

## Chapter 7

# Camouflage of High-Value Targets

*The intention of the Threat's doctrine is to locate, target, and destroy deep targets to degrade our defensive capabilities while adding offensive momentum to their own attacking forces. Threat commanders will focus their most sophisticated sensors in search of these types of targets. By denying us adequate command and control, combat support, or resupply operations, Threat forces hope to overwhelm our defenses at the FLOT. Therefore, proper camouflage of our commandposts, supply and water points, key fixed installations, nuclear-delivery units, and other high-value targets is absolutely essential to survival on the battlefield.*

**7-1. Command Posts (CPs).** Command and control systems provide military leaders with the capability to make timely decisions, to communicate these decisions to subordinate units, and to monitor the execution of decisions. CPs contain these systems and are organized to perform these functions for the military commander. CPs can be characterized as the nerve centers of military operations.

a. *Signatures.* Since World War II, the size and signatures of command posts have increased dramatically. Now, more than ever, CPs require excellent camouflage to survive on the battlefield. There are several signatures that the enemy can use to detect and identify CPs for destruction.

(1) **Lines of Communications.** CPs are usually located near converging lines of communications, such as road or rail junctions, and they often require new access and egress routes.

(a) **Vehicle traffic.** Concentrations of vehicles and heavy traffic, with characteristic wear and track marks, can indicate a CP's location. Also consider air traffic when evaluating detection signatures. Park vehicles and aircraft at a significant distance from CPs.

(b) **Antennae.** Antennae, with their associated electronic emissions, and an abundance of wire lines are also common to most CPs.

(c) **Security emplacements.** Security measures, such as barbed wire, barriers, security and dismount points, and other types of emplacements, can also provide an indication of CP operations. Barbed or concertina wire should follow natural terrain lines and be concealed as much as possible.

(2) Equipment. Power generators and other heat sources develop signature that are targeted by Threat surveillance. Place heat-producing equipment and other thermal sources in defilade, within structures, or under natural cover.

b. *Camouflage*. Camouflage, when used with dispersion and standardization, will improve OPSEC and increase survivability by minimizing the observable size and signatures of CPs. CP camouflage, as with that of an assembly area, requires reconnaissance, planning, discipline, and maintenance. Carefully controlled traffic plans will also decrease the possibility of disturbing natural cover and creating new, observable paths.

c. *Sites*. CP sites, while likely to be moved at least every 24 hours, are still occupied for a longer period than assembly areas. Therefore, CP placement is crucial. Consider the following:

- When placing a CP, consider the needs of supporting an extended occupation while minimizing changes to natural terrain patterns.
- Take advantage of existing lines of communications (roads, trails, streams, and so forth). Avoid sites requiring new roads or paths, but if this is unavoidable, make maximum use of natural concealment and existing terrain. The fewer new lines required, the better the CP blends, leaving natural features relatively unchanged.
- Do not locate a CP directly at a road junction. Road junctions are obvious targets for enemy sensor systems.
- If possible, locate a CP in an existing civilian structure. Doing this simplifies hiding military activity. However, if you place a CP in a building, choose a building in an area where a sufficient number of other buildings can mask its location.

d. *Radiotelephone Procedures*. By strictly complying with proper radiotelephone procedures, you will decrease the opportunities for the Threat to detect you. Consider the following:

- Place your antennae in a remote location such as in an antenna farm or in and around trees or other natural screens.
- Move your antennae as often as possible.
- Use directional antennae whenever possible. If you must use nondirectional antennae, employ proper terrain-masking techniques to defeat Threat radio direction-finding efforts.
- Maximize the use of existing telephone lines. However, remember that newly laid wire is a readily observable signature that can reveal a CP's location. Communications wire and cable should follow natural terrain lines and be concealed as much as possible.

e. *Camouflage Discipline*. After occupation of the site and erection of camouflage to supplement available natural concealment, maintain camouflage discipline. Establish and use designated foot paths to, from, and within the CP area. Security and dismount points and other individual emplacements should be well camouflaged, and the paths to CPs should be inconspicuous. Enforce proper procedures for trash and spoil disposal. Rigidly enforce light and noise discipline.

