

## CHAPTER FOUR

# SUPPORT VARIATIONS BASED ON TACTICAL SITUATION

### SECTION 1. INTRODUCTION

#### 4-1. MAINTENANCE UNITS

DS maintenance units, as part of the division, must maneuver and deploy to provide maintenance service support. Maintenance support operations are influenced by deployment of the division, its organization for combat, the tempo and type of combat operation, and availability of suitable terrain.

In some combat situations, maintenance units are deployed well forward; in other situations, they are deployed to the rear. In some cases, maintenance units accompany or closely follow supported units; in others, maintenance units remain behind until ordered to move forward. In still other situations, the bulk of the maintenance units may displace before supported units do.

The type and tempo of combat also affect the nature of the work load of the DISCOM maintenance units. During fast-moving offensive operations, the maintenance shop work load may be light with maintenance efforts primarily geared toward mobility systems. When the advance slows or the pursuit phase ends, however, maintenance units have to increase their activities with maintenance efforts focused on armament systems. During the offensive phase, priority of effort may be directed to recovery and evacuation and roadside-type repair, or to collection, classification, and reporting of abandoned equipment.

#### 4-2. MAINTENANCE SUPPORT OF OFFENSIVE OPERATIONS

The maintenance unit commander prepares for support of offensive operations much the same as the maneuver unit commander. The combat situation is appraised, the support needed is determined, and then resources are organized to provide the support.

#### 4-3. COMMAND, CONTROL, AND COMMUNICATIONS

Offensive operations are characterized by fast movement and rapid changes in the situation. Command, control, and communications of the CSS effort is difficult. Maintenance elements normally operate in the proximity of other CSS elements which reduces some of the difficulties.

The DJSCOM or maneuver brigades provide information to the division headquarters on the locations of support elements operating in forward areas. Under conditions of rapid movement and displacement, it will not be possible to provide specific information on the proposed locations of units in sufficient time for inclusion in division orders.

In a fast-moving situation, the DISCOM may be able to keep the division operations center informed only of its command post (CP) location.

This information is contained in administrative orders, on operation's overlays, or may be disseminated through fragmentary orders. With this minimal information, units must locate the DISCOM or

brigade CP to obtain precise locations of support units. The DISCOM continues to provide follow-up reports or situation overlays to support the daily operations report of the division.

In extremely fast-moving situations, units of the DISCOM operating in forward areas may move before advising the DISCOM headquarters. These units coordinate their movements and locations with the major supported headquarters (normally brigade). Because of distances involved and communications limitations, it may not be possible for these units to effect timely notification of parent units in the DSA. However, since major headquarters report all new locations to the division operations center, the DISCOM headquarters will learn of new locations of brigade trains areas from the division TOC.

Each DISCOM unit has the responsibility for notifying its parent headquarters of the opening and closing of its CP and for providing advance information of planned moves. Such advance information is essential for providing support forward.

#### **4-4. SUPPORT PROCEDURES FOR OFFENSIVE GROUND OPERATIONS**

Prior to initiation of offensive operations, equipment of participating units is inspected by the unit and required maintenance is performed. Equipment shortages are made up, repair parts stockage is brought up to desired levels, and reserve stocks of critical items are set up. Operations and administrative orders are prepared and disseminated. Priorities are set up for support, to include priorities for issue of float stocks and critical repair parts. Procedures, priorities, and conditions for serial resupply are set up. At higher levels, plans, orders, and mission assignments are broad in scope. At successively lower echelons, plans are more complete and detailed.

Maintenance planning, prior to the offensive, considers task assignments of--

- Support units.
- Stock levels for repair parts.
- Maintenance time guidelines.
- Forward displacement of MST/MCP.
- Channels and procedures for recovery, collection, evacuation, and disposition of captured or abandoned materiel.

