

FM 100-30 (Test)

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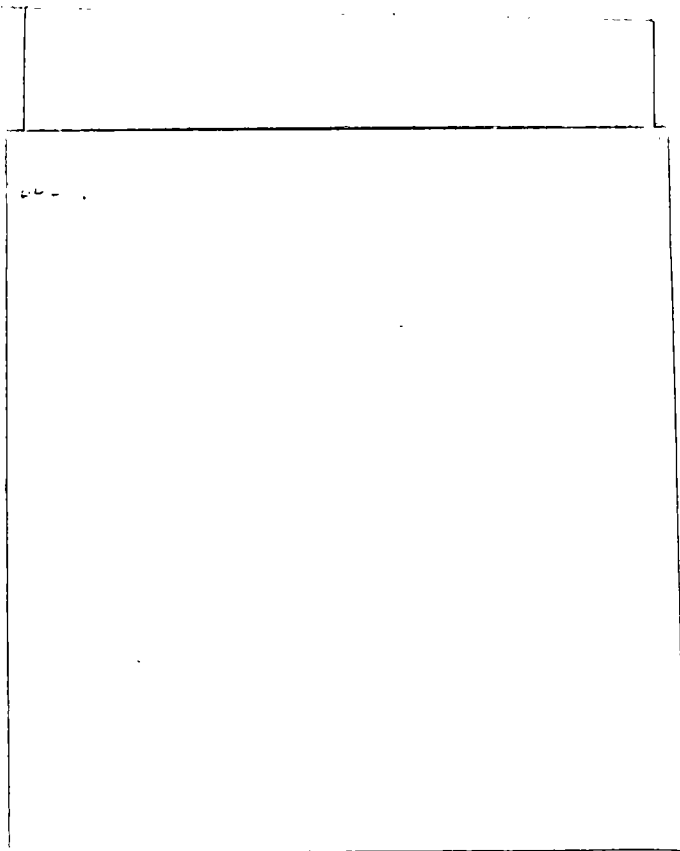
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FIELD MANUAL

**TACTICAL
NUCLEAR OPERATIONS**

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HEADQUARTERS, DEPARTMENT OF THE ARMY
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FIELD MANUAL }
 No. 100-30 (TEST) }

HEADQUARTERS
 DEPARTMENT OF THE ARMY
 WASHINGTON, D. C., 19 August 1971

TACTICAL NUCLEAR OPERATIONS

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CHAPTER 1

INTRODUCTION

1-1. Purpose

This test manual provides basic doctrinal guidance for tactical operations in a nuclear environment. Commanders and staff officers at all levels must understand and appreciate the effects of the nuclear environment on operations at brigade and lower levels and carefully consider them when planning each operation.

1-2. Scope

a. This test manual discusses the characteristic effects of nuclear weapons on troops, equipment, organization, and operations. It defines the role of the combat, combat support, and combat service support forces and discusses the specialized training requirements for conduct of operations in a nuclear environment.

b. The material presented is applicable to operations in a nuclear war. It is directed primarily to operations at corps and lower levels. The basic considerations of division-level operations are essentially the same in all areas of the world. The doctrine contained herein should be applied

in conjunction with FM 101-31-1 and FM 101-31-2.

c. This manual is in consonance with the international agreements listed below. Applicable agreements are listed by type of agreement and number at the beginning of each chapter.

<i>Title</i>	<i>NATO STANAG</i>	<i>CENTO STANAG</i>	<i>SEATO SEASTAG</i>
Radiological Hazards	2083	2083	2083
		(draft)	

1-3. Changes

Users of this publication are encouraged to submit recommended changes and comments to improve the publication. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons will be provided for each comment to insure understanding and complete evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commanding General, U.S. Army Combat Developments Command Institute of Combined Arms and Support, Fort Leavenworth, Kansas 66027.



CHAPTER 2

THE NUCLEAR BATTLEFIELD

(STANAG 2083)

Section I. GENERAL

2-1. Tactical Nuclear Warfare

a. Tactical nuclear warfare is a conflict between the land forces and associated air and naval forces of two or more nations in which nuclear weapons are limited to the defeat of opposing forces in a theater of operations. Implicit in this definition is the condition that a strategic nuclear exchange on the belligerents' homelands does not occur. The material in this manual is specifically prepared for utilization in a conflict that meets this definition.

b. Much of the doctrine contained herein is applicable to a general war that includes an unrestricted strategic nuclear exchange between major nuclear powers. However, the number and yield of nuclear weapons employed in such a conflict may be of such intensity as to prevent effective maneuver by combat forces for extended periods.

2-2. Transition

A tactical nuclear war may develop as a result of a planned response to a specific attack, from a conventional conflict or from a deliberate attempt to limit conflict intensity. The specific reason for its development does not affect the doctrine or the subsequent conduct of the conflict, but transition from one type of conflict to another type will be complex. The suddenness and shock of initial nuclear detonations will have psychological and tactical impact and will strain the ingenuity and resourcefulness of leaders and commanders at all levels. The adopted troop posture must be such that only minimal changes are required in moving from conventional to nuclear configuration. Since troop dispositions will not be optimum for either conventional or nuclear combat, planning and training must provide for some redeployments after nuclear warfare is initiated.

2-3. Restraints

a. Mutually observed limits and restraints on the actions of the belligerents are essential if a nuclear war is to be confined to the tactical battlefield. Restraints must be credible, must make violations easy to recognize, and must give neither side a decisive strategic advantage. In a tactical nuclear conflict, the combatants must practice some degree of arms control and must refrain from actions that encourage escalation. The course of the war will depend largely on which of many possible restraints the opposing forces observe. Two of the more important restraints are a limit on the employment of nuclear weapons to military targets while avoiding or minimizing injury to civilians and restrictions on the yields, number of weapons, and types of bursts that can be employed.

b. Whether one or both sides actually observe any or all the restraints depends on, among other things, the perceived self-interest of nuclear powers and their allies and their abilities to control the use of nuclear weapons. Pre-conflict attempts to predict the ultimate level of nuclear use could be misleading and disastrous. U.S. forces must be organized, trained, and psychologically prepared to operate at any level required.

2-4. Principles of War

The introduction of tactical nuclear weapons onto the battlefield neither negates the principles of war described in FM 100-5 nor causes the development of new ones. The intensity of a tactical nuclear conflict emphasizes the importance of these fundamental truths and demands the competent application of these principles by those who would succeed in battle. The degree of application of specific principles will vary as the transition occurs from conventional to nuclear war-

fare. For example, destruction of the enemy nuclear delivery means will become a principal objective and the maneuver of nuclear fires rather than troops will become a dominant feature of the nuclear battlefield.

2-5. Tactical Doctrine

In principle, existing tactical doctrine remains valid, but the manner of executing this doctrine

changes. Tactical operations are characterized by great dispersion of units both laterally and in depth; redundancy, especially of command and control headquarters; and the employment of small, highly mobile tactical elements. Numerically inferior forces when supported by nuclear weapons and an effective target acquisition capability are assigned missions that would normally require the commitment of much larger forces supported by conventional weapons.

Section II. NUCLEAR ENVIRONMENT

2-6. General

An appreciation of the tactical nuclear battlefield environment is essential for an understanding of the doctrine presented in this manual. While a description of a nuclear battlefield environment lacks the foundation of historical precedence, several basic characteristics can be discussed with relative clarity. For example, units on the battlefield can be more widely dispersed than is indicated in present doctrine for low- and mid-intensity conflict; the optimum size combat force may be relatively small; and the effects of nuclear weapons will critically affect operations on the battlefield.

2-7. Battlefield Characteristics

a. Dominant Factors.

(1) Efforts to survive nuclear attacks by the enemy and friendly use of nuclear weapons against him will dictate friendly battlefield tactics. A single nuclear burst in one battle can produce enough losses to make whole units ineffective. The heaviest losses will be concentrated in pockets of destruction scattered throughout the battlefield. Nuclear detonations will leave large areas strewn with rubble, tree blowdown, and fires. Radiation exposure will cause significant casualties. Units that survive do so by a combination of dispersion, movement, concealment, and shielding.

(2) The probable duration of a tactical nuclear conflict within a theater of operations has been estimated at from 30 to 60 days and possibly as long as 120 days. Intermittent battles during this period will vary in length and intensity. The initial phase of a tactical nuclear battle will be the most destructive, but subsequent phases will be characterized by the antagonist continuing to seek nuclear dominance.

(3) On the first day of a tactical nuclear

conflict, casualties may be from 10 to 50 percent in the forward divisions. This rate, which varies with troop organization and employment, is lower when units are dispersed and afforded the protection of shielding such as that provided by foxholes and tanks.

(4) As long as the enemy retains even a limited tactical nuclear capability, he remains a significant threat to friendly freedom of action and maneuver.

b. *Tactics.* The friendly forces' primary mission in a tactical nuclear war is to destroy the enemy's capability to wage offensive war. Every troop unit, especially armor, mechanized, airmobile, motorized, and artillery units, will be subject to attack by nuclear or other mass destruction weapons. Nuclear fires will dominate the battlefield. Directly associated with this nuclear firepower is a requirement for target acquisition to cover the gaps created by enemy fires and to acquire targets well to the rear of the forward enemy forces.

c. *Reserves.* The tactical reserves of corps and army will be held well to the rear to avoid detection and damage. These reserves require the mobility to get them to their area of employment in the shortest time possible. Division, corps, or army reserves will seldom be assigned major counterattack missions requiring massing of forces because it is more effective and efficient to counter enemy penetrations with small forces supported by nuclear fires.

d. *Redundancy.* In tactical nuclear conflict, redundancy in command and control facilities is essential. Headquarters units are priority targets. Because of dispersion on the nuclear battlefield, command and control must be retained when headquarters units are destroyed.

e. Control and Release of Nuclear Weapons. When authorized, the theater commander releases nuclear weapons to major subordinate commanders. The decision to use nuclear weapons must be made as early as possible, and the theater plans must provide for rapid transmission of

release messages to subordinate commanders. The plans must include control and security measures to preclude unauthorized use of nuclear weapons. Once nuclear weapons are released, employment of these weapons should be authorized to the lowest tactical commander possible.

Section III. SPECIAL CONSIDERATIONS

2-8. General

This section addresses special considerations that apply to all units during tactical nuclear conflict, e.g., the vulnerability of friendly troops to enemy nuclear strikes, troop safety for friendly nuclear strikes, shielding, and space management.

2-9. Vulnerability

a. Separation Distances. The extensive damage that can be caused by nuclear weapons requires commanders to examine the vulnerability of individual friendly units and formations to enemy nuclear weapons. Dispersion of units must be great enough so that no more than one maneuver company or one artillery firing element (battery or less) will be lost from the effects of a single enemy weapon. For example, a U.S. battalion undertaking an area defense on a frontage of 3 kilometers would suffer more than 30-percent casualties from a single nuclear weapon detonated at the most optimum point within the battalion formation.

b. Determination of Separation Distances. Two techniques are available for the assessment of unit vulnerability. In each technique, vulnerability is assessed in terms of the maximum assumed enemy nuclear threat. The first affords maximum protection to U.S. units, and the second gives minimum protection.

(1) *Maximum protection.* This technique for assessing the vulnerability of friendly units to nuclear weapons utilizes the radius of vulnerability (R_v) from the weapon most likely to be used against friendly forces and assumes that the enemy weapon detonates where it can do the most damage. The radius of vulnerability for personnel is the radius of a circle within which friendly troops will be exposed to a risk equal to or greater than emergency risk criteria and may become casualties. For equipment, the radius of vulnerability is the maximum radii of damage to materiel obtained from the effects table. Separation of maneuver companies and artillery batteries to distances equal to or greater than twice the

radius of vulnerability affords the commander a high degree of assurance that significant casualties will not occur within adjacent units from a single weapon attack. This dispersion, however desirable from a safety viewpoint, may not be warranted because of other tactical considerations.

(2) *Minimum protection.* In this technique, maneuver companies and artillery batteries are positioned so that no more than one-third of the area of two adjacent units is under a given vulnerability circle. This technique assumes that the enemy weapon detonates where it will do the most damage to both units. This technique insures that adjacent units, while suffering some casualties, remain combat effective (more than two-thirds survive). When two units are separated as indicated by this technique, the delayed casualty radius of damage ($RD = 650$ rad) will not reach either of the two units.

(3) *Vulnerability assessments.* The tabulation below shows the unit separation distances which are required by the two techniques when assessing the vulnerability of warned, protected troops to the effects of a 10-KT and a 30-KT weapon. (Effect of interest, 50 rad) (Figure 2-1 shows the effects of 10-KT weapons.)