**7-2. Supply and Water Points.** Supply and water points provide logistical support, the backbone of sustained combat operations. As these targets are relatively immobile and the object of the Threat's most sophisticated sensors, camouflage is one of the few effective measures to improve their survivability.

a. *Operations.* Many of the camouflage measures associated with assembly areas and CPs also apply to supply and water points. Camouflage of the latter, however, presents additional requirements. Large amounts of equipment and supplies are brought up quickly into tactical areas and delivered to supply points located as far forward as possible. The supplies must be unloaded and concealed quickly, while supply points remain open and accessible for distribution. Under these conditions, multiple supply points are generally easier to camouflage than single, large ones. Decoy supply and water points can also confuse Threat targeting efforts.

b. *Camouflage.* Take maximum advantage of natural cover and concealment. Configure logistics layouts to conform with the local ground pattern. Creativity can play a large role in doing this. For example, in plowed fields, stacking supplies parallel to the furrows and covering them with earth-colored tarps can provide effective concealment from aerial observation. The following guidelines will enhance concealment of these operations:

- Avoid establishing regular (square or rectangular) perimeter shapes for the area.
- Select locations where concealed access and egress routes are already established and easily controlled.
- If new access roads are needed, use roads that have existing overhead concealment. Conceal access over short, open areas with overhead nets.
- Rigidly control movement into and out of the supply area.
- Mix and disperse supply point stocks to the maximum extent possible, not only to avoid a pattern of stockpile shapes but to avoid easy destruction of one entire commodity.
- Irregularly space stocks (both in length and depth) to avoid recognizable patterns. Stack supplies as low as possible to avoid shadows. If resources allow, dig supplies in.
- Cover stocks with nets and other materials that blend with the local ground pattern. Flattops (large, horizontal camouflage nets) are effective for concealing supply-point activities when resources allow their construction and supply points are not too large.

c. *Traffic Control.* Access and traffic-control plans should provide for minimal changes to the natural terrain as a result of movement into, within, and out of the area. Provide for concealment and control of vehicles waiting to draw supplies. Rigidly practice and enforce camouflage discipline. Debris control may be especially troublesome and will require constant attention.

d. *Water-Point Considerations.* Camouflage of water points includes additional considerations:

(1) *Spillage.* Minimize water spillage. Provide adequate drainage to prevent standing pools of water that can reflect light and attract attention.

(2) Equipment. Use adequate natural and artificial concealment for operating personnel, storage tanks, and specialized pumping and purification equipment. Conceal water-point equipment to eliminate shine from water. Conceal shine by placing canvas covers on tanks, using LCSS, and placing foliage on or around water tanks. Use the same methods to distort the characteristic shape of these tanks.

(3) Scheduling. Enhance camouflage discipline at water points by setting and strictly enforcing a supply schedule for units. The lack or violation of such a schedule will produce a concentration of waiting vehicles which is difficult to conceal.

**7-3. Fixed Installations.**

a. *Concept.* Fixed installations, such as airfields and other lines-of-communication facilities, provide scarce, nearly implacable, functional support to ground maneuver forces. The primary threat to these facilities is from fighter-bombers and attack helicopters, both of which approach targets at low altitudes and high speeds. This method of attack creates unique target-acquisition problems for the pilot due to the short time the pilot has to locate, identify, and lock onto a target (Figures 7-1 and 7-2). Proper camouflage can easily magnify the pilots' difficulties.