Repair parts stockage is kept consistent with the mobility requirements. Based on the type of operation, the geographical area, and terrain and weather conditions, certain items in the supply stockage are increased. For example, extensive operations over rough terrain would dictate build up of stockages of vehicle springs, shock absorbers, and tires. Forward deployed MSTs increase stockage of small high usage RX items, such as fire control instruments and automotive subassemblies.

As the tempo of the situation and the distance involved increase, support units may have difficulty keeping pace with requirements. Maintenance support is displaced as far forward as practical. This, however, must be done in light of MST vulnerability, the capability of the enemy to launch a successful counterattack, and the requirements for maneuver room and road space by combat elements. In operations where the overall situation requires bypassing pockets of the enemy or guerilla elements, the effects of such bypassing on support units and other logistical activities must be considered. In some situations, assistance from combat elements may be required to provide security to logistical operations.

The CSS commanders and staff officers must plan for the redirection of logistical support to satisfy changing tactical requirements. Redirection of effort and supplies, redeployment of units, realignment of the support structure, and changes in support procedures and emphasis, are matters that take time and require close coordination and planning. Continuous movement limits the length of time in which repairs can be performed. Shorter maintenance time guidelines for rearward MCP should be set.

If the offensive is successful and gains momentum, a culminating point maybe reached where logistical support limitations make the entire force vulnerable. Lacking the ability to maneuver and displace as rapidly as combat forces, CSS forces maybe outdistanced by the combat units. Resupply of repair parts by unit distribution may break down or become ineffective due to lack of transportation, difficulty in locating units, and increased order and ship time.

The force commander must be informed of the effect of the tactical situation on the capability of the support structure to provide required support. Expedients to provide maintenance support under these circumstances include--

- Instituting BDAR.

- Setting up procedures and controls which allow MSTs to draw from bench stock, ASL, or RX those items anticipated to be needed for on-site repairs and high usage items.
- Increases emphasis on evacuation of unserviceable equipment, with repair operations in forward areas limited to component replacement, adjustments, and servicing.
- Round-the-clock operations of supporting units to the limits of physical endurance.
- Use of air transportation to move MSTs and repair parts.

DISCOM maintenance units must maximize repair efforts forward. Unserviceable equipment requiring more than limited component replacements,

adjustments, and servicing should be evacuated to a centrally located MCP. The centralized MCP maximizes BDAR, WSRO and cannibalization, and controlled exchange operations. Unserviceable equipment requiring extended repairs are consolidated and turned over to follow-on maintenance elements. Figure 4-1 illustrates various maintenance activities and the flow of maintenance elements in the forward area in support of offensive operations.

**4-5. DEFENSIVE OPERATIONS**

Types of defensive operations include the defense, delay defense of an encircled force, and rear operations. Activities associated with defensive operations include counterattacks, passage of lines, withdrawals, and reliefs to continue the defense.

Large defending formations, such as the division, may have portions of their forces conducting any of

