	100	100	100	100
310-mm gun (SP)	130	130	130	130
Tank, 76-mm gun[b]	28	28	28	26
Tank, 100-mm gun[b]	31	31	31	29
Tank, 122-mm gun[b]	34	34	34	32

[a] Firepower score is extended to limit of effective range.
[b] Includes secondary armament.

Table E-4. Firepower Scores, Aggressor Weapons, Indirect Fire

Weapon		Range (meters)	Firepower score
14.5-mm air defense mg (dual)		2,400	2
14.5-mm air defense mg (quad)		2,400	4
37-mm air defense gun		9,000	6
57-mm air defense gun		14,000	8
57-mm air defense gun (dual) (SP)		14,000	16
57-mm antitank gun (SP)		9,400	8
76-mm mountain gun (howitzer)		14,500	10
82-mm mortar[a]		3,240	12
85-mm gun		17,000	15
85-mm antitank gun (SP)		16,500	15
85-mm air defense gun		17,800	15
100-mm antitank gun (SP)		22,000	18
100-mm air defense gun		22,000	18
120-mm mortar[a b]		6,000	20 (30)[b]
122-mm howitzer[b]		12,800	20 (30)[b]
122-mm gun (SP)[b]		23,000	20 (30)[b]
130-mm gun[b]		28,600	25 (35)[b]
140-mm multiple rocket launcher (16 tubes)[b]		10,000	28 (42)[b]
152-mm gun/howitzer[b c]		18,800	40 (60)[b]
152-mm gun (SP)[b c]		18,800	30 (45)[b]
160-mm mortar[a b]		9,070	25 (40)[b]
200-mm multiple rocket launcher (4 tubes)		20,300	100
203-mm gun, howitzer[c]		31,250	100
240-mm mortar[a b c]		10,000	120 (180)[b]
240-mm multiple rocket launcher (12 tubes)[b]		25,000	120 (180)[b]
280-mm multiple rocket launcher (6 tubes)[b]		30,000	125 (185)[b]
310-mm gun (SP)[c]		32,400	130
400-mm mortar (SP)[a b c]		22,000	150 (225)[b]
Tank, 76-mm gun		15,000	10
Tank, 100-mm gun		21,900	20
Tank, 122-mm gun		22,850	35
Free rockets:[d]			
RAGE[b c]		8,000—24,000	---(50)[b]
RAKE[b c e]		16,000—58,000	---(40)[b]
Surface-to-surface missiles:			
RANCOR[b c d]		10 km—120 km	---(200)[b]
RAVAGE[b c d]		90 km—380 km	----------
REBEL[c]		300—1,200 km	----------
REGAL[c]		1,000—12,000 km	----------
URGE[c]		1,900—5,100 km	----------
Surface-to-air missiles:[d]			
RAIDER	Vert:	5—5,000	----------
	Horiz:	6,000	----------
REGENT[b c]	Vert:	600—11,800	----------
	Horiz:	600—50,000	----------
RASCAL[b c]	Vert:	300—30,000	----------
	Horiz:	6,000—60,000	----------
RAMMER	Vert:	900—2,340	----------
	Horiz:	Unknown—36,000	----------

[a] Minimum range is in excess of 700 meters.
[b] CB warhead.
[c] Nuclear warhead.
[d] While these weapons have a high explosive capability, it is considered that their use will be confined to the delivery of chemical, biological, or nuclear fires.
[e] Exact ranges unknown.

APPENDIX F

UNIT FIREPOWER SCORES, AGGRESSOR DIVISIONS

Table F–1. Firepower Scores, Aggressor Airborne Division Units

Unit	Range			
	300 meters	500 meters	700 meters	1,000 meters
Airborne regiment	4,300	3,500	2,700	1,800
Rifle battalion	1,000	750	500	250
Airborne rifle company	200	150	100	60
Airborne rifle platoon	40	30	20	10
Airborne rifle squad	10	7	4	2
Machine gun platoon	40	40	40	20
Heavy machine gun squad	12	12	12	6
Mortar battery	100	100	100	100
Mortar platoon	25	25	25	25
Support battery	300	250	220	220
Antitank gun platoon	40	----	----	----
Recoilless gun platoon	80	80	80	80
Air defense machine gun platoon[1]	130	130	130	130
Regimental artillery	900	900	900	900
Antitank gun battery	180	180	180	180
Antitank platoon	60	60	60	60
Antitank guided missile battery[2]	30	30	30	30
Antitank guided missile platoon	5	5	5	5
Mortar battery	150	150	150	150
Mortar platoon	40	40	40	40
Air defense gun battery[1]	210	210	210	210
Air defense gun platoon[1]	65	65	65	65
Air defense machine gun battery	200	200	200	200
Air defense machine gun platoon	60	60	60	60
Artillery regiment	1,500	1,500	1,500	1,500
Howitzer battalion	400	400	400	400
Howitzer battery	120	120	120	120
Mortar battalion	500	500	500	500
Antitank battalion	150	150	150	150
Antitank battery	120	120	120	120
Antitank battery (GM)	30	30	30	30
Air defense battalion[1]	900	900	900	900
Air defense battery[1]	150	150	150	150
Air defense battery (SP)[1]	170	170	170	170

[1] Firepower of air defense elements should not be credited to the supported unit except when their weapons are employed in a ground role.
[2] Minimum range 500 meters.

Table F–2. Firepower Scores, Aggressor Mortorized Division Units

Unit	Range			
	300 meters	500 meters	700 meters	1,000 meters
Motorized regiment	6,500	5,000	4,300	3,500
Engineer platoon	50	30	20	10
Security platoon	75	65	60	50
Motorized battalion	1,200	900	700	500
Rifle company	200	150	100	40
Rifle platoon	50	30	20	10
Rifle squad	10	7	4	2
Machine gun platoon	40	40	40	20
Heavy machine gun squad	12	12	12	6
Mortar battery	100	100	100	100
Mortar platoon	25	25	25	25
Support battery[1]	300	250	220	220
Antitank gun platoon	40			
Recoilless gun platoon	80	80	80	80
Air defense machine gun platoon[1]	130	130	130	130
Medium tank battalion	1,200	1,200	1,200	1,200
Tank company	350	350	350	300
Tank platoon	100	100	100	80
Regimental artillery	920	770	770	770
Antitank gun battery	180	180	180	180
Antitank gun platoon	60	60	60	60
Antitank guided missile battery[2]		30	30	30
Antitank guided missile platoon		5	5	5
Mortar battery	150	150	150	150
Mortar platoon	40	40	40	40
Air defense gun battery	210	210	210	210
Air defense gun platoon[1]	65	65	65	65
Air defense machine gun battery	200	200	200	200
Air defense machine gun platoon[1]	60	60	60	60
Regimental reconnaissance platoon	150	130	110	100
Motorized division artillery	3,800	3,800	3,800	3,800
Gun-howitzer battalion	800	800	800	800
Gun-howitzer battery	250	250	250	250
Mortar battalion	500	500	500	500
Howitzer battalion	400	400	400	400
Antitank battalion	150	150	150	150
Antitank battery	120	120	120	120
Antitank battery (guided missile)	30	30	30	30
Rocket launcher battalion (RAGE excluded)	200	200	200	200
Multiple rocket launcher battalion	600	600	600	600
Multiple rocket launcher battery	180	180	180	180
Air defense battalion[1]	900	900	900	900
Air defense gun battery[1]	150	150	150	150
Air defense gun battery (SP)[1]	170	170	170	170
Reconnaissance company	650	550	450	420
Reconnaissance platoon	150	130	110	100
Engineer battalion (firepower as infantry)	600	300	200	150

[1] Firepower of air defense elements should not be credited to the supported unit excépt when their weapons are employed in a ground role.
[2] Minimum range 500 meters.

Table F–3. Firepower Scores, Aggressor Tank Division Units

Unit	Range			
	300 meters	500 meters	700 meters	1,000 meters
Medium tank regiment				
122-mm assault gun	4,500	4,450	4,400	4,100
152-mm assault gun	4,700	4,650	4,600	4,300
Engineer platoon	50	30	20	10
Medium tank battalion	1,200	1,200	1,200	1,000
Tank company	350	350	350	300
Tank platoon	100	100	100	80

See footnote at end of table.

Table F–3. Firepower Scores, Aggressor Tank Division Units—Continued

Unit	Range			
	300 meters	500 meters	700 meters	1,000 meters
Antitank guided missile battery	30	30	30	30
Assault gun company 122-mm	400	400	400	400
152-mm	600	600	600	600
Assault gun platoon 122-mm	200	400	400	400
152-mm	300	600	600	600
Reconnaissance platoon	150	130	110	100
Motorized regiment (same as in motorized division)				
Heavy tank regiment (with 152-mm assault gun)	5,400	5,300	5,200	5,000
Tank battalion	1,400	1,400	1,400	1,200
Tank company	380	380	380	350
Tank platoon	110	110	110	100
Antitank guided missile battery (same as in motorized division)				
Assault gun company (same as in motorized division)				
Air defense gun battery (same as in motorized division)				
Reconnaissance Platoon (same as in motorized division)				
Division artillery	4,000	4,000	4,000	4,000
Howitzer regiment	1,000	1,000	1,000	1,000
Howitzer battalion	400	400	400	400
Rocket launcher battalion	200	200	200	200
Rocket launcher battery (8000-24000-m)				
Multiple rocket battery	200	200	200	200
Multiple rocket launcher battalion	1,600	1,600	1,600	1,600
Multiple rocket launcher battery	500	500	500	500
Air defense battalion[1]	900	900	900	880
Reconnaissance company (same as in motorized division)				
Engineer battalion (same as in motorized division)				

[1] Firepower of air defense elements should not be credited to the supported unit except when their weapons are employed in a ground role.

APPENDIX G

UNIT FIREPOWER SCORES, US DIVISIONS

Table G–1. Firepower Scores, Airborne Infantry Battalion, Airborne Division

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Battalion	7–35H	2156	1334	868	742
HQ & HQ company	7–36H	156	149	82	82
Rifle company	7–37H	432	232	114	72
Combat support company	7–38H	602	489	444	444

Table G–2. Firepower Scores, Armored Cavalry Squadron Airborne Division

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Squadron	17–75G	2136	1574	1354	1354
HQ & HQ troop	17–76G	243	106	40	40
Armored cavalry troop	17–77G	608	442	390	390
Air cavalry troop	17–78G	647	506	454	454

Table G–3. Firepower Scores, Airmobile Infantry Battalion, Airmobile Division

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Battalion	7–55H	1785	852	442	316
HQ & HQ company	7–56H	157	60	12	12
Rifle company	7–57H	405	270	114	72
Combat support company	7–58H	345	254	208	208

Table G–4. Firepower Scores, Cavalry Squadron, Airmobile Division

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Squadron	17–95H	3544	2033	1898	1898
HQ & HQ troop	17–96H	604	293	260	260
Air cavalry troop	17–98H	776	485	464	464
Cavalry troop	17–99H	607	324	276	276

Table G–5. Firepower Scores, Infantry Battalion, Infantry Division

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1000 meters
Battalion	7–15H	2284	1445	962	236
HQ & HQ company	7–16H	334	223	152	152
Rifle company	7–18H	433	232	114	72
Combat support company	7–28H	652	526	468	468

Table G–6. Firepower Scores, Mechanized Infantry Battalion, Mechanized Infantry, and Armored Division

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Battalion	7–45H	3346	2426	1918	1792
HQ & HQ company	7–46H	498	378	306	306
Rifle company	7–47H	674	460	334	292
Combat support company	7–48H	821	668	610	610

Table G–7. Firepower Scores, Armored Cavalry Squadron, Infantry, Mechanized Infantry, and Armored Division

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Squadron	17–105H	4327	3187	3013	3013
HQ & HQ troop	17–106H	491	367	282	282
Armored cavalry troop	17–107H	826	576	503	503
Air cavalry troop	17–108H	651	506	454	454

Table G–8. Firepower Scores, Tank Battalion, Armored or Mechanized Division

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Battalion	17–35H	2843	2419	2270	2082
HQ & HQ company	17–36H	512	412	334	334
Tank company	17–37H	642	574	564	530
Combat support company	17–39H	424	287	244	244

Table G–9. Firepower Scores, Assault Support, Helicopter Units

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Assault helicopter company, infantry division	7–77H	240	240	240	240
Assault, helicopter, battalion, airmobile division	1–155H	1920	1920	1920	1920

Table G–10. Firepower Scores, Division Artillery Units, Indirect Fire

Unit	Range	Score
105-mm howitzer battalion	0–15,000	360
105-mm howitzer battery		120
155-mm/8-inch howitzer battalion		700
155-mm howitzer battery	0–14,600	300
8-inch howitzer battery	0–16,800	400
155-mm battalion SP	0–18,000	900
8-inch battalion	0–16,800	1,200

Table G–11. Firepower Scores, Engineer Units Used as Infantry[a]

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Engineer battalion, infantry division	5–155H	1279	521	156	156
Engineer company	5–156H	284	139	46	46
Engineer battalion, mechanized/armored division	5–145H	1481	544	90	90
Engineer company	5–146H	259	91	18	18
Engineer battalion, airborne division	5–25G	3415	342	102	102
Engineer company	5–27G	969	129	24	24
Engineer battalion, airmobile division	5–216H	966	496	228	228
Engineer company	5–217H	225	121	72	72

[a] Although the engineer battalion is large in strength and trained to fight as infantry, it is not equipped with the automatic and indirect fire weapons provided to infantry units; therefore, its firepower is unimpressive unless the unit is augmented with machine guns, mortars, recoilless rifles, etc. Due to the number of missions and amount of equipment assigned, the use of the bridge company or the entire battalion has not been considered for this role.

Table G–12. Firepower Scores, Chaparral/Vulcan Air Defense Artillery Battalion

Unit	TOE	Range			
		300 meters	500 meters	700 meters	1,000 meters
Air defense artillery battalion CHAPARRAL/VULCAN, self-propelled[a] [c]	44–325H	480	480	480	480
Air defense artillery battery, VULCAN, self-propelled VULCAN platoon (SP)	44–327H	240 80	240 80	240 80	240 80
Air defense artillery battalion, VULCAN, towed, airborne division	44–425H	960	960	960	960
Air defense artillery battalion, VULCAN, towed, airmobile division	44–435H	960	960	960	960
Air defense artillery battalion, CHAPPARAL (self-propelled)/ VULCAN (towed) [b] [c]	44–725H	480	480	480	480
Air defense artillery battery, VULCAN towed VULCAN platoon (twd)	44–727H	240	240	240	240

[a] Organic to infantry, mechanized infantry, and armored divisions.
[b] Nondivisional.
[c] Chaparral has no surface-to-surface capability.

APPENDIX H

CONTROL AND UMPIRE CRITERIA

Table H–1. Staff and Commander Reaction Time

Headquarters activities	*Headquarters reaction time in minutes*
Within a company headquarters	5
Within a battalion headquarters	10
Within a brigade headquarters	30
Within a division headquarters	60
Within a corps headquarters	60
Within an army headquarters	90

Table H–2. Nuclear Delivery Response Times

Delivery system	Target of [1] opportunity (in minutes)	On-call [1] target (in minutes)	Time between successive rounds
155-Howitzer	20	3	1 round per howitzer per 10 minutes
8-inch howitzer	20	3	1 round per howitzer per 10 minutes
LANCE	30	10	1 round per launcher per 30 minutes
HONEST JOHN	30	5	1 round per launcher per 30 minutes
NIKE HERCULES (From AD to SS role).	30	10	Burst to launch: 11 seconds, same target, 5 minutes new target.
SERGEANT	60[2]	20	1 round per launcher per 30 minutes
PERSHING	120	20	1 round per launcher per 2 hours
Fighter aircraft	60[3]	10 to 40[3]	Not applicable
Tactical bomber	75[3]	15 to 50[3]	Not applicable

[1] Weapons systems correspond to the hypothetical weapons listed in FM 101–31–3.
[2] Add 25 minutes if warhead sections must be changed.
[3] Flight time must be added.

Table H–3. Rates of Advance, Infantry Units

Ratio of combat power, attacker: defender	Rates of advance in meters per hour		
	Type of terrain		
	Open [1]	Median [2]	Close [3 4]
2:1	450	300	200
3:1	550	400	250
4:1	700	500	300
5:1	1,100	800	450

[1] Open, flat, slightly rolling terrain.
[2] Rolling, lightly covered with trees (moderately open—moderately close) terrain.
[3] Rough, heavily wooded, mountainous terrain.
[4] Rate of advance contingent on relative difficulty of terrain.

Table H–4. Rates of Advance, Mechanized and Armored Units

Ratio of combat power, attacker: defender	Rates of advance in meters per hour		
	Type of terrain		
	Open [1]	Medium [2]	Close [3 4]
2:1	600	400	250
3:1	1,100	750	300
4:1	2,200	1,325	350
5:1	3,300	1,500	500

[1] Open, flat, slightly rolling terrain.
[2] Rolling, lightly covered with trees (moderately open—moderately close) terrain.
[3] Rough, heavily wooded, mountainous terrain.

