

Chapter 2

# NBC Operations and the Fundamentals of Army Operations

**"The Secretary of War's Annual Report for 1917 ... declared that the 'councils of prudence and forethought' should prepare the Army to surprise the enemy rather than lag 'defensively behind the surprises which he prepares for us.'"**

**--U.S. War Department  
Annual Report 1917**

FM 100-5, Operations, is the capstone doctrine describing how the Army fights. It forms the basis for Chemical Corps doctrine contained in this manual. This chapter covers the basics of operational doctrine specifically as it applies to NBC and smoke operations.

## ELEMENTS OF COMBAT POWER

Army operations recognizes the dynamics of combat power and its elements: maneuver, firepower, protection, and leadership. The skillful combination of these four elements at the right time and place will defeat the enemy.

Effective maneuver is the first element of combat power. Commanders maneuver their forces into positions of advantage over the enemy. The NBC defense system will minimize the effect of NBC conditions on the force and allow commanders to operate at high levels of effectiveness. However, NBC contamination may decrease operational tempo by requiring additional force protection measures. Commanders maneuver their units under NBC conditions, minimizing degradation of soldiers by using all available information to avoid contamination, and using NBC protection measures when required.

Chemical units provide NBC recon, decon, and generated smoke support. Chemical smoke conceals movement of friendly forces and hinders enemy freedom of maneuver and synchronization. Maneuver is also helped by contamination avoidance and control.

The second element is firepower. Commanders mass fires on the battlefield by rapidly positioning weapon systems for concentrated fires on lucrative enemy targets. The integration of smoke and obscurants disrupts and disorganizes enemy forces. Smoke delivered by various means conceals our maneuver and degrades enemy reconnaissance, intelligence, surveillance and target acquisitions (RISTA). Flame operations are also contributors to combat power when used for countermobility or psychological operations.

Protection, the third element of combat power, includes NBC contamination avoidance and control,

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NBC protection, and decon operations. The protection aspect of NBC defense permits maximum mission performance with minimum casualties. Units protect themselves by avoiding contamination whenever possible. Contamination spread is limited so it presents the minimum possible hazard to personnel. It has the minimum impact on operations; and it allows the rapid resumption of routine operations.

Decon operations may permit reduction in NBC protection levels, thereby increasing combat power potential. Obscurants enhance protection by increasing force survivability, lessening the chance of enemy detection.

The final element is leadership. Competent leaders at all levels ensure chemical units are fully integrated into the combined arms team. Chemical units give maneuver commanders the ability to see the battlefield better through timely NBC recon or by minimizing their risks through obscurants. Timely NBC advice helps maneuver commanders make critical choices within the enemy's decision cycle.

Chemical leaders ensure their soldiers are well motivated, trained, and disciplined to withstand the stress of the modern battlefield and serve as members of the combined arms team.

## PRINCIPLES OF WAR

The principles of war serve as a guide for our forces. The principles have withstood the tests of time, analysis, and practice. The principles of war include—

- Objective
- Offensive.
- Mass.
- Economy of force.
- Maneuver.
- Unity of command.
- Security.
- Surprise.
- Simplicity.

Decisive and attainable objectives are central to any military operation. Leaders continue to recognize the criticality of clearly defined objectives even as battlefield conditions change with enemy use of WMD. Leaders and staff improve their understanding of assigned missions by wargaming different courses of action. Alternative scenarios, including NBC conditions, are integrated into wargaming to ensure crucial contingencies are considered.

The principle of the offensive directly relates to attaining a common objective. Leaders use initiative and apply the principle of NBC contamination avoidance to maintain freedom of action and achieve required results. In the spirit of the offensive, leaders minimize the time their soldiers spend in full MOPP. Leaders make intelligent decisions that effectively balance mission accomplishment against expected threat.

Combined arms task forces mass combat power at the decisive time and place. Effective and timely use of hasty and deliberate smoke, NBC recon, and decon are all combat multipliers. Obscuring the massing of our forces, determining when and where to avoid contamination, and decontaminating to retain flexibility of action support leader efforts to maintain the initiative.

Leaders apply economy of force in using minimum essential combat power for secondary efforts. Commanders use deception, supported by hasty and deliberate smoke, to achieve superiority at key places. NBC contamination avoidance passive measures (for example, cover, concealment, dispersion) also support economy of force. Leaders consider all available lethal (flame) and nonlethal measures (smoke) to gain advantage against an enemy.

