MCRP 2-10B.1

Intelligence Preparation of the Battlespace

U.S. Marine Corps

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Foreword

Marine Corps Reference Publication (MCRP) 2-10B.1, *Intelligence Preparation of the Battlespace*, serves as a foundational reference guide for understanding concepts, operations, and procedures for the IPB process in support of the Marine air-ground task force. This publication complements and expands on Marine Corps Doctrinal Publication (MCDP) 2, *Intelligence*, and Marine Corps Warfighting Publication (MCWP) 2-10, *Intelligence Operations*, which provide doctrine and higher-order tactics, techniques, and procedures for intelligence operations.

The primary target audience of this publication is intelligence personnel responsible for planning and executing the IPB process. Personnel who provide support to the IPB process or who use the results from the IPB process should also read this publication.

This publication supersedes MCRP 2-10B.1, *Intelligence Preparation of the Battlespace*, dated November 2014.

Reviewed and approved this date.

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CHAPTER 1.
FUNDAMENTALS OF INTELLIGENCE PREPARATION OF THE BATTLESPACE

PURPOSE

Intelligence preparation of the battlespace (IPB) is the "systematic, continuous process of analyzing the threat and environment in a specific geographic area" (*Marine Corps Supplement to the DoD Dictionary of Military and Associated Terms, hereafter referred to as USMC Dictionary*). This is done to determine and evaluate adversary or enemy capabilities, vulnerabilities, and probable courses of action (COAs).

The IPB process allows commanders and staffs to take a holistic approach to analyzing the operational environment. A holistic approach—

- Describes the relevant aspects of the operational environment that can impact friendly, adversary, enemy, and neutral forces.
- Accounts for all relevant domains that can affect friendly, adversary, and enemy operations.
- Identifies windows of opportunity to leverage friendly capabilities against adversarial forces.
- Allows commanders to leverage positions of relative advantage at a time and place most advantageous for mission success with the most accurate information available.

Designed to support staff estimates, planning, and decision making, IPB results are incorporated into the intelligence estimate, which provides knowledge-based intelligence that can be visualized and absorbed by decision makers. Intelligence preparation of the battlespace results in the creation of intelligence products and tools (see Appendix A) that are used during the Marine Corps Planning Process (MCPP) to assist in developing friendly COAs and decision points (DPs) for the commander. (See Marine Corps Warfighting Publication [MCWP] 5-10, *Marine Corps Planning Process* for additional information about the MCPP). Additionally, the conclusions and the products created during IPB are critical to planning intelligence collection and targeting operations. These conclusions and products form linkages between intelligence collection and targeting operations and must be considered in the context of great-power competition to best frame the role of IPB across the competition continuum. The IPB process must ensure commanders gain and maintain the information advantage. as the Marine Corps seeks to align its warfighting philosophy and the role of intelligence with the realities of competition, every action in peace, crisis, and conflict is conducted with the intent to generate and exploit advantages.

The G-2/S-2 leads the staff effort and begins preparing for IPB during problem framing, which is associated with the intelligence support to the MCPP. (See MCWP 5-10 for more information on problem framing.)

Prior to problem framing, the intelligence staff creates and maintains data files on specific operational environments based on an evaluation of the information and intelligence related to the operational variables (political, military, economic, social, information, and infrastructure [PMESII]) as described in the pre-crisis phase of intelligence production and analysis (Marine Corps Tactical Publication [MCTP] 2-10B, *MAGTF Intelligence Production and Analysis*).

To generate intelligence knowledge, the intelligence staff should first determine what information will need to be collected about the operational environment. As the staff begins to collect data on the operational environment, the data should be organized into baseline data files in accordance with the commander's guidance. These files must be compatible with the unit's program of record systems and software. Intelligence preparation of the battlespace should be scalable based on the echelon of the producing unit. At the operational and strategic echelons, the IPB process is typically more formal and comprehensive and compiles data files focused on the commander's operational requirements. At the tactical echelon, an S-2 might choose to use more informal methods of dissemination and will usually tailor IPB to information of highest value while focusing on the adversary or enemy, terrain and weather effects, and civil considerations.

Given the limited time available to collect and evaluate information and intelligence on the operational variables, the information obtained from these data files may not be specific enough to support the IPB process and MCPP. However, the commander and staff can use the information to assist in framing the operational environment.

Throughout the operations process, the commander and staff continually collect information and analyze the operational variables to provide increased situational understanding for possible contingency operations. Situational understanding is "the product of applying analysis and synthesis to relevant information to determine the relationship among the mission, enemy, terrain and weather, troops and support available—time available variables to facilitate decision making (*USMC Dictionary*).

Upon receipt of a warning order or mission, the commander and staff obtain relevant information categorized by the operational variables and filter it into the mission variables used during problem framing. The mission variables are mission, enemy, terrain and weather, troops and support available-time available (METT-T) and civil considerations. During IPB, the staff focuses on the relevant aspects of the operational environment as they pertain to the staff's warfighting function and the mission variables. The intelligence staff focuses primarily on the mission variables of enemy, terrain, weather, and civil considerations.

To be effective, IPB must—

- Be a continuous process with all staff members providing input.
- Account for all domains (air, land, space, maritime, and cyberspace) and the information environment.
- Accurately define the commander's area of interest (AOI) to focus collection and analysis on the relevant aspects of the mission variables of adversary or enemy, terrain, weather, and civil considerations (i.e., those aspects having a significant effect on operations in a unit's area of operations [AO]).
- Describe how the mission variables of enemy, terrain, weather, and civil considerations will likely affect friendly operations and how terrain, weather, and civil considerations will likely affect the enemy.

- Include relevant aspects of the operational environment for decisive, shaping, and sustaining operations. (See MCDP 1-0 for more on these operations.)
- Provide the products necessary to aid each step of the MCPP in accordance with the planning timelines and guidance provided by the commander.
- Support the battlespace framework considerations—physical, temporal, virtual, and cognitive.
- Determine how the interactions of friendly forces, enemy forces, and indigenous populations affect each other in order to continually create outcomes that support friendly operations. This aspect of IPB is not solely the responsibility of the G-2/S-2. It involves the commander and the entire staff collaborating to determine these effects.
- Allow commanders to visualize the desired end state and an overview of how to shape current conditions into that end state.
- Facilitate the commander and staff to direct the intelligence effort.
- Facilitate the attainment of accurate, relevant, and predictive intelligence to understand enemy order of battle, goals, and objectives, and COAs.

Intelligence preparation of the battlespace is most effective and best aids the commander's decision making when the intelligence staff integrates the expertise of the other staff sections and supporting elements, such as civil affairs teams and military information support personnel, into its analysis. This is particularly true when operating in environments where the effects of the adversary or enemy, terrain, weather, and civil considerations are complex, multidimensional, and not easily determined.