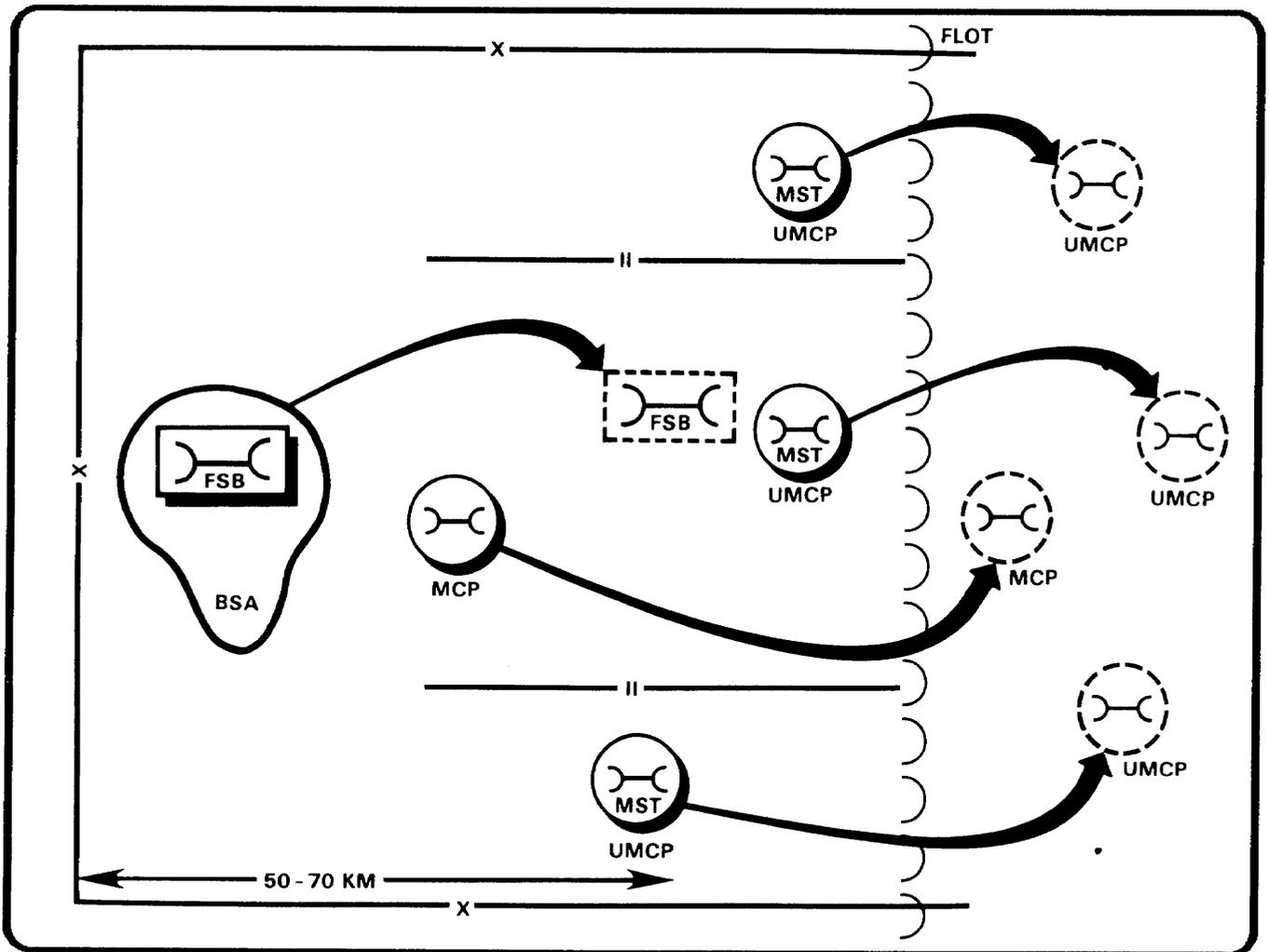


Figure 4-1. Flow of maintenance activities.

these operations or activities simultaneously. Defense may be static or dynamic. It takes a coordinated effort to defeat the attackers and prevent them from achieving their objectives.

The MSTs deployed with maneuver units are task organized to maximize on-site repair capacity. The team may relocate several times a day, keeping pace with supported units. Maneuver unit maintenance elements must assess unserviceable equipment for on-site maintenance or movement to the nearest UMCP.

Initial BDA is made on site and a plan is formulated for each unserviceable item. Follow-on maintenance elements are notified of maintenance requirements beyond the set time guidelines or capacity of the MCP elements to allow follow-on maintenance elements to plan their maintenance efforts. Maintenance support must be echeloned in depth. The base company and forward MCP must leap-frog forward so that continuous support may be maintained.

#### **4-6. MAINTENANCE SUPPORT OF DEFENSIVE OPERATIONS**

Maintenance support for defensive operations must be planned, organized, and executed with the same attention to supported unit requirements as for offensive operations.