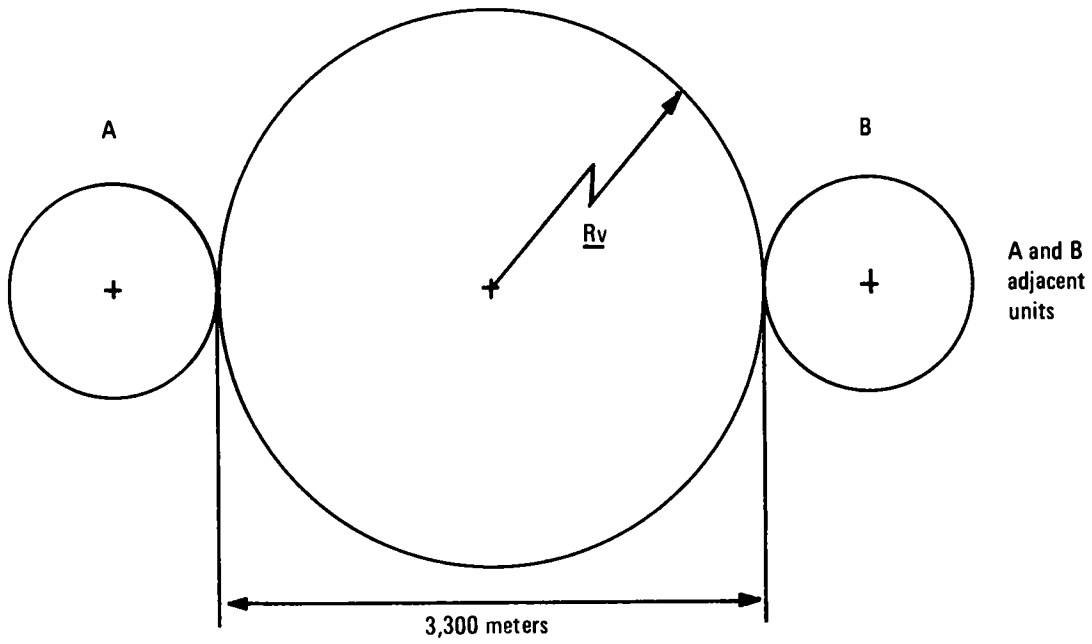
	Minimum separation 10 KT	Minimum separation 30 KT
Maximum protection	3,300 meters	4,060 meters
Minimum protection	2,300 meters	3,060 meters

(4) *Limitations.* If survivability were the only consideration, commanders could determine the optimum interval between units by utilizing the maximum protection technique. In practice, however, the mission, the defensive concepts, and the enemy's conventional force will also influence the commander's decision on dispersion.

c. Tactical Implications. The need for greater dispersion under conditions of tactical nuclear warfare will lead to greater reliance on timely and aggressive independent actions by small-unit commanders. Communications may be severely disrupted, troop formations will become more susceptible to infiltration, and units may become

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Maximum Protection



Minimum Protection

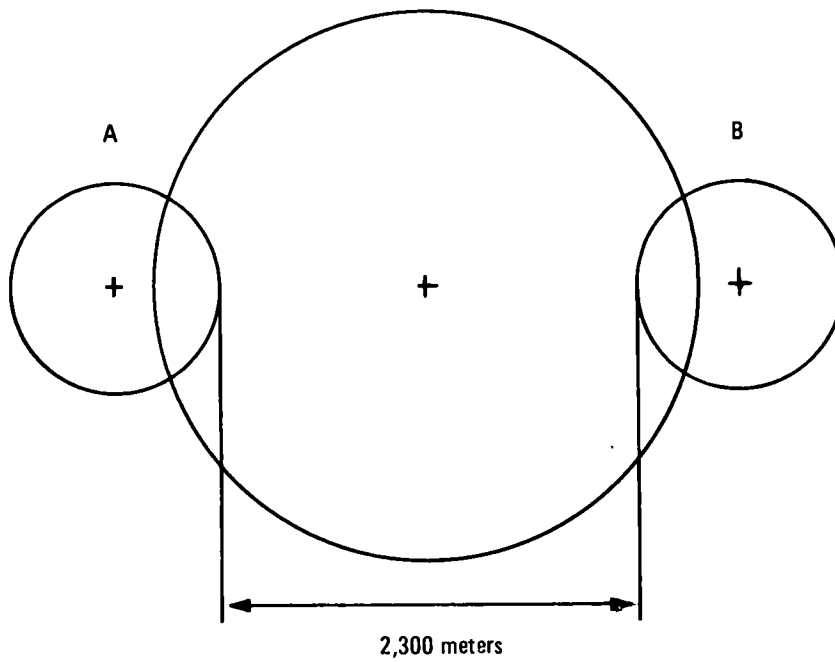


Figure 2-1. Separation distances for 10-KT weapon.

isolated for extended periods. High mobility will be critical for both offensive and defensive operations to bring sufficient combat power on the enemy to accomplish assigned missions and, at the same time, to minimize the attractiveness of these formations as targets. This kind of warfare will favor the mobile defense. It will result in greater reliance in strong, mobile reserves for both offensive and defensive employment. Airmobile operations will become more complex because of the vulnerability of both fixed- and rotary-wing aircraft to nuclear effects. Dispersion of Army aircraft may introduce limitations on the size and depth of airmobile operations. Further discussion of these considerations is contained in FM 61-100.

d. Electronics. Planners must consider that employment of nuclear weapons, either friendly or enemy, will cause effects that may limit air defense and communication operations. These effects are the electromagnetic pulse (EMP) and radar/communications interference. The severity of effects may vary from negligible to intense "blackout."

2-10. Troop Safety Considerations

a. Minimum Safe Distance. The predictable need for the U.S. commander to employ nuclear weapons in the gaps between units dictates that his forces continually maintain the highest protection status possible and that units be separated by a distance which will at least allow the employment of the smallest U.S. nuclear weapon available with negligible risk. The commander routinely accepts a negligible risk. However, he may employ weapons that subject his forces to emergency risk if the tactical situation warrants. If the enemy overruns or eliminates a unit, the interval between the units remaining in the flanks increases greatly. This enlarged interval permits the commander to employ higher yield weapons.

b. Radiation Exposure Criteria. Inevitably, some units in the tactical nuclear environment will accumulate significant doses of radiation. As higher dosage levels are reached, the commander will have to correspondingly limit the employment of the unit to reduce the probability of additional exposures and to maintain an effective unit for as long as possible. The simultaneous reduction of the effectiveness of all personnel in a unit due to accumulated radiation exposures will increase reliance on the unit replacement system as discussed elsewhere in this

manual. Detailed treatment of radiation exposure is contained in FM 3-12 and STANAG 2083.

2-11. Shielding

a. Adequate individual positions must be prepared by all soldiers to insure protection from the effects of nuclear weapons, and personnel must habitually remain protected when the mission permits. It is likely that units in the forward areas will be required to move almost nightly to prevent detection and targeting; consequently, it will be necessary to prepare alternate positions and occupy these as required. The foxhole is still the best hasty protection against the effects of nuclear weapons. Adding 3 feet of overhead cover to a foxhole or bunker reduces significantly the radius of damage from a nuclear weapon. When a unit occupies a position, all personnel in the unit are required to prepare individual positions and remain in them unless required to be outside. Mission essential equipment should be "dug in."

b. Doctrinal guidance in nuclear defense and defense against chemical and biological agents is contained in FM 21-40. Procedures for individual defense measures against these agents and weapons are contained in FM 21-41.

2-12. Space Management

In a nuclear situation where extensive use of small-yield weapons in the forward areas is contemplated, the need for effective space management (control of units to maintain dispersion and minimize casualties from friendly nuclear strikes) is essential. Commanders control the movement and positioning of all units within their area. Area control functions are accomplished within the normal G3/S3, G4/S4 responsibilities. The techniques for space management involve the transfer of control of units from one headquarters to another as they move or are deployed in the division area. The division tactical operations center (TOC) controls a combat service support (CSS) unit when this unit is in a division area of responsibility. As the unit moves into the operational area of a specific brigade, the brigade CP assumes control of it. When it moves from the brigade area to a battalion area, the battalion CP assumes control for as long as the unit remains in the battalion area. Maneuver commanders must appreciate the difficulties associated with combat support and CSS functions. The combat support and CSS commanders' recommendations must be considered when their

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units are being positioned within the battalion and brigade areas. The positioning of artillery, air defense, and signal elements within the area

is especially critical. See paragraph 5-15 for information required to be furnished to transportation movements personnel.

CHAPTER 3

NUCLEAR OPERATIONS

Section I. GENERAL OPERATIONS

3-1. General

The use of tactical nuclear weapon systems decisively influences the conduct of operations. Granting commanders authority to employ these munitions tremendously increases their combat power. Nevertheless, the concept of coordinated fires and maneuver continues to apply, and sufficient troops must be in place to exploit the advantages of these munitions. The results of a nuclear engagement may be determined almost immediately. Commanders must take special measures to reduce the vulnerability of friendly forces and installations and of civilian populations. Standard and current combat principles must be applied; however, some modifications will be necessary because of the impact of tactical nuclear weapons. Tactical nuclear operations are characterized by dispersion, mobility, decentralization of control, rapid exploitation, reduction of reaction time, and difficulty in providing combat service support.

3-2. Operational Aspects

a. Areas of Responsibility and Interest.

(1) Forces operating in a nuclear environment disperse to reduce their vulnerability. To insure that adequate space is available for dispersion, the areas of responsibility for all units from corps to company are increased. Since the enemy forces will also disperse, the area of interest of the corps and subordinate commands will increase. The size of a unit's area of responsibility and interest will vary with the enemy nuclear threat. For planning, the frontages and depths noted below will apply in a tactical nuclear conflict.

<i>Echelon</i>	<i>Frontage</i>	<i>Depth</i>
Corps	100-150 km	150 km
Division	36-50 km	60-80 km
Brigade	18-25 km	25-30 km
Battalion	10-15 km	10-12 km
Company	1,000-1,800 m	1,000 m

(2) The areas of interest of these echelons extend beyond the area of responsibility to encompass enemy forces and/or weapon systems which could influence the battle. For planning purposes, the depth of the areas of interest are—

<i>Echelon</i>	<i>Depth</i>
Corps	250-350 km
Division	60 km
Brigade	20 km
Battalion	10 km

(3) To operate effectively over these increased distances and gaps, U.S. forces must emphasize decentralized control, responsive nuclear fires, and small-unit (battalion or smaller) operations.

b. Organization for Combat. The combined arms team is the organization most suited for operations in a tactical nuclear environment. Maneuver battalions should contain tank and infantry companies, engineer units, air defense (AD) elements, and intelligence personnel. If available, an artillery battalion normally collocates in the maneuver battalion area and if the distances require, may be attached to the brigade. Brigades normally are equal in size, with an armor-heavy brigade being retained as the division reserve. Brigades and battalions operate semi-independently under mission-type orders. Combat support and combat service support (CSS) will be significantly decentralized. Although decentralization is emphasized, the commander must retain sufficient control to prevent the force from becoming disorganized.

c. Fire and Maneuver. The introduction of responsive, accurate nuclear delivery means vastly increases the fire effectiveness of U.S. units and alters the concepts of fire and maneuver. Maneuver is used to exploit the destruction caused by nuclear fires. Nuclear weapons are the primary means of destruction with maneuver forces acquiring or developing nuclear targets. The extensive use of nuclear weapons, especially in the

early stages of the conflict, may limit maneuver. However, a definite tactical advantage accrues to the combatant who can first regain the maneuverability necessary to exploit the effects of nuclear fires.

d. Tempo of Operations. The destructive effects of nuclear weapons increase the tempo of tactical nuclear operations. Engagements will be short and violent. Decisive battles may last hours instead of days. The entire span of a tactical nuclear war will probably not exceed 120 days.

e. Warning Procedures. When possible, the procedures outlined in FM 101-31-1 are used to insure adequate warning of friendly troops. However, if the commander must rapidly employ a nuclear weapon, he can assume that—

(1) The personnel in infantry companies in the defense and tank companies in any type of operation have the protection necessary for them to be considered warned, protected.

(2) Personnel who habitually work in light armored vehicles have the degree of protection necessary for them to be considered warned, exposed.

(3) All other personnel are unwarned, exposed.

f. Preparation for Combat. Preparation for tactical nuclear operations must include training in the transition from conventional postures to dispersed formations, cross-training of essential personnel, and operations under limited observation conditions. Unit procedures should be reduced to standing operating procedure (SOP) form and practices to insure successful operations on the nuclear battlefield.

g. Casualties. In operations where nuclear weapons are employed, commanders and staffs at all echelons must anticipate sudden, severe, personnel losses within very short periods. These losses may cause the temporary loss of combat effectiveness of both enemy and friendly forces. Thus, Army forces must be trained and indoctrinated to reorganize rapidly and to perform emergency treatment of mass casualties with minimum professional medical assistance.

h. Denial of Nuclear Weapons.

(1) Army forces have the mission of preventing the enemy from capturing friendly nuclear weapons and also of preventing him from using these weapons if he should capture them. The following doctrine will govern in denying nuclear weapons to the enemy:

(a) The primary means of denial is adequate security.

(b) The primary objective of denial is to make the weapons tactically useless to the enemy.

(c) The most desirable form of denial of a threatened weapon is the physical removal of the weapon from the area of threat, i.e., local repositioning or evacuation.

(d) In an emergency when nuclear weapon relocation is not possible or advisable, and when gainful and expeditious employment of the weapon against the enemy is not possible, destructive denial becomes necessary.

(e) Nuclear weapons are of sufficient importance, sensitivity, and scarcity to dictate that the SOP for their denial become the commander's personal concern. His decision is required in procedures in each area under varying circumstances of operation. These procedures should cover all details necessary for the executing individual, to include—

1. Origin of the decision to carry out emergency denial.

2. Step-by-step procedures, including differences in procedures that may be required in movement, in firing position, in a position of readiness, or at a storage site.

3. Instructions must be available for the location of the necessary denial equipment under all conditions.

(2) For details on denial of nuclear weapons, see FM 6-20-1.

3-3. Operational Limitations

Operations in a tactical nuclear environment require flexibility in planning, organization, equipment, and tactics. Decentralized control is common, and small-unit leaders will operate on their own initiative for a long time. The forces participating in nuclear conflict must be balanced so they can develop the desired firepower without support from higher echelons. These are the effects of the restrictions imposed by nuclear operations:

a. Reduced mutual support.

b. Reduced conventional artillery support.

c. Reliance on radio communications.

d. Extended lines of communications.

e. Undesirability to mass forces.

f. Increased importance of security measures.