Intelligence preparation of the battlespace assists commanders in reducing uncertainty by evaluating how the adversary or enemy, terrain, weather, and civil considerations can affect operations and decision making. Most intelligence requirements are generated by the interrelationship between IPB and the decision-making process.

A key aspect of IPB is refinement. The conclusions and the products developed during IPB are continuously refined throughout the operation. This information is incorporated into the running estimate as new information is obtained, and further analysis is conducted during situation development. Refinement ensures the commander's decisions are based on the most current information and intelligence available.

PROCESS ACTIVITIES

The IPB process consists of the following four steps:

Step 1. Define the operational environment.

Step 2. Describe the effects on operations.

Step 3. Evaluate the adversary or enemy.

Step 4. Determine adversary or enemy COAs.

> *NOTE:* Although there are four steps to the IPB process, it is important to note that IPB is a continuous process. Continuous analysis and assessment are necessary to maintain situational understanding of an operational environment in constant flux.

Step 1. Define the Operational Environment

The operational environment is "the aggregate of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decision of the commander" (*DoD Dictionary of Military and Associated Terms,* hereafter referred to as the *DoD Dictionary*). Commanders analyze the operational environment to determine the physical dimensions of their battlespace in the form of AOIs, areas of influence, and AOs (see MCDP 1-0). Defining the operational environment helps identify significant characteristics of the operational environment that can affect friendly, adversary, and enemy operations. Step 1 also results in identification of gaps in current intelligence holdings (step 1 is discussed further in Chapter 3).

Step 1 assists the commander in defining relative aspects of the operational environment in time and space. This is equally important when considering characteristics of multi-domain operational environments. Aspects of these environments can simultaneously act across the battlespace but might only factor in friendly, adversary, or enemy operations at specific times and locations.

The intelligence staff must identify those significant characteristics related to the mission variables of adversary or enemy, terrain, weather, and civil considerations relevant to the mission. The intelligence staff evaluates significant characteristics to identify gaps and initiate intelligence collection. The intelligence staff then justifies the analysis to the commander. Failing to identify, or misidentifying, the effect these variables can have on operations at a given time and place can hinder decision making and result in developing an ineffective intelligence collection strategy. The AO, area of influence, and the AOI also must be identified and established during Step 1.

Understanding friendly, adversary and enemy forces alone is not sufficient; other factors such as culture, languages, tribal affiliations, and operational and mission variables, can be equally important. Defining the significant characteristics of the operational environment is essential in identifying the additional information needed to complete IPB. Once the commander approves this information, it becomes the commander's initial intelligence requirements. This focuses the commander's initial intelligence collection efforts and the remaining steps of the IPB process.

Additionally, where a unit will be assigned and how its operations will synchronize with other associated operations must be considered. For example, the G-2/S-2 should form questions regarding where the unit will deploy within the entire theater of operations and the specific logistics requirements needed to handle the operation's contingency plans.

Domains of the Operational Environment. An operational environment encompasses the air, land, maritime, space, and cyberspace domains; the information environment; the electromagnetic spectrum (EMS); and other factors. Intelligence preparation of the battlespace applies to military operations across the entire operational environment. When defining the operational environment, it is important to consider all domains in which friendly, adversary, or enemy operations occur.

The interrelationship of the air, land, maritime, space, cyberspace, the information environment, and the EMS requires a cross-domain understanding of the operational environment. Commanders and staffs must understand friendly, adversary, and enemy capabilities within each domain. From this understanding, commanders can better identify windows of opportunity during operations. This allows a portion of the joint force to establish a center of gravity (COG) for the cross-domain convergence of capabilities, which must be supported by continuous intelligence operations across the domains for the best effect. Since many friendly capabilities are not organic to Marine Corps formations, commanders and staffs plan, coordinate for, and integrate joint and other unified action partner capabilities in a multi-domain approach to operations.

During combat operations, ground-force commanders might be required to conduct tactical activities such as a deliberate attack, to shape the environment to gain a position of relative advantage for activities, such as joint fires, within other domains. Once that position is achieved, operations would continue to increase the position of advantage to create a longer window of superiority to facilitate follow-on missions and operations across the domains. Figure 1-1 depicts a multi-domain extended battlespace.