#### **4-7. DURING DEFENSIVE OPERATIONS**

Supported units are not as widespread as in the offense. Maintenance support operations can, therefore, be more centralized. Defensive operations also do not require displacement as often as in the offense, so command, control, and communications are simplified. The exception to this is support of retrograde operations, such as delay or withdrawal. The need for continued support while engaged in a unit move makes this a difficult operation to support.

#### **4-8. SUPPORT PROCEDURES FOR DEFENSIVE OPERATIONS**

In a static defense, the defending force remains in position for longer periods. Movement and maneuver of the defending force are considerably reduced in comparison to a dynamic defense or an offensive operation. In a static defense, support units do not have to deploy as often as in other types of operations. More time is available for maintenance operations. Maintenance facilities can operate better, since they do not have to react so often to changing situations and requirements.

Repair parts stockage is generally increased and reserves of critical items are built up. Care should be exercised in selecting only needed items so that mobility is not impaired. Equipment inspections and technical assistance are emphasized to maintain readiness at a high level.

A dynamic defense requires maneuver and movement on the part of elements of the defending force. Maintenance units may also expect to move more frequently than during an area defense. In the dynamic defense, vehicular maintenance requirements are greater than in static defense, particularly with respect to track vehicles. This will result in increased evacuation from the forward support elements to maintenance elements farther to the rear.

If the defensive situation becomes critical, unit and support maintenance personnel may have to cease operations and participate in the defense of their unit.

Detailed planning, control, and coordination are required for support of delaying or withdrawal operations. Emphasis must be given to evacuation of unserviceable equipment that cannot be repaired before opposing forces overtake the position. Displacement of the support elements must not conflict with movement of the combat units. When possible, maintenance support units should be displaced at night.

Maintenance is concentrated on those weapon systems and materials directly required to support the retrograde operation. Priority of support should be given to units that have completed the movement to the next location and are preparing a new position. Emphasis must be placed on items that can be repaired most readily. Other equipment should be evacuated directly to future planned support areas. Extensively damaged equipment should be used for controlled exchange or cannibalization.

Maintenance plans must be closely coordinated with the tactical plan so that maximum support can be provided without interfering with operations of the combat elements.

Recovery equipment is critical to the support of retrograde operations. Its use must be rigidly controlled and coordinated. Recovery equipment should be marshaled at critical locations to keep routes open and recover all materiel possible.

Badly damaged equipment should be evacuated or destroyed. Specific instructions must be provided for the destruction of supplies and equipment.

## SECTION II. NBC CONSIDERATIONS (IMPACT ON MAINTENANCE)

### 4-9. SUPPORT CONCEPT

Maintenance personnel must provide maintenance support on the integrated battlefield. Individual soldiers must be trained to survive an initial nuclear or chemical attack and to continue the mission in a toxic environment under conditions of great mental and physical stress.

Maintenance activities, when possible, should occupy protected areas such as underground garages or concrete buildings. Such areas provide some cover from liquid chemical agents and shielding from radioactive contamination. Units should establish SOPS for contaminated vehicle and equipment maintenance procedures delineating--

- Inspection and contaminated MCP procedures.
- Procedures for requesting emergency equipment decontamination.
- Responsibilities and procedures for establishing and operating a contaminated equipment holding area.

### 4-10. CONTAMINATION PROBLEMS

Petroleum products tend to trap chemical contaminants. A vehicle quite safe for an operator to use without MOPP 4 protection may be unsafe for a mechanic to repair. Chemical contamination is likely to collect in bolt threads, hydraulic fluids, and closed assemblies. When mechanics open air filters, for example, they might be exposed to lethal concentrations of hazardous vapors. Therefore, all repairs and PM to previously contaminated vehicles must be done in a protected posture. Oil, grease, and dirt seriously degrade the protective qualities of the chemical overgarment.

