

CHAPTER 3

COMMAND AND CONTROL**3-1. General**

Medical tasks are expected to increase significantly on the integrated battlefield. Great numbers of casualties are expected during the initial phases. Combined NBC and conventional weapons injuries will predominate. Early resuscitation, stabilization, and prompt evacuation are mandatory for survival of the wounded. Insufficient medical personnel and medical supplies, along with inadequate evacuation means, will significantly limit HSS. Health service advisers and staff officers must provide guidance to commanders on continued duty for soldiers who have been exposed to NBC weapons effects. Medical unit commanders and their staffs must use command and control to enhance the survivability of HSS assets and the supported force. See Appendix A for guidelines on HSS planning for and operations in an NBC environment.

3-2. Survival of Initial Effects

Nuclear, biological, and chemical weapons are most effective on the untrained, unprepared, unwarned soldier. Health service support commanders must use in-place assets to enhance their unit's training, preparation, and survivability.

a. Medical Intelligence. The Armed Forces Medical Intelligence Center, Fort Detrick, Maryland, maintains a complete data base on the medical threat of any area in the world (see FM 8-10-8). When preparing for deployment, commanders can obtain information on the types of endemic diseases in the area, the biological and chemical agent potential, and other medical threats. Additionally, once deployed, the S2/G2 maintains records regarding NBC use and potential use in the theater. With this information, the HSS commander can brief his troops to enable them to recognize signs and symptoms of possible biological agent use, or endemic disease outbreaks. The commander can also ensure that his troops are either in MOPP or prepared to assume a MOPP when necessary.

b. Vulnerability Analysis. To determine the relative safety of his facility, the commander directs his S2/G2 to conduct a vulnerability analysis of their position. The S2/G2 produces intelligence information about the enemy's NBC equipment and activity; he provides a detailed characteristics review of an area. Weather and terrain information, coupled with the enemy's NBC equipment and doctrine, result in an understanding of whether the environmental factors are conducive to employment of NBC weapons. The S2/S3 coordinates with the supported units to determine the casualty estimates.

c. Mitigation of Initial Effects. If the enemy feels that using NBC weapons would not be effective, he will use other weapons. Thus, hardening a position makes it a less lucrative NBC target. Measures taken to protect a position against nuclear attack are generally effective against chemical, biological, and conventional weapons.

(1) Survival depends on mastery of basic NBC survival skills in the event of NBC attack. The skills include—

- Using procedures to avoid the thermal pulse from a nuclear weapon;
- Wearing of protective clothing;
- Wearing headgear at all times; and
- Practicing good field sanitation and personal hygiene.

(2) Foxholes and bunkers provide excellent personnel protection against nuclear and conventional weapons. Existing natural and man-made terrain features, such as caves, ditches, ravines, culverts, overpasses, tunnels, and empty bunkers, can be used as expedient shelters. The basements of masonry and light steel buildings provide protection from the effects of nuclear weapons. Sealing the doors, windows, and other openings of the general purpose (GP) tent and the tent, expandable, modular, personnel (TEMPER) will increase the protection of personnel and patients inside. The openings can be sealed using tape, sandbagging the bottoms of the GP tent flaps, or covering these areas with plastic sheeting. Although toxic vapors from chemical attacks can enter these closed-in areas, they can provide protection from liquid and particulate contamination, greatly reducing decontamination needs. However, chemical vapors have a tendency to gather in depressions and closed areas; monitoring for vapors must be continuous in these areas.

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Air blowers without chemical/biological (CB) filters must be turned off when a vapor hazard exists. The vapors will be blown in by the systems if filters are not in place.

(3) The commander must plan for alternate operational sites in case his current site is untenable. He should also provide maximum protective shelter for all off-duty personnel and critical medical equipment and supplies. Cover and concealment is employed during troop movements; also, scheduled stops are near natural/man-made shelters.

(4) All personnel must have their immunizations current for all known endemic diseases in the area of operations. Prophylaxis for suspect biological agents, pretreatments for chemical agents, and all other available protective/pretreatment measures must be planned for and used as prescribed in the tactical standing operating procedure (TSOP) or command directives.

d. *Detection of Attack.* The NBC warning and reporting system can warn the commander of many attacks, but he must also rely upon his own resources. Each unit has organic equipment to detect nuclear or chemical contamination. Measures that provide warnings of hazards include—

- Placing M9 detector paper on exposed surfaces;
- Placing chemical agent alarms upwind of the unit position; and
- Dispersing radiacmeters among personnel to monitor the arrival of fallout.