Our maneuver is designed to place an enemy in a position of disadvantage. We use organic and attached NBC recon assets to find clean and contaminated areas. Leaders use this information to exploit success and maintain freedom of action. Smoke masks our movement, blinds and deceives the enemy.

In unity of command, task force commanders use all assigned and attached assets. Chemical combat support elements respond to the commander's intent. The chemical unit leader prepares a plan that fully supports the mission. Leaders make maximum use of all attached units, and subordinates ensure that the intent is fulfilled through continuous application of all combat power.

Security is similar to the force protection component of combat power. Units battle-focus training ensuring needed protective measures are integrated. Units know they are proficient in operations under NBC conditions. Leaders, (officers and NCOs) set the example and the standard in proficiency on individual soldier survival tasks (for example, use and maintenance of MOPP gear). Thorough preparation of units and leaders helps to ensure the preservation of needed strength for critical times.

We surprise the enemy and strike at a time, place, or manner, for which he is unprepared. We use smoke and obscurants to confuse and deny the enemy information and contribute to surprise. The enemy reacts slowly because our forces are concealed under limited visibility conditions. This allows us to strike quickly to affect decisively the outcome of battle. We may also surprise an enemy with unexpected use of flame on the battlefield.

Simplicity provides clear and concise plans and orders to ensure rapid and thorough understanding. Leaders and soldiers understand Army NBC defense doctrine of avoidance, protection, and decon. Leaders ensure clarity in plans and orders. Units conduct mission-essential training under simulated NBC conditions. This supports stripping away any illusions in operations under true NBC conditions. It supports a direct approach to the battlefield environment. This approach will reduce the chances for misunderstanding and confusion and support the principle of simplicity.

## TENETS OF ARMY OPERATIONS

The Army develops combat power by fighting according to the five tenets of Army operations: initiative, agility, depth, synchronization, and versatility.

**Initiative** — setting or changing the terms of battle by actions. It implies an offensive spirit in the conduct of all operations, regardless of the nature of the operation. Applied to individual soldiers and leaders, it requires a willingness and ability to act independently within the framework of the higher commander's intent. Leaders are adept at determining their NBC defense needs and taking timely, critical actions. Operations under NBC conditions cause individual and unit degradation. Leaders anticipate mission requirements and set appropriate protection levels. Effective use of NBC defense, smoke, and flame enables task forces to steal the initiative from the enemy or to keep him off balance. Leaders seek to exploit any advantages offered by NBC conditions.

**Agility** — ability of friendly forces to act faster than the enemy. It is the prerequisite for seizing and holding the initiative. Units (and leaders) must be physically and psychologically capable of responding to rapidly changing requirements. Chemical units are task-organized to ensure rapid response to changing situations. They shift support to the main effort with

minimal delay through reconfiguration and coordination. They are sustainable and responsive to maneuver commanders at all echelons. Effective battlefield reporting supports rapid responses to attacks. Flexibility and decentralization of MOPP decisions support timely reaction to enemy threats. Tailored force packages increase combat power.

**Depth** — extension of operations in space, time, and resources. Chemical personnel and units provide support throughout the theater of operations. To maintain momentum on a contaminated battlefield, units avoid contamination using organic NBC recon capability or they decontaminate to decrease MOPP for sustainment of combat operations. Elasticity in the defense is achieved by using additional combat multipliers, such as hasty or deliberate smoke, throughout the depth of the battlefield.

**Synchronization** — management of battlefield activities in time, space, and purpose to produce maximum relative combat power at the decisive point. Commanders synchronize activities. They thereby produce synchronized operations. Commanders integrate NBC recon, obscurants, and decon support to reap the desired benefit at the desired time and place and in the desired manner. ~~Units~~ ensure that the multiple chemical activities spread across the battlefields have unity of purpose with the rest of the force.

**Versatility** — ability of units to meet diverse mission requirements. The ability to execute other than war missions while retaining the capability to execute wartime missions is critical. Chemical units and staffs will find themselves involved in a wide range of missions across the range of military operations. During combat operations chemical staffs and units must be prepared to rapidly change focus and move from one area to another to execute their missions.

## THE RANGE OF MILITARY OPERATIONS

The theater strategic environment consists of a variety of conditions — political, economic, military — and a range of threats that result in a wide range of operations that correspondingly occur in response to those conditions and threats. The Army operates in three diverse states: peacetime, conflict, and war. Army activities during peacetime and conflict are classified as operations other than war (OOTW). The last state — war — involves the use of force in combat operations against an armed enemy.