Table H–5. Effects of Separation Distances on Rates of Advance

Range steps	Action
1. Ranges greater than 5,000 meters for all types of advancing units.	1. No significant resistance. Losses are assessed as a result of artillery fires and nuclear weapons.
2. Ranges between 5,000 and 1,000 meters if either force is predominantly a tank or mechanized force; between 5,000 and 500 meters if both forces are predominantly infantry.	2. Light and scattered resistance: *a.* Infantry force—use force ratio of 5:1 in table 21. *b.* Tank of mechanized force—use force ratio of 5:1 in table 22. Losses are assessed as a result of artillery fires, nuclear weapons, and tank play as appropriate.
3. Ranges from 1,000 meters to the infantry assault line if force is predominately tank or mechanized, and from 500 meters to infantry assault line if the force is predominately infantry.	3. Resistance based on actual force ratios. Losses are assessed as a result of artillery fires, nuclear weapons, and tank play.
4. Ranges from the infantry assault position to the objective for infantry units in the attack.	4. Resistance based on actual force ratios recalculated at the assault line to allow for previous losses (force ratio must equal or exceed 1:1 to permit an assault). Losses are now assessed against the attacker from defensing small-arms fire and against the defender if he is overrun from the attackers' small-arms fire. Losses are also assessed as a result of artillery fires and tank play as appropriate.

Table H–6. Nonnuclear Casualties from Airstrikes

KILL FACTORS (KF) AND RADIUS/AREA OF EFFECTS (METERS)

	500-pound bomb 1 rd	Rockets 1 pod	20-mm 100 rd burst	Napalm 1 tank	Bomblet 1 tube/dispenser 2 tube/pass	7.62-mm 100 rd burst
Standing troops	KF .80	.35	.30	.65	.55	.09
	K[a] 28-m radius	10-m radius	10-m radius	6×60m	20×250 m	10-m radius
	W[b] 28–48 m	10–18 m	10–18 m	(Out to 10×80 m)	(Out to 26×280 m)	10–18 m
Prone troops	KF .60	.30	.20	.60	.25	.06
	K 25-m radius	10-m radius	10-m radius	6×60 m	20×250 m	10-m radius
	W 25–42 m	10–18 m	10–18 m	(Out to 10×80 m)	(Out to 26×280 m)	10–18 m
Semiprotected troops	KF .20	.25	.15	.50	.15	.05
	K 8-m radius	10-m radius	10-m radius	6×60 m	20×250 m	10-m radius
	W 8–13 m	10–18 m	10–18 m	(Out to 10×80 m)	(Out to 26×280 m)	8–13 m

[a] K—killed.
[b] W—wounded.

Table H–7. Sample Nonnuclear Airstrike Casualties Table

Materiel Targets Containing Personnel [1] [2]

Target	Casualties for initial sortie	Casualties for each additional sortie up to a maximum of three additional sorties
Armored personnel carriers (APC's)	70 percent of personnel in APC per APC destroyed.	1 per APC destroyed
Tanks	1/5 per tank destroyed	1 per tank destroyed
SP artillery	2 per piece destroyed	2 per piece destroyed
Truck convoy (troop)	55 percent of personnel in truck per truck destroyed.	1 per truck destroyed
Truck convoy (supply)	1 per truck destroyed	1 per truck destroyed
Personnel Target[2]		
Troops in defense	Initial sortie 5 percent of troops in area 100 m x 400 m.	Add 2 percent for subsequent sorties up to total of 4 sorties.
Troops in attack formation (dismounted)	Initial sortie 35 percent of troops in area 100 m x 400 m.	Add 10 percent for subsequent sorties up to total of 4 sorties.
Troops in wooded assembly area	Initial sortie 25 percent of troops in area 100 m x 300 m.	Add 10 percent for subsequent sorties up to total of 4 sorties.
Troops marching in column	Initial sortie 60 percent of troops in area 50 m x 800 m.	Add 15 percent for subsequent sorties up to total of 4 sorties.

[1] Determine number of vehicles destroyed in accordance with example H–1.

[2] Tables based on flight of 2 aircraft loaded with napalm, 500 GP bombs, CBU, 20-mm cannon, and smart bombs when available.

Table H–8. Artillery Target Data

	Effects pattern radius (meters)	Pattern area casualty percentage		
		Foxholes	Standing/ running	Prone/ in trucks
Battery Volley				
75-mm howitzer	100	0.3	4	3
105-mm howitzer	150	0.3	4	3
155-mm howitzer	150	1	8	6
8-inch howitzer	150	0.8	6	4
175-mm gun	300	0.2	2	1
4.2-inch mortar (4 weapons)	150	0.3	4	3
2.75-inch rockets (48 rounds)	150	0.3	4	3
LANCE[1]	300	0.5	4	3
Battalion Volley				
75-mm howitzer	150	0.5	6	4
105-mm howitzer	200	0.5	6	4
155-mm howitzer	200	1	13	10
8-inch howitzer	200	1	10	7
175-mm gun	300	0.3	7	2
HONEST JOHN[1]				
SERGEANT[1]				
PERSHING[1]				
NIKE HERCULES[1]				

[1] Use tables H–27 and H–37 through H–40 for assessment data.

Table H–9. Assessment of Losses Due to Artillery and Mortar Fires (Per 30-Minute Period)

	Percentage
1. AGGRESSOR FIRES ON US ATTACKING FORCES	
a. On foot: 100 to 500 meters (from FEBA) through Aggressor defensive fires	6
b. On foot: 500 to 1,000 meters	4
c. Mechanized troops (armored carriers)	2
d. On foot: beyond 1,000 meters (if detected by intelligence play	1
2. AGGRESSOR FIRES ON US RESERVE UNITS (other than armor and artillery) If detected by intelligence play	2

Table H–9. Assessment of Losses Due to Artillery and Mortar Fires (Per 30-Minute Period)—Continued

3. US FIRES ON AGGRESSOR DEFENDING FORCES	*Percentage*
a. Under attack: 100 to 500 meters	2
b. Under attack: 500 to 1,000 meters	1
c. Under attack: beyond 1,000 meters (if detected by intelligence play)	2

Table H–10. Defender's Casualties Due to Artillery and Mortar Fires (Per 30-Minute Period)

If force ratio of attacker to defender is—	*Multiply attacker's casualties in the assault by the factors below to obtain defender's casualties*
1 : 1	0.33
2 : 1	0.66
3 : 1	1.00
4 : 1	1.33
5 : 1	1.66
6 : 1	2.00
7 : 1	2.33
8 : 1	2.66
9 : 1 or over	3.00

Table H–11. Antipersonnel Mine Casualties

Apers mine density per meter of minefield front	24	20	16	12	8	4	2
Casualties (percentage)	80	70	60	50	40	30	20

NOTE. Rates increase with poor visibility and decrease with poor camouflage.

Table H–12. US G-Agent Weapon Effects Table for Umpire Use

A. Artillery Munitions and Bombs

Code designation	Delivery means (15 sec of fire)	Target radius (meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Masking time		Unmasked personnel
				¼ min	½ min	
N3	One 105-mm btry (three volleys)	50	02	20	30	45
		100	01	10	15	25
		200	----------	01	02	05
N4	One 105-mm bn (three volleys)	50	03	30	45	55
		100	02	20	25	40
		200	01	05	10	25
		300	----------	01	05	10
N5	One 155-mm btry (one volley)	50	01	05	10	15
		100	01	05	10	10
		200	----------	01	02	05
N6	One 155-mm bn (one volley)	50	02	30	35	45
		100	02	20	25	35
		200	01	10	10	25
		300	----------	01	05	10
		400	----------	----------	02	05
N7	One 8-inch btry (one volley)	50	02	15	20	30
		100	01	15	15	25
		200	01	05	10	15
		300	----------	01	02	05
N8*	One 8-inch bn (one volley)	50	03	40	45	55
		100	02	30	40	45
		200	02	15	20	35
		300	01	10	10	20
		400	01	05	05	15
		500	----------	01	05	10
N9	One 115-mm RL, M–91	200	02	25	30	35
		300	02	15	25	30
		400	01	10	15	20
		500	01	05	10	15
		750	----------	01	05	10
		1000	----------	----------	02	05

Table H–12. US G-Agent Weapon Effects Table for Umpire Use—Continued

A. Artillery Munitions and Bombs

Code designation	Delivery means (15 sec of fire)	Target radius (meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Masking time		Unmasked personnel
				¼ min	½ min	
N10	Two 115-mm RL, M–91	200	03	35	50	55
		300	02	25	40	45
		400	01	15	20	25
		500	01	10	15	20
		750	01	05	10	15
		1000	----------	----------	02	05
N11	Three 115-mm RL, M–91	200	04	45	65	75
		300	04	35	60	65
		400	02	20	30	35
		500	02	15	25	30
		750	01	10	15	20
		1000	----------	01	05	10
N12	One HONEST JOHN	100	03	25	35	50
		300	02	15	25	30
		600	01	05	10	15
N13	LANCE	100	01	15	20	25
		200	01	10	15	20
		400	01	05	10	15
N14	ONE SERGEANT	200	03	25	35	50
		400	02	15	25	30
		600	01	05	10	15
N15	One acft sortie, MC–1, 750-lb bomb (12 bombs)	50	04	45	65	85
		100	04	30	50	65
		200	02	20	35	40
		300	01	10	15	20
		500	01	05	10	15

B. Spray munitions

Code designation	Delivery means	Downwind coverage distance (meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Masking time		Unmasked personnel
				¼ min	½ min	
N16	One ftr acft sortie, one spray tank (100 gal) (Spray release line length: 1,500 meters)	250	02	20	30	45
		500	01	15	20	25
		750	01	05	10	15
		1000	----------	02	05	10
N17	One ftr acft sortie, two spray tanks (100 gal) (Spray release line length: 1,500 meters)	250	04	30	40	65
		500	02	20	25	30
		1000	01	10	15	20
		1500	01	05	10	15
		2000	----------	01	05	10

Notes. 1. Enter the above table at the appropriate delivery means. Opposite the target radius (half the long dimension of the dispositions of the umpired unit) and in the appropriate casualty level column, read the percentage of casualties among the target personnel.

2. If personnel are masked at the time of agent delivery, use data shown in column entitled "masked personnel." If personnel are unmasked at the time of agent delivery but have masks available, use data shown for either ¼-minute masking time or ½-minute masking time based on the effectiveness of the unit CBR warning system and CBR discipline of the umpired unit. If personnel have no masks available or the CBR discipline of the umpired unit is poor, use values shown for unmasked personnel.

3. If the personnel are in the open, G-agent shell fragmentation effects are considered as ½ the effects of an equivalent HE shell.

4. To simplify for controllers, weather factors are omitted.

Table H–13. Aggressor G-Agent Weapon Effects Table for Umpire Use

A. Artillery Munitions and Bombs

Code designation	Delivery means (15 sec of fire)	Target radius (meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Masking time		Unmasked personnel
				¼ min	½ min	
N25	One mortar battery	50	03	40	45	55
		100	02	30	40	45
		200	02	15	20	35
		300	01	10	10	20
		400	01	05	05	15
N26	One artillery battery	50	01	05	10	15
		100	01	05	10	10
		200	----------	01	02	05
N27	One artillery battalion	50	02	30	35	45
		100	02	20	25	35
		200	01	10	10	25
		300	----------	01	05	10
		400	----------	----------	02	05
N28	One 140-mm RL (16 tubes)	200	02	25	30	35
		300	02	15	25	30
		400	01	10	15	20
		500	01	05	10	15
		750	----------	01	05	10
N29	One 240-mm RL (12 tubes)	200	03	30	45	50
		300	02	20	35	45
		400	01	10	15	25
		500	01	05	10	15
		750	01	03	05	10
N30	One 280-mm RL (6 tubes)	200	02	20	25	35
		300	02	15	20	30
		400	01	05	10	15
		500	----------	03	05	10
		750	----------	----------	02	05
N31	RAGE rocket	100	03	25	35	50
		300	02	15	25	30
		600	01	05	10	15
N32	RAKE rocket	100	02	15	25	35
		300	01	10	15	30
		600	01	05	10	15
N33	RANCOR missile	200	03	25	35	50
		400	02	15	25	30
		600	01	10	15	20
		50	04	40	60	08
N34	One fighter bomber sortie GB bombs	100	03	25	45	60
		200	02	15	30	40
		300	01	10	15	20
		500	01	05	10	15

B. Spray Munitions

Code designation	Delivery means	Downwind coverage distance (meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Masking time		Unmasked personnel
				¼ min	½ min	
N35	One fighter aircraft sortie, one spray tank (one gal) (Spray release line length: 1,000 meters)	250	02	20	30	45
		500	01	15	20	25
		750	01	05	10	15
		1000	----------	02	05	10

Table H–13. Aggressor G-Agent Weapon Effects Table for Umpire Use—Continued

B. Spray Munitions

Code designation	Delivery means	Downwind coverage distance (meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Masking time		Unmasked personnel
				¼ min	½ min	
N36	One bomber sortie, one spray tank (500 gal) (Spray release line length: 5,000 meters)	300	04	45	65	85
		500	03	30	40	65
		1000	02	20	25	30
		1500	02	10	20	25
		2000	----------	02	10	15

Notes. 1. Enter the above table at the appropriate delivery means. Opposite the target radius (half the long dimension of the dispositions of the umpired unit) and in the appropriate casualty level column, read the percentage of casualties among target personnel.

2. If personnel are masked at the time of agent delivery, use data shown in column entitled "masked personnel." If personnel are unmasked at the time of agent delivery but have masks available, use data shown for either ¼-minute masking time or ½-minute masking time based on the effectiveness of the unit CBR warning system and CBR discipline of the umpired unit. If personnel have no masks available or the CBR discipline of the umpired unit is poor, use values shown for unmasked personnel.

3. If the personnel are in the open, G-agent shell fragmentation effects are considered as ½ the effects of an equivalent HE shell.

4. To simplify for controllers, weather factors are omitted.

Table H–14. US V-Agent Weapon Effects Table for Umpire Use

A. Artillery Munitions and Land Mines

Code designation	Delivery means	Target radius (meters)	Casualty level among target personnel (percentage)			
			Protection categories			
			A	B	C	D
P1	One 155-mm battery (eight volleys)	50	45	35	25	10
		100	30	20	15	05
		300	15	10	05	----------
		500	05	02	01	----------
P2	One 155-mm battalion (eight volleys)	50	90	80	70	25
		100	80	60	40	15
		300	45	35	20	05
		500	15	05	02	01
P3	One 8-inch battery (four volleys)	50	30	20	15	05
		100	20	15	10	01
		300	10	05	02	----------
		500	05	01	----------	----------
P4	One 8-inch battalion (four volleys)	50	85	65	45	15
		100	65	50	30	10
		300	20	10	05	01
		500	15	10	02	----------
P5	One 115-mm RL	200	15	10	05	----------
		400	05	05	01	----------
		500	05	01	----------	----------
P6	Two 115-mm RL	200	25	20	10	02
		400	15	10	02	----------
		500	10	05	01	----------
P7	Three 115-mm RL	200	35	25	15	05
		400	20	15	05	01
		500	15	10	05	----------
		750	10	05	01	----------
P8	20 chemical land mines	100 x 100 (area coverage)	65	50	30	10

Table H–14. US V-Agent Weapon Effects Table for Umpire Use—Continued

B. Spray Munitions

Code designation	Delivery means	Target radius (meters)	Casualty level among target personnel (percentage)			
			Protection categories			
			A	B	C	D
P9	One fighter aircraft sortie, one spray tank (100 gal)	1,000 x 300 (area coverage)	60	45	30	10
P10	Two fighter aircraft, two spray tanks (100 gal) each	300	95	70	45	15
		500	90	60	40	10
		750	60	45	30	05
P11	Four fighter aircraft, two spray tanks (100 gal) each	500	95	70	45	15
		750	85	65	40	10
		1000	75	50	35	05

Notes. 1. The table above gives the casualty level for use in conjunction with table H–16 in assessing casualties from V-agent attacks with various weapon systems.

2. Enter the above table at the appropriate delivery means. Opposite the target radius (half the long dimension of the dispositions of the umpired unit) and in the appropriate protection category column, read the casualty level among target personnel. Multiply the casualty level by the appropriate adjustment factors from table H–16.

3. Protection categories:
   A = Tropical uniform with masks only.
   B = Summer uniform with masks only.
   C = Summer uniform with masks, hoods, and protective gloves; and winter uniform with masks only.
   D = Winter uniform with masks, hoods, and protective gloves.

4. If the personnel are in the open, V-agent shell fragmentation effects are considered as ½ the effect of an equivalent HE shell.

5. To simplify for controllers, weather factors are omitted.

Table H–15. Aggressor V-Agent Weapon Effects Table for Umpire Use

A. Artillery Munitions and Mines

Code designation	Delivery means	Target radius (meters)	Casualty level among target personnel (percentage)			
			Protection categories			
			A	B	C	D
P	One mortar battery	50	75	60	40	15
		100	60	45	25	10
		300	20	10	05	01
		500	15	10	01	----------
P	One artillery battery	50	40	30	20	10
		100	25	20	15	05
		300	15	10	05	----------
		500	05	02	01	----------
P	One artillery battalion	50	80	70	60	20
		100	70	55	35	15
		300	40	30	20	05
		500	15	05	02	01
P	One 140-mm rocket launcher (16 tubes)	200	20	15	05	----------
		400	10	05	01	----------
		500	05	01	----------	----------
P	One 240-mm rocket launcher (12 tubes)	200	25	20	10	02
		400	15	10	02	----------
		500	10	05	01	----------
P	One 280-mm rocket launcher (6 tubes)	200	20	15	05	----------
		400	10	01	01	----------
		750	05	01	----------	----------
P	One RAGE rocket	100	25	20	10	02
		300	15	10	02	----------
		600	10	05	01	----------
P	15 chemical land mines	100 x 100 (area coverage)	65	50	30	10

Table H–15. Aggressor V-Agent Weapon Effects Table for Umpire Use—Continued

B. Spray Munitions

Code designation	Delivery means	Target radius (meters)	Casualty level among target personnel (percentage)			
			Protection categories			
			A	B	C	D
P	One fighter aircraft sortie, one spray tank, 100 gal	1,000 x 200 (area coverage)	55	40	30	10
P	One bomber sortie, one spray tank, 500 gal	5,000 x 300 (area coverage)	85	70	45	10

Notes. 1. The table above gives the casualty level for use in conjunction with table H–16 in assessing casualties from V-agent attacks with various weapon systems.