Mechanics must keep themselves as clean as possible. Extra overgarments should be on hand to replace dirty ones. Wet weather gear helps keep overgarments clean but vastly increases heat buildup and will eventually be penetrated. The combination of protective gear and wet weather gear provides good, although extremely hot, protection from a combination of toxic chemicals, grease, and oil contamination. Fuel handlers aprons and field ex-

**MAINTENANCE ACTIVITIES, WHEN POSSIBLE, SHOULD OCCUPY PROTECTED AREAS SUCH AS UNDERGROUND GARAGES OR CONCRETE BUILDINGS.**

pedient rubber sleeves can provide added protection with much heat stress.

**4-11. PRINCIPLES FOR CONTAMINATION CONTROL**

Maintenance teams should make every effort to repair contaminated equipment in a contaminated MCP. Return repaired but contaminated equipment to units that are contaminated, whenever possible. Even if equipment has gone through unit restoration decontamination, it can still be hazardous to handle. A previously contaminated unit will already be conducting periodic contamination checks and will be able to use the equipment safely because of the precautions they are already taking. Contaminated equipment and tools must be stored at a location downwind of clean areas. Every effort must be made to control the spread of contamination. Contaminated vehicles and equipment should not be evacuated for repairs. If DS maintenance is required, an MST will be sent forward to effect repairs in the contaminated MCP. DS maintenance units should treat all customer equipment as though it were contaminated until inspected. Figure 4-2. illustrates a contamination maintenance support operations layout.

**4-12. PROVIDE PROTECTION FROM CONTAMINATED EQUIPMENT**

Even though decontamination is done, maintenance teams cannot be sure that a vapor hazard trapped by oils or held inside a closed assembly will not appear at some point during the maintenance process. To guarantee safety, the maintenance officer must decide what MOPP level mechanics should use.

Operate chemical agent detection equipment while contaminated equipment is being repaired. The testing must be a continuous process. Vapor hazards may not be present in open terrain, but as soon as the vehicle is moved into an area where air does not circulate, significant vapor hazards may concentrate. If contamination is ever detected after an assembly is opened, the assembly can be decontaminated hastily by flushing with diesel or motor gasoline (MOGAS). The unserviceable component must then be marked and taken to the contaminated holding area, where it can weather or undergo more thorough decontamination.

For reparable assemblies, wait until the assembly no longer gives off vapor. The fuel used for this