• Monitoring patients by HSS personnel for signs of biological agent employment. The appearance of exotic diseases, or large increases in disease rates are indicators of biological warfare agents employment. Blood or other biological specimens of patients displaying signs of suspect illnesses can be sent to the area medical laboratory and continental United States (CONUS) laboratories for evaluation. All specimens are forwarded through technical intelligence channels.

e. *Mission-Oriented Protective Posture Levels.* Mission-oriented protective posture is the flexible use of protective clothing and equipment balanced against performance degradation. The higher the MOPP level, the more protection it provides and the more it degrades performance. The

commander must weigh the needs of individual protection against unit efficiency. The MOPP level that the unit assumes is based on the threat, temperature, work rate, and mission. The MOPP level used is a balance between the need to prevent NBC casualties and reducing heat and fatigue casualties. The commander specifies a MOPP level before a mission. This level changes as the situation changes or new intelligence is received. Although some mission degradation is unavoidable, the amount of degradation can be reduced by acclimatization and training. Besides the five levels of MOPP, the commander may opt for mask with hood only to be worn. This may be viable in shelters that provide partial protection from direct skin exposure to liquid or solid contamination. Inside the shelter the occupants are exposed to vapor hazards only (keep in mind that mustard vapors can still cause blistering); however, when leaving the shelter they must assume the appropriate MOPP.

f. *Strike Warning.* Maintaining continuous contact with higher headquarters ensures strike warnings (STRIKWARN) of nuclear or chemical (CHEMWARN) weapons are received and promulgated. As mentioned earlier, NBC weapons have their greatest effect upon untrained and unprepared troops. The STRIKWARN will enable the commander to harden his position against the potential nuclear or chemical weapons effects.

3-3. Management of Residual Effects

The STRIKWARN and intelligence channels provide early warning and enhanced protection from the initial effects of NBC weapons. There are many procedures that reduce the residual effects (contamination and collateral damage) of NBC weapons on the battlefield.

a. *Nuclear, Biological, and Chemical Warning and Reporting System.* The NBC warning and reporting system (NBCWRS) is a rapid means of sending reports of an NBC attack. They inform other affected units of possible contamination. They also report contaminated areas up and down the chain of command and to adjacent units. Each report has a specific purpose and uses standard codes to shorten and simplify the reporting process (for report detail, see FM 3-3). A summary of each report is as follows:

(1) *NBC 1: Observer's Initial Report.* This report is used by the observing unit to give initial and follow-up data about an NBC attack. It is sent by platoons and companies to battalion headquarters, or by designated observers in the case of NBC 1 to division NBC centers (NBCC). Key leaders and NBC specialists in all units must be completely familiar with the NBC 1 report and the information it contains. Battalion and higher elements must consolidate reports and decide which NBC 1 to forward. The unit NBCC is responsible for ensuring the report is in the correct format. The NBC 1 report following the first use of NBC weapons is sent with a FLASH precedence. Subsequent reports are sent with an IMMEDIATE precedence. Only observers designated by the division NBCC send NBC 1 (nuclear) reports. Nuclear attacks can be observed from great distances. Therefore, those units most capable of making accurate measurements are designated as observers.

(2) *NBC 2: Evaluated Data Report.* This report is based on two or more NBC 1 reports. It is used to pass evaluated data to units. Division is usually the lowest level to prepare an NBC 2 report. However, a brigade or battalion might do so, especially during independent operations.

(3) *NBC 3: Warning of Predicted Contamination Report.* The NBCC uses NBC 1 reports and wind information to predict downwind hazard areas. This is disseminated as an NBC 3 report. Each unit evaluates the NBC 3 report, determines which of its subordinate units may be affected, and disseminates the report as required. This report warns the commander when the affected unit may be within a downwind hazard area so the unit may take protective measures.

(4) *NBC 4: Monitoring and Survey Report.* When a unit detects NBC hazards through monitoring, survey, or reconnaissance, this information is reported as NBC 4 reports from various units and plotted on the NBCC situation map to show where hazards exist. These reports are prepared and submitted by company-level organizations.

(5) *NBC 5: Actual Contaminated Areas Report.* Once the NBC 4 reports are posted on the situation map, an NBC 5 report is prepared showing the contaminated area. The NBC 5 report is usually prepared by the division. The preferred method of dissemination is by map overlay.