Section II. RECONNAISSANCE, SURVEILLANCE, AND SECURITY OPERATIONS

3-4. Reconnaissance and Surveillance

a. General. The introduction of tactical nuclear weapons causes wide dispersion of forces and requires commanders to emphasize reconnaissance, surveillance, and target acquisition activities to insure coverage of the security area and the gaps between units. The most important function of these activities, and a key to successful nuclear operations, is target acquisition, with emphasis on locating enemy nuclear delivery systems, troop units, and headquarters.

b. Reconnaissance. Reconnaissance activities are essential for early warning and for prevention of infiltration in the gaps between units. Ground reconnaissance must be closely controlled to insure the safety of the reconnaissance elements and to permit the commander to rapidly employ nuclear weapons. Reconnaissance will normally be performed by mechanized and aerial scout elements; however, dismounted reconnaissance patrols must be planned and executed.

c. Surveillance. Extensive use of surveillance and target acquisition devices characterizes operations in a tactical nuclear environment. Commanders must thoroughly plan the use of organic and attached surveillance devices to insure that enemy units are detected as far forward as possible and to insure coverage of the gaps between units. They should emphasize use of devices to accurately locate and enable the destruction of enemy units as far forward as possible.

d. Command and Control. Centralized planning and control of reconnaissance and surveillance missions are required to insure adequate coverage and troop safety. Also required is the rapid transmission of target information into fire direction channels. Preferably, at battalion and brigade levels, the artillery liaison officer and the S2 collocate to insure close coordination of their efforts.

3-5. Security

a. General. Security forces prevent surprise, maintain the integrity of friendly dispositions, and maintain freedom of action. Aside from aircraft, security forces are usually the first to make contact with the enemy. When supported by nuclear weapons, security forces can cause considerable damage to the enemy before he closes on the forward defensive units. Therefore, the planning and execution of security missions must be closely integrated into the overall defense plan. In the offense, speed and violence of the attack maintain security. Assaulting units use dispersed formations to eliminate the employment of small security echelons forward of the assaulting units. During movement to contact, however, light security forces to the front, flanks, and rear will be utilized.

b. Covering Force. The covering force emphasizes to the maximum the employment of available nuclear weapons to destroy enemy forces as they approach the battle area. The covering force's mission is normally assigned to an armored cavalry unit with attached forces, especially nuclear-capable artillery. The covering force operates from 25 to 30 kilometers forward of the main body.

c. Command and Control. The frontage assigned a corps operating in a tactical nuclear environment prevents the use of a corps-controlled general outpost (GOP) or covering force. The forward division is responsible for providing these forces. Corps armored cavalry assets may be attached to assist the division if necessary. Although decentralized control of the GOP is common, the corps commander must maintain sufficient direction of the operation to insure coordination of the GOP effort over his entire front.

Section III. OFFENSE

3-6. General

a. Concepts. Offensive operations in a tactical nuclear war emphasize the use of nuclear weapons. Maneuver forces operate in a dispersed formation to exploit the effects of nuclear strikes and to acquire further targets for nuclear destruction.

b. Fundamentals of Offensive Operations. These fundamentals are most applicable to offensive operations in a nuclear situation—

- (1) Surprise.
- (2) Aggressiveness.
- (3) Simplicity of plans.
- (4) Nuclear fire superiority.

(5) Destruction of the enemy force.

(6) Dispersion of friendly forces.

c. Forms of Maneuver. The forms of maneuver have not changed with introduction of nuclear weapons to the battlefield. The use of nuclear weapons assists in rupturing the enemy front to permit penetration or envelopment maneuvers. The impact from extensive use of nuclear weapons is overwhelming; therefore, the frontal attack may be the most desirable form of attack. An examination of each situation will dictate the form of attack offering the best chance of destroying the enemy force.

d. Objectives. In a tactical nuclear war, terrain objectives are normally not selected as intermediate objectives because key terrain can be controlled by the use of nuclear weapons. The objective of friendly forces normally is to destroy or capture enemy forces and their nuclear delivery means.

3-7. Planning

a. General. Offensive operations in a nuclear environment require detailed early planning. The plans must particularly emphasize organization for combat, fire support, scheme of maneuver, and command and control. The commander insures that all subordinate commanders thoroughly understand his plans because once the battle commences, decentralized control becomes common. Alternate plans are necessary, and commanders must be prepared to take advantage of favorable changes in the enemy situation.

b. Organization for Combat. The combined arms team is the most effective organization for offensive operations. The brigades of the division normally are equal in size with armor-heavy task forces on the main avenue of approach and in reserve. The forward brigades organize combined arms task forces (tank-heavy or mechanized-heavy). Each task force making the main attack should have division artillery (preferably 155-mm and 8-inch mixed) in direct support. Other artillery units should be located with the remaining maneuver battalions and initially should fire general support missions. These battalions should prepare to give direct support to specific task forces. Combat support and combat service support elements, especially engineers, signal, and supply elements, may be attached to the task forces.

c. Fire Planning. In a tactical nuclear environment, fire planning for offensive operations is critical. The success or the failure of the entire

operation may hinge on the planning of nuclear fire support. The maneuver plan exploits the success of these fires. Fire planning must also provide on-call fires to destroy the enemy units located by the advancing maneuver units. The commander and his staff must consider the fire plan and the maneuver plan of equal importance. They closely control the fire plan. Fire planning must also include the allocation of nuclear weapons to brigade commanders and possibly to battalion commanders.

d. Scheme of Maneuver. Intensive nuclear fire preparation followed by the rapid advance of widely dispersed maneuver units characterize the attack. Nuclear and conventional fires destroy enemy units that survive the preparatory fires. Units mass only when absolutely necessary and then only near enemy units. The friendly units immediately disperse when the resistance has been overcome. Reserve units maintain the momentum of the attack. Under nuclear conditions, failure to exploit the effects of nuclear weapons may result in failure of the operations.

e. Command and Control. When the actual attack begins, command and control is decentralized. The commander controls the operation primarily through orders to his subordinate commanders, but he retains sufficient personal control to insure that the battle does not become disorganized.

3-8. Conduct of the Attack

a. The attack is characterized by fire and maneuver which produce an overwhelming preponderance of combat power. Commanders must anticipate the rapid tempo of nuclear operations: the outcome of a conflict will be decided in hours rather than days.

b. Once the attack is launched, all commanders must remain flexible and exploit advantages rapidly. The impact of rapidly moving maneuver units and nuclear strikes will disrupt enemy defenses and will insure success of the attack.

c. Attacking forces will rarely bypass enemy units without first destroying or neutralizing the enemy capability to call nuclear strikes on friendly forces.

d. Flank security is provided by screening forces, both ground and air; surveillance devices; and fires.

3-9. Movement to Contact

a. Movement to contact is a tactical operation to gain or reestablish contact with the enemy.

b. Units must move in dispersed formations for as long as a nuclear threat exists. A screening force to the front and flanks protects the main force against surprise. Every reconnaissance and surveillance device is used to insure early determination of the size and disposition of the enemy force.

c. Movement to contact is normally made in multiple columns. The division commander retains a large reserve to employ and decisively overcome any resistance.

d. Command and control will be decentralized; however, the commanders must retain close coordination with the lead elements. The size, composition, and combat power available to the lead elements may determine the outcome of the entire battle. The lead elements develop the enemy situation and prevent enemy screening forces from delaying the main body.

3-10. Meeting Engagement

a. A meeting engagement occurs when a moving force, incompletely deployed for combat, engages an enemy force about which it has inadequate intelligence. The action ceases to be a meeting engagement when the enemy situation is developed and coordinated operations are undertaken.

b. In a meeting engagement the initiative must be gained and maintained. The advance guard's organization is a critical factor in determining the success of a meeting engagement. Mobile forces, well supported by nuclear artillery, permit the commander to rapidly develop the situation.

c. The commander commits forces from the march column to overcome resistance too great for the advance guard to handle. Since all units remain dispersed even when moving, fire support

units should move so as to insure rapidly available fire support.

3-11. Exploitation and Pursuit

a. *Exploitation.* Exploitation is the following up of gains to take full advantage of success in battle. Because of the destruction caused by extensive employment of tactical nuclear weapons, the exploitation phase may begin shortly after the attack commences. The exploitation phase must be aggressively executed to prevent the enemy from reconstituting a cohesive defense. The formations during this phase are similar to those used in the movement to contact.

b. *Pursuit.* Pursuit is the final phase of an offensive action and normally follows the exploitation phase. However, in a nuclear situation this phase may occur simultaneously with the exploitation phase or very shortly thereafter. Its function is to completely destroy the enemy force which is attempting to disengage. Therefore, the commander must be prepared to react swiftly to the situation and to maneuver his forces to destroy the enemy completely.

c. *Special Considerations.* Units must prepare to logistically support exploitation and pursuit forces to maintain their momentum. Emphasis on petroleum, oil, and lubricants (POL), conventional and nuclear ammunition, and aerial resupply is essential.

3-12. Night Combat

The impact of nuclear weapons and the efforts that both sides take to negate their effects will result in more operations at night or under limited visibility conditions. Training in night operations is essential; therefore, commanders at all echelons must emphasize night target acquisition techniques.

Section IV. DEFENSE

3-13. General

a. *Fundamentals of the Defense.* The purpose of defensive operations is to deny the enemy entry into an area, to economize forces, to develop conditions more favorable for the attack, or to trap and destroy an enemy. In the early stages of any conflict, U.S. forces will likely conduct defensive operations. Defense in depth, dispersion, responsiveness, maximum use of of-

ensive action, and security are the fundamentals most applicable to nuclear conflict.

b. *Concepts.* The concept of defensive operations in nuclear environment is based on the employment of small, mobile units, well supported by nuclear weapons. The depth of the defensive area is increased and the attacking enemy forces are subjected to nuclear destruction as they attempt to penetrate the battle area. Small units,

usually less than battalion size, may be committed to disorganize the enemy attack and locate lucrative nuclear targets. Obstacles to include atomic demolition munitions (ADM) will be used extensively. Units will attempt to destroy the enemy before he reaches the rear of the battle area (the rear of the forward brigades). Forces inadequate to accomplish this task will be reserved for the counterattack phase to follow. These forces are dispersed and concealed to the rear of the defensive area.

c. Form of Defense. The commander bases his selection of the form of defense on the mobility and nuclear firepower of U.S. forces. Paragraph 3-15 describes the conduct of the defense.

3-14. Planning

a. General. In a nuclear environment, the defensive plans, especially the barrier and nuclear fire plans, are the most positive methods of control that the commander has over the battle. Use of ADM to complement the conventional barrier system provides the commander with the capability to emplace formidable barriers in a timely manner utilizing a minimum of personnel and logistic tonnage. Once close combat begins, decentralized operations are common.

b. Organization for Combat. The combined arms team is the best organization for operation in a nuclear environment. Division commanders normally organize the brigades into infantry or armor-heavy combined arms teams. The reserve brigade is normally armor heavy. Commanders of forward brigades further organize the battalions into combined arms task forces. Supporting field artillery should be positioned to provide continuous coverage of areas of operations of the force as a whole with mixed calibers to include nuclear delivery systems. Combat support and CSS units may also be positioned with the forward brigades, but located well to the rear to prevent interference with tactical operations.

c. Organization of the Ground. The area of responsibility of the corps and subordinate units provides maximum coverage of the high-speed avenues of approach into the area of operations. Each unit should be assigned a specific area within which the commander controls the movement or positioning of units. All units will be dispersed. The area assigned to maneuver companies must permit dispersion of up to 1 kilometer between platoons. Companies and elements of artillery batteries will normally be separated by 3,200

meters. Figures 3-1 and 3-2 show typical corps and division initial defensive postures.

d. Fire Planning. In a nuclear situation, the defense primarily will be to employ nuclear fires extensively to destroy enemy units. Fire planning must emphasize rapid response to fire requests. Nuclear fire support plans must include concentrations on high speed avenues of approach and critical terrain features likely to be used by enemy forces. Commanders must insure positive lines of communications between the maneuver headquarters and the delivery units.

e. Command and Control. Division control of operations in a nuclear defense will be decentralized. Each subordinate commander will operate on his own initiative but in conformance with the division overall plan. However, positive command and control is necessary at brigade and battalion levels and within the nuclear delivery units.