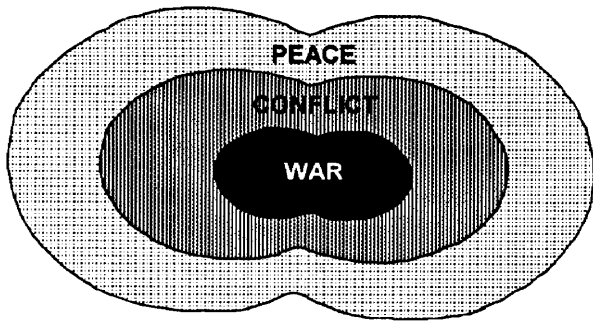


Figure 2-1.

### Peacetime

Peacetime is a state wherein political, economic, informational, and military measures, short of combat operations or active support to warring parties, are used to achieve national objectives. Within this state, US forces may conduct joint training exercises to demonstrate resolve, conduct peacekeeping operations, participate in nation-building activities, conduct disaster relief and humanitarian assistance, provide security assistance to friends and allies, or execute shows of force.

### Conflict

Conflict is an armed struggle or clash between organized parties within a nation or between nations in order to achieve limited political or military objectives. While regular forces are often involved, irregular forces frequently predominate. Conflict is often protracted, confined to a restricted geographic area, and contained in weaponry and level of violence. Within this state, military power (in response to threats) may be exercised indirectly while supporting other elements of national power. Within this state US forces may conduct attacks and raids, participate in peacekeeping operations, execute counternarcotics operations, or support foreign internal defense activities. Limited objectives may be achieved by the short, focused, and direct application of force.

Conflict also describes situations where continuing clashes or crises occur over boundary disputes and water territorial claims. Conflict also describes situations in which opposing political factions engage in military actions to gain control of political leadership within a nation. In the future, potential exists for crises and clashes in space. As the amount of forces, frequency of battles, number of nations,

levels of violence are increased and sustained over an extended period, or when the sovereignty of a nation is threatened, conflict approaches the threshold of a state of war.

In low-intensity conditions, the use of CB weapons will be primarily oriented towards achieving political or psychological objectives. The primary threat will be a single attack, or a small number of attacks, for the following purposes—

- **Recognition.** Terrorist groups may use CB weapons for shock effect to gain national or international recognition of a cause. The use of NBC weapons will attract a strong amount of media attention.
- **Coercion.** Terrorist groups may use selective, small-scale CB attacks or the threat of NBC attacks to obtain revision of a government policy through fear.
- **Provocation.** Government, military, or police activities may be attacked with CB weapons to provoke heavy-handed reaction on the part of government forces.
- **Intimidation.** The threat or use of CB weapons may prevent individuals or groups from acting against terrorist or insurgency groups. Security forces may be afraid to act if they fear reprisal with CB weapons.
- **Insurgency support.** The use or threat of CB weapons use may cause a government to overextend by trying to protect both its urban and rural areas. This may facilitate insurgency operations against thinly-spread military and police forces.

A wide variation exists in the types of weaponry used in low-intensity conflict (LIC). Modern weapons may be obtained from other nations. Chemical and biological weapons may be fabricated by the attackers. Existing industrial facilities may be sabotaged to create a hazard or discredit a friendly government.

Chemical units and NBC production and storage facilities must be protected against attack by terrorists and insurgents.

Terrorists may attack civilian populations and/or host country forces. US security assistance forces may give assistance by intelligence, warning, provision of NBC protective equipment, and decon. Terrorist or insurgent groups (unidentified) could also use CB weapons to create fear and unrest.

### War

War is sustained armed conflict between nations or organized groups within a nation. Regular and irregular forces are involved in a series of connected battles and campaigns to achieve vital national

objectives. War may be limited by self-imposed restraints on resources or objectives. It may also be general having the total resources of a nation or nations used and national survival at stake. War can also range from high- to low-intensity in nature. Within these states US forces may conduct conventional war or execute strategic offensive operations.

Conditions in conflict or war may cause US forces to face large, rapidly maneuvering battlefield formations equipped with sophisticated weapons, operating over extended time and distance.

Advanced weapons systems technology provides the capacity to acquire, track, classify, and attack targets at ranges unattainable in previous conflicts. Communications and artificial intelligence systems enhance the ability of command and control elements to maneuver large forces rapidly.

NBC weapons added to an already large array of highly lethal weapons challenge us to protect the force, maintain freedom of maneuver, and sustain operations.

In mid- to high-intensity conditions NBC weapons are used primarily to achieve the maximum military effect. Enemy goals for use of NBC weapons in mid- to high-intensity warfare may be to...