2. Enter the above table at the appropriate delivery means. Opposite the target radius (half the long dimension of the dispositions of the umpired unit) and in the appropriate protection category column, read the casualty level among target personnel. Multiply the casualty level by the appropriate adjustment factors from the table H–16.

3. Protection categories:
   A = Tropical uniform with masks only.
   B = Summer uniform with masks only.
   C = Summer uniform with masks, hoods, and protective gloves; and winter uniform with masks only.
   D = Winter uniform with masks, hoods, and protective gloves.

4. If the personnel are in the open, V-agent shell fragmentation effects are considered as ½ the effect of an equivalent HE shell.

5. To simplify for controllers, weather factors are omitted.

Table H–16. V-Agent Casualty Adjustment Factors for Umpire Use

A. Adjustment Factors for Terrain Contamination

Time in area	Time since area was contaminated					
	0 hr	1 hr	2 hr	6 hr	12 hr	24 hr
30 min	1.0	0.8	0.7	0.5	0.2	0.01
1 hr	1.2	1.0	0.8	0.6	0.3	0.1
2 hr	1.4	1.2	1.0	0.7	0.4	0.2
4 hr	1.6	1.3	1.1	0.7	0.5	0.3
8 hr	1.7	1.4	1.2	0.8	0.5	0.3
16 hr	2.0	1.5	1.3	0.8	0.5	0.3

B. Adjustment Factors for Types of Activities

Activity	Adjustment factor
Occupying or passing through area	1.0
Crawling or advancing under fire	2.0
Passing through in vehicles	0.1
In shelters with overhead cover	0.1

Notes. 1. The tables above give adjustment factors for use in conjunction with tables H–14 and H–15 in assessing casualties among personnel exposed to V-agents.

2. Multiply the adjustment factor obtained in table A by the appropriate adjustment factor from table B to compute the overall adjustment factor. Multiply the casualty level obtained from table H–14 or table H–15 by the overall adjustment factor. When the result is more than 100 percent, use 100 percent. Casualties are assessed over a period of 1 to 24 hours after exposure.

3. Seventy-five percent of the V-agent casualties will be fatalities if no treatment is given.

4. If the CBR discipline of the unit is superior, reduce the casualty level by half; if the CBR discipline of the unit is poor, double the casualty level.

5. The 0-hr "time since area was contaminated" indicates that the troops are in the target area at the time of V-agent delivery. If troops take cover from agent splash and spray, use adjustment factor for "in shelters with overhead cover" from table H–16 B.

6. To simplify for controllers, weather factors are omitted.

Table H–17. US HD Agent Munitions Requirements[1]

Code designation	Delivery means	Area coverage (meters)	Number of rounds
P	4.2-in mortar platoon	400×200	960
P	105-mm howitzer battery	200×100	400
P	155-mm howitzer battery	250×150	200
P	Chemical mines	100×100	50

[1] The table above gives the munition requirements for use in conjunction with table 36. If the simulated use of the agent is more or less than that given above, the casualty levels in table 36 are increased or reduced proportionately.

Table H–18. Aggressor M (Mustardo) Agent Munition Requirements[1]

Code designation	Delivery means	Area coverage (meters)	Number of rounds
P	One mortar battery	700×300	600
P	One artillery battery	200×100	120
P	One artillery battalion	300×200	350
P	140-mm rocket launcher	circular 500 dia	150
P	Chemical mines	100×100	60

[1] The table gives the munition requirements for use in conjunction with table H–19. If the simulated use of the agent is more or less than that given above, the casualty levels in table H–19 are increased or reduced proportionately.

Table H–19. M and HD Casualty Effects for Umpire Use

A. Casualty Level in Percentage

Temp ° F.	Time in area	Time since area was contaminated					
		0 hr	1 hr	2 hr	4 hr	6 hr	12 hr
50° to 70°	1 min	30					
	30 min	30	10	5	3	2	1
	1 hr	40	20	10	5	5	2
	2 hr	50	30	20	10	8	4
	4 hr	60	40	30	20	15	6
	8 hr	70	50	40	30	20	8
	12 hr+	80	60	50	40	30	10
70° to 90°	1 min	30					
	30 min	40	10	5	1		
	1 hr	50	20	10	2		
	2 hr	60	30	20	3		
	4 hr	80	40	20	3		
	6 hr	90	50	20	4		
90°+	1 min	30					
	30 min	60	10	2			
	1 hr	80	20	3			
	2 hr	90	20	3			
	3 hr	90	30	4			

B. Adjustment Factors for Average Troops

	Protective clothing	*Mask only*	*No protection*
Occupying or passing through area	0.2	1.0	10
Crawling or advancing under fire	0.5	2.0	10
Passing through in vehicles	0.01	0.2	5
In shelters with overhead cover	0.01	0.2	5

Notes. 1. Multiply the incapacitating casualty level in table A by the appropriate factor in table B. When the result is over 100 percent, use 100 percent. Casualties are assessed over a period of 4 to 12 hours.

2. If the state of CBR discipline of the unit is superior, reduce the casualty level by half; if the CBR discipline of the unit is poor, double the casualty level.

3. If winter clothing is being worn, reduce the casualty level by half.

4. A closed vehicle is considered a substitute for protective clothing.

5. The 0-hr "time since area was contaminated" indicates that the troops are in the area at the time of agent delivery. If the troops are able to take cover from the agent splash and spray, the casualty level is reduced by ¼, or as the umpire sees fit based on CBR defense measures taken.

Table H–20. Air Defense Weapon Capabilities[1]

Weapon	Horizontal range (km)	Effective altitude (km)
NIKE HERCULES	139.0	30.0
HAWK	30.0	15.0
Improved HAWK[2]		
Self-propelled twin 40-mm Gun M42	1.6	1.6
VULCAN[2]		
CHAPARRAL[2]		
Quadruple cal .50 MG	0.8	0.8
REDEYE[3]		

[1] More detailed information is contained in FM 44–1–1, 44–1A, and 44–2.
[2] See FM 44–1A for classified data.
[3] See FM 23–17A for classified data.

Table H–21. Assumed SAM Kill Factors [1] [2]

System	Single shot	Salvo
NIKE HERCULES	0.7	NA
HAWK	0.6	0.8
CHAPARRAL[3]		
REDEYE[3]		

[1] Use random number procedures described in paragraphs D–4 through D–7.
[2] More finite information is contained in FM 44–1 and 44–1A.
[3] See FM 44–1A for classified data.

Table H–22. Assumed Light Air Defense Artillery Kill Factors[1]

System	Tracking time (sec)	Kill probability [2]
Self-propelled twin 40-mm Gun M42	1	[3] 0.02
Quadruple cal .50	1	[3] 0.04
VULCAN[5]		

[1] Use random number procedures described in paragraphs D–4 through D–7.
[2] Kill probability increases by 0.01 for each additional second that each weapon correctly tracks aircraft not employing evasive action.
[3] Kill probabilities assume that aircraft is within 1,100 meters; over 1,100 meters kill probabilities decrease rapidly.
[4] Kill probabilities assume that aircraft is within 500 meters; over 500 meters kill probabilities decrease rapidly.
[5] See FM 44–1A for classified data.

Table H–23. Aircraft Damage by Ground Fire[1]

Type	Kill probability
OV–1 (Mohawk)	Ground score/300×0.01
Helicopter (flying)	Ground score/300×0.10
Helicopter (hovering or slow flight)	Ground score/300×0.30
Helicopter (landing)	Ground score/300×0.40
Transport	Ground score/300×0.01
Transport (extraction on landing)	Ground score/300×0.40
Jet	Ground score/300×0.01

[1] Use random number procedures described in paragraphs D–4 through D–7.

Table H–24. Nonnuclear Damage from Airstrikes

DESTROYED AND DAMAGED FACTORS AND RADIUS/AREA OF EFFECTS (Meters)

		750-pound 1 rd	Smart bomb	Rockets 1 pod 2.75 or ZUNI	20-mm 100-rd burst	Napalm 1 tank	Bomblet 1 tube/dispenser 2 tube/pass	7.62-mm 100-rd burst
Radius/area of effects (meters) [1]	Destroyed	----------	----------	10-m radius	10-m radius	6×60 m	20×250 m	10-m radius
	Damaged	----------	----------	10–18 m	10–18 m	10×80 m	26×280 m	10–18 m
Parked aircraft		.25	90% kill factor on each tgt taken	.20	.70	.60	.60	.21
Radar van		.30	under attack.	.30	.50	.40	.40	.15
Mobile RL		.08	----do----------	.18	.25	----------	----------	.07
POL dump (revetted)		.10	----do----------	.38	.65	.50	.45	.17
POL dump (open storage)		.16	----do----------	.62	.85	.85	.75	.30
Truck		.18	----do----------	.40	.25	.60	.50	.07
Light armor vehicle		.08	----do----------	.30	.18	.50	----------	.05
Medium tank		.06	----do----------	.15	.10	.18	----------	.03
Light and medium arty		.10	----do----------	.08	----------	.06	.35	
Heavy arty		.02	----do----------					
Field bunker		.02	----do----------					
Railway		.02	----do----------					
Ammo dump (revetted)		.30	----do----------	.30	.30	.40	.50	.09
Ammo dump (open storage)		.50	----do----------	.50	.50	.65	.80	.20
Masonry bridge		.02	----do----------					
Floating bridge		.02	----do----------	----------	.80	.70	----------	.25
Small wood bldgs		.50	----do----------	.20	----------	.80		
Small masonry bldgs		.18	----do----------					
Small steel bldgs		.10	----do----------					

[1] In view of the random factors used in the table, the radius/area of effects columns are shown only for those weapons having a large dispersion.

Example H–1. Sample Assessment of Damage[1] to Ground Targets by Aircraft[2] [3]

Target	1st Pass	2d Pass	3d Pass	4th Pass	Remarks
Mechanized column (tanks and APC on road).	4 lead veh with CBU	2 veh with CBU	1 veh with GP-bombs	1 veh with GP-bombs	CBU used on lead veh initially to stop column.
Mechanized attack (tanks and APC in attack formation).	3 veh with CBU	2 veh with CBU	2 veh with GP-bombs	1 veh with GP-bombs	Type of veh determined by acft direction of atk; in troop simulation exercises tanks attacked by CBU and Bombs, APC CBU and 20-mm API.
Tanks with infantry in defensive position	3 tanks with CBU	1 tank with CBU	1 tank with GP-bombs	1 tank with GP-bombs	Reduce losses by 50 percent if tanks dug in and camouflaged. After initial attack, tank losses are by product of attack on infantry positions.
Self-propelled artillery in column (trucks interspersed).	4 lead veh w th CBU	2 veh with CBU	1 truck with GP-bombs	1 truck with GP-bombs	CBU used initially to stop column.
Self-propelled artillery in firing (battery) position.	3 veh with CBU (Gun disabled).	3 veh with CBU (Gun disabled).	1 veh with GP-bombs	1 veh with GP-bombs	Reduce losses by 50 percent if pieces are dug in and camouflaged.
Towed artillery in column on road	4 trucks and 2 artillery pieces with CBU.	2 trucks and artillery pieces with CBU.	2 trucks with GP-bombs	2 trucks with BP-bombs	Initial atk on lead veh.
Towed artillery in firing position	2 pieces with CBU	1 piece with CBU	1 piece with GP-bombs	1 piece with GP-bombs	Napalm dropped to destroy ammunition at gun positions. Reduce losses by 50 percent if pieces are dug in and camouflaged.
Truck-mounted missile artillery (in column on road).	4 launchers and missiles (if mounted) with CBU.	3 launchers and missiles with CBU.	3 trucks with GP-bombs	3 trucks with GP-bombs	
Truck mounted missile artillery in firing position.	3 launchers with CBU	2 launchers with napalm	1 truck and launcher with GP- bombs.	1 truck and launcher with GP-bombs.	Launcher in open ready to fire, associated veh dispersed and concealed nearby.
Track-mounted missiles in column or road (PERSHING).	4 with CBU	3 with CBU	2 trucks with GP-bombs	2 trucks with GP-bombs	
Track-mounted missile in firing position.	3 with CBU	3 with CBU	3 trucks with GP-bombs	3 trucks with GP-bombs	Launcher in open ready to fire, associated veh dispersed and concealed nearby.
Armored unit in wooded assembly area.	30 percent of veh in area 100 m×300 m with CBU.	15 percent of orig veh destroyed with CBU.	15 percent of orig veh dest W/CBU.	10 percent of orig veh dest W/CBU.	500-lb GP-bombs used on remaining tgts.
Truck convoy (supply or troop)	12 trucks with CBU	4 trucks with CBU	2 trucks with CBU	4 trucks with CBU.	
POL dumps (1000,000 sq yd or less, open storage).	100 percent using CBU, 500-lb GP-bombs, and/or smart bombs.				

See footnotes at end of example H–1.

Example H-1—Continued

Target	1st Pass	2d Pass	3d Pass	4th Pass	Remarks
POL dumps (100,000 sq yd or less, revetted).	50 percent using smart bombs and GP-bombs.				
Ammo dumps (100,000 sq yd or less, open storage).	100 percent using CBU, GP-bombs, and/or smart bombs.				
Ammo dumps (100,000 sq yd or less, revetted).	50 percent using bombs CBU, and/or smart bombs.				
Bridges	Bridge destroyed by 2 aircraft delivery smart bombs. To drop one span requires three flights of our aricraft using 750-pound bombs.				

[1] Vehicles are destroyed or severely damaged.
[2] Losses shown are maximum for daylight and will not exceed the number of vehicles in the target area; for night attack by flare illumination assess 50 percent of daylight losses.
[3] Table based on flight of 2 aircraft with armament as indicated.
Notes. 1. Armor-piercing CBU, such as ROCKEYE II, used on vehicles. GP-bombs; either low-drag or high-drag 500-pound MK-825.
2. If smart bombs, such as Maverick, are used figure a 90 percent kill factor on each target fired upon. The F-4, A-7, or A-Y carries up to six Mavericks, and multiple firings per pass are to be expected.

Table H–25. Antitank Mine Tank Losses

Antitank mine density per meter	3	2	1	0.5	0.2
Tank losses (percentage)	90	80	60	30	10

Table H–26. Minefield Breaching Data

Activity	Average rate	Probable casualties for mines
Breach and mark (tracing tape) a 1-to-1½ meter path through the entire field, marking antitank mines and hand neutralizing all apers mines encountered.	50 meters per hour (flat, open terrain, some tall grass).	1 per 100 meters of depth
Breach and mark (tracing tape) two 1-to1½ meter paths, 7 meters on either side of and parallel to center line, marking antitank mines and hand neutralizing apers mines.	50 meters per hour (terrain as above).	1 per 50 meters of depth.
Breach and mark a 7-meter vehicular lane, marking antitank mines and hand neutralizing apers mines.	50 meters per hour (terrain as above).	2 per 50 meters of depth.
Uncover and remove by rope all antitank and apers mines previously marked by above parties.	5 min per mine.	25 percent of rates shown for above for breaching and marking (caused mainly by undetected and unmarked small nonmetallic mines).

Notes. 1. For integrated HE-chemical minefield, decrease rates above by 50 percent and increase probable casualty estimates by 50 percent.
2. For terrain conditions other than those shown, minefield breaching rates are increased or decreased based on the best judgment of the umpire.
3. Mine clearing parties are organized and equipped as described in FM 20–32.

To assess realistic casualties and damage resulting from the employment of nuclear weapons, it is necessary to establish general exposure criteria. Controllers and umpires use their professional judgment and modify the data cited in the following table if the players institute special measures to minimize troop vulnerability.

Table H–27. Exposure Criteria

		Percentage exposed	*Percentage protected*
Approach march—	Dismounted troops	90	10
	Motorized (truck) units	75	[1] 25
	Armored carriers	5	95
Assembly areas—	(All type units)		
	Daylight	35	65
	Darkness	10	90
Defensive position actively engaged—			
	Infantry	35	65
	Reinforcing armor	15	85
Defensive position not actively engaged—			
	Daylight	15	85
	Darkness	10	90
Artillery in firing positions—			
	Daylight:		
	Towed artillery hasty position	50	50
	Armored artillery or towed in organic position	30	70
	Darkness:		
	Towed artillery hasty position	25	75
	Armored artillery or towed in organic position	15	85
Attack—	Dismounted infantry	85	15
	Infantry in armored carriers	15	85
	Tanks	5	95
Command posts—	Regiment, brigade, battalion, company	20 percent exposed	
Command posts—	Division, corps	20 percent shielded[1]	
Civilians—	Use condition above which most closely approximates the civilian situation	60 percent protected	

[1] Shielded from thermal effects of nuclear weapons only.