3-15. Conduct of the Defense

a. Forward of the Main Defensive Area. The introduction of nuclear weapons changes the concepts for operations of the security forces and permits these forces to inflict damage out of proportion to the size of the force committed. Properly executed covering force operations can destroy an enemy force before it reaches the initial defensive positions. The covering force is normally the armored cavalry squadron with mobile task forces, nuclear-capable artillery, and combat support and, as necessary, CSS units. The primary mission of the covering force is to detect approaching enemy units and to destroy them with nuclear fires. The covering force maneuver units act as target acquisition elements and are not expected to engage in close combat. Covering force units delay when necessary to alternate or successive delaying positions where they continue to observe the enemy and fire on him until passage through the forward defensive area (FDA). They cover nuclear, nonnuclear, or natural obstacles so that enemy forces massing near these obstacles become targets. The division commander controls the covering force operation and closely integrates it into the overall defense plan.

b. Within the Battle Area. The division battle area is normally the responsibility of the forward brigades. This area, like the security area, is organized in depth. In the forward battalion task force areas, dispersed companies engage enemy

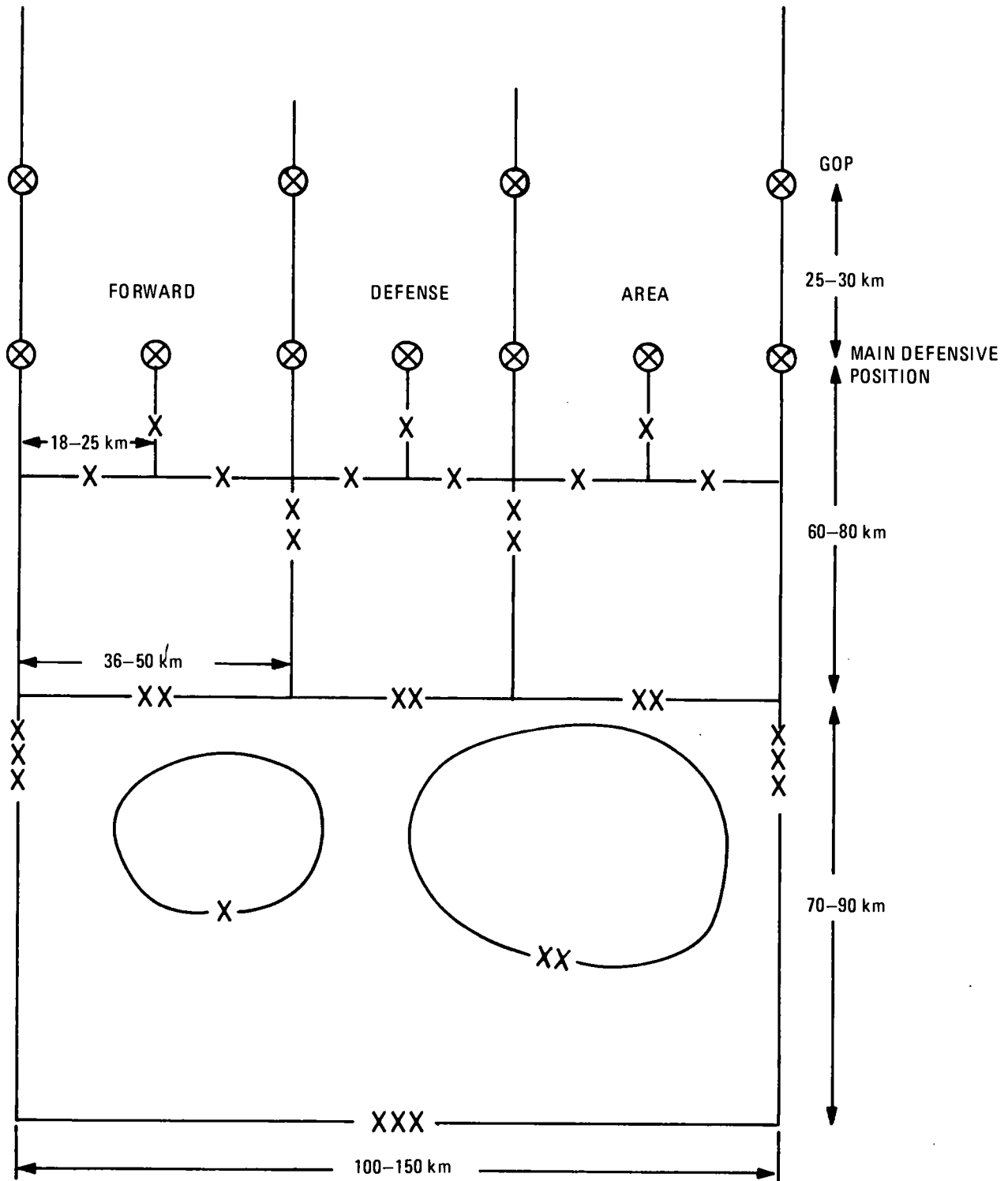


Figure 3-1. Typical corps initial defensive posture.

units attempting to penetrate the battle area and force the enemy to mass. When these units must withdraw, they should break contact rapidly and, with nuclear weapons, attempt to destroy the attacking enemy. The enemy meets increasingly heavy opposition from the time he penetrates the

battle area until he is destroyed. The initial line of contact should not be considered as the area forward of which the enemy must be stopped. The entire battle area, 25 to 30 kilometers deep, is the area where the enemy is halted. Battalion task forces or company teams may be maneu-

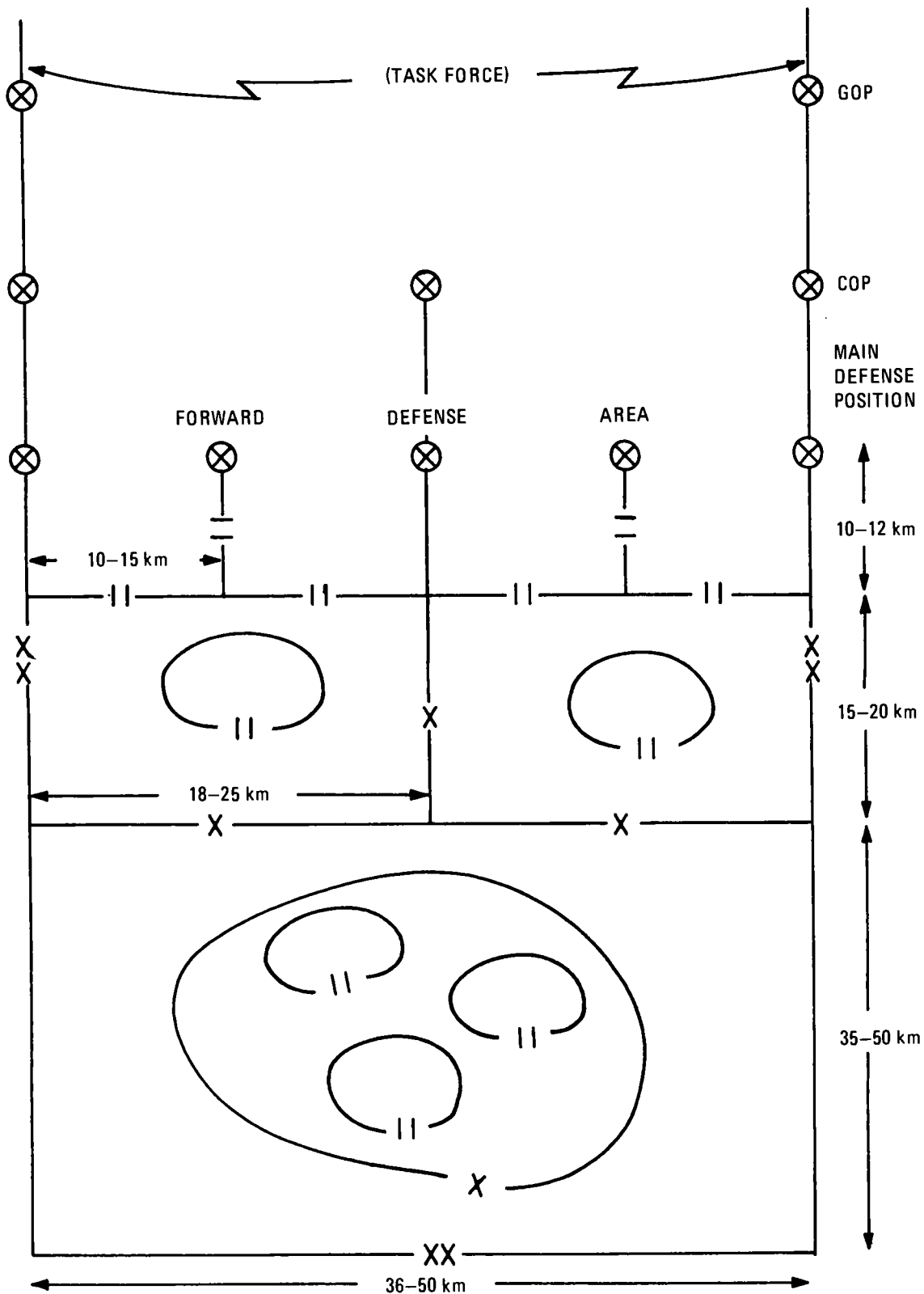


Figure 3-2. Typical division initial defensive posture.

vered as required in this area to conduct limited counterattacks, to block, or to reinforce.

c. Counterattacks. Forces counterattack enemy units that appear to be penetrating the battle

area. The size of the counterattack force must be determined on the spot. Commanders must consider that small units, well supported by nuclear weapons, will be able to accomplish tasks

that normally would require massing conventional forces. Uncommitted companies from the for-

ward brigades may conduct counterattacks.

Section V. UNCONVENTIONAL WARFARE OPERATIONS

3-16. General

Unconventional warfare (UW) operations are normally directed in support of the unified command and, if required, field army. Special forces (SF) operations will orient initially toward strategic reconnaissance and direct action missions. Operational control of special forces is retained by the special forces operational base (SFOB). Guidance and directives are provided by the unconventional warfare command.

3-17. Capabilities

a. Special forces are unique in that they can infiltrate an operational area by air, land, or sea and can survive and operate in remote areas and hostile environments for extended periods with a minimum of external direction and support. Therefore, special forces elements perform certain priority direct action missions (e.g., employment of selected nuclear weapons) in support of tactical forces that other tactical reconnaissance forces cannot perform. When planning for the employment of selected nuclear weapons by special forces elements in the enemy rear area, consideration must be given to the following:

- (1) Location of weapon employment.
- (2) Weapon yield.
- (3) Effects on other than purely military targets.

When such direct action missions are ordered and executed, it must be apparent to the opposing forces that it is a part of the tactical nuclear exchange and not the beginning of an unrestrained strategic nuclear exchange.

b. Regionally oriented, language-trained teams working behind enemy lines conduct unconventional warfare. These teams infiltrate enemy territory before or during hostilities; however, these teams may remain in a territory that is overrun during initial operations. Unconventional warfare teams can also employ ADM and chemical weapons with exceptional selectivity. Unconventional warfare forces can disorganize

and disrupt the enemy lines of communications and delay enemy forces attempting to reach the forward area.

c. Unconventional warfare, direct action mission, and strategic reconnaissance elements behind enemy lines create special command and control problems, especially in the use of nuclear fires. Since special forces elements communicate on a scheduled basis, they normally receive no warning of nuclear strikes on targets of opportunity. Further, these forces are normally exposed and, therefore, are more vulnerable than conventional military units to the effects of nuclear weapons.

d. Notifying Air Force elements of special forces warfare operations is also critical. Notification of the location of special forces unconventional warfare direct action and strategic reconnaissance elements will pass through special forces and joint unconventional warfare channels to the Air Force units having an operational need to know this information. These data must be current to insure minimum interference of operations.

e. In planning the employment of tactical nuclear fire support by conventional forces (ground and air), factors that could have a pronounced effect on the friendly conduct of unconventional warfare operations must be considered, e.g.:

(1) Location of special forces elements in order to minimize their exposure to the effects of friendly nuclear strikes.

(2) Location of indigenous people whom the theater commander is trying to influence to support friendly aims.

(3) Location of built-up areas and civilian population in relationship to the intended target.

(4) Whether it is possible by employment of special forces to attain the same desired results by conventional means and lessen the risk of escalation.

(5) Other friendly forces operating in opposing forces' rear areas.



CHAPTER 4

COMBAT AND COMBAT SUPPORT

Section I. MANEUVER BATTALIONS

4-1. Basic Considerations

a. The principles of war govern the employment of maneuver battalions. The factors of METT (mission, enemy, troops available, and terrain) remain principal considerations for determining how and when to employ these units in tactical nuclear warfare operations. The impact of nuclear weapons on the battlefield requires increased attention to dispersion, command and control, development of intelligence, mutual support, and security.

b. The subsequent paragraphs in this section address the implications of a nuclear environment on tactical operations.

c. Guidance on defense against the initial effects of a nuclear weapon and subsequent radiation hazards are contained in FM 21-40.

4-2. Organization for Combat

a. Brigade commanders structure battalions to give them the combat capability to accomplish the mission. Normally they cross-attach maneuver companies (armor and infantry) and may include attachment of other combat units (armored cavalry) and combat support units (engineer and artillery) to form battalion task forces. Combined arms task forces are best suited for operations in the forward brigades.

b. The task force commander, as a result of his estimate and the recommendations of his staff, establishes a task organization necessary to accomplish the mission or missions. In so doing, he organizes organic and attached companies by attaching or cross-reinforcing units of two or more combat arms. Such a force is called a company team.

(1) A tank-heavy company team is best used when terrain is suitable for tank employment, the enemy is strong in armor, and great shock effect and speed are desired.

(2) An infantry-heavy company team is preferable to a tank-heavy company team when an obstacle must be breached, when antitank defenses are strong, or when a built-up area must be seized.

(3) A dismounted infantry-heavy company team is preferable to mechanized or tank-heavy teams when terrain is unfavorable for employment of a substantial number of armored vehicles.

(4) A balanced company team consists of an equal number of infantry and tank platoons and is best used when the enemy situation and the terrain afford equal opportunities for employment of either infantry or tank forces. The balanced team commander may be either the infantry company commander or the tank company commander.

c. The battalion mission, missions assigned to subordinate units, the terrain and enemy strength in each company area, dispersion, and the amount of combat power, including maneuver and fire support units available to the battalion commander, are considerations in determining the organization for combat.

4-3. Dispersion

a. A primary distinction between nuclear and nonnuclear operations is the wide dispersion of forces and the great depth of the zone of combat. Dispersion is essential when conducting operations in a tactical nuclear environment, especially in the early phases of the battle when the enemy nuclear allocation will be the greatest. Dispersion of units reduces vulnerability to enemy nuclear weapons and permits the use of friendly nuclear weapons within the battle area.

b. Maneuver battalions in the forward battle area require an approximate area of responsibility 10 to 15 kilometers wide and 10 to 12 kilometers deep. When he assigns an area of responsibility to a battalion, the brigade com-

mander must insure that there is sufficient space to allow separation between each maneuver or combat service support unit based on the distance established by a vulnerability analysis. If artillery units are positioned in the battalion area, each battery separates into elements that must also be the same distance apart.

c. The battalions in the rear of the battle area must also have sufficient space to disperse the combat, combat support, and combat service support (CSS) units located in the battalion area of responsibility.

d. Dispersion is vital to operations in a nuclear environment, and commanders must always insure that the units have the space necessary to accomplish dispersion. Dispersion to the degree described in *b* above improves probability of survival and permits the commander to employ nuclear weapons between friendly units.