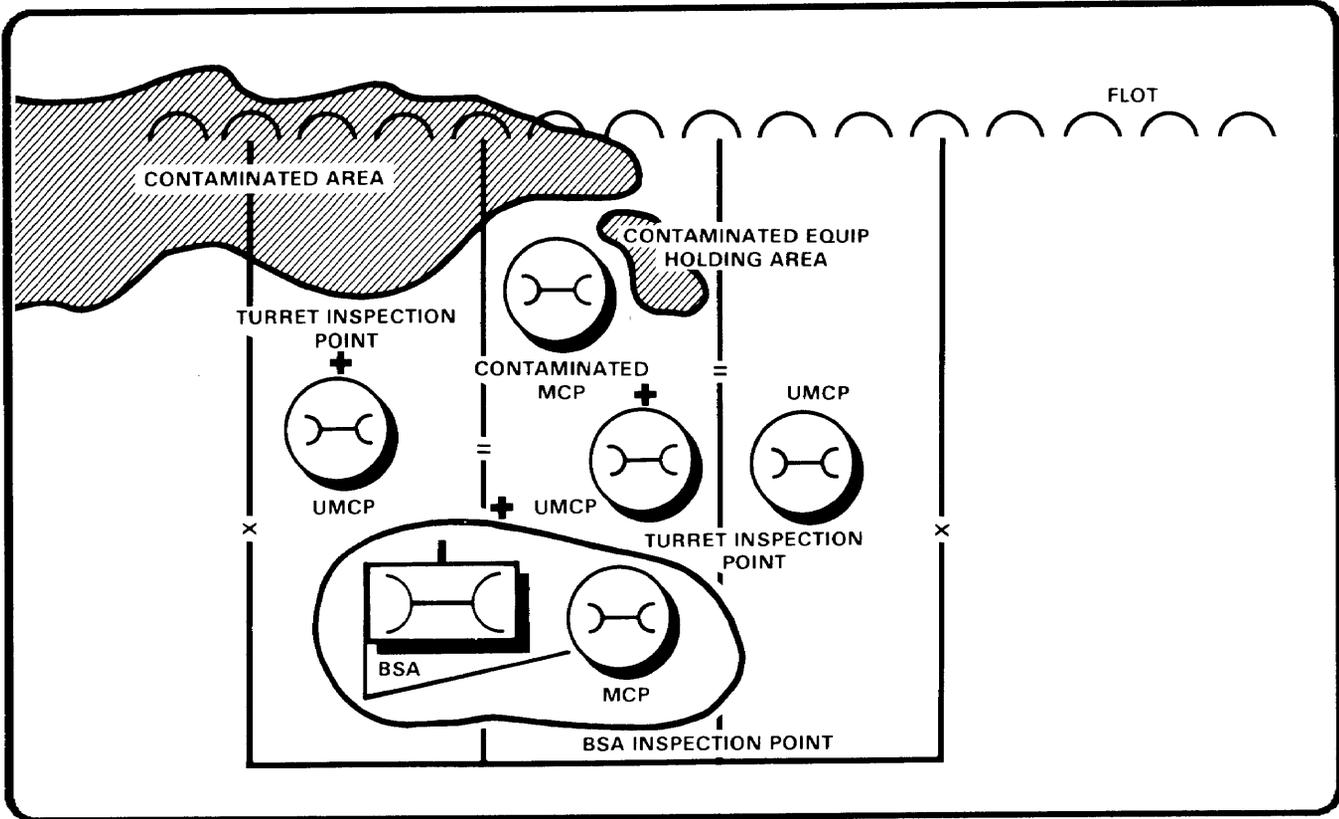


Figure 4-2. Contaminated maintenance support operations.

flushing must also be marked contaminated and dumped in the contaminated sumps at the decontamination site or disposed of per unit SOP.

Maintenance personnel repairing equipment with radiological contamination should wear a dosimeter and be closely monitored for level of radiation exposure. They must avoid exceeding exposure levels. When the highest acceptable levels are reached, personnel should be replaced, mission permitting. The amount of radiological contamination they can tolerate will vary depending on operational exposure guidance (OEG) and the tactical situation. Priorities for monitoring equipment should go first to the recovery teams, inspection point MSTs, and then the MCP.

#### **4-13. MARK VEHICLES AND EQUIPMENT TO PROTECT OTHERS**

Contaminated vehicles must be identified with a standard triangular contamination sign in the vicinity of the driver's compartment. The type and date of contamination should be written on the sign. The sign should be easily visible from the outside of the vehicle and may not be removed for nonpersistent agents until decontamination has been verified by a detailed inspection. Contamination signs on vehicles and equipment contaminated with persistent agents will not be removed even after decontamination. Nonvehicular equipment should be similarly marked in a conspicuous location,

#### **4-14. SUPPORTING CONTAMINATED EQUIPMENT FROM A CLEAN AREA**

The strategy for supporting from an uncontaminated area is to prevent contaminated equipment and personnel from entering a clean area. Work within a clean area can thus be done at reduced MOPP and with greater efficiency. Once NBC attacks have occurred within the area of support, the unit must assume that all the equipment it supports is contaminated. To deal with this, the maintenance unit must set up separate inspection and MCPs. All vehicles, personnel, and supplies must pass through this inspection point before they enter the maintenance area,

The inspection team must segregate the equipment. Uncontaminated equipment can go straight to the maintenance area. Contaminated vehicles and equipment must be marked with standard triangular

contamination signs, then a decision must be made on the disposition of the equipment. If contaminated with a nonpersistent agent and repairs cannot be performed in MOPP 4, the item may be sent through decontamination or left to weather.