Table H–28. Capability of Artillery Unit to Continue Mission After Nuclear Attack

Percentage casualties	*Percentage tube effectiveness*
0–10	100
10–20	90
20–30	80
30–40	70
40–50	60
50–60	50
Over 60	Unit ineffective

Table H–29. Tree Blowdown Clearance Capability

Equipment [1]	*Time required per piece of clearing equipment (hours)* [2]	*Capability*
Crawler tractor D7 or TD18	14	Clearing a path 6 meters wide per kilometer through previously uncleared forest, type II, III, and IVA trees presenting moderate to severe obstacles.
Crawler tractor D8 or TD24	11	
Combat engineer vehicle (not buttoned up)	16	
Combat engineer vehicle (buttoned up)	27	

[1] In the field, availability of specific equipment applies.
[2] With clearing crews and helicopters available, as needed.

Table H–30. Time for Rubble Clearance for Passage of Vehicles

Clearance for	Time for clearance equipment used (hours) [1]			
	Crawler tractor D7 or TD18	Crawler tractor D8 or TD24	Combat engineer vehicle (not buttoned up)	Combat engineer vehicle (buttoned up)
Wheeled vehicles	15	15	16	18
Tracked vehicles	1½	1½	1½	2

[1] For clearing a path 6 meters wide through 1 kilometer of rubble.

Table H–31 Nuclear Crater Reduction

Yield, KT (surface burst, saturated soil on low ground (water slowly fills crater))	*Passage for tracked vehicles (days) using one engineer combat company*	*Passage for wheeled vehicles (days) using one engineer combat company*
KT	*Days*	*Days*
2	2	5
10	3	16
20	7	24
100	10	32
200	15	48

INSTRUCTIONS

Instructions for use of tables H–32 through H–36.

1. Sighting data obtained on nuclear bursts are used by players to determine the yield of enemy weapons and to assist in the prediction of fallout. Controllers or umpires provide the data that players would be able to observe whether they (the players) had been able to make the actual sightings. Player units within 30 kilometers of the burst, except those within the immediate effects radii, may be furnished sighting data. Players furnished sighting data use them to complete the observer's initial report, giving basic data (NBC 1) (fig I–12).

2. The tables are constructed identically with two elements necessary for entry: row number (horizontal entry by yield) and distance of the player unit from ground zero (vertical entry by ring letter).

3. To obtain the ring letter for vertical entry, the controller (umpire) uses the coordinates of ground zero and the coordinates of the center of mass of the player unit that could observe the burst. Using the coordinates, the umpire determines the ring letter column of entry by measuring the distance of the player unit from ground zero in kilometers. To assist in plotting data, the controller (umpire) may use a burst sighting template to determine distance and azimuth to ground zero. The template consists of six concentric circles 5 kilometers apart representing the ring letter distances of the tables. It also shows radial lines in degrees printed to read as "back-azimuths." The use of the template in conjunction with the tables allows a rapid determination of sighting data without making any mathematical computations.

4. The row number for horizontal entry is based on the planned yield of the weapon fired. The tables are based on a contact surface burst for the yield concerned. If the weapon detonates in the air but below the fallout-safe height of burst, use the row of entry for a weapon of the next smaller yield. Height of burst adjustment factors are obtained from FM 3–22.

Table H–32. Flash-Bang Time Table (Seconds from Flash to Sound Arrival) (Distance from GZ)

Row number	Ring letter						
	(Yield KT)	A (5 km)	B (10 km)	C (15 km)	D (20 km)	E (25 km)	F (30 km)
1	(1)	14	29	43	57	71	86
2	(2)	14	29	43	57	71	86
3	(5)	14	29	43	57	71	86
4	(10)	14	29	43	57	71	86
5	(20)	14	29	43	57	71	86
6	(50)	14	29	43	57	71	86
7	(100)	14	29	43	57	71	86
8	(200)	14	29	43	57	71	86
9	(500)	14	29	43	57	71	86
10	(1,000)	14	29	43	57	71	86
11	(2,000)	14	29	43	57	71	86
12	(5,000)	14	29	43	57	71	86

Table H–33. Nuclear Burst Cloud Width Table in Mils (H+5 Minutes)

Row number	Ring Letter						
	(Yield KT)	A (5 km)	B (10 km)	C (15 km)	D (20 km)	E (25 km)	F (30 km)
1	(1)	275	135	92	70	56	47
2	(2)	360	180	120	91	73	0
3	(5)	500	250	170	130	105	86
4	(10)	(a)	325	225	165	135	110
5	(20)	(a)	415	385	215	170	141
6	(50)	(a)	(a)	400	300	240	200
7	(100)	(a)	(a)	510	395	310	255
8	(200)	(a)	(a)	(a)	490	410	335
9	(500)	(a)	(a)	(a)	(a)	520	460
10	(1,000)	(a)	(a)	(a)	(a)	(a)	(a)

[a] At this distance a meaningful direction reading cannot be obtained.

Table H–34. Cloud Bottom Elevation Table (Mils) (10 Minutes After Burst)

Row number	Ring Letter						
	(Yield KT)	A (5 km)	B (10 km)	C (15 km)	D (20 km)	E (25 km)	F (30 km)
1	(1)	360	200	135	100	81	68
2	(2)	435	240	155	115	92	78
3	(5)	620	351	246	180	150	122
4	(10)	800	475	340	250	202	170
5	(20)	(a)	615	450	348	290	240
6	(50)	(a)	700	510	400	330	275
7	(100)	(a)	760	560	445	355	310
8	(200)	(a)	(a)	600	485	400	340
9	(500)	(a)	(a)	690	540	450	380
10	(1,000)	(a)	(a)	730	600	500	435

[a] At this distance a meaningful direction reading cannot be obtained.

Table H–35. Cloud Top Elevation Table (Mils) (10 Minutes After Burst)

Row number	Ring Letter						
	(Yield KT)	A (5 km)	B (10 km)	C (15 km)	D (20 km)	E (25 km)	F (30 km)
1	(1)	620	355	250	187	152	126
2	(2)	710	420	290	220	177	147
3	(5)	(a)	560	400	310	250	210
4	(10)	(a)	695	505	395	320	260
5	(20)	(a)	(a)	610	500	405	350
6	(50)	(a)	(a)	705	565	470	400
7	(100)	(a)	(a)	780	610	520	450
8	(200)	(a)	(a)	(a)	690	585	505
9	(500)	(a)	(a)	(a)	760	650	570
10	(1,000)	(a)	(a)	(a)	(a)	710	615

[a] At this distance a meaningful direction reading cannot be obtained.

Table H–36. Casualty Effects of Radiation Doses

Total dose (rad)	1. Early effect of total dose received in percentage of casualties to be assessed		2. Time to begin assessing casualties in hours after dose was received
	A. 1 day	B. 1 week	
Less than 50	0	0	—
100	5	0	8
150	15	5	7
200	20	15	7
300	50	30	6
450	90	90	4–5
650	100	100	2–3
1,000	100	100	Less than 1

EXPLANATION (table H–36)

1. This table gives the percentage of casualties to be assessed and the time to begin assessment. Casualties will exhibit early effects from total dosages received. Evaluation of those who become sick is a command prerogative based on the situation. Those becoming sick will become ineffective in 24 to 36 hours and will remain ineffective for varying periods of time.
2. Controllers (umpires) calculate total dose received by players and length of time it took the players to accumulate the dose. The table is entered horizontally by the total dose and vertically by length of time (either column 1A or 1B) The percentage of casualties to be assessed is read directly and the time delay in assessment is then read from column 2.

Table H–37. Dose Rates at Specified Hours

Time from detonation (hour)	Overall dose rate decay factors T	Contour 3,000 rad/hr	Contour 1,000 rad/hr	Contour 300 rad/hr	Contour 100 rad/hr	Contour 30 rad/hr	Contour 10 rad/hr
H+1	1.000	3,000	1,000	300	100	30	1
H+2	0.436	1,308	436	131	44	13	0
H+3	0.268	804	268	80	27	8	0
H+4	0.190	570	190	57	19	6	0
H+5	0.145	435	145	44	15	4	0
H+6	0.116	348	116	35	12	4	0
H+7	0.096	288	96	29	10	3	0
H+8	0.083	249	83	25	8	3	0
H+9	0.072	216	72	22	7	2	0
H+10	0.063	189	63	19	6	2	0
H+11	0.056	168	56	17	6	2	0
H+12	0.051	153	51	15	5	2	0
H+13	0.046	138	46	14	5	1	0
H+14	0.042	126	42	13	4	1	0
H+15	0.039	117	39	12	4	1	0
H+16	0.036	108	36	11	4	1	0
H+17	0.033	99	33	10	3	1	0
H+18	0.031	93	31	9	3	1	0
H+19	0.029	87	29	9	3	1	0
H+20	0.027	81	27	8	3	1	0

Table H–37. Dose Rates at Specified Hours—Continued

Time from detonation (hour)	Overall dose rate decay factors T	Contour 3,000 rad/hr	Contour 1,000 rad/hr	Contour 300 rad/hr	Contour 100 rad/hr	Contour 30 rad/hr	Contour 10 rad/hr
H+21	0.026	78	26	8	3	1	0
H+22	0.025	75	25	8	3	1	0
H+23	0.023	69	23	7	2	1	0
1 day	0.022	66	22	7	2	1	0
2 days	0.0097	30	10	3	1	0	0
3 days	0.0059	18	6	2	1	0	0
4 days	0.0042	12	4	1	0	0	0
5 days	0.0032	9	3	1	0	0	0
6 days	0.0026	9	3	1	0	0	0
1 week	0.0022	6	2	1	0	0	0
1 month	0.0004	1	0	0	0	0	0

EXPLANATION (table H–37)

1. This table provides dose rates (survey meter readings) in the open that players would obtain for residual radiation at specified hours after a surface burst. Horizontal entry into the table is by hour after the burst. Vertical entry is by dose rate contour reference to H+1 hours. A special column, overall dose rate decay factors, is used to permit the computation of dose rates at specified hours for radiation dose rates obtained by interpolation between contours on the fallout pattern. Direct interpolation may also be used between vertical columns.

2. Example of direct reading. The player unit is monitoring fallout at a point nearest to the 100 rad/hr contour line. The time is 4 hours after the burst. The umpire (controller) determines the survey meter reading in the open that the player unit could observe. The umpire consults the fallout plot to determine the dose rate at H+1 hour. If the point falls on the 100 rad/hr contour and the time is H+4 hour, the umpire reads across the H+4 hour line to the 100 rad/hr column. The table indicates that at H+4 hours the survey reading should be 19 rad/hr.

3. Example of interpolated and corrected reading. The player unit is making a radiological survey. The point player selected to make a reading is between the 300 and 100 rad/hr contour line of the fallout plot. The time is H+5 hours.

Step 1. From the fallout plot the dose rate of H+1 hour for the point where player takes a reading is estimated to be 200 rad/hr.

Step 2. The umpire multiplies 200 rad/hr by the overall dose rate decay factor. In this case the factor for H+5 hours is .15. Then 200×.15=30 rad/hr. The survey meter reading is 30 rad/hr.

Table H–38. Total Dose Between Specified Time Periods (Rad)

Time of stay (from—to) (hour)	MF	Hour H+1 dose rate contours (rad/hr)					
		3,000	1,000	300	100	30	10
H+1—H+2	0.64	1,920	640	192	64	19	6
H+2—H+3	0.34	1,020	340	102	34	10	3
H+3—H+4	0.23	690	230	69	23	7	2
H+4—H+5	0.17	510	170	51	17	5	2
H+5—H+6	0.145	435	145	44	15	4	2
H+6—H+7	0.110	330	110	33	11	3	1
H+7—H+8	0.092	276	92	28	9	3	1
H+8—H+9	0.080	240	80	24	8	2	1
H+9—H+10	0.069	207	69	21	7	2	1
H+10—H+11	0.062	186	62	19	6	2	1
H+11—H+12	0.055	165	55	17	6	2	1
H+12—H+13	0.050	150	50	15	5	2	1
H+13—H+14	0.046	138	46	14	5	1	1
H+14—H+15	0.042	126	42	13	4	1	0
H+15—H+16	0.039	117	39	12	4	1	0
H+16—H+17	0.036	108	36	11	4	1	0
H+17—H+18	0.034	102	34	10	3	1	0
H+18—H+19	0.032	96	32	10	3	1	0
H+19—H+20	0.030	90	30	9	3	1	0
H+20—H+21	0.028	84	28	8	3	1	0
H+21—H+22	0.027	81	27	8	3	1	0
H+22—H+23	0.026	78	26	8	3	1	0
H+23—H+24	0.025	75	25	8	3	1	0

EXPLANATION (table H–38)

1. This table indicates the total dose received in the open between specified time periods of 1-hour duration by personnel occupying an area contaminated by residual radiation. The table is not designed for interpolation. Otherwise it is identical in construction with table H–37.

2. Example of a single hour dose. A player unit is in an area shown on the fallout plot as 1,000 rad/hr at H+1 hour, and the unit

stays in the area from H+6 to H+7 hour. Reading across the table on the H+6 to H+7 hour line to the 1,000 rad/hr column, the column shows that the unit would receive a total dose of 110 rad during the hour.

3. Example of a dose received during a stay time longer than 1 hour. If the player unit had remained in the same fallout area from H+6 to H+9 hours, the total dose would be obtained as follows:

Step 1. Read the dose received for a time of stay from H+6 to H+7 hours for an H+1-hour dose rate of 1,000 rad/hr, or 110 rad.

Step 2. Read the dose received for a time of stay from H+7 to H+8 hours, or 92 rad.

Step 3. Read the dose received for a time of stay from H+8 to H+9 hours, or 80 rad.

Step 4. Sum up the three hourly doses (100+92+80) to obtain a total dose for a 3-hour stay time, or 282 rad.

Table H–39. Transmission Correlation Factors (TF) for Residual Radiation

Shielding	*TF*
Armored personnel carriers (APC's)	0.3
Lower floor of multistory building	0.1
Foxholes	0.1
Shelters (1 meter earth cover)	.0002
Tanks	
Light	0.1
Medium	0.04
Trucks	
¼-ton	0.8
¾-ton	0.6
2½-ton	0.6
4 to 7-ton	0.5

EXPLANATION (table H–39)

1. Factors are listed that allow the computation of dose rates within various types of shielding. The factors are multiplied by outside dose rates to obtain dose rates within the shielding. These are used in conjunction with the dose rate and total dose tables.

2. As an example, a player unit wants to know the monitoring reading taken inside a foxhole. The umpire (or controller) has determined that the outside dose rate reading at the foxhole is 50 rad/hr. The transmission factor for foxholes is 0.1. The umpire then multiplies 50 rad/hr ×0.1=5 rad/hr. The reading inside the foxhole is 5 rad/hr.

Table H–40. Induced Radiation

1. Time after detonation (hour)	2. Fraction of dose rate at 1 hour	1. Time after detonation (hour)	2. Fraction of dose rate at 1 hour
1	1.00	25	0.19
2	0.90	26	0.17
3	0.77	27	0.17
4	0.68	28	0.16
5	0.62	29	0.15
6	0.56	30	0.14
7	0.50	31	0.14
8	0.46	32	0.13
9	0.43	33	0.12
10	0.41	34	0.12
11	0.39	35	0.11
12	0.37	36	0.11
13	0.35	37	0.11
14	0.33	38	0.10
15	0.31	39	0.10
16	0.29	40	0.10
17	0.27	41	Less than 0.10
18	0.26	42	Do.
19	0.25	43	Do.
20	0.22	44	Do.
21	0.22	45	Do.
22	0.21	46	Do.
23	0.20	47	Do.
24	0.19	48	Do.

EXPLANATION (table H–40)

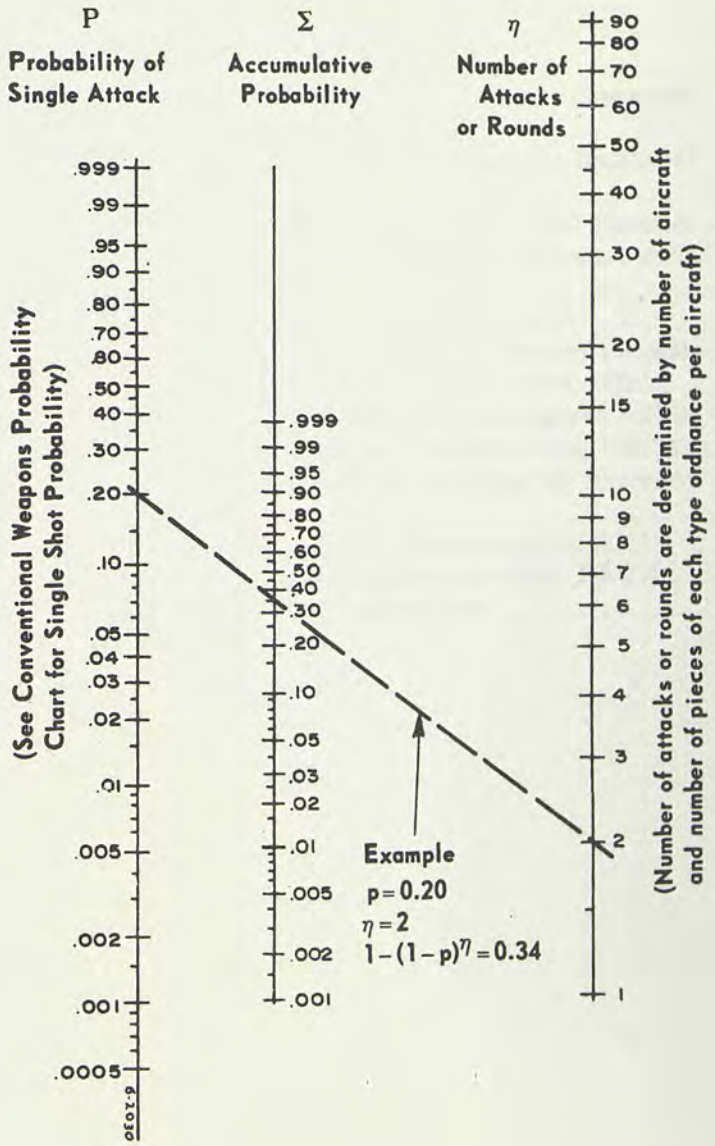
1. This table is used when player units pass through zones contaminated by induced radiation. Column 1 shows times from H+1 to H+48 hours after detonation, and column 2 shows the corresponding fraction to be applied to the H+1-hour dose rates. In using this table, the umpire or controller first obtains the dose rate at ground zero. Next he obtains the radius of 2 rad/hr induced contamination from the nuclear play calculator. He then determines the H+1-hour dose rate for the point, area, or route applicable to the player unit.
2. For example, if the H+1-hour dose rate is 100 rad/hr and the time now is H+8 hours, the umpire or controller multiplies 100 by the factor for H+8 hours.

$$100 \times 0.69 = 69 \text{ rad/hr}$$

The umpire using this table furnishes radiological monitoring and survey data for induced radiation to the player unit and assesses casualties, when indicated, in the same manner as for residual radiation.