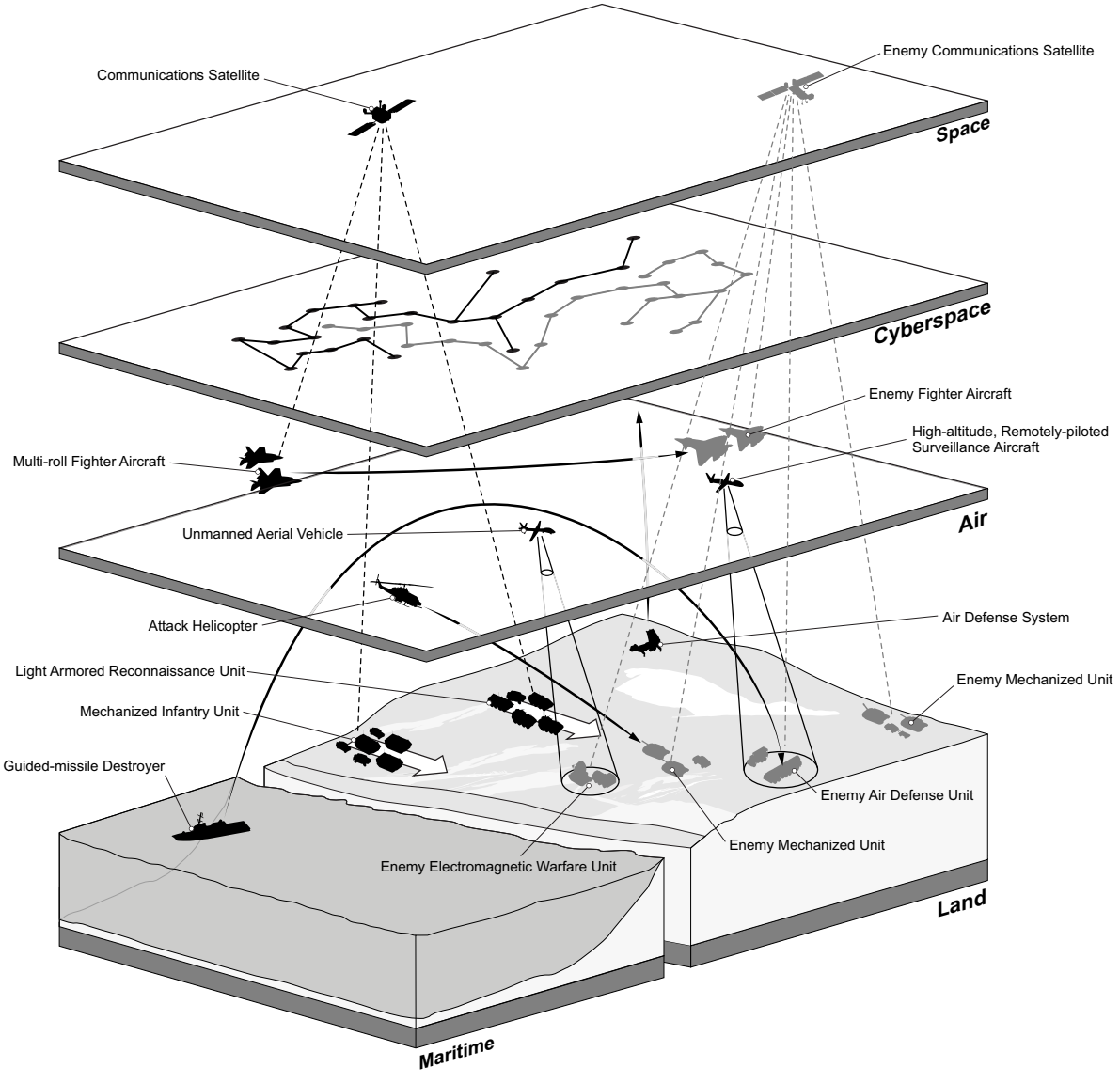


Figure 1-1. Multi-Domain Battlespace.

A window of superiority for joint fires capabilities across multiple domains can be achieved through aggressive intelligence collection and focused intelligence analysis of the following:

- What capabilities reside in each domain?
- How are capabilities integrated and actions synchronized across the domains and information environment?
- How and when will adversary forces attempt to exploit friendly vulnerabilities?
- How will adversary forces maximize combat power?
- When will adversary forces be in a position of disadvantage across multiple domains and the information environment?
- Does analysis facilitate rapid decision making?

Combat operations introduce levels of complexity, lethality, and ambiguity, and an operating tempo not common in other operations. When operating against a peer or near peer adversary or enemy, commanders aggressively conduct decisive action to seize, retain, and exploit the initiative. Marine Corps operations orchestrate many simultaneous actions in the most demanding of operational environments.

Intelligence supports the commander by visualizing the potential enemy and detecting possible enemy COAs. Marines must integrate and synchronize these actions across multiple domains to create opportunities to dislocate, isolate, disintegrate, and destroy enemy forces. Marine Corps units strive to use intelligence, mobility, protection, and firepower to strike the enemy unexpectedly in multiple domains and from multiple directions, denying the enemy freedom to maneuver by creating multiple dilemmas that the enemy commander cannot effectively address. Intelligence supports these operations by facilitating situational understanding and supporting decision making. Intelligence assists commanders in seeing through the fog and friction of war.

Seeing, understanding, and responding to windows of vulnerability or opportunity within each domain and the information environment can reduce risk to the force and enhance success in chaotic and high-tempo operations. Situational understanding is essential to managing risk.

> *NOTE:* Decisive point is "key terrain, key event, critical factor, or function that, when acted upon, enables a commander to gain a marked advantage over an enemy or contributes materially to achieving success (e.g., creating a desired effect, achieving an objective)" (Joint Publication [JP] 5-0, *Joint Planning*).

Figure 1-2 Demonstrates a practical application of identifying windows of opportunity during the 1967 Arab-Israeli Six-Day War.

Air Domain. The air domain "is the atmosphere, beginning at the Earth's surface, extending to the altitude where its effects upon operations become negligible" (JP 3-30, *Joint Air Operations*). The air domain is the operating medium for fixed-wing and rotary-wing aircraft, air defense systems, unmanned aircraft systems (UASs), cruise missiles, and some ballistic and antiballistic missile systems. Air avenues of approach (AAs) are different from maritime and ground AAs. (See Chapter 4 for more information on AAs.) Analysis of the air domain is critical in identifying air AAs, which are also associated with terrain restrictions of the land domain (see Chapter 9 and JP 3-30, for more information on the air domain).

Land Domain.The land domain "is the area of the Earth's surface ending at the high-water mark and overlapping with the maritime domain in the landward segment of the littorals" (JP 3-31, *Joint Land Operations*). Marines analyze the military aspects of terrain as they primarily conduct operations in the land domain. The terrain analysis takes into consideration key terrain, observation and fields of fire, cover and concealment, obstacles, and avenues of approach (KOCOA). The land domain's natural and man-made features assist in determining the domain's effects on friendly, adversary, and enemy operations. Subsequently, terrain analysis assists in determining friendly and adversary or enemy COAs (see Chapter 9 and JP 3-31 for more information).