4-4. Command and Control

a. The command post (CP) provides facilities for the coordination and control of all units located in the battalion area. The CP will normally contain the commander, the S2 and S3, liaison officers from other elements (artillery, air force), and the necessary supporting vehicles, radios, and men.

b. An alternate headquarters must always be designated when operating in a nuclear environment. Normally, the alternate headquarters is the S1/S4 logistic center at the combat trains area; but, in certain cases, an adjacent battalion headquarters may be designated as the alternate headquarters. Provisions are made to insure that the alternate headquarters is kept abreast of the current situation to assist in continuity of operations if the main headquarters is destroyed. Succession of command must also be clearly established.

c. The battalion commander with the advice of the combat support and CSS commanders controls the positioning or movement or both of all units in his area of responsibility. When considering the location of units, the maneuver commander must consider that the positioning of artillery has a priority equal to or greater than the positioning of maneuver units because of their nuclear delivery capabilities.

4-5. Intelligence

a. The wide dispersion of forces normal in the nuclear environment, coupled with the probable

greater use of night or limited visibility operations, requires emphasis on the intelligence-gathering operations of the battalions. Intelligence-gathering operations must be continuously conducted within the gaps between units and forward of friendly positions.

b. The battalion S2 plans and coordinates the use of all sensors and other observation devices. In the internal operation of his section, the battalion S2 emphasizes the processing of numerous intelligence reports from various sources. Then, as targets are developed, the target information is passed immediately to the commander and the field artillery fire support (liaison) officer.

4-6. Mutual Support

a. Dispersion reduces or eliminates mutual support by fire between companies. At a separation distance of 3,200 meters, adjacent companies will not be able to fire in front of each other with shorter range weapons, and support fires on the flanks may or may not be possible.

b. The maneuver battalion commander provides mutual support by maneuvering units and positioning his heavy mortar platoon. He may split the 4.2-inch mortar platoon into two sections to cover as much of the battalion area as possible. However, to emphasize support for a particular area or unit, he may employ the platoon intact.

c. The commander's plan for artillery fires is essential to provide adequate support. Battalion commanders and staffs must insure that field artillery targets (nuclear and nonnuclear) are planned around all units in the battalion area. These fires, especially nuclear fires, will be the most rapid support available to the widely separated units.

4-7. Security

a. The use of widely dispersed companies requires the company commanders to provide all-round physical security of their area and target acquisition capabilities to prevent surprise attack. All units must plan security actions.

b. Because dispersion heightens the threat of infiltration, the maneuver commander must insure that the nuclear artillery located in his area is protected. Field artillery units fragmented into two elements are marginally capable of self-defense against local attack when performing their primary mission of fire support. To insure the provision of continuous nuclear and/or con-

ventional fire support, commanders must be prepared to augment field artillery with security forces.

4-8. Combat Service Support

a. In the defense, the CSS elements organic to the battalion operate from dispersed locations to the rear of the battalion.

b. Operations of the CSS units are devoted mainly to maintaining and resupplying the forward elements. Battalion maintenance units are prepared to rapidly repair equipment lightly damaged by nuclear strikes. More seriously damaged equipment is evacuated from the battalion

area or destroyed. Resupply operations stress the use of prepositioned stocks from which the units draw necessary supplies. The support platoon establishes and maintains these stocks.

c. In the offense, a mobile battalion supply point, which accompanies the battalion, provides CSS. The fuel and ammunition requirements for a mechanized operation exceed all other supply requirements. Companies should carry the basic load of class V prescribed by the battalion commander. Vehicles will be resupplied with fuel and petroleum, oil, and lubricants (POL) at every opportunity to insure constant readiness for continuous operations. Maintenance emphasizes the rapid repair of lightly damaged equipment.

Section II. FIELD ARTILLERY

4-9. Basic Considerations

a. Operations in a tactical nuclear environment require modification of the techniques for employment of field artillery. Nuclear-capable field artillery units will be targeted for nuclear strikes by the enemy. The tactical principles for the employment of these units, therefore, stress dispersion and concealment to insure survival. Camouflage discipline will be stressed.

b. As a minimum, the decision to deliver conventional fires from a dual-capable unit must be based on the following:

- (1) Comparative responsiveness of nuclear versus nonnuclear fires.
- (2) Military worth of the target.
- (3) Enemy's actual ability to locate and destroy friendly nuclear delivery units during nonnuclear fire missions or as a result of them.
- (4) Effectiveness of nonnuclear fires against the target.
- (5) Accuracy of target location and description.
- (6) Current and expected supply rate of nuclear weapons.
- (7) Relative importance of the mission of specific maneuver forces requiring fire support.

4-10. Dispersion

a. The firing batteries will disperse and deploy in depth so that artillery units will be positioned throughout the division area of operations. Normally, artillery, either division or corps artillery,

will be responsive in the area of responsibility of each maneuver battalion. Structuring of the artillery units located with the forward battalions is desirable to provide the commander with a selection of yields.

b. Artillery in the area of the forward brigades is the most vulnerable to detection. These units are within the range of the greatest number of enemy target detection systems and are the most active. Dispersion and concealment of these units are critical. Since a single nuclear weapon can destroy a battery, artillery units in the forward areas may disperse into equally firing-capable elements. The battery headquarters collocates with one firing element, with the other firing element dispersed. This dispersion improves the probability that an entire artillery battery will not be destroyed by a single nuclear weapon. This dispersion can be reduced if a greater risk is accepted or if the enemy nuclear threat is reduced (see examples in para 2-9).

c. Artillery units in the rear areas will not always be able to fire in support of units in contact. While these units will be relatively inactive, they must not be considered in reserve. These rearward artillery battalions must be prepared to destroy expected enemy penetrations.

d. The dispersion and the deployment of artillery in depth throughout the battle area, the need to reduce exposure to enemy detection, and the extreme difficulty of moving large tonnages of conventional ammunition logically favor the use of nuclear munitions. In addition to these factors, commanders must carefully weigh target threat and troop and civilian vulnerabilities to nuclear

effects in choosing the best type of firepower for the task. Ideally, conventional fire missions will be restricted to small targets close to and threatening friendly forces. Therefore, in tactical nuclear warfare, preplanned nuclear fire missions, resupply of nuclear rounds, and the rapid delivery of nuclear fires will be emphasized.

e. Rapid changes in the tactical situation may cause artillery units to move frequently. The survey teams organic to the battalions must locate as many alternate positions as time permits.

4-11. Command and Control

a. The dispersion of artillery units throughout the battle area results in decentralized control of artillery operations. Battalion commanders normally operate independently with division artillery or artillery group control being limited to directing battalion movements or ordering additional assistance to overcommitted battalions.

b. The battalion is the most critical echelon of control in a nuclear environment. The battalion establishes an alternate headquarters, which while austere, must be able to assume immediate control if the main headquarters is destroyed. In no case will the artillery battalion headquarters collocate with major maneuver headquarters.

4-12. Security

a. Security of nuclear-capable artillery units

is essential, especially when the wide dispersion of maneuver units is considered.

b. When necessary, the maneuver commander provides security for artillery platoons by positioning maneuver elements with each artillery element to protect against ground attack. Security may be provided by the attachment of an infantry company to each artillery battalion. If this is the case, the artillery commander will use this unit to provide his own security.

4-13. Combat Service Support

a. The most important CSS aspects are resupply and maintenance. The medical and mess section operation will not change although dispersion will require some modification of techniques.

b. Limiting conventional fire missions in a tactical nuclear environment reduces the conventional ammunition expenditures and resupply requirements. This reduction in conventional ammunition requirements increases the importance of nuclear ammunition supply.

c. The maintenance sections of artillery units must emphasize the rapid repair of lightly damaged equipment. Since most of the destruction caused to artillery equipment will result from enemy nuclear strikes, the damaged equipment will either require the relatively simple replacement of antennas and sights or will be damaged beyond the capability of the battalion maintenance section.

Section III. OTHER SUPPORT

4-14. Air Defense Artillery

Because of the destructive power of the nuclear air and missile threat, a strong air defense posture is required.

a. Tactics. Air defense artillery (ADA) activities in a nuclear war are basically the same as those in a nonnuclear conflict, but they will be more intensely planned and executed to prevent enemy reconnaissance and the delivery of nuclear weapons against friendly forces. Generally, nuclear conflict will increase the requirements for dispersion, mobility, decentralization of control, reduction of reaction time, use of special protective equipment, procedures, and measures to reduce radiation contamination hazards, and the capability for rapid reorganization after suffering mass casualties.

(1) The dispersion of friendly military assets on the nuclear battlefield makes more complex the planning for air defense (AD) coverage. The emphasis of the AD effort in the forward divisions is the prevention of the penetration of enemy reconnaissance and nuclear delivery aircraft beyond the rear boundaries of the forward maneuver battalions.

(2) ADA units must always be prepared to displace rapidly so as to arrive at the proper places in time to accomplish their missions.

(3) ADA organization standing operating procedures (SOP) must provide for autonomous operations under emergency conditions.

(4) Some ADA units are particularly susceptible to detection and location by enemy electronic intelligence (ELINT) and radar di-

rection finding equipment. Because they are high-priority targets for enemy attack, ADA units should be positioned so as to enhance their survivability and thus their continued ability to defend high-value military assets.

(5) ADA unit procedures must emphasize the use of cover, concealment, camouflage, deception techniques, and protective measures and procedures against radiation hazards.

b. Command and Control. Effective nuclear AD response to nuclear air attack requires timely initial authority to expend AD nuclear weapons. Constant evaluation of AD intelligence and early requests for release and rapid dissemination of the decision to initially release nuclear weapons via reliable responsive communications down to the ADA fire unit are mandatory. After the initial authority to expend AD nuclear weapons has been given, the ADA battery commander must be authorized to use the nuclear weapons allocated to his unit, subject to rigid conditions specified in SOP based on theater policies. Involved nuclear coordination procedures would prevent the use of nuclear AD weapons against nuclear air attacks, and such restrictions must not apply to ADA.

c. Planning. A detailed terrain analysis of the area to be defended by nuclear-capable ADA units is conducted early in the planning phase. This analysis will include the terrain variations in altitude, the locations of critical military assets and their priorities for AD, and a general survey of troop and population densities. This analysis, tempered with the commander's guidance, is the basis for the determination of the minimum normal burst altitudes that should be specified for each acceptable risk and weapon combination. For more detailed information on planning for ADA nuclear weapon employment, see FM 44-1 and FM 44-1A.

4-15. Naval Gunfire Support

a. U.S. Navy ships operating offshore can provide fast, accurate fire support for ground forces operating near the coast. Because of their mobility, ships can be used to provide fire support over a wide area with little time lost between missions. Ships should be used when conditions permit.

b. The method for requesting and processing naval gunfire will be as presently envisioned in FM 61-100 and FM 6-20-2.

4-16. Tactical Air Support

a. Doctrine. Tactical air support includes close air support, tactical air reconnaissance, and tactical airlift. Requirements and procedures for requesting close air and tactical air reconnaissance support are outlined in FM 100-26. One modification of these procedures is required; all aircraft entering the airspace over the brigade must coordinate their movement with the brigade CP to prevent possible destruction by friendly fires.

b. Close Air Support. Close air support is air action against hostile targets which are close to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces.

c. Tactical Airlift. Tactical airlift aircraft move combat forces and sustaining materiel under widely varying situations ranging from small movements in battle to large movement over long distances. A critical factor in establishing an air line of communications (ALOC) is the location, selection, and construction of suitable airstrips and drop zones (DZ). The site selection for a network or grid pattern of these areas should be accomplished at the outset of an operation. The aircraft mission encompasses these basic tasks:

- (1) Logistic airlift operations.
- (2) Airborne operations.
- (3) Tactical aeromedical evacuation.

(4) Special air support operations. Because of the nature of their airframe, airlift aircraft have the capability or adaptability to accomplish such special missions as flare drops, airstrikes, command and control missions, loudspeaker missions, and leaflet drops.

d. Tactical Air Reconnaissance. Air reconnaissance of various target types is accomplished by different reconnaissance methods in keeping with the target characteristics. Targets are often covered by more than one mode of reconnaissance at the same time. Visual and imagery are the general methods of reconnaissance.

(1) Visual reconnaissance can be of great value, particularly when conducted over the same areas by the same pilots for extended periods. Four general categories of visual reconnaissance are area search, specific search, route reconnaissance, and weapon fire adjustment. The desired intelligence or essential elements of information (EEI) should be specified for each target requested.

(2) Recorded images of various kinds are required when visual reconnaissance does not suffice or becomes impracticable. The principal image types are day or night optical, thermographic, radiographic, and electronic.

(3) Electronic warfare reconnaissance is used to maintain electronic order of battle and to locate high-threat emitters and associated weapon systems.

(4) Weather data are obtained from visual observations and airborne instruments are used to update weather forecast and assist in making operational decisions.