- Cause the collapse of morale and paralysis of will.
- Cause tactical problems and create mass casualties.
- Degrade battle command and logistical operations.

NBC warfare may be initiated at the onset of hostilities to increase shock effect and achieve rapid breakthrough and demoralization of defending forces. NBC warfare may not be used initially, but if defending forces are successful in slowing or stopping an attack, a combatant may resort to an NBC attack to help regain the initiative and restore the momentum of the attack. If defending forces counterattack and threaten the attacker's operational and strategic objectives, the attacker may use NBC weapons to halt the defender's progress and regain the offensive.

The weaponry used will vary, depending on the adversary and the circumstances surrounding the conflict. Enemies may use World War I vintage agents, such as mustard. They may use ultra-lethal chemical agents, genetically-engineered biological agents, toxins, or nuclear weapons. They can deliver these weapons by mortars, artillery, surface-to-surface missiles, aircraft, special operations forces, vectors, clandestine operations, or sapper/saboteur emplacement.

## CLOSE, DEEP, AND REAR OPERATIONS

The outcome of battles, major operations, and campaigns depends ultimately on the success in synchronizing deep, close, and rear operations. Chemical staffs and units participate at all echelons in the planning and coordination process to ensure these operations support the overall battle.

Close operations at any echelon comprise the current activities of major committed combat elements, and their immediate combat support (CS) and combat service support (CSS). As part of close operations, chemical units operate either integrated into a committed unit or in support of it.

Deep operations at any echelon comprise activities directed against enemy forces not in contact, but designed to influence the conditions in which future close operations will be conducted. Deep operations often include assets other than ground maneuver forces. In this case the chemical staff provides input for fire support operations to the commander.

Integrating smoke, obscurant, and conventional fires to support deep operations reduces the enemy's operational tempo, disrupts his battlefield synchronization, and upsets his timetables. The synergistic effect of combined smoke and conventional weapons use disrupts the enemy's battle plan and slows enemy actions.

Whenever ground forces conduct deep operations, NBC recon assets monitor routes necessary to support the action. The NBC recon platoon can conduct NBC recon for deep operations. However, the NBC recon element should be augmented either by a scout team or combat team to provide security. Security is essential to ensure survivability in deep operations.

Rear operations comprise activities rearward of elements in contact. Rear operations are designed to assure freedom of maneuver and continuity of operations, including continuity of sustainment and command and control. All of these operations require protection. NBC protection of fixed sites and mission-essential personnel (US and host nation) is a significant requirement for ensuring sustained operations. NBC-hardened protective shelters ensure critical battle command functions are unimpeded by NBC attacks. Chemical units support protection of rear-area facilities by providing smoke and decon support. Additionally, NBC recon support provides important intelligence information on the presence or absence of contamination.

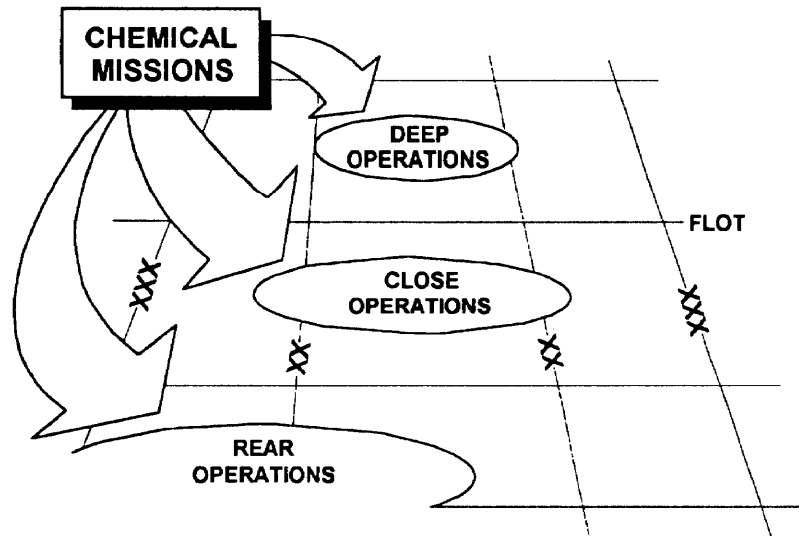


Figure 2-2.