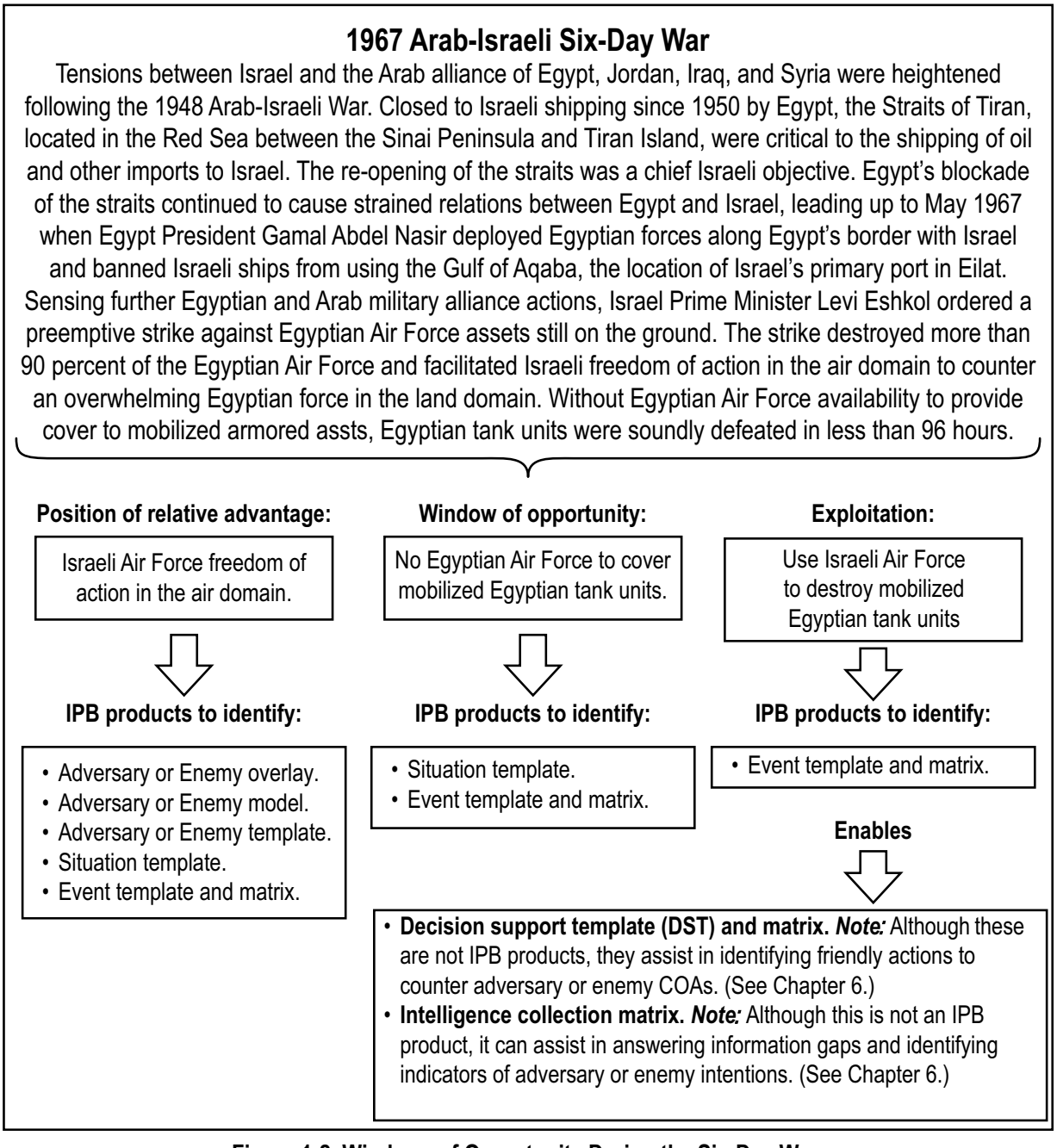


Figure 1-2. Windows of Opportunity During the Six-Day War.

Maritime Domain. The maritime domain is "the oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals" (JP 3-32, *Joint Maritime Operations*). The maritime domain's vastness and proximity to the landmasses makes this domain critical for force projection and the application of weapons and sensors that support Marine Corps operations (see Chapter 9 and JP 3-32 for more information).

Space Domain. The space domain is "the area surrounding Earth at altitudes of greater than or equal to 100 kilometers above mean sea level" (*DoD Dictionary*). The space domain is essential to intelligence collection, missile tracking, launch detection, environmental monitoring, communications, navigation, global positioning, and timing. It is also essential to multiple systems

and subsystems necessary for the conduct of military operations across the warfighting functions. Analysis of adversarial capabilities that can affect the space domain, as well as the effects a degraded space domain can have on friendly operations, must be considered during the IPB as adversarial exploitation of friendly technology (see JP 3-14, *Space Operations*, for more information).

Cyberspace Domain. Cyberspace "is a global domain within the information environment consisting of the interdependent network of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers" (JP 3-12, *Cyberspace Operations*). The cyberspace domain is an essential part of the information environment. It can be used by nation-states, non-nation-states, and a variety of actors unable to commit to military confrontation. Since multiple entities worldwide (military, government, economic sectors) depend on the cyberspace domain for information exchange, this domain must be considered during IPB.

Domain Interdependence. Domain interdependence refers to the reliance that one domain (or several) has on other domain(s). For example, the space domain relies on the EMS to transmit information such as imagery to the cyberspace domain. Without the cyberspace domain, the space domain's capability to transmit information worldwide would be significantly degraded.

Because numerous effects (including adversary, enemy, terrain, and weather) can cross multiple domains, the interdependence of the five domains must be considered when performing the IPB process. The S-2, with assistance from other staff members and possibly outside organizations, must support the battlespace framework considerations and view the operational environment holistically.

Battlespace Framework Considerations. A thorough IPB effort and intelligence analysis assists each echelon in focusing operations on significant aspects of the operational environment and on visualizing how adversaries can impact friendly operations in time and space across multiple domains. This prevents each echelon from focusing only on the close fight and current operations. A broad focus across the battlespace framework considerations assists commanders and staffs in better identifying friendly windows of opportunity and adversarial windows of vulnerability within and across each domain and the information environment. A battlespace framework is a cognitive tool used to assist commanders and staffs in clearly visualizing and describing the application of combat power in time, space, purpose, and resources in the concept of operations. Table 1-1 lists the battlespace framework considerations and how IPB and subsequent intelligence analysis supports each consideration (see MCDP 1-0 for details on battlespace framework considerations).

Holistic View of the Operational Environment. •During IPB, each staff element provides input. This ensures a holistic view of the operational environment. Subsequently, the IPB effort aids in identifying domain windows of opportunity to exploit adversarial vulnerabilities. A holistic view of the operational environment (see Figure 1-3) assists the commander in understanding and visualizing the multi-domain extended battlespace. Analyzing where information flows within the five domains is required to understand how friendly, neutral, adversary, or enemy force capabilities can be affected by aspects within each domain. Friendly, neutral, adversary, and enemy capabilities often depend on a variety of aspects, such as nodes, systems, and subsystems across the five domains. Knowing how enemy forces can use their capabilities throughout the five

Table 1-1. Intelligence Preparation of the Battlespace and Intelligence Analysis Support to Battlespace Framework Considerations.

Battlespace framework considerations	Intelligence preparation of the battlespace and intelligence analysis support
Physical considerations include geography, terrain, infrastructure, populations, distance, weapon ranges and effects, and known adversary or enemy locations.	• Intelligence support begins prior to the deployment of forces and is provided by the generate intelligence knowledge intelligence warfighting task, which addresses the operational variables (PMESII). Information gained during generate intelligence knowledge is used by commanders and staffs to assist in framing the operational environment during the design methodology. • IPB provides detailed analysis of the mission variables of enemy, terrain, weather, and civil considerations to determine their effects on operations. • IPB and intelligence analysis assists in determining relevant aspects within an area of operations—such as civil considerations characteristics (ASCOPE)—that are critical in determining how friendly operations can be affected during the consolidation of gains. • Intelligence analysis is critical to the designation of a deep area, the fire support coordination line, and the area of interdiction.
Temporal considerations are related to time, including when capabilities can be used, how long they take to generate and employ, and how long they must be used to achieve desired effects.	• IPB is a process that is both geographically and temporally specific. • Developing adversary or enemy courses of action during IPB is based on identifying adversary or enemy objectives, goals, timelines, and end states. • IPB provides a temporal context using rates of movement, time phase lines, phases of adversary or enemy fires, and other templates to capture adversary or enemy timing.
Cognitive considerations relate to people and how they behave. They include information pertaining to adversary or enemy decision making, adversary or enemy will, the Nation's will, and the population's behavior.	• IPB accounts for aspects associated with the center of gravity and the adversary's or enemy's morale and willingness to continue operations. • Intelligence support to continuous operational assessments considers many relevant aspects of the operational environment, including sociocultural factors. • IPB also considers all significant aspects of the operational environment associated with the various civil considerations.
Virtual considerations pertain to activities and entities, both friendly and adversary or enemy, residing in cyberspace.	• IPB and intelligence analysis, in coordination with the cyberspace electromagnetic activities section, provide intelligence on the adversary 's or enemy's likely activities within the information environment, which includes cyberspace.
LEGEND **ASCOPE**—areas, structures, capabilities, organizations, people, and events **PMESII**—political, military, economic, social, information, and infrastructure	

domains is critical to understanding the enemy's intent and desired end state as well assessing the effects friendly and enemy operations may have on the operational environment. Figure 1-3 illustrates the holistic view of the operational environment, which encompasses the following:

- The physical areas and factors of the five domains.
- The information environment.
- The systems perspective, which includes the relationships and interdependencies of friendly, neutral, adversary, and enemy PMESII systems, subsystems, objects, and affiliated attributes.

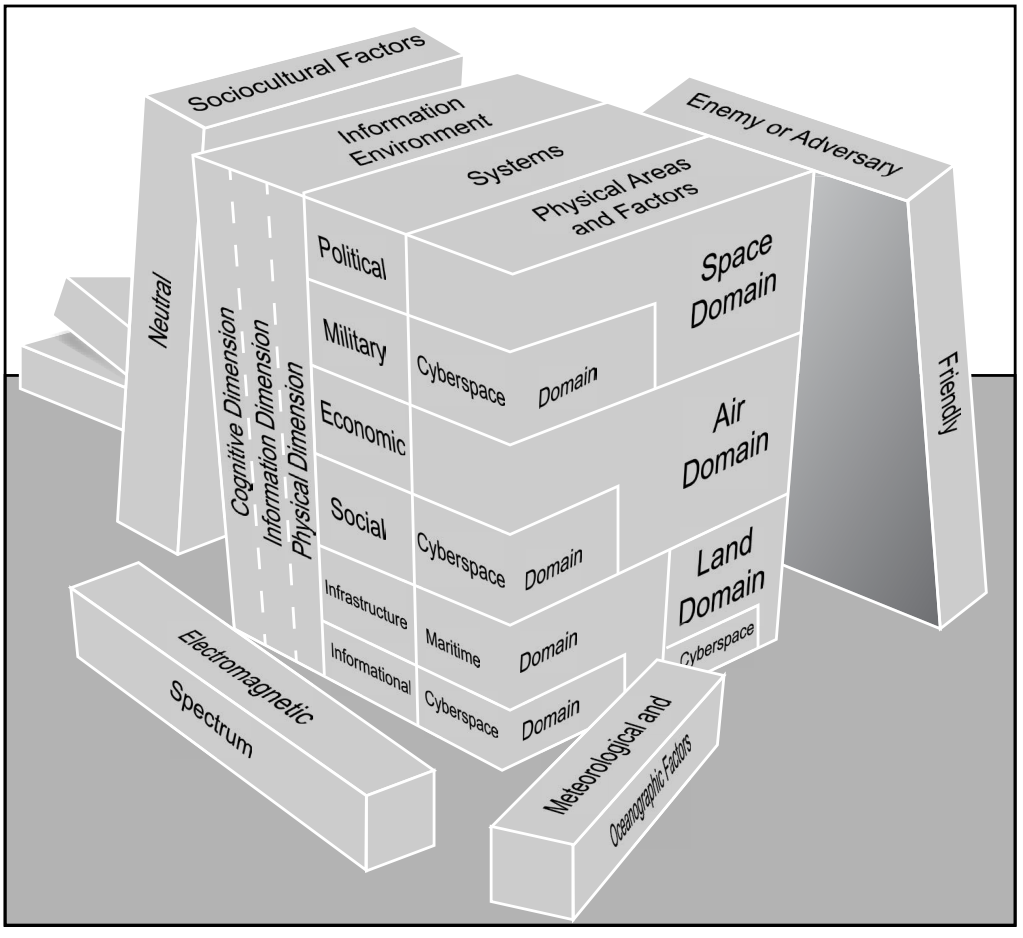


Figure 1-3. Holistic View of the Operational Environment.

Physical Areas and Factors. Within the operational environment, physical areas include the assigned operational area and the associated AOI and area of influence necessary to conduct operations within the air, land, maritime, space, and cyberspace domains and the information environment. Factors, including, but not limited to, terrain, enemy forces, weather, and the location of man-made structures and obstacles, can affect operations within a physical area. Identifying physical areas and factors within the operational environment is critical to understanding their effects on friendly and enemy operations.

Information Environment. The information environment is "the aggregate of social, cultural, linguistics, psychological, technical, and physical factors that affect how humans and automated systems derive meaning from, act upon, and are impacted by information, including the individuals, organizations, and systems that collect, process, disseminate, or us information" (*DoD Dictionary*). The information environment consists of three interrelated dimensions—physical, informational, and cognitive. Cyberspace, a significant component of the information environment, overlaps the physical and informational dimensions.

The IPB process must determine an adversary's or enemy's capabilities within the various dimensions of the command's battlespace:

- *Physical dimension* comprises command and control (C2) systems, key decision makers, and supporting infrastructure that enable individuals and organizations to create effects. It includes but is not limited to people, computers, smart phones, and newspapers.
- *Informational dimension* encompasses where and how information is collected, processed, stored, disseminated, and protected. It includes but is not limited to C2 systems, knowledge management tactics, techniques, and procedures (TTP), and physical and operational security policies.
- *Cognitive dimension* encompasses the minds of those who transmit, receive, and respond to or act on information. It includes but is not limited to cultural norms, perspectives, beliefs, and ideologies.

Systems Perspective. A systems perspective focuses on multiple systems in the operational environment and their associated functions. Identifying which systems are associated with specific functions and their interdependence with other systems is critical to understanding when and where adversaries might decide to use them.

Step 2. Describe the Effects on Operations

In step 1, the intelligence staff identifies the operational environment's significant characteristics related to the mission variables of adversary and enemy, terrain, weather, and civil considerations. During step 2 of IPB, the intelligence staff describes how these characteristics affect friendly operations. The intelligence staff also describes how terrain, weather, civil considerations, and friendly forces affect enemy forces. This evaluation focuses on the general capabilities of each force until enemy COAs are developed in step 4 of IPB and friendly COAs are developed later in MCPP. Additionally, the entire staff determines the effects of friendly and enemy force actions on the population.