Table H–41. Accumulative Probability Chart.

Chart for obtaining the probability of success for n attacks when probability of success for a single attack, p, is known.



APPENDIX I

CONTROL AND UMPIRE FORMS

REQUEST FOR CHEMICAL STRIKE

FROM: _____ DTG: _____

TO: _____ PRECEDENCE: _____

INFO COPIES TO: _____

Item

a. Designation of mission: _____

b. Headquarters requesting: _____

c. Delivery unit (air or ground): _____

d. Type of target: _____

e. Size of target: _____

f. Attitude (activity) of target: _____

g. Protection of target (from chemical attack): _____

h. Agent desired: _____

i. Delivery system: _____

j. Grid location for center of impact: _____

k. Time on target: _____

l. Code designation: _____

m. Effects desired: _____

n. Remarks: _____

_____

_____
Originator's Name, Rank

_____
Time Transmitted

_____
Time Received

Figure I–1. Format 1—Request for toxic chemical air or ground strike.

CHEMICAL ATTACK ALERT NOTIFICATION

FROM:_____ DTG:_____

TO:_____ PRECEDENCE:_____

Item a. Designation of mission:_____

b. Code designation:_____

c. Delivery means:_____

d. Agent:_____

e. Type of attack (casualty prod, contamination or harassment):_____

f. Aiming point(s), (Military grid of center of impact):

_____

_____

_____

g. Time on target:_____

h. Duration of contamination (if applicable):_____

i. Time required to decontaminate (if applicable):

1. Terrain: _____
2. Materiel: _____
3. Equipment: _____

j. Munitions, area coverage, and weapon effects (if other than that shown in weapons effects tables).

_____

_____

_____

_____

ORIGINATOR:_____

TIME TRANSMITTED:_____

Figure I-2. Format 2—Toxic chemical attack alert notification.

Chemical Attack Loss Report

FROM:_____ DTG:_____

TO:_____ PRECEDENCE:_____

Item a. Designation of mission:_____

b. Time on target:_____

c. Agent:_____

d. Delivery means:_____

e. Unit(s) under attack:_____

f. Activity of troops at time of attack:_____

g. CBR discipline of unit:_____

h. Personnel losses:_____

(1) Deaths:_____

(2) Incapacitation:_____

NAME OF UMPIRE:_____

TIME TRANSMITTED:_____

Figure I-3. Format 3—Toxic chemical attack loss report for umpire use.

FROM:_____ DTG:_____

TO:_____ PRECEDENCE:_____

INFO COPIES TO:_____

a. Mission of unit.

b. Unit tactical situation
   (1) Locations of units in contact.
   (2) Locations of organic units, reserves, command posts, heliports, boundaries, etc.
   (3) Locations of supporting or attached units.
   (4) Synopsis of situation for period.
   (5) Operational effectiveness of unit (excellent, satisfactory, unsatisfactory). (Give details concerning commander, staff, and units to justify adjectival ratings.)

c. Unit administrative situation.
   (1) Personnel.
      (a) Number of assessed casualties.
      (b) Number of replacements.
      (c) Total combat effective strength of unit.
      (d) Morale of individuals and unit.
      (e) Discipline of individuals and unit.
   (2) Logistics.
      (a) Class III and V expenditures and losses.
      (b) Critical shortages.
      (c) Supply consciousness of individuals and unit.
      (d) Maintenance of equipment.
      (e) Use of transportation.
      (f) Synopsis of logistic situation.
   (3) Administrative effectiveness of unit (excellent, satisfactory, unsatisfactory). (Give details concerning command and staff knowledge and influence and unit implementation.)

d. Summary of plans for next period.

ORIGINATOR'S NAME AND RANK_____

TIME TRANSMITTED_____

TIME RECEIVED_____

Figure I–4. Format 4—Umpire daily report.

CERTIFICATE OF OBSTACLE

(To be completed by unit officer when umpire is not present)

1. TYPE AND NATURE OF OBSTACLE (Example: Bridge demolition, bridge damaged by bombs, road crater, prepositioned weapons.)

2. METHOD USED (Brief description of work done. Example: ADM placed at center of abutment; for conventional explosives, attach a sketch, indicate location, type and amount of explosives in each charge and include the wiring diagram.)

3. MATERIAL OR EXPLOSIVE USED (Example: ADM ___ KT; 6 charges, TNT, 200 pounds each with electric or nonelectric blasting caps.)

4. STARTED (Date and hour)

   COMPLETED (Date and hour) or DATE AND HOUR BOMBED

5. COMMENT:

(Front of Certificate)

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 the time of execution, this may be completed by the senior officer of the executing party. An umpire will verify all such work executed by his unit as soon as practicable.)

---------- ----------

UNIT OFFICER UMPIRE

OBSTACLE REDUCED AT _____ HR

DATE _____

BY _____

(Unit) (Signature of umpire) (Rank)

(Back of Certificate)

Figure I-5. Format 5—Certificate of obstacle.

INSTRUCTIONS--UMPIRES

ACTIONS: Require operations to be actual whenever possible. Fill in data on reverse side and give to guard at obstacle. Check that material to execute or reduce simulated obstacles is at site when operations are carried out. Visit all detachments sent on obstacle work before completing the certificate.

SPECIAL NOTES

Troops may go around an obstacle, provided the movement is actual.

The umpire with a delayed unit will not modify the provisions of the certificate of obstacle under any circumstances.

When a defended obstacle is attacked by opposing forces, the result of the attack is decided as in any similar action. The clearing of an obstacle by the attacker can commence only after successful completion of the attack is ruled by the umpire.

Figure I-5—Continued.

Diagnosis

PART A No _____

SIMULATED CASUALTY Time _____

Type	Check One
Litter	
Walking	
Dead	

Evacuate Casualty, In Turn, To Stations Checked ( )

	Check
1. Bn Aid Sta	
2. Division Clr Sta	
3. Army Hosp	
4. Div GRREG Coll Pt	

Disease _____

PART B No _____

Name Time _____

Service No

Organization Casualty Evacuated to (Insert Highest Number from 1 to 4 As Applicable. See Part A of Tag.) _____

Time)
Date) Tagged

4-1313

FRONT

LEGEND

CW –Contused Wound
LW –Lacerated Wound
Pen W–Penetrating Wound
MW –Multiple Wounds
Perf W–Perforating Wound
FS –Fracture Simple
FC –Fracture Compound
FCC –Fracture Compound Comminuted

INSTRUCTIONS

1. This tag will accompany simulated casualty to medical installation ( ) checked in "Casualty Evacuation" on reverse side.
2. This tag is *not* intended to replace FMC (DD Form 1380).

INSTRUCTIONS

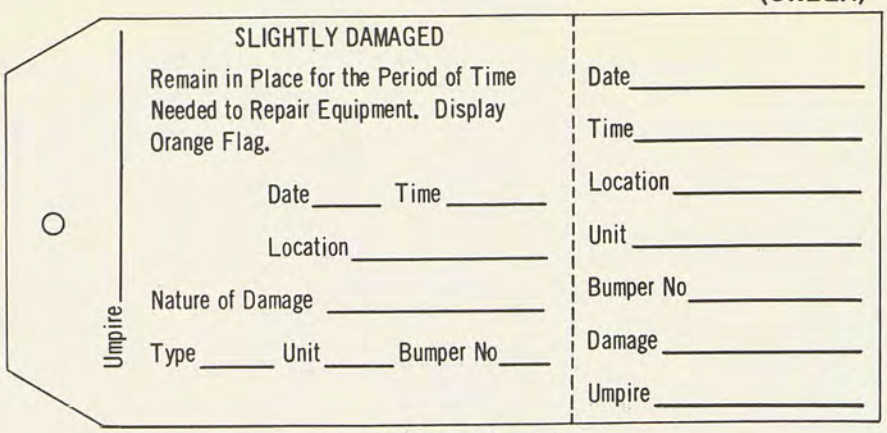
1. Remove this part of tag after filling out reverse side and tagging casualty.
2. Forward this part to chief umpire daily with routine reports.

4-1313

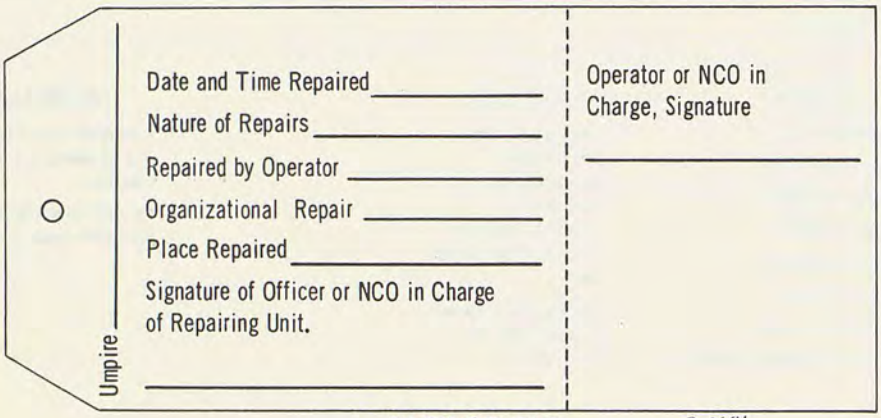
BACK

Figure I–6. Format 6—Casualty tag.

(GREEN)



FRONT OF TAG

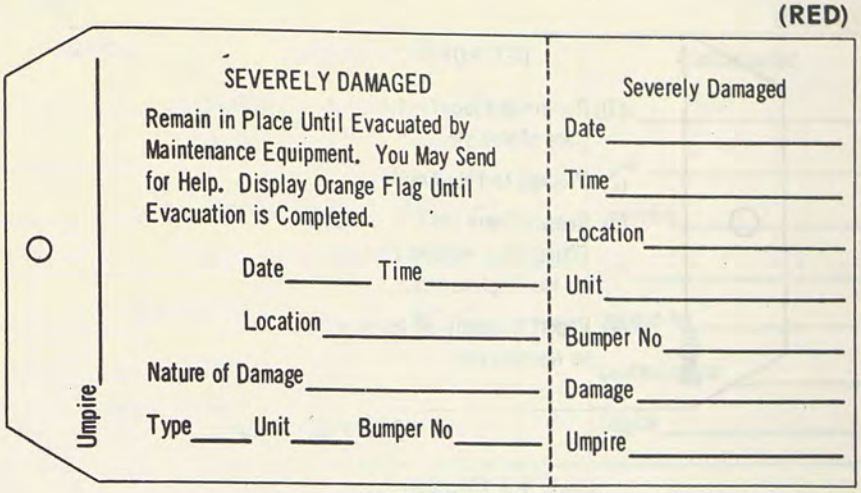


BACK OF TAG

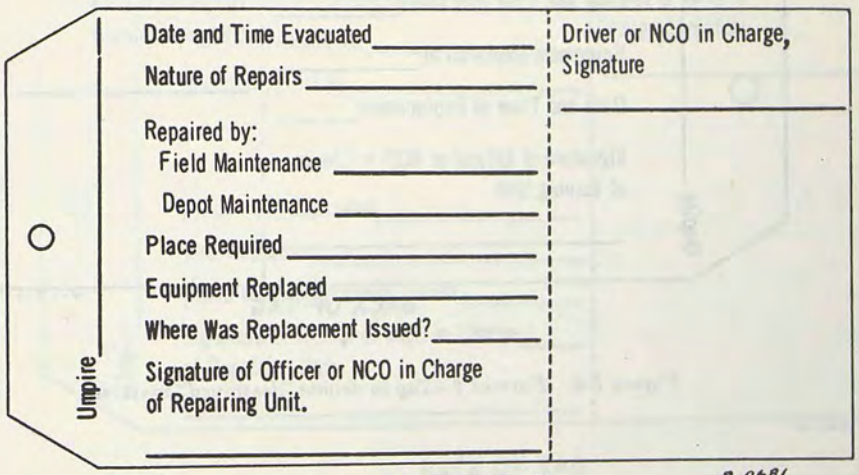
8-0631

Figure I–7. Format 7—Tag to denote "slightly damaged" materiel.

(RED)



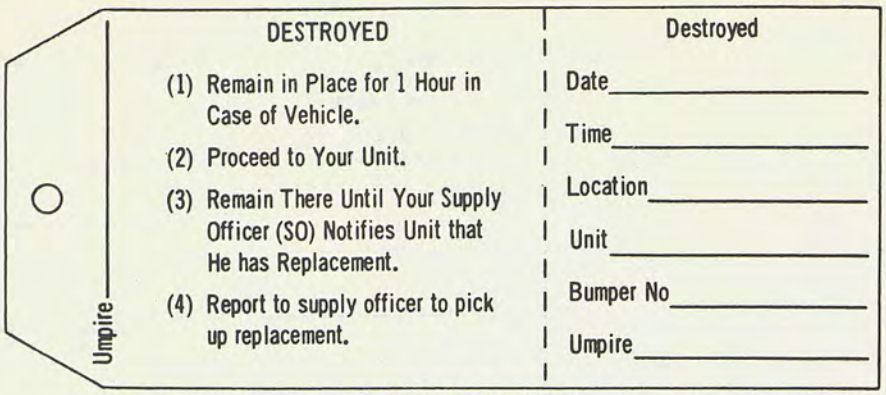
FRONT OF TAG



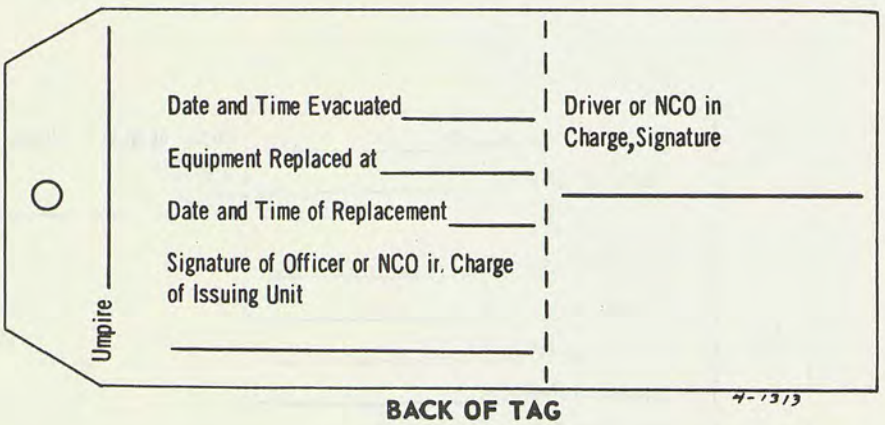
BACK OF TAG

Figure I–8. Format 8—Tag to denote "severely damaged" materiel.

(WHITE)



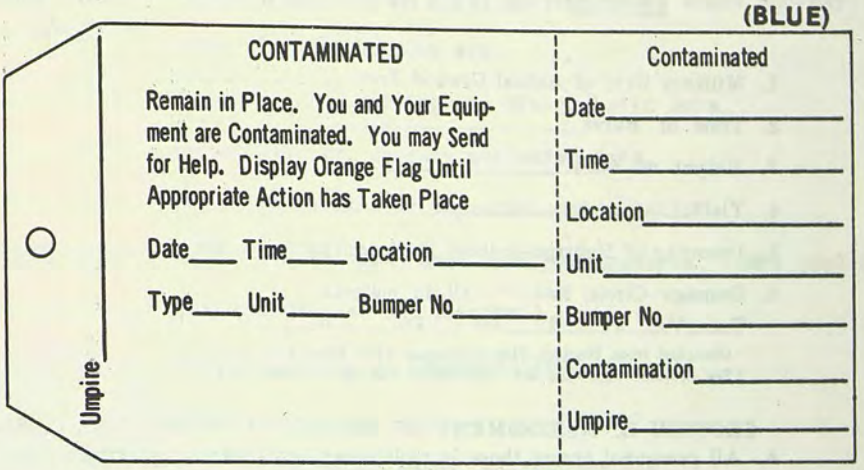
FRONT OF TAG



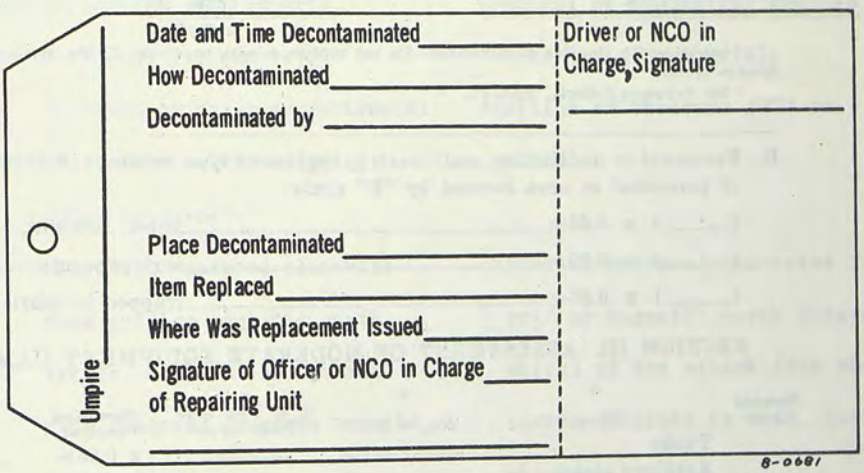
BACK OF TAG

Figure I–9. Format 9—Tag to denote "destroyed" materiel.