## PSYCHOLOGICAL OPERATIONS

Psychological operations (PSYOP) are a vital part of modern military and political power. When fully coordinated with tactical/operational/strategic military planning and effectively integrated into the military decision-making process, PSYOP enhance combat power. Psychological operations are defined as planned operations to convey selected information and indicators to foreign audiences. Such operations are designed to influence emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals. The purpose of PSYOP is to induce or reinforce foreign attitudes and behavior favorable to the originator's objective. In NBC warfare, psychological impact on the enemy can be obtained by emphasis on US defense capability and threat of retaliation as deterrents, as well as by weapons. Such effects can be supplemented and enhanced by PSYOP. So, PSYOP is a combat multiplier. For implementation of PSYOP under NBC conditions, refer to FM 33-1.

## CHEMICAL CORPS MISSIONS

The mission of the Chemical Corps is to protect the force and allow the Army to fight and win under NBC conditions. The Corps does this by developing doctrine, equipment, and training for NBC defense, which serve as a deterrent to any enemy possessing

weapons of mass destruction. The Chemical Corps also provides the Army with the combat multipliers of smoke, obscurant, and flame capabilities.

The nature of war on today's battlefield poses great challenges. High- and mid-intensity battlefields will be chaotic, intense, and highly destructive. Low-intensity conflicts may pit US forces against irregular or unconventional forces, enemy special operations forces, or terrorists anywhere in the world. Any of these conflicts may lead to biological warfare and/or chemical warfare. It could escalate into nuclear warfare.

Chemical staffs and units work to restore, maintain, and/or increase combat power on this battlefield.

Chemical Corps missions include —

- Battle management.
- NBC Defense.
- Nonlethal operations.
- Smoke and obscurants.
- Flame.

Historically, the US Army Chemical Corps fought successfully in past wars and performed its battlefield functions. Army operations doctrine now places even greater demands upon the Chemical Corps to support military operations.

### Battle Management

Battle management is the integration of battlefield assessment and risk analysis with NBC warning and reporting, chemical unit operations, and nuclear operations. The chemical advisor manages NBC operational elements to support the commander's concept of operations. He assists the intelligence

section in evaluating friendly and enemy vulnerabilities. He manages the NBC warning and reporting system to develop a picture of battlefield hazards. He recommends use of chemical units. He assists in the preparation of nuclear fire plans to support the battle. He assists in potential collateral damage prediction/assessment from NBC weapons use. Chapter 3 describes battle management.

### NBC Defense

NBC defense includes all measures to minimize casualties and enhance unit effectiveness under NBC conditions. These measures may be proactive or reactive in nature. They include contamination avoidance and control, protection, and decon. A sound program of NBC defense forms a key part of the US deterrent posture. Chapter 4 discusses the principles of NBC defense.

### Nonlethal Operations

The use of riot control agents and other nonlethal materials provides combat commanders an alternative to the use of lethal force. This alternative is very attractive in OOTW, where the use of lethal force is neither desirable nor acceptable. The use of riot control agents is specified by Executive Order 11850 and the Joint Strategic Capabilities Plans (JSCP). Chemical staffs and units provide both technical and tactical expertise on the use of riot control agents, herbicides, and other nonlethal materials. Chapter 5 describes the use of riot control agents and herbicides.

### Smoke and Obscurants

Smoke and obscurants are combat multipliers. They deny the enemy critical data, interfere with enemy weapon systems, and deceive the enemy about friendly intentions and activities. Man-made smoke combines with natural obscurants to defeat or degrade visual and thermal signals. Chapter 5 describes smoke and obscurant use and countermeasures.

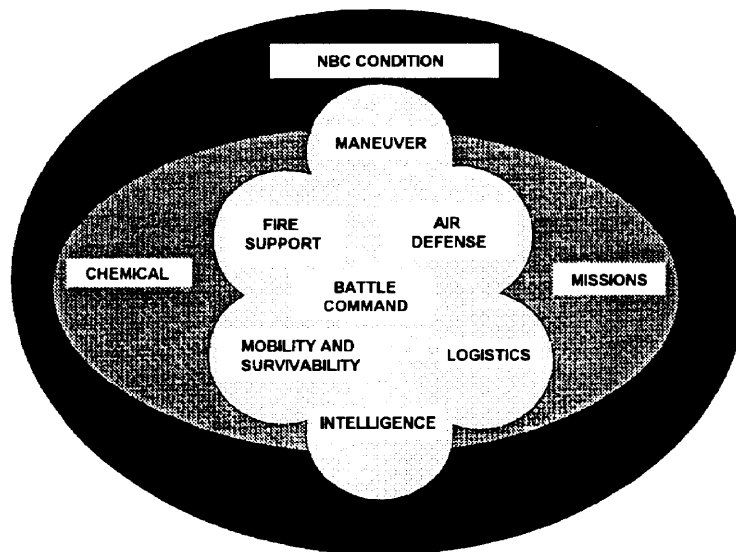
### Flame

Flame is a point and area effects weapon with physical and psychological impact. Its damage continues and compounds after the initial burst. Forces on the battlefield use flame weapons and flame field expedient devices in offensive and defensive operations as well as military operations on urban terrain (MOUT). Chapter 5 also discusses flame use and defense.