Before any repairs are made, the equipment should go through unit restoration decontamination. Priority equipment must be decontaminated first. If contaminated with a persistent agent, every effort should be made to replace the contaminated component with the next higher assembly that can be done in MOPP 4. Contaminated equipment or components should be marked with a triangular contamination sign and placed in the holding area to await disposition instructions from higher headquarters.

Once equipment and tools have been used for contaminated maintenance, they should be left contaminated. Use rags to wipe off only the gross contamination. Dispose of the rags by soaking in decontaminant solution and holding, or bury them and mark the location. Maintenance teams may go through a MOPP gear exchange or detailed troop decontamination. The teams' equipment and tools should be left alone. A fresh team can use the contaminated tools on other contaminated equipment. For extended repairs, a fresh team can relieve contaminated teams who move back and undergo detailed decontamination. After a rest, the newly decontaminated team rotates forward and relieves the contaminated team.

#### **4-15. SUPPORT FROM A CONTAMINATED AREA**

The physical and emotional limits on the length of time personnel can operate in MOPP 4 severely restrict the maintenance support which can be provided from contaminated area. It may be possible to extend the length of time the unit can continue to support from the contaminated location by scheduling periodic withdrawal of personnel to a clean area for complete personnel decontamination and a rest period at a reduced MOPP level. For continued effectiveness, however, the unit must depart the area, go through a complete equipment and decontamination process, and set up shop in a clean area. The time limitations may dictate that only the most critical repairs continue, while the remainder of the unit moves to a clean area. The limited organic transportation capability may require that some unit and customer equipment be left in place. Following

setup at the clean area, this equipment may be recovered or repaired.

#### **4-16. CONTAMINATION AVOIDANCE**

The severe impact of contamination on the unit's mission capability dictates that avoiding contamination may be the keystone of the maintenance unit's strategy for support in an NBC environment. This makes it essential that the unit NBC defense personnel monitor the NBC situation by maintaining contact with higher headquarters and their counterparts in supported units. Prior to dispatch to MSTs, as much information as possible must be obtained relating to the threat along the route of march and at the support location. The location and availability of division decontamination equipment must be carefully monitored.

### **SECTION III. NIGHT OPERATIONS**

#### **4-17. TRAINING**

The goal of night maintenance operations is to attain the same degree of effectiveness as in daylight operations and to sustain the effort over long periods of time. Intensive night training is the key in attaining this goal. Those tasks which cannot be performed under subdued visible light or night vision goggles are identified. Procedures are developed for deferring them until daylight hours. Procedures are developed for the pre-positioning of equipment, tools, and repair parts supplies. This allow ready access, identification, and handling during the night. Criteria are established for site selection which specifically address the effective use of terrain, natural cover, and concealment to avoid direct enemy observation. Procedures for night movement and relocation stress light discipline and camouflage.

#### **4-18. THE IMPACT OF SECURITY REQUIREMENTS ON MAINTENANCE MANPOWER**

The planner must remember that maintenance elements will be providing 24-hour maintenance support, plus security, and plan accordingly. Planners should expect a degradation in support as 24-hour operations are sustained.

#### **4-19. THE IMPACT OF CAMOUFLAGE AND SITE SELECTION**

Maintenance support sites, while meeting all the other doctrinal criteria, must also be selected be-

cause they can be camouflaged effectively to avoid direct enemy observation. The enemy has night devices such as image intensifiers (starlight scopes), infrared devices (binoculars and metascopes), thermal imaging devices which see the heat given off by a warm or hot object, and various types of battlefield illumination. Maintenance elements will be continuously dealing with equipment which provides observable signatures. Planners and operators must be aware of the effects of enemy observation of these signatures. With the sophistication of weapons and target acquisition means over the past years, detection of a target has become almost equivalent to its destruction. This fact points out the need for careful planning of maintenance support locations.