(6) *NBC 6: Detailed Information on Chemical /Biological Attack Report.* This report, summarizing information concerning a chemical or biological attack, is prepared at the battalion. It is submitted to higher headquarters only when requested. If desired, it can be sent from higher to lower for information purposes.

b. *Predictions.* When alerted of possible contamination (through a STRIWARN or NBCWRS), the commander ensures that predictions of potential contamination are constructed. This alerts him to the possibility of his unit being in zones of expected contamination. Based on these predictions or the receipt of an NBC 5 report, the commander alerts his troops to move out, or to prepare to receive contamination to include putting patients into a protective posture.

c. *Survey, Detection, and Monitoring.* At all levels, selected soldiers are designated as survey team members; these individuals operate available NBC detection equipment. Assignment to these survey teams is an additional duty. The survey teams consist of a primary and an alternate operator for each piece of assigned detection equipment. These teams provide the commander with a picture of the local contamination hazards and where clean areas are located. This data is also forwarded to higher headquarters to become part of the larger NBC picture.

(1) *Survey.* Nuclear, biological, and chemical detection is carried out while performing the unit's assigned missions. Units survey small areas and routes of immediate interest to the commander. Often he requires contamination information not available through routine monitoring to select evacuation routes and alternate unit positions. To this end, the commander may direct the NBC survey teams to check the route or area of interest. An advance party searching for new positions mount automatic chemical agent alarms on their vehicles to detect the presence of chemical agents along the route. However, the M8A1 chemical agent alarm does not operate in the mobile mode; the vehicle must come to a halt to test for chemical agents with this device. Periodically they conduct tests using a chemical agent detection kit. Concurrently, the survey team checks for the presence and level of radiological contamination. Thus, the advance team is able to advise the commander of NBC hazards found along the proposed route. Upon arrival at a proposed position, the survey team checks the area for NBC hazards. If contamination exists, the commander must evaluate the type and degree of the NBC hazard and how it may affect operations.

(2) *Detection.* Once an NBC hazard is found, the next step is to identify the hazard. Biological agents require a laboratory facility for identification. Nuclear radiation is measured with the teams' radiac instruments and chemical agents are identified with detector paper and chemical agent detector kits. Chemical agent detector paper (M8/9) is used to detect liquid chemical agents. When the paper is brought into contact with a liquid hazard, the presence of blister or nerve agents is indicated by a color change in the paper. Because petroleum and other substances can cause a similar color change, the M8/M9 paper should be used only as an indicator that chemical agent

hazards may exist. Definitive identification of an agent requires the use of the M256A1 chemical agent detector kit. This kit detects blood, blister, and nerve agent vapors; detection of toxins may also be possible.

(3) *Monitor.* When contamination is found, it is marked to warn unsuspecting personnel. The reconnaissance team marks all likely entry points into NBC hazard areas using the standard NATO NBC marking set and reports the contamination to higher headquarters. The markers are placed facing away from the contamination and close enough to each other so that more than one marker can be seen. The commander may direct that the area not be marked if he determines that markings would help the enemy; however, the hazard must be reported to higher headquarters. Upon discovering a marked contaminated area, elaborate surveys are not required, but merely check the extent of contamination; altering plans may be necessary. As the extent of the hazard is reduced, the signs are relocated; if the hazard is gone, the signs are removed. Any changes are reported to higher headquarters.

d. *Management of Contamination.* Contamination is used to cause casualties, degrade performance, and restrict the use of terrain. The unit commander must not become preoccupied with the contamination, but must consider the mission; the type and extent of contamination; and anticipated enemy actions when deciding how to manage contamination.

(1) *Contamination avoidance.* By far, the preferred method is to avoid contaminated areas. Thus, troops do not need to wear complete protective clothing, or use time and resources for decontamination. Bypassing contamination is simpler and safer than going through it. When the entire unit is not needed on a mission in or passing through a contaminated area, consider taking only personnel and equipment required to accomplish the mission. Personnel staying behind can prepare for decontamination of personnel and equipment upon return from the mission. When an NBC hazard is imminent, the commander takes immediate action to determine the type of hazard and its persistency. When the hazard is a nonpersistent chemical agent, the unit continues its mission; the hazard should disappear quickly. When the hazard is persistent (nuclear fallout, suspected biological agent, or persistent chemical agent), the unit maintains full protection; takes actions to limit further exposure to the hazard; and continues the mission. At the same time, the commander considers whether the unit should relocate to a clean, alternate location. When required, preparation to relocate the unit is started. During a relocation, every effort is made to avoid further exposure to the contamination. If the decision is made to remain in the contaminated area, the hazard must be lessened or avoided as much as possible.

(2) *Collective protection.* Collective protection systems reduce the degradation caused by wearing MOPP; they eliminate the need to wear MOPP while continuing with the mission in a contamination hazard area.