## COMBAT FUNCTIONS

The commander uses a variety of combat functions to build and sustain combat power. He must integrate and coordinate these functions to achieve the desired battlefield effects. Chemical missions must be integrated into each combat function for successful execution of combined-arms operations. The combat functions are...

- Intelligence.
- Maneuver.
- Fire support.
- Mobility and survivability.



INTELLIGENCE  
*Figure 2-3*

- Air defense.
- Logistics.
- Battle command.

Combat functions are tools to describe functions on the battlefield. These operating systems should not be confused with Army branches or proponents. Despite the familiar branch-oriented terminology of these seven functions, each includes activities performed by many segments of the force. The various activities within the force are responsible for performing functions in several or all of the functions in the execution of assigned missions.

### **Intelligence**

Intelligence collection and the intelligence and electronic warfare (IEW) effort require agile and flexible systems and units. These systems and units locate and attack the threat in support of close, deep, and rear operations.

The intelligence combat function includes functions that generate knowledge of the enemy, weather, and terrain. The commander uses this knowledge in planning and conducting combat operations. The intelligence officer, in coordination with the chemical staff officer, develops priority intelligence requirements (PIRs) and information requirements (IRs) needed to collect information on enemy NBC, obscurant, and flame capabilities and intent.

During battle management activities the chemical staff advisor works with the G2 or S2 on the intelligence preparation of the battlefield (IPB). Potential targets the enemy may attack with WMD are identified in the area of operations. The chemical staff coordinates with the intelligence officer to analyze and identify enemy chemical targets based on threat, terrain, and area of operations. Potential threat chemical targets could be key terrain, chokepoints, command and control facilities, counterattack routes, mobility corridors, and rear area. The general situation statement that the enemy will use persistent chemical agents on the flanks and nonpersistent chemical agents in forward areas does not provide the commander with a good understanding of the chemical threat.

Another battle management tool is the NBC warning and reporting system. This system helps develop a comprehensive picture of enemy NBC use.

NBC defensive procedures may also yield information for the intelligence combat function. Units conduct NBC recon to identify required unit actions or posture. This recon also collects data

needed to assess enemy use. Recon units detect, identify and mark NBC contamination. They collect samples of suspected NBC agents. They gather meteorological and terrain data. This information feeds into the intelligence system. The chemical staff and the G2 or S2 use this information to predict enemy intentions.

### **Maneuver**

The maneuver combat function is the use of forces on the battlefield. Maneuver is accomplished through movement and direct fires in combination with fire support or fire potential. Maneuver enables friendly ground forces to gain a tactical advantage over enemy ground forces. Maneuver elements of a force operate with the intention of moving into positions where they can bring their direct and indirect fires to bear on the enemy with the greatest effectiveness.

Friendly forces may have to move, engage the enemy, or control terrain under NBC conditions. The chemical staff advisor uses battle management techniques to develop a picture of NBC hazards on the battlefield. He analyzes friendly vulnerability to enemy NBC weapons. The maneuver commander takes proactive and reactive measures to reduce vulnerability to these weapons. He implements contamination avoidance and control. He applies appropriate protection to maintain maximum combat power against the enemy with acceptable risk. Should his unit become contaminated, he will restore combat power and reduce further casualties by decon.

The commander uses obscurants to enhance survivability during movement. Obscurants can improve relative combat power during engagements by diverting enemy resources or degrading enemy weapon systems. Obscurants support the occupation of fighting and support positions by denying enemy intelligence. Obscurant countermeasures support movement and direct fire engagements by providing friendly intelligence and fire control measures.

Flame and incendiary weapons are also used against selected targets to engage enemy forces. Flame weapons (for example, flame field expedients) can be used to restrict terrain to the enemy by controlling its use through direct fire or fire potential.

In the direct fire battle under NBC conditions, commanders must consider the following factors:

- Attacks will take longer.
- Firing rates decline.
- More soldiers are required for a successful attack.
- Units experience more difficulty in locating and identifying targets.