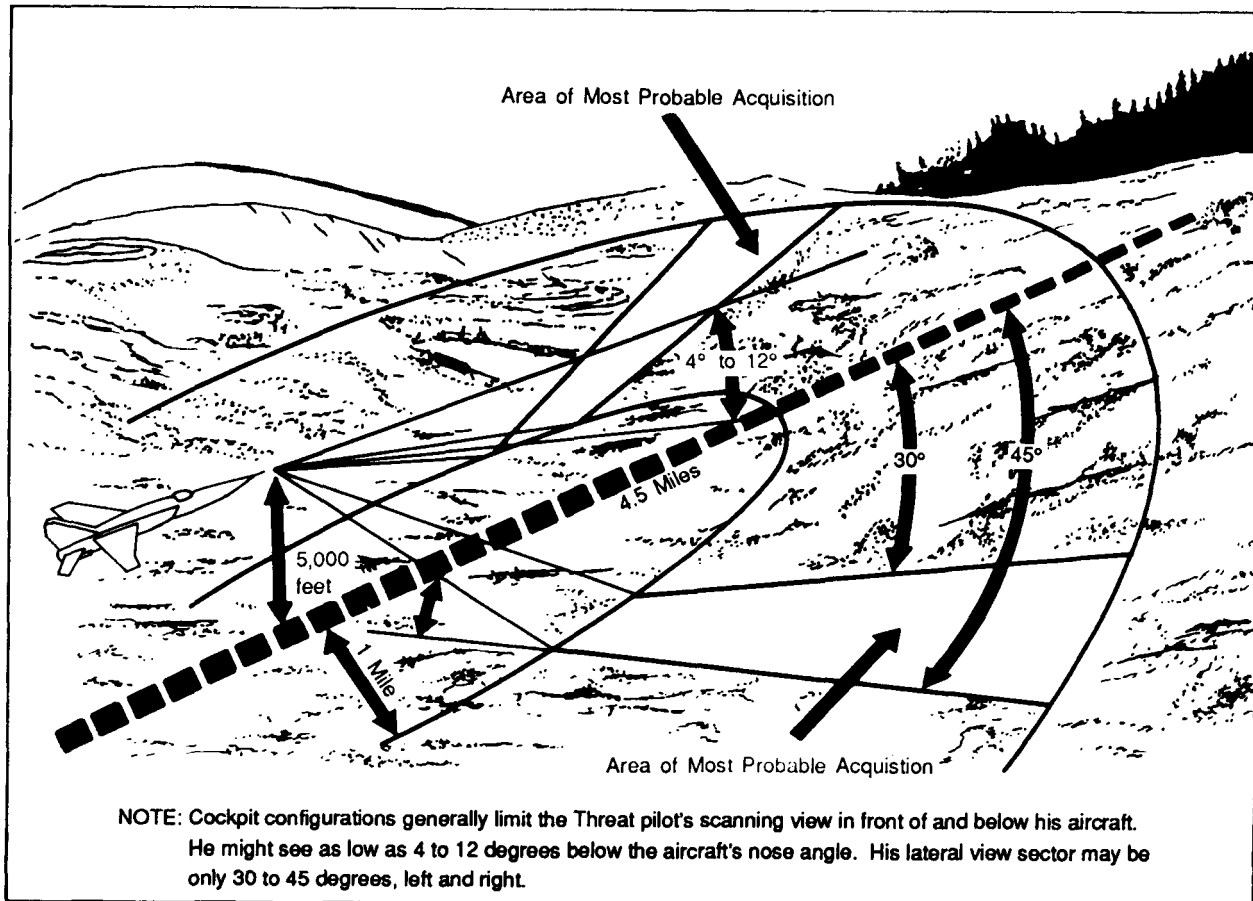


Figure 7-1. Threat High-Performance Aircraft Visibility

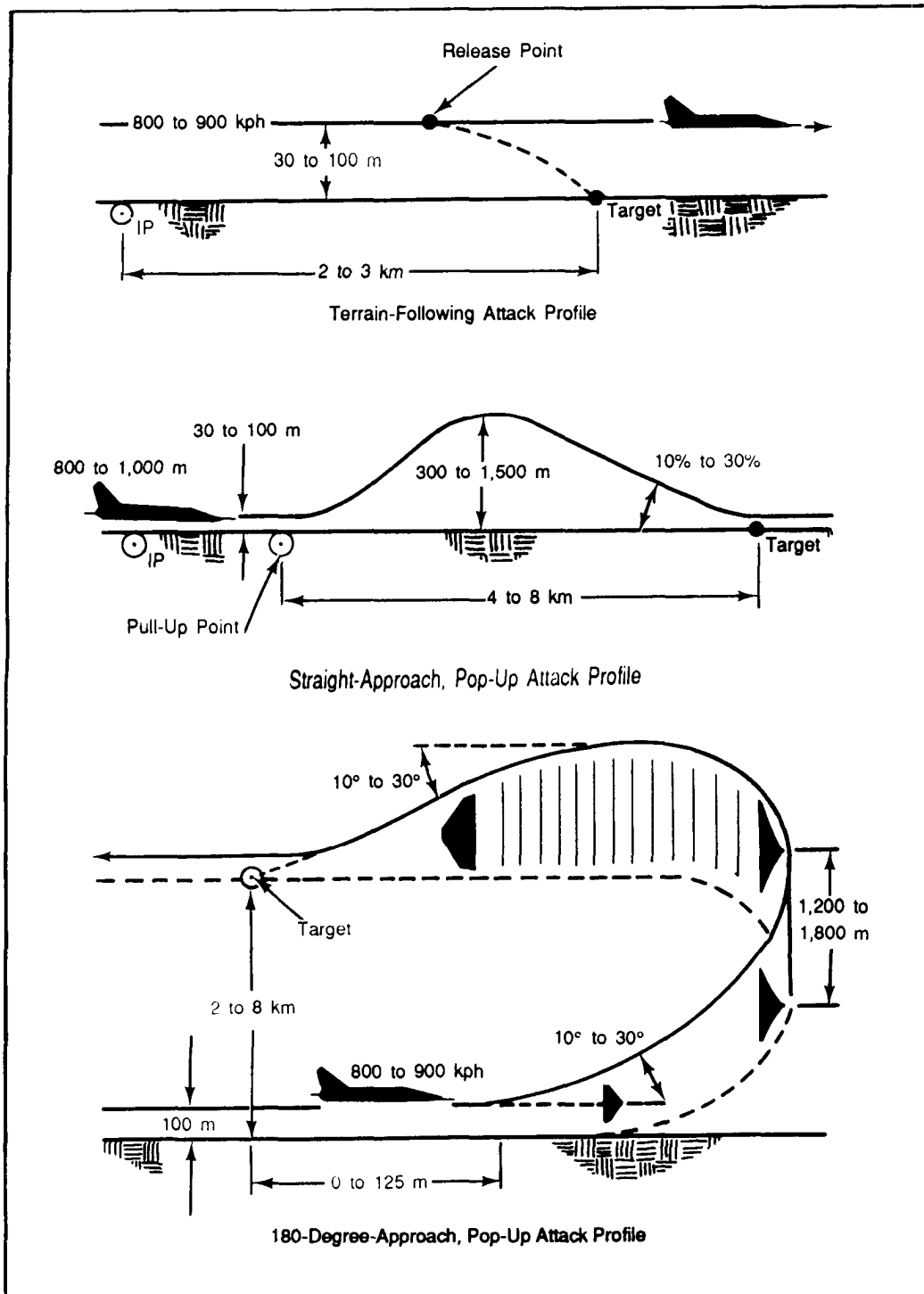


Figure 7-2. Typical Aerial Attack Profiles Against Fixed Facilities

The location and configuration of most fixed installations are well-known. Camouflage against sophisticated Threat sensor systems, except in special cases, is not cost effective. Furthermore, the cost of completely camouflaging many facilities is prohibitive. Camouflage efforts, therefore, should focus on the multispectral defeat of the attacking aircraft's target acquisition process. Camouflage efforts should take advantage of local terrain features and the poor field of vision and short time available to attacking aircraft pilots.

b. *Camouflage Plans.* There is no single solution for enhancing fixed-installation survivability using camouflage technology. The characteristics of most facilities are unique, requiring distinctly different camouflage techniques. Accordingly, every fixed-installation commander should develop a unique camouflage plan based on a thorough study of the factors affecting a Threat aircraft's ability to distinguish key targets.

(1) *Objective.* The objective of the camouflage plan is to produce the desired level of survivability within the limits of available resources. The design procedure must systematically determine what is conspicuous about a given site, why it is conspicuous, and how to best camouflage it. The ultimate goal is to decrease the effectiveness of enemy firepower by making installation location and identification and critical target acquisition more difficult to accomplish.