(a) Types of collective protection systems for chemical/biological agents include the ventilated facepiece, overpressure, hybrid, and total protection. The ventilated facepiece provides filtered air through hoses to the individual mask. Mission-oriented protective posture is still worn, but the forced air supplied to the mask reduces the breathing resistance caused by the mask. Overpressure systems include an enclosure with filtered air that removes NBC contamination, allowing the occupants to work in shirt sleeves. Hybrid systems provide overpressure and filtered air in a vehicle; it also allows the personnel inside to wear a ventilated facepiece when the vehicle must be opened to the outside air. A total system combines the hybrid system with conditioned air, thus, reducing heat stress. Collective protection shelter (CPS) systems for HSS treatment facilities provide

filtered, conditioned air. These systems also have litter air locks for access to litter patients. Field Manual 3-4 provides additional information on collective protection systems.

(b) Because the gamma component in radiation contamination can easily penetrate clothing and tentage, radiation collective protection (fallout shelters) must also incorporate shielding. Shielding is best obtained by locating in deep cellars of high rise buildings, in tunnels, and in caves. In the open, radiation is received from all sides, and without scraping the ground of all particles, little protection is afforded by tentage. Appendix B provides methods of applying protective schemes. Engineer support is required for some applications.

(3) *Decontamination.* Avoidance and collective protection are not always options; therefore, decontamination is a method of lowering the unit's MOPP level. Decontamination restores the unit's effectiveness. How much is decontaminated depends on the tactical situation and the mission; the decontamination resources available; and the extent of unit contamination. Generally, decontaminate only what is needed to continue the mission. It must be remembered that decontamination is expensive in the resources needed: manpower, time, and materials. Therefore, consider the principles of speed, need, limit, and priority when planning for decontamination. See Appendix C for detailed guidance on patient decontamination; see FM 3-5 for detailed guidance on unit and equipment decontamination.

(a) Three types of decontamination can be used to reduce the effect of an NBC attack on unit effectiveness. They are basic skills, hasty decontamination operations, and deliberate decontamination operations. Basic skills decontamination is conducted using supplies and equipment carried by each individual or unit vehicle and are basic to soldier survival. Hasty decontamination operations are the actions of teams or squads using equipment found within battalion-size units. Deliberate decontamination requires a detailed plan; more manpower and resources are needed than in hasty decontamination.

(b) Unit decontamination must be conducted as soon as possible; contamination forces the unit to remain in higher MOPP levels, degrading unit effectiveness. However, only conduct hasty decontamination of personnel and mission-essential equipment; deliberate decontamination of everything will tax the units personnel and materiel resources. Decontaminate as far forward as possible to limit the spread of contamination; bring decontamination assets to the area, rather than moving contaminated personnel (except patients) and equipment away from their operational area. Lastly, decontaminate the most important things first. The commander decides which assets are more essential to the unit's mission.

(c) Besides decontaminating themselves and their equipment, the medical treatment personnel must also ensure that patients are decontaminated. See Appendix C for detailed patient decontamination procedures.

(4) *Radiation exposure.* When required to operate in a nuclear-contaminated area, personnel will be exposed to damaging radiation. Methods are established to estimate the dose and maintain these estimates for each platoon or section at higher headquarters. The radiation exposure of a unit determines its radiation exposure status (RES) and is outlined in Table 3-1 below. When the unit or section receives a mission which involves exposure to radiation, the commander assigns an operational exposure guide (OEG) to that mission. The OEG is the amount of total exposure he is willing to allow his troops to receive in completing the mission. The three levels of OEG are negligible risk, moderate risk, and emergency risk. Based upon the OEG of the mission and the RES of available units, the commander selects the unit to perform the mission, limiting personnel exposure to radiation.

Table 3-1. Radiation Exposure Status Categories

RES-0	The unit has had no radiation exposure.
RES-1	The unit has been exposed to greater than 0 cGy but less than or equal to 70 cGy.
RES-2	The unit has been exposed to greater than 70 cGy but less than or equal to 150 cGy.
RES-3	The unit has been exposed to greater than 150 cGy.