(BLUE)



FRONT OF TAG



BACK OF TAG

Figure I–10. Format 10—Tag to denote "contaminated" materiel.

SECTION I. RECORD OF NUCLEAR BURST. (Red) (Blue)
(Strike Out One)

1. Military Grid of Actual Ground Zero[1]_____
2. Time of Burst_____
3. Height of Burst[1]_____
4. Yield_____
5. Intensity of Neutron-Induced Radioactivity at GZ (H+1)_____
6. Damage Circle Radii[1,2] (all in meters).
   T____V____P____X____DP____DX____B____T.B.____I____C____.

[1] Obtained from Nuclear Play Calculator (FM 105-6-1, 2, or 3).
[2] See sections following for significance and use of these radii.

SECTION II. ASSESSMENT OF IMMEDIATE PERSONNEL CASUALTIES.

A. All personnel except those in multi-story, wall-bearing, apartment type buildings.

Exposed (_____) x[3] (_____) x (_____) x 0.85= _____.
Unit strength % Exposed[4] % of unit under the "X" Circle

Protected (_____) x (_____) x (_____) x 0.85= _____.
Unit strength % Protected[4] % of unit under the "P" Circle

Total immed casualties_____

[3] Lower-case x signifies multiplication. Do not confuse it with uppercase X, the symbol for radius of damage circle.
[4] See Exposure Criteria, Table 47.

B. Personnel in multi-story, wall-bearing, apartment type buildings. Estimated number of personnel in area covered by "B" circle:

(_____) x 0.25=_____killed outright.
(_____) x 0.20=_____seriously injured.
(_____) x 0.30=_____trapped in debris.

SECTION III. ASSESSMENT OF MODERATE EQUIPMENT DAMAGE.

Damage Circle	*a Item*	*b No. In Unit*	*c % of Unit Area Under Circle*	*Numerical Constant*	*d Number Damaged*
	Tanks	_____x	_____	x 0.85=	_____
	Artillery pieces	_____x	_____	x 0.85=	_____
	Small arms	_____x	_____	x 0.85=	_____
"T"	Machineguns	_____x	_____	x 0.85=	_____
	Recoilless rifles	_____x	_____	x 0.85=	_____
	Supply dumps (severe)	_____x	_____	x 0.85=	_____
	Vehicles	_____x	_____	x 0.85=	_____
	Missiles	_____x	_____	x 0.85=	_____
"V"	Veh Mtd Rkt Launchers	_____x	_____	x 0.85=	_____
	Sig & electronic equipment (severe)	_____x	_____	x 0.85=	_____
	Radars (severe)	_____x	_____	x 0.85=	_____

SECTION IV. ASSESSMENT OF CONTINGENT EFFECTS.

Tree blowdown, fires _____

Induced radiation _____

Figure I-11. Format 11—Nuclear burst worksheet.

1. The standardized formats (STANAG 2103) for reporting enemy nuclear, biological, and chemical (NBC) attacks are--

a. NBC 1. Observers' initial report, giving basic data.

b. NBC 2. Report used for passing evaluated data.

c. NBC 3. Immediate warning of expected contamination.

d. NBC 4. Report of radiation dose-rate measurements. (Not applicable for reporting biological or chemical attacks.)

e. NBC 5. Report of areas of contamination.

2. NBC reports use--

a. The letter items as shown below, as appropriate.

b. ZULU time only for these reports for NATO forces operating in a NATO area.

Letter	Meaning	Meaning
	Nuclear reports	Chemical or biological reports
A.	Strike serial number(s).	Strike serial number(s).
B.	Position of observer (universal transverse mercator (grid) (UTM) or place).	Position of observer (UTM or place).
C.	Direction measured clockwise from grid or magnetic north (state which) of the attack from observer (degrees or mils, state which).	Direction measured clockwise from grid or magnetic north (state which) of the attack from observer (degrees or mils, state which).
D.	Date/time of detonation (local or ZULU time, state which). If local time is used, give the letter of the local time zone, if known. See FM 101-10-1 for time-zone charts. If the local time is used and the time-zone letter is not known, the word "local" will be transmitted with this item.	Date/time attack started (local or ZULU time, state which). If local time is used, give the letter of the local time zone, if known. See FM 101-10-1 for time-zone charts. If the local time is used and the time-zone letter is not known, the word "local" will be transmitted with this item.

Figure I-12. Format 12—Standardized NBC report formats.

Letter	Meaning Nuclear reports	Meaning Chemical or biological reports
E.	Illumination time. (Report only when other data are not available. Report in seconds.)	Time attack ended (local or ZULU, state which).
F.	Location of attack (UTM or place) (actual or estimated, state which).	Area attacked (actual or estimated, state which).
G.	Means of delivery, if known.	Means of delivery, if known.
H.	Type of burst--air, surface, or unknown (state which)--including height, if known.	Type of agent, if known (chemical or biological). Type of attack (chemical or biological).
I.	(This letter item is not used for nuclear report.)	Type and number of munitions or aircraft (state which).
J.	Flash-to-bang time (seconds).	
K.	Crater present or absent and diameter, if known (meters).	
L.	Nuclear burst angular cloud width measured at 5 minutes after the detonation (degrees) or mils, state which). (Do not report if data are obtained more than 5 minutes after the detonation.)	
M.	Stabilized cloud-top angle and/or cloud-bottom angle (state which) or cloud-top height and/or cloud-bottom height (state which) measured at H+10 minutes (degrees, mils, meters, or feet--state which).	

Figure I-12—Continued.

Letter	Meaning Nuclear reports	Meaning Chemical or biological reports
N.	Estimated yield (KT).	
O.	Reference date/time for estimated contours when not H+1 hour.	
P.	For radar purposes only:	Area of expected contamination (UTM).
P.A.	UTM coordinates of points to outline external contours of radioactive cloud.	
P.B.	Effective wind direction (direction from which the wind is blowing) in degrees or mils (state which).	
Q.	Location of reading (UTM).	
R.	Dose rate (rad/hr). The words "initial," "increasing," "peak," or "decreasing" may be added.	
S.	Date/time of reading (local or ZULU time, state which).	Date/time contamination initially detected (local or ZULU time, state which).
T.	H+1 date/time (local or ZULU time, state which).	Date/time of latest reconnaissance of contamination in the area (local or ZULU time, state which).
U.	1,000 rad/hr contour line coordinates (UTM) (red).	
V.	300 rad/hr contour line coordinates (UTM) (green).	

Figure I-12—Continued.

Letter	Meaning Nuclear reports	Meaning Chemical or biological reports
W.	100 rad/hr contour line coordinates (UTM) (blue).	
X.	30 rad/hr contour line coordinates (UTM) (black).	Located area of contamination (UTM) (yellow).
Y.	Direction measured clockwise from grid north to the left and then to the right radial lines (degrees or mils, state which--4 digits each).	
Z.	Effective windspeed (kmph), 3 digits; downwind distance of zone I (km), 3 digits; cloud radius (km), 2 digits. (When effective windspeed is less than 8 kmph, the NBC 3 report will contain only three significant digits, that is, the radial distance of zone I.)	

Figure I-12—Continued.

Example I-1. Format 13—Observer's Initial Report, NBC 1

1. *PURPOSE.* Report used by observing unit, giving initial data and subsequent followup date of an enemy nuclear, biological, or chemical attack.

2. *NOTES.*

a. NBC 1 report follows the same format as the SHELLREPS, MORTREPS, and BOMBREPS, which are included in STANAG 2008 dealing with conventional enemy attacks.

b. The item "Type of Report," and letter items D, H, and either B and C or F must always be reported; other items are optional.

c. Users of NBC 1 reports are not confined solely to the use of the letter items shown in the examples; other letter items may be added at the users' discretion.

Example I–1—Continued

LETTER	MEANING	EXAMPLE NUCLEAR	EXAMPLE CHEMICAL	EXAMPLE BIOLOGICAL
	Precedence[1]:			
	Date/time (local or ZULU time, state which):			
	Security Classification:			
	From:			
	To:			
	Type of Report:			
		NBC 1 (NUCLEAR)	NBC 1 (CHEMICAL)	NBC 1 (BIOLOGICAL)
A.	Strike serial number (as assigned by reporting unit).	A. 04	A. 02	
B.	Position of observer (UTM or place).	B. LB 196400	B. MARVILLE	
C.	Direction measured clockwise from grid or magnetic north (state which) of the attack from observer (degrees or mils, state which).	C. Grid 060 degrees		
D.	Date/time of detonation or date/time attack started (local or ZULU time, state which).	D. 201405 ZULU	D. 201405 (local)	D. 201405 HOTEL
E.	Illumination time (seconds) or time attack ended (local or ZULU, state which).	----------	E. 201412 (local)	
F.	Location of attack (UTM or place) or area attacked (actual or estimated, state which).	----------	F. LB 205305 estimated	F. LB 2030 actual
G.	Means of delivery, if known.	----------	G. Artillery	G. Aircraft, 100 meters
H.	Type of burst—air, surface, or unknown (state which)—including height, if known; type of agent, if known (chemical or biological); or type of attack (chemical or biological).	H. Surface	H. Airburst, nerve	H. Aerial spray
I.	Type and number of munitions or aircraft (state which).			
J.	Flash-to-bang time (seconds).	J. 60		
K.	Crater present or absent and diameter if known (meters).			
L.	Nuclear burst angular cloud width measured at 5 minutes after the detonation (degrees or mils, state which). (Do not report if data are obtained more than 5 minutes after the detonation.)	L. 280 mils		
M.	Stabilized cloud-top angle and/or cloud bottom angle (state which) or cloud-top height and/or cloud-bottom height (state which) measured at H+10 minutes (degrees, mils, meters, or feet—state which).			

[1] As appropriate or as per unit SOP.

Example I–1—Continued

LETTER	MEANING	EXAMPLE NUCLEAR	EXAMPLE CHEMICAL	EXAMPLE BIOLOGICAL
S. Date/time of reading or date/time contamination initially detected (chemical or biological). State whether local or ZULU time.	----------	S. 201500 (local)		
X. Located area of contamination (UTM). *Note.* When the contaminated area is a complete circle, the first coordinate will be repeated as a last coordinate.	----------	X. LB 208303 LB 208308 LB 203303 LB 203308		

WORKSHEET FOR RADIOLOGICAL FALLOUT

1. Ground Zero _____

2. Effective Windspeed (kmph) _____

3. Effective Wind Direction (grid azimuth in degrees) _____

4. Downwind Distance of Zone I (km) _____

5. Radiological Contamination Diagram Number _____

6. Estimated Yield _____

EXPLANATION

1. To facilitate control of data and to ease transmission problems, use prearranged radiological contamination diagrams. These are prepared before the exercise if "problem" weather and winds aloft are prescribed in advance for the exercise. A series of these diagrams are prepared to accommodate different yields and the differing wind patterns. In selecting an appropriate diagram, it should be remembered that the 100 rad/hr contour should not extend into zone II of the Area Predictor, Radiological Fallout, M5.

2. On occurrence of a surface burst, the controller (umpire) orients the proper radiological contamination diagram with his map. The fallout plot is the basic reference for the use of the other radiological tables. That is, the H+1-hour dose rate at any particular point is determined from this plot. See tables H-37 through H-41.

Figure I–13. Format 14—Worksheet for radiological fallout.

Example I-2. Format 15—Reporting Evaluated Data, NBC 2

1. *PURPOSE.* Report used for passing evaluated data of a nuclear, biological, or chemical attack.
2. *NOTES.*

a. This report is normally based on two or more NBC 1 reports. It includes an attack location and, in the case of a nuclear detonation, an evaluated yield.

b. When adjacent agencies (for example, Navy and Civil Defense organizations) use a different radiological fallout prediction system, this report may be sent to provide basic data for their fallout computations.

c. Letter items A, D, F, H, and N may be repeated as often as necessary to produce a summary report.

d. Users of NBC 2 reports are not confined solely to the user of the letter items shown in the examples; other letter items may be added at the user's discretion.

LETTER	*MEANING*	*EXAMPLE NUCLEAR*	*EXAMPLE CHEMICAL AND BIOLOGICAL*
	Precedence:	_____	_____
	Date/time (local or ZULU time, state which):	_____	_____
	Security Classification:	_____	_____
	From:	_____	_____
	To:	_____	_____
	Type of Report:	NBC 2 (NUCLEAR)	NBC 2 (CHEMICAL)
A.	Strike serial number	A. 24	A. 1
D.	Date/time of detonation or date/time attack started (local or ZULU time, state which).	D. 201405 ZULU	D. 200945 (local)
F.	Location of attack (UTM or place) or area attack (actual or estimated, state which).	F. LB 187486 actual	F. LB 126456 actual
G.	Means of delivery, if known		
H.	Type of burst—air, surface, or unknown (state which)—including height, if known; type of agent, if known (chemical or biological); or type of attack (chemical or biological).	H. Surface	H. Nerve
N.	Estimated yield (KT)	N. 50	

Example I-3. Format 16—Immediate Warning of Expected Contamination, NBC 3

1. *PURPOSE.* Report used for immediate warning of expected chemical, biological, or radiological contamination or hazardous area.
2. *NOTES.*

a. When adjacent agencies (for example, Navy and Civil Defense organizations) use a different radiological fallout prediction system, NBC 2 report may be sent to provide basic data for their fallout computations.

b. Users of NBC 3 reports are not confined solely to the use of the letter items shown in the examples; other letter items may be added at the user's discretion.

c. When the effective windspeed is less than 8 kmph, the NBC 3 nuclear report will consist of the letter items D, F, and Z. Z will contain three digits only, that is, the radial distance of zone I.

Example I–3—Continued

LETTER	MEANING	EXAMPLE NUCLEAR	EXAMPLE CHEMICAL AND BIOLOGICAL
	Precedence:	_____	_____
	Date/time (local or ZULU time, state which):	_____	_____
	Security Classification:	_____	_____
	From:	_____	_____
	To:	_____	_____
	Type of Report:	NBC 3 (NUCLEAR)	NBC 3 (CHEMICAL/ BIOLOGICAL)
D.	Date/time of detonation or date/ time attack started (local or ZULU time, state which).	D. 201405 ZULU	D. 201415 (local)
F.	Location of attack (UTM) or place) or area attacked (actual or estimated, state which).	F. LB 187486 actual	F. LB 206300 actual
P.	Area of expected contamination (UTM).		P. LB 208320 LB 210320 LB 206310 LB 204310
Y.	Direction measured clockwise from grid north to the left and then to the right radial lines (degrees or mils, state which—4 digits each).	Y. 0272–0312 degrees	
Z.	Effective windspeed (kmph), 3 digits; downwind distance of zone I (km), 8 digits; cloud radius (km), 2 digits. (When effective windspeed is less than 8 kmph, use three digits only for radial distance of zone I.)	Z. 019–025–05	

Example I–4. Format 17—Dose Rate Measurements, NBC 4

1. PURPOSE. Report used for radiation dose-rate measurements.
2. NOTES.

a. Letter items Q, R, and S may be repeated as often as necessary.

b. Radiation dose rates are measured in the open, 1 meter above the ground. Other conditions will be specified in the message.

c. Users of NBC 4 reports are not confined solely to the use of the letter items shown in the examples; other letter items may be added at the user's discretion.

LETTER	MEANING	EXAMPLE
	Precedence:	_____
	Date/time (local or ZULU time, state which):	_____
	Security Classification:	_____
	From:	_____
	To:	_____
	Type of Report:	_____
		NBC 4 (NUCLEAR)
Q.	Location of reading (UTM)	Q. LB 123987
R.	Dose rate (rad/hr). (This is NOT normalized to H + 1 hour.) The words "initial," "increasing," "peak," or "decreasing" may be added.	R. 35 INITIAL
S.	Date/time of reading (local or ZULU, state which).	S. 201735 (Local)
		Q. LB 129965
		R. 60
		S. 201650 (local)
		Q. LB 146808
		R. 27 INCREASING
		S. 201710 (local)

Example I–5. Format 18—Areas of Contamination, NBC 5

1. PURPOSE. Report used to locate the area of chemical, biological, or radiological contamination or hazard.

2. NOTES.

a. The report is best sent as a trace or overlay if time and distance permit.

b. When the contamination arises from a single enemy or unidentified nuclear burst, the dose rate always refers to H + 1 hour, and the letter item T is used. When there have been several nuclear detonations at different times or on different days and no single H + 1 hour is possible, the dose rates are reported as at a specified time, using letter item O. Letter items O and T are, therefore, alternative and cannot both be used in the same report.

c. It is not necessary or even desirable to report all four of the contours of different dose rates. Four are given to provide flexibility. (In the example only two are reported.)

d. When a contour closes to form a complete ring, the first coordinate is repeated at the end (see example for 300 rad/hr).

e. Colors for plotting, and when sending the report as a trace, are as follows:

Red for 1,000 rad/hr.
Green for 300 rad/hr.
Blue for 100 rad/hr.
Black for 30 rad/hr.
Yellow for chemical and biological contamination or hazardous area.

f. Contour lines are to be annotated with the dose rates.

g. When requested, decay rates are to be transmitted according to letter item R.

h. Users of NBC 5 are not confined solely to the use of the letter items shown in the examples; other letter items from paragraph E–6 may be added at the user's discretion.