However, if the intelligence staff does not have the information required to form conclusions, it uses assumptions to fill information gaps—always careful to ensure the commander understands when assumptions are used in place of facts to form conclusions (Chapter 4 discusses Step 2 further).

Step 3. Evaluate the Adversary or Enemy

The purpose of evaluating the adversary or enemy is to understand how they can affect friendly operations. Although adversary or enemy forces can conform to some fundamental principles of warfare that guide operations, these forces will have obvious (and subtle) differences in how they approach situations and problem solving. Understanding these differences is essential to discerning how an adversary or enemy force will react in a situation.

Adversary and enemy evaluations do not begin with IPB. The intelligence staff conducts evaluations and develops adversary and enemy models during the generate intelligence knowledge task of intelligence support to force generation. Using this information, the intelligence staff refines these models, as necessary, to support IPB. When analyzing a well-known adversary or enemy, the intelligence staff may be able to rely on previously developed adversary or enemy models. When analyzing a new or less well-known adversary or enemy, the

intelligence staff may need to evaluate the adversary or enemy and develop models during the problem-framing step of the MCPP. When this occurs, the intelligence staff relies heavily on the adversary or enemy evaluation conducted by higher headquarters and other intelligence agencies.

In situations where there is no enemy force, the intelligence analysis conducted, and the products developed relating to terrain, weather, and civil considerations can be sufficient to support planning. An example of this type of situation is a natural disaster (Chapter 5 discusses step 3 further).

Step 4. Determine Adversary or Enemy Course of Action

During step 4, the intelligence staff identifies and develops possible adversary or enemy COAs that can affect accomplishing the friendly mission. The staff uses the products associated with determining adversary or enemy COAs to assist in developing and selecting friendly COAs during the MCPP. Identifying and developing all valid enemy and adversary COAs minimizes surprise from unanticipated enemy or adversary action.

Failure to identify and develop all valid enemy and adversary COAs can lead to incomplete collections strategies, which can further result in an unanticipated enemy or adversary COA that the commander is not prepared for. As required, the staff should identify all significant civil considerations in the operational information to portray the interrelationship if the various forces and the population activities.

The staff develops adversary and enemy COAs in the same manner as friendly COAs are developed. Although written specifically as a guide to develop friendly COAs, the COA development discussion in MCWP 5-10 is an excellent model to use in developing enemy and adversary COAs that are suitable, feasible, acceptable, unique, and consistent with enemy and adversary doctrine. The intelligence staff has the primary responsibility for developing enemy and adversary COAs; however, it needs assistance from the rest of the staff to present the most accurate and complete analysis to the commander (step 4 is discussed further in Chapter 6).

INTELLIGENCE ESTIMATE

Intelligence estimate is defined as “the appraisal, expressed in writing or orally, of available intelligence relating to a specific situation or condition with a view to determining the courses of action open to the enemy and the order of probability of their adoption” (*DoD Dictionary*).

The intelligence estimate includes the following IPB products necessary to support planning and operations:

- Enemy and adversary situation templates, with associated COA statements and high-value target (HVT) lists.
- Event templates and associated event matrices.
- Modified combined obstacles overlays (MCOOs), terrain effects matrices, and terrain assessments.
- Meteorological and oceanographic (METOC) climatology, forecast and analysis charts, METOC operational impacts charts, and light and illumination tables.
- Civil considerations overlays and assessments.

STAFF COLLABORATION

Intelligence is critical to targeting enemy capabilities at the right time and place to open windows of opportunity across domains. Commanders and staffs receive effective intelligence when they direct and participate in intelligence warfighting function activities. Close interaction between the commander, G-2/S-2, G-3/S-3, and the other staff is essential as the entire staff supports unit planning and preparation through integrating processes and continuing activities.

The first aspect of supporting operations when fighting for intelligence is developing sound information requirements and designating priority intelligence requirements (PIRs) based on the IPB results and MCPP completion. Commanders and staffs must have detailed knowledge of adversarial strengths, vulnerabilities, organizations, equipment, capabilities, and tactics to plan for and execute friendly operations. Staff collaboration assists in developing this detailed knowledge and accounts for possible enemy and adversary COAs.

Collaboration Examples

The intelligence staff can provide the personnel staff with information on how the enemy can affect personnel replacement or casualty evacuation timelines. The intelligence staff can provide the sustainment staff with information about the enemy that can affect friendly logistics efforts, including theater armies opening operations at sea and air points of debarkation. The intelligence staff also uses the expertise of the other staff sections:

- **Staff engineers**: Collaborating with staff engineers can provide valuable information on terrain mobility, locations of subterranean features, where the enemy is likely to emplace obstacles, and where the adversary or enemy could employ engineer assets.
- **S-6**: Collaborating with the S-6 can provide valuable information on information technology infrastructure, lines of communications (LOCs), communications line-of-sight (LOS) information, and potential cyberspace threats.
- **Surgeon**: Coordinating with the surgeon about adversary or enemy forces' health status can indicate the enemy forces' willingness to engage in long-term operations. The surgeon can also provide the locations of medical facilities in the operational environment, as well as the presence of medical threats, such as Ebola and Dengue Fever.
- **Signals Intelligence/Electromagnetic Warfare (EW)/Cyberspace Operations officer**: Collaborating with Marines in this occupational field can provide valuable information about potential adversary or enemy impacts on the EMS and how this can affect friendly operations.
- **Low Altitude Air Defense (LAAD) officer**: Collaborating with the LAAD officer can provide information on adversary or enemy antiaccess (A2) and area denial (AD) systems, including integrated air defense systems (IADSs) and their effects on force projection.
- **Space support element**: Collaborating with the space support element can provide information on regional enemy space capabilities and which global partners they may co-opt to attain needed capabilities during conflict.

  NOTE: Space support elements are located at regiment and Division, Marine expeditionary unit, Marine expeditionary force (MEF), Marine expeditionary brigade and other organizations with emerging requirements.

The relationship between intelligence operations is continuous; commanders drive intelligence, intelligence enables operations, operations are supportive of intelligence, and so forth. Commanders provide tactical and operational experience as it relates to various operational environments and missions; they also provide an understanding, visualization, and description of the problem. Commanders assist in shaping the focus and scope of IPB to facilitate an effective MCPP.

Although the G-2/S-2 facilitate the IPB effort, they cannot provide all IPB information the commander requires for situation understanding. Other staff sections or supporting elements must assist the intelligence staff in producing and continuously refining all IPB products. Total staff integration reduces the initial time required for IPB development and assists the command in timely decision making. This coordination also improves the quality and accuracy of IPB products.