3-4. Movement/Management of Contaminated Facilities

Operations in a contaminated area require the commander to operate with contaminated or potentially contaminated assets. The commander must be aware that his primary mission is to conserve the fighting strength. The following provides guidance in determining how to operate with contaminated facilities.

a. Fulfill Health Service Support Principles. In making his decision to move or continue to operate with contaminated facilities, the commander must apply the principles of conformity, proximity, flexibility, mobility, continuity, and control. The facility's operation must conform with the tactical commander's operation plan (OPLAN). Health service support must be provided to the tactical unit as far forward (proximate) as possible; this ensures prompt, timely care. Additionally, the HSS commander must be flexible; he must tailor his support to the OPM requirements. Therefore, HSS assets must be as mobile as the unit they support; there must be continuity of HSS so that all units have support. Finally, the commander must control his assets. Dispersion on the integrated battlefield may enhance unit survivability; however, if the commander cannot maintain control of his assets, they become compromised.

b. Decision to Move. The commander (when deciding to move his unit to an uncontaminated area, or in support of the tactical commander's plan) must base his decision to move on several factors.

(1) *Protection available.* The commander must consider the type of protection available in the new area. Will he need to establish the units' CPS systems, or are indigenous shelters available (for example, buildings, tunnels, caves)? Does the unit have sufficient individual protective equipment for unit personnel and are there sufficient chemical agent patient protective wraps (PPW) to perform the anticipated mission?

(2) *Persistency.* If his unit has been in a contaminated area, is the contamination persistent or nonpersistent? Is the area he will move to contaminated or clean? Persistency determines the MOPP level; the degree of threat; and performance decrement to be expected because of the protective measures used.

(3) *Patients.* Before moving the entire facility, the commander must consider the number and types of injuries in his current patient load. Plans must be implemented to evacuate the patients who are currently on hand. These patients are stabilized before movement; however, evacuation assets must be called for.

(4) *Alternate facilities.* Alternate facilities may be used (if the facility can be configured to ensure continuity of care or provide a protected area for patients) until the relocating activity is up and operating.

(5) *Evacuation.* Consideration must always be given to the patient. Routes of evacuation must be disseminated. The ability to evacuate patients before a move and continue evacuating patients during the move must remain in effect. All evacuation considerations must be addressed before any move.

(6) *Mobility.* A facility that is not 100 percent mobile requires movement support. Thus, the commander must coordinate movement support requirements with higher headquarters.

(7) *Mission.* The primary consideration is the support mission of the MTF. The tactical commander requires HSS for his troops; when a move jeopardizes the quality of care, the move may be delayed.

(8) *Sustainability.* Hand-in-hand with the mission is sustainability (the ability of the unit to continue operating in support). If the current location compromises this ability, then the primary mission of the unit is in question. Similarly, if the move will result in a disruption of support, then the move may not be viable.

(9) *Decontamination.* When only a nonpersistent agent hazard exists and a CPS is not available, patients may be directed to another MTF until the hazard is gone; or certain facilities may be decontaminated, patient protection procedures applied, and the operation continued. A treatment facility contaminated with a persistent agent requires time-consuming and resource-intensive decontamination operations; it may include replacement of contaminated shelters. Hasty decontamination may be an alternative.

c. *Management of Contaminated and “Clean” Facilities.* Facilities contaminated with a persistent agent may be too resource intensive. Operating with a combination of contaminated assets and “clean” assets may be necessary. Mark contaminated assets with standard warning tags. Use these assets in contaminated environments and along contaminated routes. Keep clean assets in operation in clean areas. Of primary importance is proper marking and the avoidance of cross contamination. These two tenets, if followed, will ensure that support is continuous.

3-5. Leadership on the Nuclear, Biological, and Chemical Battlefield

Operating on the NBC battlefield will stress leadership. Beyond the normal stresses of combat, the NBC environment increases the need for good leadership. Heat stress from being in higher levels of MOPP for long periods of time may lead to dehydration; the commander must ensure that his troops rest, drink, and eat sufficiently to allow them to continue with the mission. In the midst of activity, rest, hydration, and nutrition are often overlooked; however, a good leader will ensure that his soldiers needs are met. In MOPP Level 4, severe dehydration and heat injury are likely. Individuals may suffer hyperventilation because of the enclosed feelings. Additionally, personnel remaining in MOPP Level 4 around the clock may suffer from increased sleep loss. Use of CPS can reduce this problem by allowing the troops to rest out of their MOPP gear. Because C3 is hampered in MOPP Level 4, leaders must take actions to ensure that orders are received and that personnel perform their mission. Leaders must have response plans in place before NBC attacks occur. They must delegate responsibilities as much as possible. Leaders should concentrate on supervision, rather than on generation of procedures during and after an attack. Successful leaders are those who have planned well and need to do little during a crisis situation. The NBC battlefield will, therefore, require more dedicated leaders who can balance the needs of their troops and the mission. Successful leaders minimize the degradation of troop’s effectiveness to meet the mission requirements.