### **SECTION IV. OPERATIONS SECURITY**

#### **4-20. OPSEC PHASES**

OPSEC is the action taken to prevent the enemy from obtaining information relating to friendly operations. Throughout the planning, preparation, and execution phases of maintenance operations, every effort must be made to maintain security.

#### **4-21. OPSEC PLANNING**

OPSEC planning by maintenance units maybe organized into the following sequence:

- Determine enemy capabilities for obtaining information about maintenance operations.
- Determine what information obtained by the enemy can compromise friendly operations.
- Determine what actions taken by the maintenance unit before an operation would provide the enemy with needed information.
- Determine what protective measures are necessary and where they must be implemented to maximize OPSEC.

#### **4-22. COUNTERSURVEILLANCE**

This includes all active or passive measures taken to prevent the enemy from seeing the friendly area, equipment, movements, and so forth. Some OPSEC techniques include making maximum use of terrain for concealment, moving at night or during periods of reduced visibility, using camouflage, and maintaining noise and light discipline.

#### **4-23. TRANSMISSION SECURITY**

This involves use of CE security techniques to prevent the disclosure of operation information. Some practical techniques for maintenance units to employ are to keep radio transmission short, maintain signal silence, use wire communications whenever possible, and use the low power setting on radios. Transmission security information may be found in field SOPS, security instructions, and in the unit's current CEOI.

#### **4-24. PHYSICAL SECURITY**

This consists of the use of security forces, barriers, dispersal, concealment, and camouflage in order to deny the enemy access to facilities, areas, equipment, materiel, and personnel to protect operational information or activities. Some practical techniques to apply include--

- Using security elements to the front, rear, and when required, flanks on convoys.
- Using listening and observation posts in garrison or bivouac areas.
- Identifying likely avenues of approach and covering them with fields of fire.
- Employing obstacles to impede the enemy.
- Using challenge and passwords.
- Using early warning devices.

#### **4-25. INFORMATION SECURITY**

This is the control of written, verbal, and graphic information to prevent the disclosure of operation information. OPSEC measures include never posting information in the open, such as on vehicle windshields; not allowing local civilians into work and assembly areas; and proper handling of all classified and sensitive information,

### **SECTION V. RECONSTITUTION PROCESS**

#### **4-26. RECONSTITUTION**

Reconstitution is the total process of providing replacement of critical supplies, services, personnel, and equipment to restore the combat effectiveness of

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a unit. It encompasses unit regeneration and sustaining support.

#### **4-27. UNIT REGENERATION**

Unit regeneration consists of those replacement, reorganization, and redistribution actions needed to restore the ineffective unit to the desired level of readiness.

#### **4-28. SUSTAINING SUPPORT**

Sustaining support includes those actions that are constantly in progress to maintain a unit at a desired level of combat effectiveness.

Included is replenishment of all classes of supply and the transportation needed to accomplish replenishment, essential maintenance, recovery and evacuation of inoperable equipment, medical treatment and evacuation, individual personnel replacement, and services required to sustain the unit.

#### **4-29. RECONSTITUTION OPERATIONS**

Reconstitution is done as far forward as possible so that units may be returned to combat with minimum delay. This is normally in the support area two levels higher than the unit being reconstituted. Maintenance support of reconstitution operations initially consists of assessing the damage and then shifts to repairing as many weapon systems as possible in response to the priorities set by the commander.

BDA is used to appraise major weapon systems status. This effort shows the number of items destroyed or damaged beyond repair in the forward area and the number that can be repaired forward. It also shows the location of forward maintenance and salvage collecting points and transportation required to support recovery and/or evacuation. Repairs concentrate on mission essential maintenance only and the priorities established by senior commanders.