- Units are less effective in using terrain for cover and concealment.

### **Fire Support**

The fire support function is the collective and coordinated use of target acquisition data, indirect-fire weapons, armed aircraft (fixed- and rotary-wing), and other lethal or nonlethal means against ground targets in support of maneuver force operations. The fire support plan is integrated into the scheme of maneuver consistent with the commander's intent. To achieve integration, the commander and his staff, with the advice and expertise of the unit fire support coordinator (FSCOORD), must think in terms of the total systems available to include nuclear munitions.

The commander allocates fire support systems to support his maneuver elements and preserve freedom of maneuver. The FSCOORD recommends the allocation of systems and organizations according to METT-T. When authorized, friendly forces may use nuclear weapons to cause casualties, restrict terrain, or reduce enemy effectiveness.

NBC defense supports the fire support combat function by enhancing the survivability of fire support elements. Contamination avoidance measures, such as detection and NBC recon, reduce the likelihood of exposure to NBC hazards. Appropriate levels of protective posture reduce the impact of attack. Rapid decon restores unit effectiveness.

The commander also uses artillery- or mortar-delivered smoke to mark targets and counter enemy target acquisition systems. Large-area smoke enhances survivability by concealing firing positions. Smoke also conceals the visual signature of firing and counters enemy flash and sound ranging procedures. However, smoke does not counter threat weapons-locating radar.

Studies show that units rely more heavily on indirect fire support under NBC conditions. In these conditions an attack takes longer. Personnel conducting the attack perceive that their direct fire is less effective. They call for fire more often. Further, the degradation of speech and hearing in MOPP results in longer times to complete calls for fire. Increased fire support response times still result when personnel remain in MOPP3/4 even when digital communications from observer to fire direction center to guns is used. As a result the fire support, combat function takes on added importance for combat operations under NBC conditions.

### **Mobility and Survivability**

Mobility and survivability operations preserve freedom of maneuver of friendly forces. This operating system also includes measures taken to remain viable and functional by protection from the effects of enemy weapon systems and natural occurrences. This combat function also includes functions to enhance the effectiveness of friendly weapon systems by channeling the enemy, stopping or slowing his movement.

Battle management and NBC defensive principles are key to supporting the mobility and survivability combat functions. Leaders implement contamination avoidance measures to reduce casualties and to avoid burdensome protective posture. Units use protective measures such as deception, OPSEC, and dispersion to reduce the likelihood of enemy NBC attack. They use MOPP, NBC defensive equipment, and collective protection equipment (CPE) to avoid or reduce casualties. NBC recon enhances friendly force mobility by identifying hazards. Recon elements detect, identify, and mark NBC obstacles. They use the warning and reporting system to notify friendly units of NBC hazards. When notified, friendly units take appropriate protective measures to reduce risk. If they become contaminated, they conduct immediate decon of skin and personal equipment. This is followed by further decon as required to accomplish the mission.

Units conducting countermobility operations emplace obstacles to canalize, slow, or stop the enemy. These obstacles could include flame weapons and flame field expedient devices. In some cases the obstacle may be further contaminated with persistent chemical agent to increase breaching difficulties. Similarly, chemical fires on units conducting breaching operations force them into a burdensome protective posture. Following the breach these units must decontaminate or fight while contaminate. Throughout these actions friendly forces use smoke and other obscurants to deceive the enemy or conceal friendly operations.

### **Air Defense**

Air defense as a combat function includes all measures designed to prevent or reduce the effect of attack or recon by hostile aircraft, missiles, or unmanned aerial vehicles (UAVs) — on the ground or in the air. An artillery strike on an enemy air base is a function of air defense operations.

The chemical staff advisor uses battle management to provide an overall picture of NBC hazards on the

battlefield. He also determines the vulnerability of friendly units. These factors aid the commander in positioning his air defense units. NBC defensive procedures enhance survivability and effectiveness of these units.

Smoke curtains used 2 to 3 kilometers from friendly positions can complicate targeting. Aircraft at speeds of 500 knots or greater need a minimum of 4 kilometers of unobstructed line of sight to acquire the target. Smoke curtains used with natural obstacles prevent aircraft from vectoring targets with on-board weapon guidance systems. Air defense systems requiring visual acquisition (Vulcan/Stinger) are located, at minimum, 2 kilometers from the smoke screen or on the high ground overlooking the smoke screen. Smoke screens can silhouette low-flying helicopters/aircraft for visual acquisition.

Commanders also use smoke and obscurants in valleys and nap-of-earth approaches to restrict enemy use of airspace. In some cases air defense units use flame weapons and devices to defend their positions.