4-17. Army Aviation

a. Army aviation plays an important role on the nuclear battlefield. Army aviation will perform its usual missions; in addition, those peculiar to the nuclear battlefield will include mass casualty evacuation, radiological and damage surveys, and air delivery of atomic demolition munitions (ADM) and teams. Large gaps between units will often require employment of aviation in a security role.

b. Army aviation units present lucrative targets; therefore, the aviation commander insures that his aircraft are camouflaged and dispersed widely throughout the battlefield. Dispersion of the aircraft does not require dispersion of the maintenance facilities although stocks of ammunition and fuel will be prepositioned throughout the forward areas of the division. The maintenance facilities organic to the aviation battalion may operate from one central location to provide rapid, one-stop service to the aircraft. The number of aircraft at maintenance facilities is limited to prevent the facility from becoming a nuclear target.

c. Airmobile forces from corps reserve can be used to block enemy penetrations, perform security missions, conduct aerial radiological surveys, and exploit the friendly use of nuclear weapons. Frequent repositioning of combat elements requires displacement of CP which may be accomplished by aerial means.

d. Army aviation takes on increased significance when direct aerial fire support is employed against armored vehicles. Aerial antitank missile systems provide fire support during on operation when intermingling of forces denies the use of friendly nuclear weapons against enemy armored units.

4-18. Chemical Operations

a. Doctrine for the employment of chemical agents and guidance for planning the employment of these agents/munitions are contained in FM 3-10. General guidance is contained in FM 101-40.

b. Except in retaliation to enemy use of chemical weapons, the major U.S. chemical effort is devoted to smoke and flame operations. Smoke, because of its ability to degrade IR sensors, some radars, and the flash effects of nuclear detonations, is important on the tactical nuclear battlefield. There is no major difference in smoke operations in a nuclear and nonnuclear conflict. Commanders must determine priorities because the operational areas are large and the available assets are limited.

c. Guidance for unit commanders on defense against chemical and biological attack is contained in FM 21-40. When operating in a chemical environment, personnel will be dressed in chemical protective clothing and masks in accordance with the mission-oriented protective posture (MOPP). This will degrade individual and unit capabilities, which the unit commander must consider in his operational planning.

4-19. Engineers

a. Nuclear weapons employed by and against friendly forces can so alter the terrain that requirements for engineer effort of all types may be overwhelming when considered in the conventional sense. Engineer operations must be governed by a strict system or priorities in order to realize the operational objectives of the supported force. The highest priorities for engineer support are maintaining the mobility of the supported force and impeding mobility of the enemy. Additional priority missions for engineer units may be construction of shelters and advising and assisting combat units in the construction of fighting positions.

b. Good maneuver routes and early route reconnaissance are particularly important because forces are dispersed and control is decentralized. Damage from nuclear strikes requires extensive repair to roads and bridges. Once the critical roads and bridges are identified, engineers prepare alternate routes to compensate for their possible destruction. Support construction and repair of line of communications (LOC) facilities is expected to be a major undertaking in a nuclear environment. Major installations such as ports

and airfields would be key targets for nuclear activity, and their repair/replacement is required to sustain operations. Numerous small depot complexes and more intensive bridging operations over major water barriers will be required to maintain a LOC.

c. The construction of obstacles to impede or canalize attacking enemy forces is of considerable importance in a tactical nuclear conflict. Properly constructed and emplaced obstacles cause the development of nuclear targets. Barriers must be a fully integrated effort of minefields and other obstacles created by conventional munitions and ADM's and covered by nuclear and conventional fires. They are used extensively to protect friendly forces, to block high-speed avenues of approach, and to force the enemy to mass at locations favorable to his destruction by nuclear fire. Radiologically contaminated fallout can also impede or canalize enemy forces.

4-20. Communications

a. A nuclear environment substantially increases the problems of communicating by electronic means. The damage to, or the time to reestablish, radio/wire communications is directly dependent on the yield and type of burst of the nuclear weapon or weapons employed in a particular area.

(1) Maximum effort will be made to reestablish radio/wire communications as quickly as possible. Until such communications are reestablished, all other means of communications will be utilized (i.e., unscheduled air, motor and foot messenger, visual and sound).

(2) For limited secure communications, all unit's communications-electronic/standing communications-electronic (CEOI/SCEI) should contain a simple operations code if it is necessary to utilize visual or sound as a means of communication.

(3) Units must guard against susceptibility to jamming and must emphasize the need for electromagnetic compatibility (EMC) and vulnerability analysis as part of their communication and operation planning.

b. Redundant communications are imperative in a nuclear conflict to insure that the commander always has the means to command, control, and coordinate his maneuver and support forces.

c. A significant difference between traditional communication concepts and the concepts under

tactical nuclear conditions is the necessity for the signal elements supporting a major headquarters to remain mobile so they can displace rapidly. This concept applies to every headquarters from battalion through corps and is essential to maintain command and control on the battlefield. Large permanent headquarters are rarely established in the area of the forward division, therefore, reducing the requirement for internal communications nets. If at all possible, communication within headquarters is accomplished by liaison and messengers.

4-21. Intelligence

a. Since target acquisition and identification are the most significant intelligence activities in a nuclear conflict, reliable collection assessment, and rapid communications are vital. Information-gathering devices are used extensively to supplement visual observation and information collection by listening posts, observation posts, patrols, and from materiel, document, and personnel exploitation. The gaps between widely dispersed units are covered by a multitude of overlapping sensor devices. The use of sensors, aircraft, and long-range patrols must be coordinated to insure complete coverage of the area of operation. Further, provision must be made for the information to be fed to more than one collecting point.

b. One of the most essential operational requirements is the rapid evaluation of information on nuclear targets. This information must reach the nearest intelligence processing agency where it can be converted into target intelligence and be provided to the appropriate firing unit.

c. Counterintelligence personnel from the military intelligence company at division and corps can assist the brigade and other intelligence officers in formulating security measures to counter espionage and sabotage threats. Widely dispersed units, especially those with a nuclear delivery capability, may become targets for such activities, particularly by infiltrators and partisan groups. Counterintelligence personnel can assist in identifying security hazards from both within the unit area and from any surrounding population. These personnel also provide a liaison contact with other intelligence and security agencies having data of interest to the unit. Further, personnel from the division and corps military intelligence detachments, particularly prisoner of war interrogation specialists, may operate in forward areas. Intelligence from these sources,

when collated with other available information, may provide lucrative nuclear targets.

4-22. Military Police

a. The nuclear environment complicates military police operations by impacting significantly on the functions of circulation and straggler control. The dispersal of friendly forces requires military police units to provide support over extended distances, usually without personnel or equipment augmentation.

b. The mere threat of the employment of nuclear weapons may cause random massive population movements beyond anything heretofore experienced. Freedom of ground maneuver on LOC will be inhibited as masses of people attempt to escape from potential target areas. The random nature of these surges requires military police and civil affairs units constantly to remain abreast of the circulation situation so that they are responsive to the need for identifying areas in which tactical maneuver is feasible or areas in which it is impossible. Liaison must be established with maneuvering units that are directly affected by any population surge, and the main support effort must be directed at keeping sufficient routes open to permit high-speed tactical maneuvers.

c. Straggler control will require increased emphasis on the nuclear battlefield. Shock, disorien-

tation, and loss of command and control dictate the implementation of an orderly, purposeful, and effective system for assembling widely dispersed personnel so that they can be returned to their units, transported to medical facilities, or reorganized into new and cohesive elements. The maneuver commander should consider reinforcing the military police effort involved in straggler control to assist them in handling and processing the large numbers of stragglers anticipated in a nuclear conflict.

d. In addition to circulation and straggler control, military police units must concentrate on the physical security of special ammunition sites, supply facilities, and logistic convoys. The primary emphasis will be on providing technical advice to commanders who are responsible for protecting their facilities by using organic resources.

e. Captured enemy personnel must be evacuated rapidly from the nuclear battlefield. If this is not feasible, prisoner of war facilities that are clearly identified, marked, and separated from any potential target must be established to provide captured personnel as much protection as possible under existing conditions. The large number of wounded prisoners of war expected in a nuclear conflict will impact on available medical facilities and may require the assignment of minimal medical support personnel to prisoner of war collecting points or cages.

CHAPTER 5

COMBAT SERVICE SUPPORT

Section I. GENERAL

5-1. Purpose

This chapter outlines doctrine for combat service support (CSS) during tactical nuclear warfare operations to include supply, maintenance, transportation, and CSS aspects of medical treatment and evacuation and personnel management and services.

a. The established principles of CSS apply to tactical nuclear warfare operations. Logistic techniques, procedures, and organizational concepts must be modified to provide responsive support to combat elements as required by the specific situation.

b. Survival of CSS units to remain capable of supporting combat units must be emphasized. CSS units must be highly mobile and operate from widely dispersed positions. Logistic support planning must visualize interruptions and higher equipment losses and must compensate for them through the use of prepositioned stocks, advanced techniques of automatic resupply, and throughput concepts of supply distribution.

c. Maintenance support is restricted to emergency repairs or to short-term repairs. When battle conditions permit, contact maintenance teams perform onsite maintenance. During the initiation of nuclear conflict, the forward area is usually untenable; therefore, maneuver elements must rely on their organizational capabilities during that period. Wide discretionary authority is granted to repair, cannibalize, evacuate, or destroy unserviceable equipment based on criteria established by the major command.

d. Medical responsibilities remain unchanged. However, workload and emphasis shift according to the numbers and types of patients encountered. Great numbers of dead and wounded accumulate rapidly during the initial phases of a tactical nuclear war. Using triage teams, medical personnel segregate the wounded and order evacuation to the appropriate medical facility. Signifi-

cant numbers of casualties may not be able to be examined or moved until the conflict stabilizes. Current doctrine on evacuation is valid. However, different categories of patients may require different evacuation priorities.

e. Graves registration tasks increase significantly as a result of nuclear detonations; therefore, all commanders must be prepared to accomplish graves registration actions.

f. Unit replacement is the most common form of replacement for combat battalions and artillery.

g. The CSS system relies on automatic data processing (ADP), particularly in the materiel management field. CSS activities must be provided alternate ADP resources to insure a flow of current management information.

5-2. Organization

a. CSS must respond to the needs of the combat forces operating in small groups or elements dispersed in great depth and across wide fronts. Support to maneuver and nuclear artillery units is emphasized. No specific changes in the CSS organizations are required in a tactical nuclear war. CSS units operate from widely dispersed positions and remain as mobile as possible. CSS units rely on supported tactical commanders for protection against major ground attack and depend on passive measures for nuclear defense.

b. The function of direct support is to provide close and continued logistic support to using units. Within the division, companies of the division support command (DISCOM) battalions positioned in the brigade areas provide CSS for the forward brigades. These companies disperse from 2 to 3 kilometers apart but are located in the same general area to minimize resupply problems of the using units. The brigade CSS area should be near the brigade rear boundary so that its location will not interfere with tactical opera-

tions. The remainder of the CSS units supporting the division, both divisional and nondivisional, operate from positions located well to the rear but within the division area.

c. General support activities are organized to provide backup support to direct support elements. These general support organizations are less mobile, hold more stock, and generally belong to corps or field army support command (FAS-

COM) CSS organizations. Larger and more specialized general support activities are found in the communications zone (COMMZ). General support activities contribute to the throughput concept by rapidly instituting preplanned or emergency shipments of supplies, by quickly issuing major items of equipment, and by assisting in the recovery, inspection, classification, and evacuation of unserviceable equipment.

Section II. SUPPLY

5-3. General

Planning for supply operations must include a consideration for the large and unexpected losses likely to occur in supplies and equipment. Providing alternate means of control, storage, and issue of supplies is a consideration. The supplies most needed for survival, particularly classes I, III, V, and VIII and water, are emphasized.

5-4. Supply Operations

a. Destruction of supplies is to be expected; therefore, forces prepare to operate for short periods from stocks prepositioned near the points of anticipated consumption. Forward divisions and the forces directly supporting them are able to exist with a minimum of 3 days if supplies of selected classes I, III, V, and VIII are carried with them or are located near them. An additional 4 days of similar supplies is available to the forward divisions either prepositioned in the division area or carried with the maneuver elements. Resupply by air during any phase of a tactical nuclear war is limited to emergency on-call resupply missions and high-priority requirements.

b. Only essential supplies are stocked in the forward CSS units. Combat units must be self-sustaining; they stock items essential to mission accomplishment. Although predetermined survival supplies may be forwarded automatically from theater army support command (TASCOM) or FASCOM units, such shipments are normally held behind the forward division areas and sent forward only on call from the requesting division. Total reliance on such shipments moving automatically into the forward areas from TASCOM or FASCOM units during the initial 15 days is unrealistic. As the situation stabilizes, reliance may be placed on throughput shipments and automatic or preplanned supply shipments.

c. Resupply in the forward areas of the field

army is normally at night, using rendezvous techniques. Unit distribution of supplies is employed as far forward as possible.

d. As a rule, logistic stocks are low-priority targets for nuclear weapons; however, large concentrations of classes III and V are exceptions. When possible, stocks are balanced; stored in small, dispersed sites; and kept as mobile as circumstances permit.