Minimum camouflage efforts may include the concealment of orientation cues or reference points that assist the attacker in finding the installation. The next level of effort may involve the camouflage treatment of large or conspicuous features (airfield runways or the geometric shapes of weapon storage sites) that allow the attacker to orient himself relative to the facility. Often other critical targets within the installation may be quite conspicuous, requiring additional camouflage to conceal them. Often, decoys (reference points or critical targets) may be sufficient to confuse and defeat the attacker's target-acquisition process.

(2) *Planning Approach.* Use the following eight-step approach to develop a camouflage plan that meets the installation's needs.

(a) *Identify the threat.* Initially, identify the chief Threat sensors, aircraft, weapon systems, and the most likely directions of attack.

(b) *Establish goals.* Establish specific camouflage goals for the installation. Base these goals on the Threat assessment, the impact the goals will have on operations, and the cost effectiveness of achieving the goals. This step is iterative, requiring reconsideration throughout the planning process.

(c) *Identify critical facilities.* Identify the most critical facilities on the installation. Include facilities that are critical from an operational standpoint as well as those that may provide reference points for an attack on the more lucrative targets.

(d) *Evaluate facilities.* Once you have identified the critical facilities, focus your efforts on identifying what facility features make them conspicuous to attacking aircraft. This assessment

must consider multispectral (visual, thermal, NIR, and radar) signatures. The eight recognition factors (Chapter 3) are an excellent framework within which to conduct this assessment. Include a review of area maps, site plans, and photographs, as well as an aerial survey of the installation, its surroundings, and probable attack avenues of approach.