LETTER	*MEANING*	*EXAMPLE NUCLEAR*	*EXAMPLE CHEMICAL AND BIOLOGICAL*
	Precedence:	_____	_____
	Date/time (local or ZULU time, state which):	_____	_____
	Security Classification:	_____	_____
	From:	_____	_____
	To:	_____	_____
	Type of Report:	_____	_____
		NBC 5 (NUCLEAR)	NBC 5 (CHEMICAL/ BIOLOGICAL)
A.	Strike serial number(s) causing contamination (if known).	A. 24	A. 1
O.	Reference date/time for estimated contours (see note *b* above) when not H + 1 hour.		
S.	Date/time contamination initially detected (chemical or biological) (local or ZULU time, state which).		S. 200800 (local)
T.	H + 1 date/time or date/time of latest reconnaissance of contamination in the area (chemical or biological). State whether local or ZULU time.	T. 201505 ZULU	T. 201045 (local)
U.	1,000 rad/hr contour line coordinates.		

Example I–5—Continued

LETTER	*MEANING*	*EXAMPLE NUCLEAR*	*EXAMPLE CHEMICAL AND BIOLOGICAL*
V.	300 rad/hr contour line coordinates.	V. ND 651455 ND 810510 ND 821459 ND 651455	
W.	100 rad/hr contour line coordinates.	W. ND 604718 ND 991686 ND 114420 ND 595007	
X.	30 rad/hr contour line coordinates, or located area of contamination (chemical or biological).		X. CHEMICAL ND 206991 ND 201575 ND 200787 ND 206991

Example I–6. Format 19—CBR Control Plan

1. INTRODUCTION

a. The purpose of CBR evaluators in a field exercise is to provide control of the CBR play and to advise unit controllers on effects of CBR operation. CBR play in any exercise must be logical and represent actions normally expected under the conditions imposed by the general plan. To provide realism, CBR situations are planned to resemble situations that troops could be expected to encounter in the performance of their mission in combat.

b. It is not the intent of the CBR evaluators to replace unit controllers but to supplement and assist them in CBR play. All evaluation and comments of CBR evaluators will be directed to the unit controllers.

2. RESPONSIBILITIES OF THE EXERCISE CHEMICAL OFFICER

a. Exercise general supervision of all CBR play in the exercise in coordination with G3 and the chief controller.

b. Coordinate and supervise the activities of CBR evaluators.

c. Coordinate and supervise the operation of the chemical and radiological element (CBRE) at the exercise headquarters.

3. DUTIES OF CBR EVALUATORS

a. Provide unit controller with realistic casualty assessment data when a unit is subjected to any CBR attack.

b. Evaluate individual proficiency in masking, detection, identification, decontamination, and reporting the CBR attack.

c. Report results of attack and reactions of unit to the exercise chemical officer.

4. DUTIES OF UNIT CONTROLLER

a. Assess casualties as recommended by the CBR evaluation.

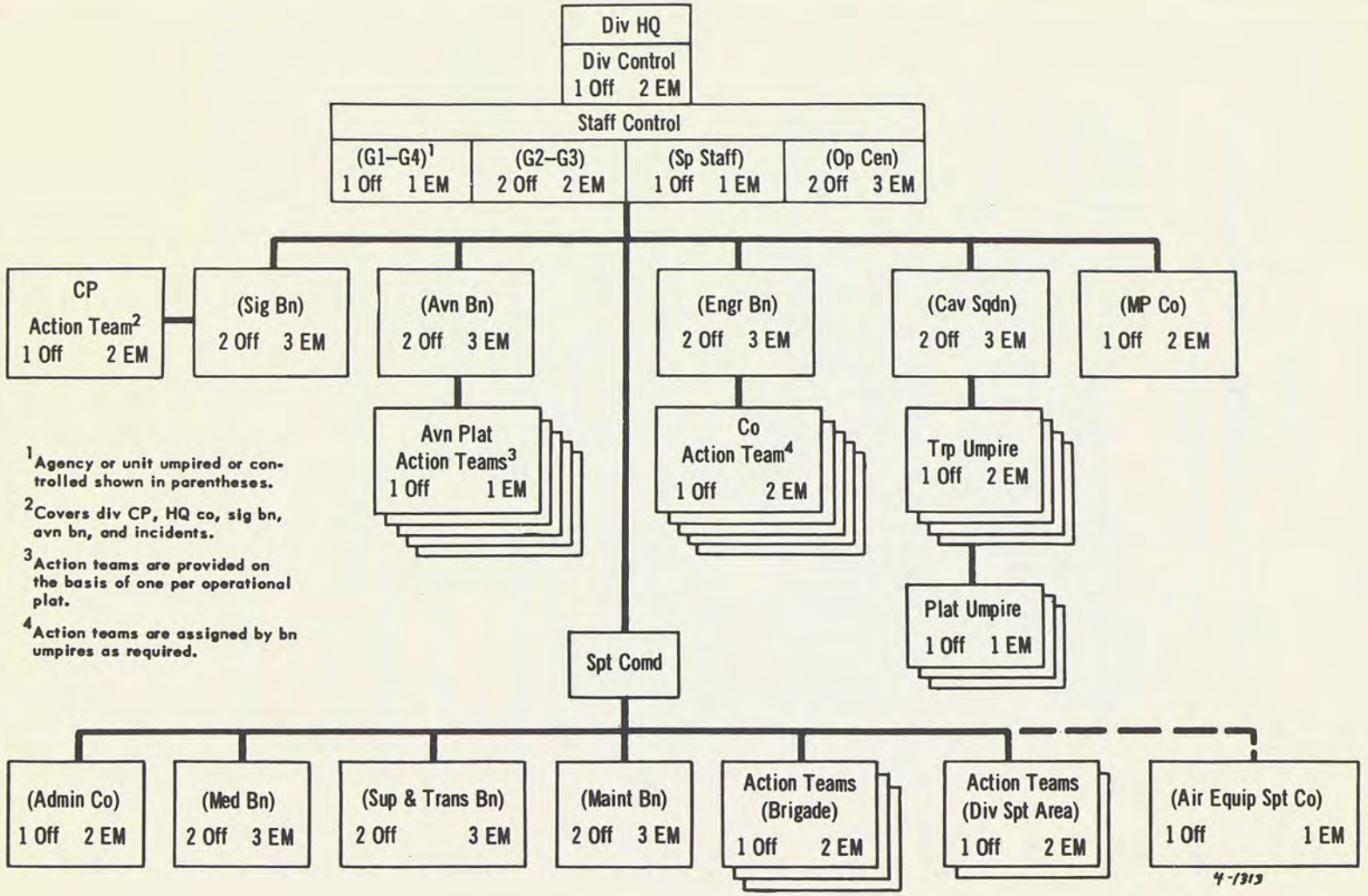
b. Record result of CBR operations.

APPENDIX J

CONTROL AND UMPIRE ORGANIZATIONS

APPENDIX J

CONTROL AND UMPIRE ORGANIZATIONS



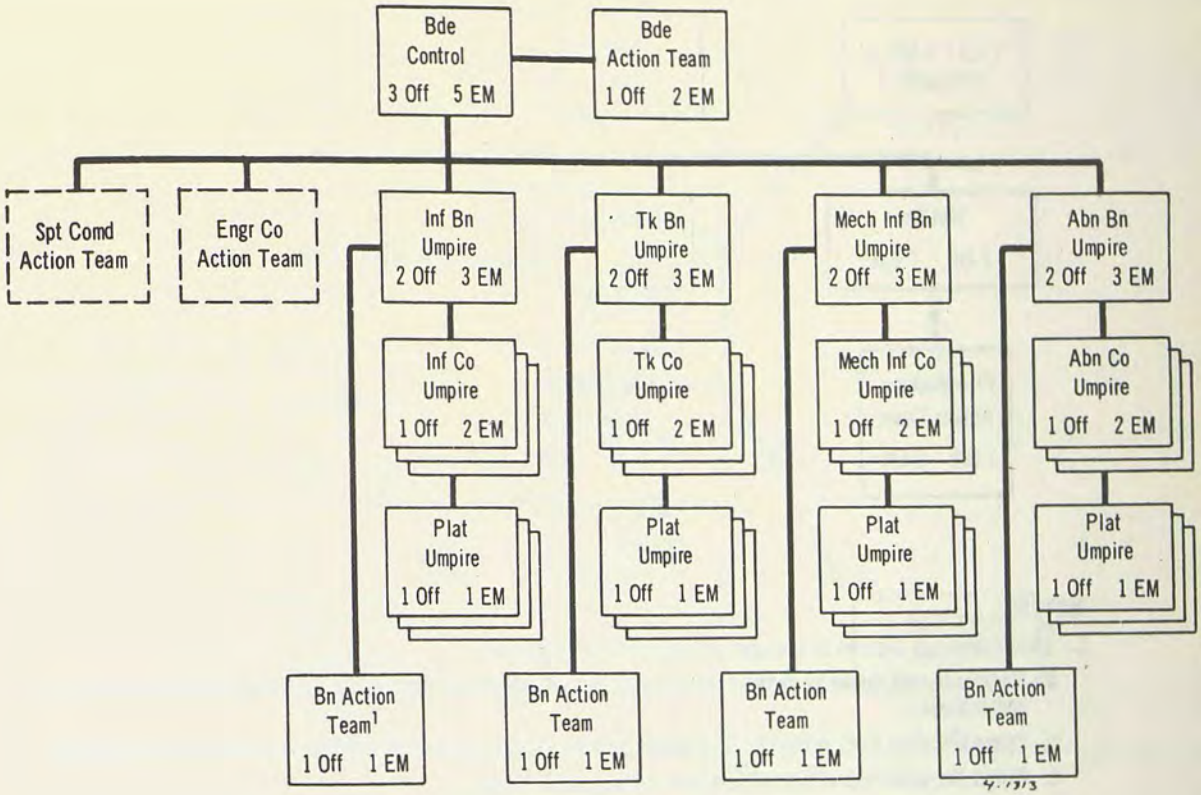
[1] Agency or unit umpired or controlled shown in parentheses.

[2] Covers div CP, HQ co, sig bn, avn bn, and incidents.

[3] Action teams are provided on the basis of one per operational plat.

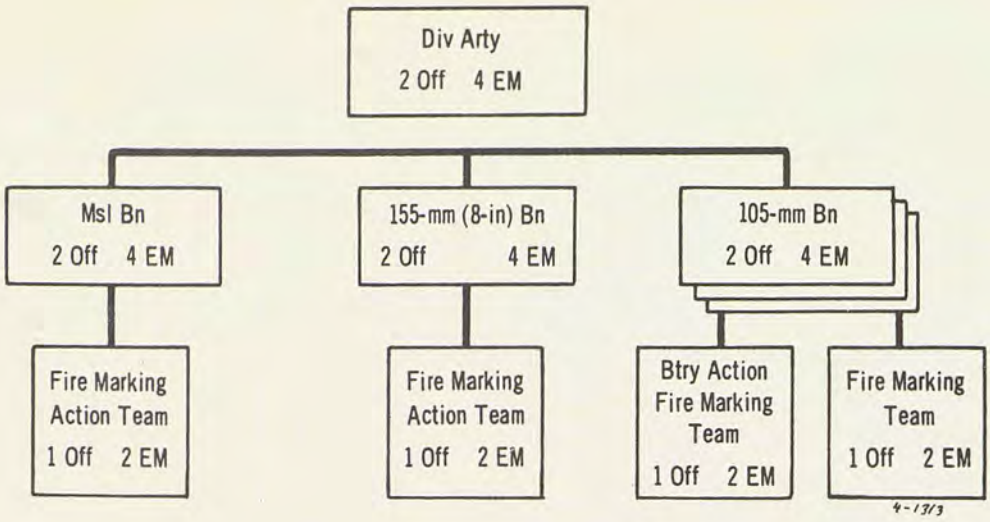
[4] Action teams are assigned by bn umpires as required.

Figure J–1. Umpire/control organization, division participating in a field exercise or field maneuver.



[1]Umpires actions as directed by battalion umpire, including battalion support platoons.

Figure J–2. Brigade umpire/control organization, division field exercise or field maneuver.



NOTES:

1. Controllers and umpires at division artillery and battalion level:
   a. Perform normal duties of control–receive and transmit information and reports of player activities and control instructions.
   b. Operate control FDC to direct conventional artillery, mortar, nuclear, biological, and chemical fire marking.
   c. Direct the activities of subordinate fire marking/action teams.
2. Fire marking teams:
   a. Mark fires from friendly and opposing fire units–artillery or mortar.
   b. Mark nuclear, biological, and chemical fire and assist umpires in disseminating damage and loss data to player units.
3. If fire marking team has additional duty of battery action, it marks fires in rear areas (from opposing forces) and also performs as unit umpire for units affected (if there are no unit umpires), particularly artillery batteries to "paint picture" and assess casualties and losses.
4. It is advisable to provide airmobility for at least two of the four rear area fire marking/action teams.

Figure J–3. Artillery umpire/control and fire marking organization, division field exercise or field maneuver.

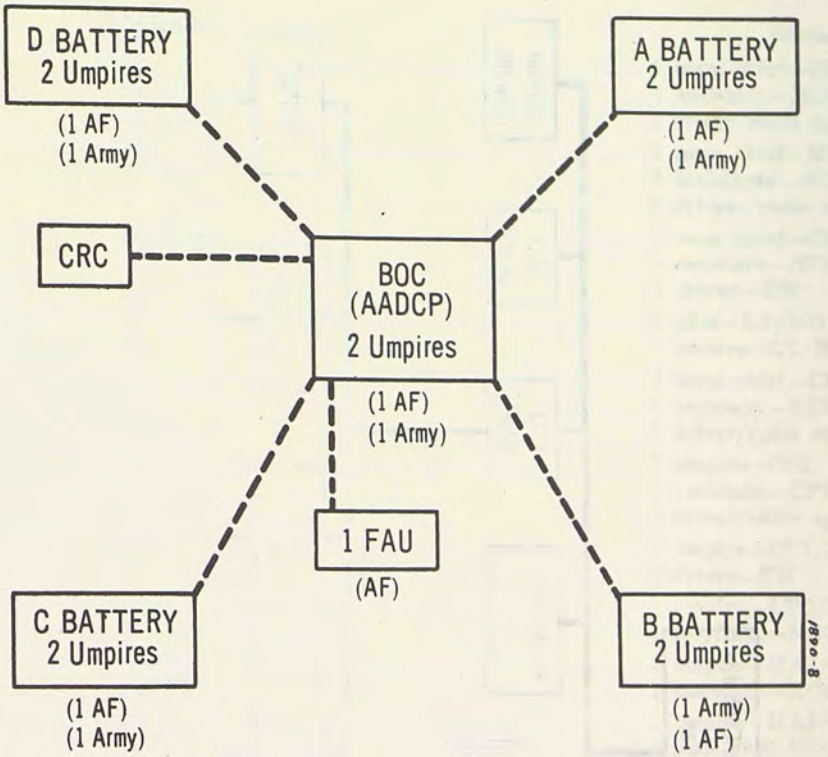


Figure J–4. Typical allocation of umpires with ADA battalions.