5-5. Classes of Supply

a. *Class I.* The number of rations carried by the individual soldier will be a matter of command decision determined by factors such as weight and the time frame in which food can be resupplied. Prescribed loads in units will be a command decision. Class I rations in the forward division areas should be sufficient to sustain the forces for 7 days.

b. *Class II.* Items in this category generally are not essential to combat operations except in extreme climatic environments. Limited supplies of assorted boots, socks, and clothing may be stocked, but generally no farther forward than DISCOM.

c. *Class III.* Class III fuels requirements may increase, depending on the activity of maneuver units and the losses of stocks during the initial stages. The depth of the battlefield may produce a bonus effect since tactical units will be much farther to the rear than in a normal orientation, resulting in less fuel requirements for CSS activities. Units establish class III distribution points for vehicles and aircraft as required. Tank trucks are used as far forward as possible. To insure the availability of adequate fuel support, the petroleum, oil, and lubricants (POL) supply system must have sufficient inherent redundancy and cross-support features to permit support in any portion of the field army area. Major POL storage sites must be dispersed, minimum stocks

maintained, and be camouflaged to avoid presenting a lucrative nuclear target to the enemy.

d. Class IV. Class IV items normally concern special items of equipment and fortification material for defensive positions. Such items are generally not stored in the forward division areas but are maintained to the rear and sent forward in accordance with specific plans or requirements.

e. Class V. Field artillery units are positioned in great depth, and conventional fires are restricted to minimize identification of artillery units and subsequent destruction from counterfires. Thus, in the initial stages, conventional ammunition stocks may be conserved. This may be reflected as a bonus from supply and transportation viewpoints but unanticipated losses and sudden requirements may well offset the gains. Commanders will personally insure the adequacy and security of the nuclear ammunition supply because of its importance. Adequate security forces may be provided to protect nuclear weapon storage facilities against conventional or guerrilla attack. Ammunition supply points must be dispersed with minimum stocks necessary to support the combat forces. Supporting ammunition depots must rely on dispersion and camouflage for protection against nuclear targeting.

f. Class VI. These are personal demand items (nonmilitary sales items) that should be made available for morale purposes. Stockage in the forward support or forward division areas is not normally essential.

g. Class VII. These major end items are final combinations of end products ready for their intended use, e.g., tanks, launchers, and vehicles. They are normally found in the heavy materiel supply companies supporting each area and in

the operational readiness float of the divisional maintenance units. In view of the extremely high losses anticipated during the initial stages, equipment replacement is a major logistic support requirement, particularly at echelons above division.

h. Class VIII. These are medical materials that include medical-peculiar repair parts. Survival supplies are prepositioned throughout the combat zone, particularly in the combat elements of the forward divisions. Medical supplies should be sufficient to support massive *self-help* and *buddy care* requirements during the initial stages of nuclear combat and requirements for intensive training of troops in both programs.

i. Class IX. These are repair parts and components, less medical-peculiar repair parts, include kits, assemblies, and subassemblies that are required for maintenance support of all equipment. Repair parts are particularly important in a tactical nuclear war. Commanders must be prepared to repair many lightly damaged items that require only organizational effort. The range and scope of the repair part requirements for organizational maintenance indicate that support packages, computed in anticipation of such a need, be forwarded on a prearranged basis from DISCOM to the using units. Some repair parts categories, such as antennae and optical sight groups, lend themselves to advanced supply management techniques. Commanders must insure that repair parts stockage, particularly in the forward areas, is limited to items essential to restoring equipment to operable condition.

j. Class X. This material is required to support nonmilitary programs, and, therefore, is seldom required in tactical nuclear or conventional combat operations.

Section III. MAINTENANCE

5-6. General

a. Maintenance organizations function essentially as in other operations; however, the nuclear environment requires maintenance units to operate from widely dispersed positions and to remain highly mobile. Maintenance organizations in themselves are unlikely to become high-priority nuclear targets; however, when they are collocated with other CSS units in a large complex, they may become lucrative nuclear weapon targets.

b. Maintenance is restricted to emergency repairs or to short-time repairs.

c. The use of contact maintenance teams to provide onsite maintenance will be emphasized. The teams move to the equipment that requires repair, repair it on site, or order the evacuation of the equipment.

d. Dispersion results in distances twice those of a conventional orientation. Commanders must acknowledge the additional time and space penalties imposed by such dispersion.

e. Maintenance units in the forward brigade areas are positioned near the rear boundary of the brigades, with at least 2 to 3 kilometers between units. Maintenance units supporting the division as a whole are located well to the rear in the division area. All elements are located so as to not interfere with tactical operations.

f. Before or early in the conflict, the commander, usually at division or higher levels, determines the priority of critical items to be repaired. He determines the level of damage to be repaired. Only those items of equipment that can be made combat serviceable with minimum manpower expenditure should be repaired. Items that cannot be repaired under these criteria are to be abandoned for later recovery or are to be destroyed if necessary.

g. The major command establishes criteria on which wide discretionary authority is granted to repair, cannibalize, evacuate, or destroy unserviceable equipment.

h. Neutron-induced gamma activity (NIGA) is not a significant factor with respect to materiel; however, other conditions such as contaminated areas, tree blowdown, rubble, and fires may restrict maintenance operations on the tactical nuclear battlefield.

i. Although the repair task, in general, is expected to remain as the dominant constraint, commanders must realize that personnel losses in certain units may be so severe that repair of equipment associated with those units need not be an immediate concern.

5-7. Maintenance Operations

a. *Organizational Maintenance.* Initially, maintenance activities are limited to organizational support. Anticipated losses during initiation of a nuclear conflict indicate an overtaking of organizational maintenance elements. Once these elements are free to move about in the area, they can recover and repair only a limited number of damaged combat-essential items. Ground combat operations will permit major recovery tasks to commence 72 hours after damage is inflicted. Initial damage assessments may be limited to air reconnaissance reports or to estimates based on yield and probable radius of damage. The recovery operations must not interfere with tactical operations nor inhibit friendly fires. The unit commander retains responsibility for the recovery and repair of equipment. Special

operations may be conducted at any time to recover nuclear weapons or firing pieces. Some unrecovered critical items may be destroyed by friendly fires rather than to permit them to be captured by the enemy.

b. *Direct Support.* Direct support maintenance is provided both by maintenance contact teams and by direct support units.

(1) Initially, direct support maintenance units may not support combat forces; therefore, maintenance requirements appear so rapidly and in such quantity that a backlog develops. The direct support elements also must anticipate extensive damages in such areas as optics and antennae. The tactical nuclear environment demands that direct support elements reorient their methods of providing assistance to supported units. Examples are ordering necessary repair parts support packages in advance of their needs and emphasizing the use of highly mobile contact teams to assist using units in the rapid accomplishment of organizational repairs. The use of repair parts support packages computed in anticipation of such extensive damage is in consonance with and supported by advanced supply and transportation techniques, such as preplanned supply (on-call, automatic, or prepositioned stocks), and throughput shipments. Particular care must be taken where a variety of makes and models of equipment must be supported (as in construction equipment). Parts packages must be keyed to specific makes and models so that units moved from one area to another can draw the proper packages.

(2) Aviation maintenance units are widely dispersed well to the rear of the forward brigades. A minimum of aircraft are located with these units to avoid presenting a lucrative target. Aircraft awaiting repairs are held at dispersed fields until they can be repaired promptly and returned to the user.

(3) Missile maintenance is an exception to the doctrine concerning routine maintenance and limitations on repair. Virtually all missile systems attacked by nuclear weapons become total losses. These losses are supply replacement problems, not maintenance problems. The missile maintenance element's direct support role must focus on routine maintenance, particularly the calibration of test equipment in the hands of using units.

c. *General Support.* General support maintenance units operate substantially the same in a

nuclear conflict. They may take passive measures, such as dispersion, concealment, camouflage, and, where possible, the hardening of facilities. If general support units are well dispersed, they are less likely to become nuclear targets.

d. Evacuation of Materiel. The nuclear environment highlights the value of air evacuation of equipment, particularly considering the essentiality of the items, the distance between units, tree blowdown and obstacles, and the need to minimize traffic on land routes.

5-8. Special Considerations

a. Recovery and Utilization of Lightly Damaged Equipment. Nuclear warfare can cause high, perhaps total, personnel losses in some units. When radiation is a dominant casualty-producing factor, a significant quantity of combat-essential equipment may remain that has suffered only light damage.

(1) The tactical or using unit commander retains the responsibility for recovery and repair of lightly damaged equipment. Recovery includes retrieval of damaged equipment and movement to passable roads for further movement to a maintenance facility or for repair on site. The using unit repairs lightly damaged equipment while organic direct support units repair moderately damaged equipment or it is evacuated to supporting maintenance facilities. In reaching a decision to recover, disable, or abandon lightly damaged equipment, the commander considers—

- (a) Command policies.
- (b) Mission requirements.
- (c) Probability of detection and subsequent targeting.
- (d) Criticality of the equipment.
- (e) Location of the equipment.
- (f) Probable destruction caused by friendly nuclear fires.

(2) Nuclear weapons remaining in destroyed firing elements or ADM elements are highly important and sensitive; therefore, they must be recovered or denied to the enemy. Commanders of nuclear delivery units must insure that standard procedures for the recovery of such weapons are developed, tested, and in effect. These procedures must set forth positive control measures whereby—

- (a) The number of nuclear weapons in each firing unit is known.
- (b) The poststrike situation in each nuclear firing unit is promptly reported.

(c) A primary and an alternate element are tasked for the recovery of nuclear rounds.

(3) To avoid interference with tactical operations and to improve space management, control and coordination of all recovery operations in the forward division areas are functions of the brigade S4. Within the division rear area, the DISCOM commander has this responsibility. Personnel and equipment resources of the brigade trains and both the forward and rear elements of the division maintenance battalion are available for this task. Other personnel and equipment assets of the DISCOM and of the maneuver units may be applied to the task, subject to the following guidance.

(a) Appropriate units will be tasked with the recovery of critical equipment from units that have been hit by nuclear weapons.

(b) Individual replacements are not normally used to recover lightly damaged equipment. The effectiveness of an unorganized group of transients performing a recovery operation in unfamiliar territory is questionable.

(c) Radiated personnel can often be used for recovery operations. Some radiation casualties can be expected to enter a latent phase within 3 days of initial exposure to radiation. Many of these personnel function effectively for 14 to 21 days before requiring hospitalization. Radiation exposure guidance is discussed in FM 3-12.

b. Moderately and Severely Damaged Equipment. The most significant logistic implications concerning equipment recovery and repair stem from the large number of items that sustain moderate and severe damage. Maintenance requirements generate rapidly; and backlogs, which cannot be avoided, are a problem either for supply replacement or maintenance repair. Direct impact is expected in the areas of recovery, inspection, classification, repair, and replacement; and indirect impact is expected in other areas, such as repair parts support, location of readiness floats, and location of replacement units.

(1) Support maintenance is likely to remain as the constraining factor even when command priorities reduce the workload and all maintenance personnel resources are applied to the task.

(2) Moderately damaged equipment which becomes a support maintenance requirement must be repaired by the maintenance element before it can be returned to the combat element. Severely damaged equipment is considered out of operation permanently and may become a candidate

for cannibalization. It is unlikely that centralized control over cannibalization, recovery, or evacuation of severely damaged equipment can be established until the tactical situation is stabilized. Such actions should not divert effort from the repair of moderately damaged items or further diffuse the efforts to reconstitute a combat effective force.

c. Inspection and Classification. The initial inspection and retrieval of damaged equipment may present special problems. Classification criteria, procedures, and responsibilities for inspection and classification may have to be modified. Using units may be unable to survey and report the location of damaged equipment. Initial classification data may be limited to air reconnaissance reports or estimates based on yield and radius of damage. Using units (combat elements in particular) can recover only the most critical and most accessible items, accomplishing little or none of their normal retrieval tasks. They may leave items for other elements to recover, e.g., noncritical or low-priority items and inaccessible lightly damaged items plus moderately and severely damaged items.

d. Maintenance Controls. To avoid major backlogs of moderately damaged equipment at support maintenance levels, special maintenance controls are established to include possible deferral of routine maintenance. Maintenance company commanders must be granted wide discretionary authority in order to respond to the requirements of the support force. While the repair task is expected to remain dominant, requirements may be reduced because personnel losses are so severe in some units that expedited repair of the items associated with those units is unnecessary.

e. Repair Parts. When numerous major items of

combat-essential equipment suddenly enter the support maintenance system, neither the range nor the quantities of the repair parts authorized in the support maintenance system can be expected to meet the requirements of immediate responsive repair. Similarly, the repair parts authorized in the using units' prescribed loads cannot meet the requirements of the unit. Repair parts stockage at direct support level will rapidly be depleted. Some groupings of repair parts will be suitable for automatic shipment to direct support units. For other groups, the use of replacement modules of "next higher assembly" concept may prove feasible for rapid supply action. In any respect, intensive management must be exercised over repair parts for CSS system to be responsive to the combat commander.

f. Operational Readiness Float. The commander insures maximum flexibility in the maintenance system, particularly in the replacement of combat-essential end items. Normally, the operational readiness float will not be used to replace items that have been lost, destroyed, or determined uneconomically reparable by direct support activities. Replacement of such items will be through supply channels. However, float items may be issued in an emergency or to replace combat-essential equipment when such equipment is repaired for the accomplishment of the supported unit's assigned mission, provided approval of the support command commander has been acquired. The maintenance commander considers the distances involved when placing the maintenance float in the forward support areas. The commander insures that the operational readiness float is held within the maintenance system of the CSS unit at an echelon capable of responding promptly to the needs of the combat elements.

Section IV. MEDICAL

5-9. General

Medical support follows the basic principles and practices of military medicine. Provision of medical treatment and evacuation is complicated by the extended distances and independent, separated nature of operations. The mass casualties anticipated in the early stages of tactical nuclear warfare may overload the medical system; therefore, treatment of cases involving minimum trauma may be omitted or deferred.

5-10. Operation of Medical Units

a. The principles set forth in appropriate 8-series field manuals should be followed as closely as the situation permits; centralized control, when practicable, is more efficient than decentralized control.

b. The division medical battalion companies establish medical facilities in each brigade area and in the DISCOM area away from potential nuclear targets. These facilities are clearly identi-

fied. Personnel of these companies take passive measures to protect themselves against nuclear strikes. Medical facilities must prepare to receive and treat large numbers of casualties delivered to them in a short time.

c. Medical self-help and buddy care training programs are emphasized as a means of reducing suffering, conserving unit effectiveness, and alleviating medical workloads.