Staff sections bring their expertise to IPB as follows:

- **The chief of staff, or executive officer**:
  - Synchronizes staff activities during IPB.
  - Using tools, such as the one-third to two-thirds planning rule as a guide, determines:
    - How long each step of MCPP will take.
    - How much time is allocated to problem framing.
    - How much time within problem framing can be sub-allocated to IPB.
- **The G-2/S-2** analyzes the mission variables of enemy, terrain, weather, and civil considerations. The G-2/S-2 assists the commander in improving the understanding of how these mission variables can affect operations through the production of an intelligence assessment that supports the MCPP, the integrating processes of targeting and risk management, and the continuing activities of intelligence collection and security operations. The rest of the staff assists the G-2/S-2 in this effort. The following includes additional G-2/S-2 IPB activities: (Appendix B provides the "how to" of IPB as a checklist for the S-2.)
  - Facilitate generating intelligence knowledge.
  - Continually coordinate with staff, external agencies, and organizations for input to situational understanding.
  - Identify AOIs and areas of influence.
  - Assist the staff with identifying enemy capabilities, vulnerabilities, and intent.
  - Conduct terrain analysis.
  - Determine the enemy's composition and disposition.
  - Develop adversary or enemy templates by warfighting functions.
  - With assistance from the other staff sections, determine enemy missions, objectives, schemes of maneuver, and desired end states.
  - Coordinate with the staff to identify high-value targets (HVTs), high payoff targets (HPTs) and enemy COAs.
  - Disseminate intelligence products in specified formats, and across programs of record for other staff utilization.
  - Determine named areas of interest (NAIs) with staff input.

- **The G-3/S-3** provides subject matter expertise on the art and science of military operations and—
  - Reviews the G-2/S-2's evaluation of enemy COAs.
  - Reviews the G-2/S-2's identification and evaluation of the enemy's composition and disposition.
  - Assists the G-2/S-2 with identifying terrain and weather effects on friendly and enemy military aspects of the terrain (KOCOA).
  - Ensures the G-2/S-2 and other staff members understand the AO and other friendly maneuver limitations and parameters specified by higher headquarters.
  - Ensures the G-2/S-2 and other staff members understand available friendly maneuver forces.
  - Assists in selecting HPTs, target areas of interest (TAIs), and DPs.
  - Assists in developing the decision support template (DST).
  - Evaluates enemy COAs to ensure they are valid from an operational perspective.
  - Evaluates enemy situation templates, COA statements, HVT lists, and civil considerations overlays and assessments to ensure they contain the information necessary to support friendly COA development and analysis.
  - Evaluates the event template and matrix to ensure they contain the information necessary to support friendly COA analysis and the development of the DST.
  - Is responsible for civil affairs unless the Marine air-ground task force (MAGTF) commander establishes a G-9. The civil affairs staff assists the G-2/S-2 in—
    - Identifying and evaluating civil considerations on military operations and evaluating the effect of military operations on civilian populations.
    - Identifying protected targets. (The civil affairs staff, along with fires support coordinator or force fires coordinator, provides this assistance.)
    - Creating and maintaining civil considerations assessments, files, and data files or databases.
- **The fires support coordinators.** The fires support coordinator at battalion level; the Marine expeditionary unit, regiment, and division; and the force fires coordinator at the Marine expeditionary brigade and the MEF provide subject matter expertise on fires (artillery and air defense). The fires subject matter expert—
  - Assists the G-2/S-2 in—
    - Developing adversary or enemy HVTs.
    - Evaluating enemy fires support operations, including identifying potential friendly HPTs from the enemy perspective
    - Assessing potential enemy artillery and mortar positions.
    - Developing situation and event templates of probable enemy employment of fires support assets.
    - Positioning enemy fires support assets on the situation template.
    - Identifying enemy air AAs.
    - Assessing adversary or enemy fixed-wing, rotary-wing, and air defense capabilities.
  - Coordinates with the G-2/S-2 in identifying types of enemy artillery and evaluating likely adversary or enemy artillery or missile positions.

- Assists the staff in identifying and evaluating potential engagement areas and kill zones, no fires areas, and restricted target lists.
- Assists, in coordination with the G-2/S-2 and the staff weather officer, in determining what effect weather and terrain will have on enemy artillery systems.
- Participates in the selection of HPTs, TAIs, and DPs.
- Coordinates with the G-2/S-2 and the G-3/S-3 in determining the fires support effort to the friendly intelligence collection effort and in countering the enemy intelligence collection effort.
- Assists the staff on protection from enemy air.

- **The G-4/S-4** provides subject matter expertise on sustainment operations and assists the G-2/S-2 in—
  - Evaluating host nation (HN) logistics capabilities.
  - Evaluating enemy logistics capabilities.
  - Identifying potential supply routes and resupply points.
- **The G-6/S-6** provides subject matter expertise on friendly communications systems and assists the G-2/S-2 in identifying and evaluating friendly communications systems' vulnerabilities to cyberspace and electromagnetic attack.
- **The G-7/S-7** advises the commander on the planning and employment of unit actions and capabilities to create and exploit information advantages, across all operational domains, to support mission objectives. This includes identifying threats, vulnerabilities, and opportunities to gain or protect advantages through the implementation of the four functions of information (i.e., generate, preserve, deny, project).
- **The engineer coordinator** provides subject matter expertise on mobility and counter-mobility and assists the G-2/S-2 in developing enemy obstacle plans for the adversary or enemy situation template. The engineer coordinator—
  - Assists the staff in identifying and assessing obstacles along friendly AAs.
  - Assists the G-2/S-2 with terrain analysis and creating terrain analysis products that support the IPB process.
  - Assists the G-2/S-2 in developing the MCOO.
  - Provides staff input concerning enemy mobility, counter-mobility, and survivability doctrine, tactics, and equipment capabilities.
  - Assists in developing situation and event templates regarding the probable employment of enemy engineer assets and obstacle emplacement.
  - Coordinates with the G-2/S-2 and the G-3/S-3 in determining engineer support to the friendly intelligence collection effort and in countering the enemy intelligence collection effort.
  - Provides engineer reconnaissance input. (See Army Techniques Publication [ATP] 3-34.81 and Marine Corps Reference Publication [MCRP] 3-34.3, *Engineer Reconnaissance*.)
- **The chemical, biological, radiological, and nuclear (CBRN) officer** provides subject matter expertise on CBRN and assists the G-2/S-2 in determining the locations of CBRN assets and potential areas of employment. The CBRN officer—