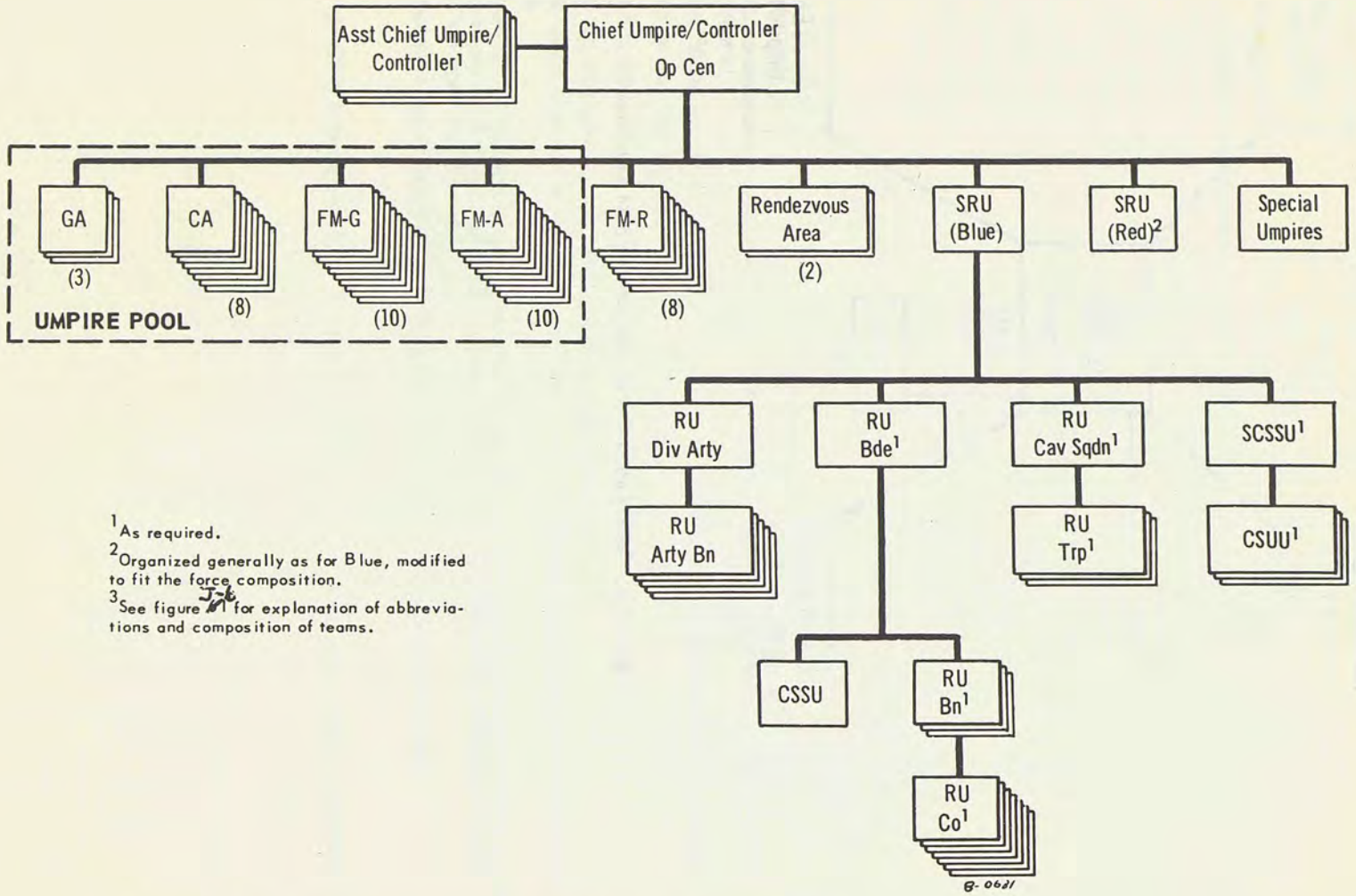


Figure J–5. Typical umpire/control organization, area umpire system.

Type	*Title*	*Composition*
GA	Group action team	1 team chief—COL/LTC 1 assistant—NCO 1 driver/radio operator—EM
CA	Company action team	1 team chief—MAJ/CPT 2 assistants—NCO 3 drivers/radio operators—EM
FM–G	Fire marker, ground	1 team chief—CPT/LT 1 assistant—NCO 1 driver—EM
FM–A	Fire marker, air	1 pilot—LT/WO 1 umpire—LT/WO
FM–R	Fire marker, relay	1 team chief—CPT/LT 1 assistant—NCO 1 driver/radio operator—EM
SRU	Senior resident umpire	1 umpire—COL 1 assistant—CPT 1 driver/radio operator—NCO
RU	Resident umpire	1 umpire—CPT/LT 1 driver—EM
SCSSU	Senior combat svc support umpire	1 umpire—LTC/MAJ[1] 1 assistant—NCO
CSSU	Combat svc support umpire	1 umpire—MAJ/CPT 1 assistant—NCO
CSSUU	Support umpire combat svc support unit	1 umpire—MAJ/CPT 1 assistant—NCO and driver

[1] With technical service assistants as may be required.

Figure J–6. Composition of umpire teams, area umpire system.

Note (1). Net is shown as it might be established for a given tactical situation. Stations are added and withdrawn as various umpire elements pass to and from the jurisdiction of this particular GA team.

Note (2). Each FM-G team operates on a permanently assigned frequency. FM-R teams establish communication with FM-G teams as required for each fire mission.

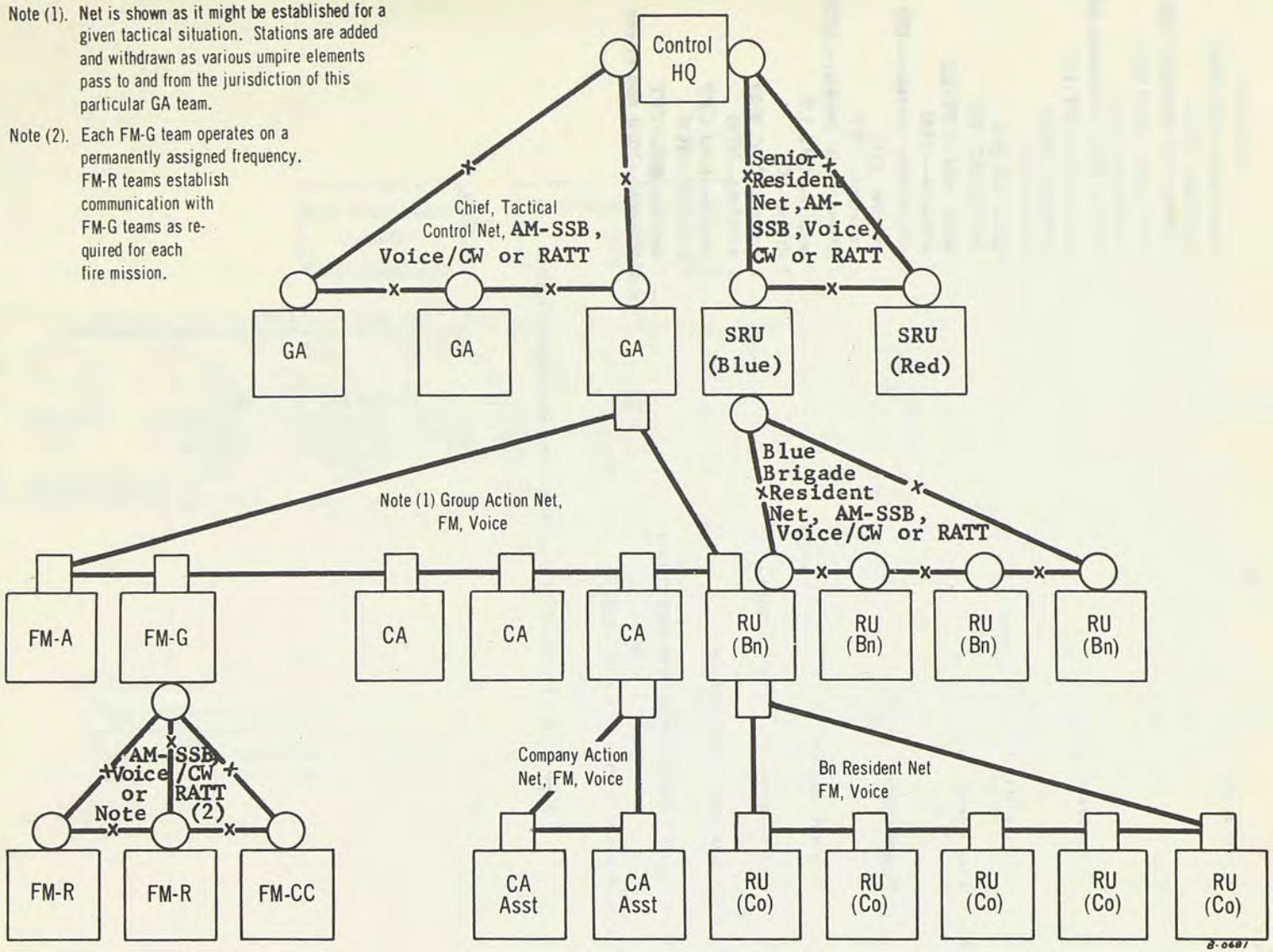


Figure J–7. Typical umpire radio nets, division exercise, area umpire system.

APPENDIX K

UMPIRE TRAINING PROGRAM

The following training program may be used as a guide for the preparation of umpire training schedules. If the exercise plan calls for special operations, the schedule is modified to include umpire training in these special operations.

Subject	*Hours*
Introductory	2
Official welcome	1/6
Purpose and scope of exercise	2/6
Maneuver area rights and restrictions	1/2
Participating troops	1
General Subjects	25
Umpire school organization and umpire organization	1
Supply and supply economy	1
Orientation on Aggressor	1
Aggressor demonstration	1
Safety precautions	1
Map reading	5
Use of intelligence	2
Reconnaissance of exercise area	8
Maneuver control	1
Landmine warfare	2
Chemical and biological operations	2
Employment of pyrotechnics and control devices	1
Orientation on the air-ground system	1
Communication plan for the exercise	1
Radiotelephone procedure	1
Operation of radio sets and signal security	1
Communication-electronic operation instructions, standing communication-instructions, standing operating procedures	1
Communication field exercise with review	3
Conduct of the maneuver, maneuver control, area rights, and restrictions	1
Command post exercise	8
Nuclear aspects of the exercise	2
Organization and tactics (concurrently by umpire assignment)	2
Artillery	(2)
Air defense artillery	(2)
Armored units	(2)
Organization of infantry and airborne divisions	(1)
Employment of infantry in offensive and defensive operations	(1)
Organization and operation of airborne corps[1]	(1)
Airborne assault[1]	(1)
Special forces units	(1)
Operation Security (OPSEC)	1
Tank-infantry-artillery team	1
Electronic warfare (EW)	1
Civil-military operations	1
Psychological operations	1
Umpiring	28
Umpiring duties, general	1
Tactical and organizational factor of ground umpiring	2

[1] Used only when exercise is predominantly airborne or when required for proper umpire orientation. Time to be taken from open time.

Subject	*Hours*
Capture of personnel and materiel	1
Assessment of casualties and damages	1
Umpiring landmine warfare	1
Umpiring special forces activities	1
Computation of losses due to chemical agents	1
Casualty and damage assessment due to chemical and biological attack	1
Duties of umpires in the nuclear play of the exercise	8
Fire marking procedures	3
Obstacles and delays	1
Umpiring civil-military operation activities	1
Umpire records and reports	2
Intelligence (concurrently)	2
US Army Security Agency umpire duties	(2)
Special operations intelligence umpire duties	(2)
Counterintelligence umpire duties	(2)
Interrogation prisoner of war umpire duties	(2)
Order of battle umpire duties	(2)
Image interpreter umpire duties	(2)
Technical intelligence umpire duties	(2)
Censorship umpire duties	(2)
Document analysis umpire duties	(2)
Recording teams umpire duties	(2)
Interpreter and translator umpire duties	(2)
Review of umpire duties	1
Examination	1
Practical Umpire Training	
Field demonstration of umpire methods	44
Practical field work to include rehearsal with Aggressor forces	2
Testing of communication facilities	24
Nuclear weapon play umpiring	8
Critique of umpire training	2
Total scheduled time	126

INDEX

By Order of the Secretary of the Army:

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Chief of Staff

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Example C-2. Director Staff Activities in Preparing Exercise Plans

PREPARATION OF THE SCENARIO
G3

1. Study the directive to ascertain the objectives of the exercise.

2. Analyze appropriate reference material to insure technical accuracy.

3. Prepare a planning schedule and distribute it to all responsible staff officers.

4. Develop an outline plan by--

   a. Making a map reconnaissance.

   b. Organizing the exercise area.

   c. Making a ground and aerial reconnaissance.

5. Prepare a series of situations and requirements to satisfy the training objectives.

6. Prepare a time schedule.

7. Prepare a schedule of events.

8. Prepare a troop list.

9. Prepare the operation order that is to be issued to the participating unit. All annexes are integrated into the order.

10. Prepare transition plan for possible alerts and emergencies that may require termination of exercise and movement out of the exercise area.

11. Prepare any other orders, messages, or directives that are to be used during the conduct of the exercise and that can be anticipated in advance.

PREPARATION OF THE PUBLIC INFORMATION PLAN
IO

1. Study the directive and the scenario for the exercise.

2. Consult with G4 to determine the location of leased lands and the road restrictions that will be enforced in the problem area.

3. Study the claims plan.

4. Determine the information necessary and desirable to release to the public through the press.

5. Determine the information to be released to other services.

6. Prepare press releases according to schedule set up for the exercise.

7. Prepare the public information plan.

PREPARATION OF THE INTELLIGENCE PLAN
G2

1. Study the directive and the scenario with all accompanying orders.

2. Make a detailed study of references with particular emphasis on Aggressor play in the exercise.

3. Prepare a series of enemy situations that will force the exercise along the lines intended (Aggressor plan and situation).

4. Reconnoiter terrain to check feasibility of enemy situations.

5. Prepare an analysis of the area of operations.

6. Develop basis for procurement and issue of maps and map substitutes.

7. Prepare directive to Aggressor commander.

8. Devise a plan for the issuance of information to the participating unit to provide maximum combat intelligence training.

PREPARATION OF THE CONTROL PLAN
Chief Umpire/Controller or G3

1. Study the problem scenario with the view of incorporating an umpire/control system that can properly evaluate and control the exercise.

2. Consult with the G1 regarding the personnel requirements for the umpire system.

3. Design the umpire/control system to include--

   a. Umpire/controller distribution plan.

   b. Assignment.

   c. Plan for communication.

   d. An umpire/controller school.

   e. Types of reports required.

   f. Checklists.

PREPARATION OF THE ADMINISTRATIVE PLAN
G4

1. Study the directive and the scenario with all accompanying orders. Coordinate with the G1 and G5.

2. Make a detailed study of reference materials pertaining to combat service support of a large unit field exercise.

3. Consult with the division surgeon, engineer, communications and electronics officer, provost marshal, and support command commander regarding--

   a. A plan for playing combat service support to include establishment of installations and resupply.

   b. Availability of essential supplies such as training ammunition, field rations, fuels, demolitions, and umpire/controller equipment.

   c. Medical evacuation.

   d. Pertinent sections of the administrative annex to the operation order.

9. Prepare paragraph 1a or an intelligence annex to the operation order, whichever is applicable.

10. Consolidate all entries and prepare the information distribution plan.

11. Prepare administrative instructions to the Aggressor force.

NOTE: The supporting material for the intelligence plan is closely coordinated by the G2 with the other staff officers concerned. (Example: The G2 must check with the G3 to insure that the intelligence plan conforms with the control plan.)

g. Umpire SOP.

h. Uniform and equipment markings.

i. Signals and rules.

4. Prepare safety instructions for issue to both the control personnel and the participating unit.

5. Coordinate with the G2 to insure that the control plan and intelligence plan agree on the means of releasing information, in developing enemy situations, and representing enemy forces.

6. Prepare detailed instructions for umpire and safety personnel so that they clearly understand their roles in the exercise.

e. Traffic circulation and control in the exercise area.

4. Draft the administrative annex to the operation order and the administrative instructions governing troop participation in the exercise.

5. Reconnoiter the problem area to insure the feasibility of the administrative plan.

6. Prepare maneuver damage control plan and integrate portions of civil affairs and personnel plans into the administrative annex to the operation order.

7. Coordinate with the G3 to insure that the administrative plan conforms with the control plan and the troop orientation and critique plan.

PREPARATION OF THE CIVIL-MILITARY
OPERATION PLAN
G5

1. Study the directive, the scenario with all accompanying orders, and appropriate references.

2. Prepare the CMO plan and pertinent annexes.

3. Coordinate with the G3 to insure conformity of the CMO plan to the overall operational plan; with the G2 to insure appropriate input into the combat intelligence training; and with the G4 for inclusion of pertinent data into the administrative plan.

4. Coordinate with the G1 and G3 regarding civil affairs and PSYOP requirements for umpire and control personnel.

PREPARATION OF THE TROOP ORIENTATION
AND CRITIQUE PLAN
G3 or Chief Umpire/Controller

1. Determine who is to attend the initial orientation, depending on facilities available and size of group desired. Select time and date.

2. Select sites for orientation and critique. Arrange for use at times required.

3. Prepare maps and charts required for the orientation and the critique.

4. Prepare and rehearse the orientation.

5. Prepare instructions for the orientation of junior officers and troops by their commanders.

6. Prepare instructions for critique. Specify time, place, date, schedule of speakers, and scope.

NOTE: Though this plan is considered separately here, it may be prepared as an appendix to the control plan.

PREPARATION OF THE CLAIMS PLAN
(When required)
G4

1. Study the scenario.

2. Study pertinent regulations on claims procedure. Consult with the judge advocate, G1, G5, and division engineer.

3. Designate a claims officer. Prepare his instructions for acquisition of land, procedure for rental, period required, and provision of contracts with owners.

4. Prepare instructions to troops regarding limitations on use of rented ground and procedure for obtaining claim releases after use of ground has ended.

5. Consult with G3 to insure that the claims plan conforms with the scenario.

6. Prepare the plan itself.

TRAINING CIRCULAR FOR THE EXERCISE
G3

1. Incorporate the provisions of the various plans into a training circular for the exercise.

2. Include in the basic circular the references, objectives, schedule, and administrative instructions applicable to all units affected by the exercise.

3. Include as annexes instructions on particular subjects that are detailed and lengthy. These normally are:

a. The complete scenario.

b. Troop orientation and critique instructions.

c. Administrative instructions.

d. Instructions to control personnel.

e. Administrative instructions for Aggressor personnel.

f. Other administrative instructions.

INSTRUCTIONS TO
PARTICIPATING UNITS
(TC w/need to know annexes)

INSTRUCTIONS TO CONTROL
AND AGGRESSOR PERSONNEL
(TC w/all annexes)

4M4—0085