5-11. Evacuation

a. The principles and factors concerning evacuation of the wounded remain unchanged. However, as trained medical personnel will be required to provide emergency medical care, commanders should plan to utilize nonmedical personnel for search and rescue of the injured. Techniques of application may have to be modified because of special considerations and requirements of the nuclear environment.

b. Within 7 days after the initiation of a tactical nuclear war, the battle is expected to stabilize sufficiently to increase the number of aircraft to perform evacuation missions. During this phase, a priority mission for Army aircraft, particularly medium helicopters, is the movement of large numbers of casualties to appropriate treatment or holding facilities. A large percentage of these casualties may be ambulatory and may be suffering primarily from the effects of nuclear radiation. Casualties may be so high that, as an exception, general-purpose aircraft may be used to evacuate them. Medium helicopter assets of the corps or field

army should be made available, on a mission-controlled basis, to the corps or army surgeon until the evacuation mission from the division to field army hospitals is accomplished. If non-medical helicopter assets are required for evacuation of large numbers of patients within the division, they should be mission-controlled by the medical battalion commander of the combat division.

c. The theater evacuation policy may require modification in view of the great numbers of casualties anticipated in a period of 120 days or less.

5-12. Medical Supplies and Equipment

a. Medical supplies assume new importance in the tactical nuclear environment. The emphasis on survivability, particularly among the maneuver elements, makes medical supplies an essential part of these stocks to be positioned or maintained with the maneuver elements in the forward area. Stocks of medical supplies must aim at supporting the self-help and buddy care programs. CSS planning must include consideration of predetermined quantities of medical supplies arranged for automatic shipment from FASCOM or TASCOM units.

b. Planning at all levels must consider the extraordinary requirements for specialized medical supplies, whole blood, etc. required during the early stages of an intensive nuclear conflict. Because medical supplies are fragile and perishable, they may be logical candidates for through-put shipment from CONUS to the field army or corps support area.

Section V. TRANSPORTATION

5-13. General

The operations of transportation units in a tactical nuclear war vary slightly from operations in other forms of conflict. Transportation units use dispersion, cover, and concealment to reduce their vulnerability to nuclear attack. An ability to operate in more than one location enhances passive defensive measures.

5-14. Transportation Operations

a. The need to disperse has doubled the dimensions of the division area. The impact of the additional distances on transportation activities can only be projected. The penalty of the additional distance may be offset by the loca-

tion of more units farther to the rear, which reduces transportation requirements.

b. Initially, movement in the forward areas is severely curtailed, if not completely halted. During the first 30 days, movement throughout the combat zone may be curtailed as much as 50 percent. Also, disruptions can be anticipated as a result of priority movements of replacement units and equipment, large-scale movements of casualties and patients, and generally reduced mobility resulting from damaged and congested highways and shortages of vehicles.

c. The throughput concept for distribution of supplies into the forward division areas may be limited or partially curtailed during and im-

mediately following the initiation of nuclear conflict. Limited application within COMMZ or to the rear of the combat zone may be effective. Resupply in the forward areas is limited to emergency shipments. Restrictions to movement and the need for priority deliveries of specific items and quantities limit implementation of throughput distribution of supplies to the forward area until the situation stabilizes.

d. Logistic planners must consider the increased fuel requirements visualized in a tactical nuclear war. The increasing number of fuel-consuming vehicles in U.S. units and the likelihood of mass losses of fuel caused by nuclear attacks indicate the need to plan for emergency movement of POL stocks throughout the combat zone by all transport modes.

e. The extensive use of nuclear weapons early in the conflict may limit the use of aircraft in forward areas. Within 7 days after initiation, the battle is expected to stabilize sufficiently to permit commitment of aircraft to high-priority resupply and evacuation missions. During this

phase, Army aircraft, helicopters in particular, have a priority for moving large numbers of casualties to medical facilities. The use of helicopters to provide routine resupply is not anticipated. Resupply by air during any phase of a tactical nuclear war will likely be limited to emergency, on-call missions.

5-15. Transportation Movements

In addition to seeking the optimum utilization of all modes of transportation, movements personnel have the important task of providing movement data to commanders to insure effective space management (para 2-12). In turn, the tactical operations center/command post (TOC/CP) informs transportation movements personnel of the whereabouts of other units to enable the transportation system to better deliver supplies and provide essential evacuation service in the forward areas. The importance of this service cannot be overemphasized in view of the anticipated mass destruction and loss of complete units in such an environment.

Section VI. PERSONNEL MANAGEMENT CONSIDERATIONS AND SERVICES

5-16. General

The unique environment of a tactical nuclear battlefield presents commanders and personnel and administrative elements added personnel management problems. Every soldier, whether in the forward combat areas or in the service and support areas to the rear, is confronted with the prospect of new and strange circumstances and he is under constant threat of annihilation by enemy nuclear strikes. Even though he is trained to operate in isolated, semi-independent groups on a widely dispersed battlefield, the soldier is exposed to death and destruction of a magnitude far beyond his imagination. Such factors have a direct bearing on the soldier's ability to react properly to his leadership and his desire to perform at peak proficiency. Commanders should recognize the requirement for acclimatization and psychological adjustment of all personnel, particularly individual replacements, and insure that all personnel receive a complete orientation of the unit, its mission, and the aspects of a nuclear battlefield. Men must recognize the possibility of sudden losses of leaders and must be filled with a determination to exert leadership, to respond to leadership, to reorganize, and to accomplish the mission.

As far as possible, men are kept informed of the overall situation. Each man must realize his part in the overall operation if he is to be effective. Each individual, particularly newly arrived replacements, must be allowed as much time as possible to make initial adjustment to the nuclear environment.

5-17. Personnel and Administrative Services

Although personnel and administrative (P&A) services function essentially the same as in other environments, the manner of operation will differ considerably from the stability operations or nonnuclear war. The occurrence of large numbers of casualties in short periods of time impacts on the entire personnel and administrative spectrum. The distribution of losses in the combat elements and the resultant replacement requirements are expected to fluctuate widely. The great numbers of wounded and killed in action impact on the entire personnel services area, e.g., strength accounting, finance, and postal. Proper location and identification of personnel are emphasized to minimize erroneous reporting of dead, wounded, or missing to insure that requirements are known for individual replacements by military occupational specialty (MOS).

Possible losses of entire units place additional importance on the location of records and current alternate sets of records of the soldiers.

5-18. Unit and Individual Replacements

a. Unit Replacements. The more common form of replacement during a tactical nuclear war is unit replacement because losses to personnel and equipment will be many times greater than those experienced in other types of combat. Replacement of entire units to an extent never before experienced must be considered. The large number of casualties in maneuver and combat support organizations makes replacement by the individual infeasible in some situations and undesirable in others. Organizations most susceptible to such destruction are the nuclear delivery batteries and maneuver units such as armor and mechanized infantry. Replacement by unit alleviates command and control, processing, and training problems. Brigades and battalions are established in the theater and are earmarked for this purpose. Not all replacement units require full tables of organization and equipment (TOE). Some units may be equipped only with individual weapons and minimum communication equipment, obtaining combat-essential items from the operable or serviceable pieces of equipment left in the forward areas. These units are flown into the forward division area to replace destroyed units. This system is particularly effective when replacing units not located in the forward brigade area. Crews organized and trained as members of a replacement platoon or company can be used to achieve combat effectiveness. This technique takes advantage of the usable equipment assets on the battlefield, minimizes movement and displacement from position, and lessens processing and training problems.

b. Individual Replacement. Individual replacement continues to represent a considerable and important workload even though great numbers of individual replacements are removed from the workload by virtue of a more extensive unit replacement program. In addition to those personnel in the communications, surveillance, air defense artillery, and intelligence fields, skilled technicians in the logistic services and administrative services will be required. Although combat support and CSS units in the rear areas are less likely to become nuclear targets, losses in these units could result from nuclear strikes on

higher priority targets. Replacements of personnel for such units probably will continue to be accomplished in accordance with current replacement procedures.

5-19. Graves Registration

In a nuclear battle, units may not have the time or the opportunity to evacuate and bury the large numbers of dead. The practice of evacuating the dead to cemeteries in the rear areas or in continental United States (CONUS) may be deferred, and cemeteries in the division area may be used. Direct support in the form of graves registration detachments probably will not be available for all units that have suffered mass casualties. Therefore, all echelons of command must be prepared to accomplish those tasks related to recovery, identification, evacuation, or burial of deceased personnel normally performed by graves registration elements. Commanders must emphasize the importance of expeditious processing of remains in the interest of troop morale and to maintain confidence in the U.S. Army's methods of handling the dead. When hasty burials are authorized, the grave sites must be marked to enable their relocation at a later time. Identification of the dead is paramount so that notification of next of kin can be made promptly and accurately.

5-20. Rehabilitation Areas

Personnel operating in a nuclear environment will receive repeated and varying doses of nuclear radiation. Although exposure to large quantities of radiation will cause immediate casualties, there will be other personnel who will receive a lower intensity which will not either prove fatal or cause immediate hospitalization. However, continued exposure would eventually cause casualties. To prevent the hospitalization of personnel, they must be removed from the radiation environment. Commanders must emphasize the importance of removing personnel to rehabilitation centers before they become inoperable. These rehabilitation centers must be located throughout the command to provide dispersion from possible nuclear detonation. These centers must also be accessible to meet the replacement requirements of the commander anywhere in the command. All personnel must become acclimatized and be psychologically readjusted before they reenter another contaminated environment.



CHAPTER 6

SPECIAL TRAINING REQUIREMENTS

Section I. INDIVIDUAL TRAINING

6-1. General

The dispersion of forces, decentralization of control, and especially the increased violence of nuclear warfare operations demand the highest standards of individual training proficiency. Psychological stress and the importance of individual initiative require primary emphasis in these areas:

a. The isolation, the possible loss of contact with adjacent and higher units, and the destruction likely to occur on the nuclear battlefield.

b. The need to accomplish a mission without receipt of specific orders.

c. The requirement for aggressive action and confidence that individual and small-unit actions can be successful and are critical on the nuclear battlefield.

6-2. Cross-Training

Cross-training in command and control, intelligence, artillery operations, radiation detection, decontamination, area damage control techniques,

and emergency medical procedures requires particular emphasis. Stressing training in these areas while continuing other programs of cross-training insures the availability of essential combat units to continue operations under nuclear conditions. The following cross-training is also essential:

a. All personnel assigned to artillery battalion fire direction centers (FDC) of tactical fire (TACFIRE) equipment operations.

b. All personnel assigned to maneuver units in the operation of organic target acquisition equipment.

c. Selected personnel in the operation of the communications equipment organic to their unit.

d. Selected personnel (officer and enlisted) in all maneuver units to act as forward observers for artillery.

e. All personnel in self-help and buddy care procedures for a mass casualty situation.

f. All maintenance personnel in procedures for radiation detection and decontamination of equipment.

Section II. UNIT TRAINING

6-3. General

Tactical nuclear battlefield conditions require small-unit commanders to perform more independent and semi-independent actions and to react to rapidly changing tactical situations. Higher headquarters often issue broad mission-type orders instead of detailed, restrictive orders. Units that have lost communications with higher headquarters must continue to contribute to the overall mission. The tactical nuclear environment places special demands on the adequacy of unit training. Without degrading the more conventional unit training, programs must be

instituted to prepare units to function while widely separated from other units, to rebound as an effective military force after suffering large numbers of casualties, and to integrate quickly into larger organizations when transferred as a replacement unit.

6-4. Training for Dispersed Operations

Unit training must emphasize independent and semi-independent platoon, company, and battalion operations. Units must be prepared to function without physical or even visual contact with other units. This training must always stress

that unit actions are part of a cohesive overall plan. Unit training for dispersed operations requires special emphasis in these areas:

- a. Combined night operations.
- b. Night or limited visibility operations.
- c. Space planning and control requirements.
- d. Coordination of fire and maneuver.
- e. Operations with redundant (duplicate) command and control facilities.
- f. Mutual support and security techniques.
- g. Resupply procedures.
- h. Movements and straggler control.
- i. Denial of nuclear weapons to the enemy.
- j. Procedures for transition from conventional to nuclear operations.
- k. Tactical control of nuclear weapons (brigade level).

- l. Personnel management problems.

6-5. Response to Mass Casualties

The use of tactical nuclear weapons on the battlefield may result in a sudden unprecedented number of casualties. Casualties among the leaders of the unit could be high; therefore, unit training must stress the immediate, effective response of the senior survivor to mission-oriented orders.

6-6. Unit Replacement

The most common (except for certain specialists) replacement procedure on the tactical nuclear battlefield probably will be unit replacement. Unit replacement techniques require extensive standardization of procedures among divisions to permit quick and effective unit replacement employment.

APPENDIX A

REFERENCES

Field Manuals (FM).

3-10	Employment of Chemical and Biological Agents.
3-12	Operational Aspects of Radiological Defense.
6-20-1	Field Artillery Tactics.
6-20-2	Field Artillery Techniques.
8-series	Medical.
21-40	Chemical, Biological, Radiological, and Nuclear Defense.
21-41	Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare.
44-1	U.S. Army Air Defense Artillery Employment.
(S) 44-1A	U.S. Army Air Defense Artillery Employment (U).
61-100	The Division.
100-26	The Air-Ground Operations System.
101-31-1	Staff Officer's Field Manual: Nuclear Weapons Employment Doctrine and Procedures.
(S) 101-31-2	Staff Officers' Field Manual: Nuclear Weapons Employment Effects Data (U).
101-40	Armed Forces Doctrine for Chemical and Biological Weapons Employment and Defense.



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