### **Logistics**

Logistics provides support and assistance to sustain the force. This support is primarily in the fields of logistics, personnel services, and health services. The logistics combat function also includes functions to build and maintain lines of communications and facilities. Sustaining the fight requires all CSS elements to adhere to the sustainment imperatives of anticipation, integration, continuity, responsiveness, and improvisation. Logistics supports close, deep, and rear operations simultaneously. Commanders integrate CSS units into the battle command system so they can shift support effort to the critical place and time to weight the battle.

Battle management helps commanders identify and avoid NBC hazards on the battlefield. NBC defensive procedures limit exposure to NBC attacks. These procedures also protect personnel and supplies from NBC contamination. Where protection is not possible, NBC defense calls for decon of necessary materiel to continue the fight.

CSS units conduct their basic functions of sustaining, manning, arming, fueling, fixing, transporting, and protecting under the concealment of obscurants. Obscurants allow them to continue operations to support the force.

Many logistics functions become more of a burden under NBC conditions. Medical units must implement systems to treat and evacuate casualties.

Commands identify functions and services available from host nation assets. US units train and equip mission-essential personnel, both US and host nation, to ensure survival.

### **Battle Command**

The command and control system enables the commander to prioritize and allocate assets to use and sustain combat power. It is a tool that enables him to transform potential combat capabilities into combat power.

The command and control system —

- Is flexible, redundant, and survivable to synchronize combat operations and requirements for CS and CSS.
- Allows the commander to sense clearly the total battle and then transmit orders to adjust quickly and take advantage of a threat weakness.
- Is responsive throughout the area of operations, controlling units in close, deep, and rear areas simultaneously.
- Provides the commander with a capability to move and mass his combat power in a manner that helps the destruction of the threat before he can mass.

Battle management of NBC functions supports battle command by providing needed timely information to the commander. Battle management provides a current picture of NBC hazards and vulnerabilities. It provides battlefield information to direct NBC defense, nonlethal, and smoke operations.

The commander's decisions on NBC defensive measures, such as operational exposure guidance (OEG), MOPP levels, and decon go through the battle command system. Some NBC defensive principles apply directly to the commander's actions. For example, under NBC conditions leaders must carefully pace themselves, delegate responsibilities, and observe a strict work-and-rest regimen. These procedures preclude dehydration and heat stress that might result in poor performance or physical exhaustion.

Other NBC defensive principles that affect the entire unit, such as type and timing of decon, stem from METT-T. Leaders must understand the principles to decide when to decontaminate and at what level.

Leaders must also be prepared for the stress and confusion created by enemy smoke and flame operations. Command and control (C<sup>2</sup>) becomes more difficult when smoke conceals key events. Similarly, the psychological impact of flame weapons may also impact C<sup>2</sup> activities. Commanders must

quickly implement countermeasures to reduce the impact of enemy smoke and flame operations.

## NUCLEAR, BIOLOGICAL, AND CHEMICAL WARFARE

Although chemical operations do not compose a combat function, NBC is a condition of warfare. Forces conduct combat operations in the presence of enemy nuclear-, biological-, or chemical-capable systems.

Under the threat of enemy WMD, the commander must implement NBC defensive measures. Some of these measures impact his available combat power. For example, on the nuclear-threatened battlefield the commander weighs the advisability of massing or dispersing his forces. Massing increases his immediate combat power but presents a good target for enemy WMD. Dispersion reduces his vulnerability to NBC strikes but increases his risk of defeat in detail by conventional forces and challenges his command and control system.

In a similar manner the commander may respond to a chemical or biological threat by directing his personnel to don MOPP. MOPP provides protection against chemical or biological hazards, but degrades combat effectiveness. Chapters 3 and 4 describe vulnerability analysis and the principles of NBC defense.

When friendly nuclear weapons have been released, the commander may use them to isolate a unit's close operations area and destroy, divert, or halt movement of enemy reinforcements. Nuclear weapons can also defeat and disrupt follow-on echelons and create offensive opportunities. JP 3-12, FM 100-30 and FM101-31-1 describe nuclear operations.

Limited visibility will also be a battlefield condition. Both sides will use smoke and obscurants to enhance combat power and reduce the enemy's combat power. Relative combat power may be changed directly by diverting resources or indirectly by changing the effectiveness of friendly and enemy weapon systems. Forces will also use flame weapons to increase combat power. Chapter 5 describes smoke/obscurant use and countermeasures, flame operations and defense.