(e) Quantify signatures. Relatively quantify the multispectral signatures emitted by installation facilities. Base signature quantity on actual surveys of critical facilities, using the array of possible Threat sensors. The goal is to develop a priority for signatures to be reduced and to determine how much each signature must be reduced.

(f) Select materials and techniques. Based on the previous steps, select the suitable materials and techniques that best reduce the facilities' signatures, while meeting the plan's camouflage goals. Table 7-1 contains a list of generic camouflage technologies that apply to fixed installations. As there is no *camouflage kit* available for fixed facilities, select techniques and materials based on what fulfills each installation's needs.

(g) Organize the plan. At this point, develop a total installation camouflage plan. Since all facilities can be characterized by two dominant features (traffic surfaces and above-ground structures), group specific camouflage measures accordingly. Consider both temporary (removable) and permanent measures. Table 7-2 groups camouflage measures according to these categories. Whichever measures you choose, avoid repetitive solutions that may be recognized as a pattern. The previous identification of installation camouflage goals, critical facilities, signature-reduction priorities, and available camouflage measures should provide the framework for the completion of this step.

(h) Implement the plan. The last step is implementation. If possible, deploy permanent measures during normal maintenance schedules. (For example, substitute special thermal coatings for normal paints.) Store temporary (removable) materials inconspicuously. Conduct deployment training for these materials, but on a schedule that will deny enemy intelligence teams the opportunity to identify the measures or develop methods to defeat the camouflage.

(3) Limitations. While all the measures and techniques described above are designed to enhance fixed-installation survivability, they have practical limitations. For example, attacking pilots will still be able to use natural cues (mountains and rivers) and some man-made cues (such as towers and expressways). The physical size of the installation will also be a limiting factor, especially if there are too many critical facilities or cues completely conceal. Despite these limitations, carefully developed and implemented camouflage plans can significantly increase fixed-installation survivability against airborne threats.

**7-4. Nuclear-Delivery Units.** Nuclear weapons retain their deterrent capabilities only as long as they cannot be targeted and destroyed. Therefore, the survivability of the tactical nuclear force is a national priority.

a. *Mobility and Camouflage.* The primary means available for enhancing the survivability of tactical nuclear-delivery units are mobility and camouflage. The ability of these units to rapidly

deploy and continuously conduct mobile operations, while crucial to their survivability, must be supplemented by a comprehensive camouflage program.

b. *Built-In Capabilities.* Camouflage should be built into systems to the maximum extent possible. Supplemental camouflage will also be needed. The same camouflage principles and rules for avoiding detection still apply, as do the considerations regarding the eight recognition factors. The basic camouflage techniques of placement, movement, decoys, and smoke and obscurants are also valid.

c. *Critical Nature.* Camouflaging a nuclear-delivery unit is similar to camouflaging any combat unit. The main difference is that, due to the high value and scarcity of these assets, a camouflage mistake is more likely to spell disaster for the nuclear unit. For these reasons, constant and intense command attention is required to ensure there are no camouflage lapses.

Table 7-1. Generic Camouflage Technology

Camouflage Objective	Optical Systems	Thermal Systems	Electronic Systems
<b>Hide</b>	Earth cover Earth embankments Vegetation LCSS Screens Smoke	Earth cover Earth embankments Vegetation LCSS Screens Smoke	Chaff Corner reflectors Earth cover Earth embankments Vegetation Nets RAM LCSS
<b>Blend</b>	Paint Foam Lights Vegetation LCSS Textured mats	Thermal paint Foam Air conditioning Vegetation LCSS Textured mats Water Insulation	Vegetation LCSS RAM Reshaping Textured mats
<b>Disguise</b>	Reshaping Paint	Reshaping Paint	Corner reflectors
<b>Decoy</b>	Lights Pneumatic or rigid structures Smoke	Flares Air conditioning Smoke	Corner reflectors Signal generators
<b>Distract</b>	Pyrotechnics Smudge post Balloons Strobe lights* Tracer simulators* Smoke**	Rocket flares Balloons Smoke**	Chaff
*Active **Active or Passive			



Table 7-2. Fixed-facility camouflage methods and materials

Feature	Removable Solutions	Permanent Solutions
<b>Traffic Surfaces</b>	Paints and coatings Water Liquid foam LCSS and carpets Corner reflectors Decoys Smoke and obscurants	Paints and coatings Reforestation Paving blocks Irregular patterns
<b>Above-Ground Structures</b>	Paints and coatings Water LCSS Corner reflectors Visual decoys Smoke and obscurants Lights	Paints and coatings Reforestation Earthworks Reshaping Insulation New construction guidelines