  - Provides input to the G-2/S-2 on adversary or enemy CBRN doctrine, capabilities, and employment.
  - Assists the staff in creating templates of likely locations of enemy CBRN assets.
  - Advises the staff on enemy doctrine concerning the use of obscurants, likely triggers for its employment, and types of obscurant-generating equipment.
  - Assists the staff in locating water sources that could be used for friendly CBRN decontamination operations.
  - Advises the G-2/S-2, in coordination with the staff weather officer, on the effects of the weather and terrain on friendly and enemy CBRN operations.
- T**he LAAD officer** provides subject matter expertise on ground-based air defense (GBAD) and assists the G-2/S-2 in determining the locations of GBAD assets and potential areas of employment. The LAAD officer—
  - Advises the G-2/S-2, in coordination with the staff weather officer, on the effects of the weather and terrain on friendly and enemy ADA operations.
  - Provides input to the G-2/S-2 on enemy air defense doctrine, capabilities, and employment.
  - Assists the staff in creating templates of likely locations of enemy air defense assets.
  - Assists the staff in determining weather and terrain effects on friendly and enemy air defense operations.
  - Provides staff input concerning enemy air defense doctrine, tactics, capabilities, and equipment.
  - Assists in developing adversary or enemy HVTs.
- **The spectrum manager** provides subject matter expertise on procedures for using the EMS and for avoiding communications interferences.
- **The EW officer**—
  - Provides subject matter expertise on ground-based, airborne, and functional EW employment considerations.
  - Has additional responsibilities as the cyberspace planner (see MCDP 8 for additional information).
  - Assists the G-2/S-2 in determining the locations of EW assets and potential areas and methods of employment.
- **The information officer** provides subject matter expertise on creating and exploiting information advantages across all the domains of warfighting (See MCDP 8 for additional information).
- **The surgeon** provides subject matter expertise for the analysis and disposition of captured enemy medical materiel and for the analysis of any medications carried by captured or detained enemy personnel.

Deployed units, or personal referenced below, provide additional subject matter expertise for IPB input. For example, international officers, other cultural enablers, State Department officers, and other knowledgeable sources (when available) can provide sociocultural information, research and analysis of the population.

RELATIONSHIPS

As one of the integrating processes, IPB is essential to targeting, risk management, intelligence collection, planning, and decision making (see Chapter 2 for additional information about IPB in the decision-making process). Intelligence preparation of the battlespace is also related to intelligence knowledge and situation development.

Targeting

Targeting is "the process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities" (JP 3-0, *Joint Campaigns and Operations*). During steps 3 and 4 of IPB, the intelligence staff identifies HVTs associated with each adversary or enemy capability or COA. This assists the fires cell in conducting target-value analysis. The following techniques can be useful in identifying and evaluating HVTs:

- Identify HVTs from existing intelligence studies, database evaluations, patrol debriefs, and size, activity, location, unit, time, and equipment (also called SALUTE) reports.
- Review adversary or enemy TTP and previous operations as the task, purpose, method, and end state are useful.
- Identify assets that are key to executing the primary operation or sequels.
- Determine how the adversary or enemy might react to each HVT loss.
- Consider the adversary's or enemy's ability to substitute other assets as well as adopt branches or sequels.
- Consider how the adversary or enemy might use multiple capabilities to create the effects of one or more HVTs.
- Consider how the adversary or enemy might use various assets during different operational phases—which can lead to certain assets, functions, or systems being classified as HVTs.
- Consider the multi-domain nature of complex operational environments and how adversary or enemy forces can use assets to disrupt friendly operations at multiple echelons and locations.
- After identifying HVTs, place them in order of their relative worth to the adversary's or enemy's operation and record them as part of the adversary or enemy overlay. The value of an HVT varies throughout an operation.

The HPT list is a prioritized list of HPTs. A high-payoff target "is a target whose loss to the enemy will significantly contribute to the success of the friendly course of action" (*DoD Dictionary*). High-payoff targets are those HVTs that must be acquired and successfully attacked for the success of the friendly commander's mission. High-payoff targets are developed by the staff. They can include various adversary or enemy considerations that can be detrimental to the success of friendly missions.

The intelligence staff, aided by other warfighting staffs, also identifies indicators associated with those targets that can assist in determining their locations and activities. Developing HVTs during IPB is essential to developing HPTs during the COA development step of MCPP, and to refining those targets throughout the operations process, particularly during targeting boards and meetings. Chapter 6 discusses the development of HVTs and indicators.

During targeting meetings, the intelligence officer, along with other staff sections or supporting elements, assesses friendly capabilities, friendly missions, and the effects of friendly actions on the civilian populace. As HPTs are identified, the analysis of adversary or enemy, terrain, weather, and civil considerations conducted during IPB assists in developing intelligence target packages on those targets (see MCWP 3-31, *Marine Air-Ground Task Force Fires*).

Risk Management

Risk management "is the process to identify, assess, and mitigate risks and make decisions that balance risk cost with mission benefits" (*DoD Dictionary*). Throughout the operations process, commanders and staffs use risk management to mitigate risks associated with all hazards that have the potential to injure or kill friendly and civilian personnel, damage or destroy equipment, or otherwise impact mission effectiveness. (See Marine Corps Order 5100.29C *Marine Corps Safety Management System* [MCSMS], vol. 2, *Risk Management*, for additional information on risk management.)

Intelligence, Surveillance, and Reconnaissance and Intelligence Collection

Intelligence collection relies on IPB results. The staff's continual input to IPB provides an analysis of the operational environment and the options it presents to friendly and enemy forces. It also provides information required to plan intelligence collection activities, such as:

- Characteristics of the AOI that will influence friendly and adversary or enemy operations (including civil considerations).
- Adversary and enemy event templates, including DPs and matrices critical to intelligence collection planning.
- Intelligence collection assets' sensitivities to weather and the effects of weather on planned or potential operations.
- Adversary and enemy order of battle, doctrine, tactics, techniques, and behavior.
- Possible and likely adversary or enemy COAs.
- High-value targets.

The Marine Corps executes intelligence collection through the operations and intelligence processes (with an emphasis on intelligence analysis and leveraging national to tactical intelligence). Even if the mission is new, the intelligence staff can identify and tap into ongoing or existing intelligence collection activities or joint intelligence, surveillance, and reconnaissance (ISR) collection that might offer relevant information to fill gaps. These collection requirements identify the critical pieces of information the commander must know to successfully conduct (plan, prepare, execute, and assess) operations.

Intelligence collection enables staff to develop perceptions of the enemy on the battlespace that matches the actual situation on the battlespace. Intelligence collection does not eliminate all information gaps that concern commanders and staffs. Intelligence staffs, in conjunction with the other staff sections, should be prepared to fill gaps with reasonable assumptions and continually send out additional requests for information (RFIs) to refine IPB.

There is a relationship between IPB and intelligence collection. The IPB products that feed intelligence drive intelligence collection requirements. This means the IPB process identifies intelligence gaps that translate into information requirements and PIRs, which are then answered through collection.

The staff collaborates on intelligence considerations and integrates available resources into an integrated information collection plan. Developing requirements also supports the commander's targeting decisions. Well-stated information requirements assist the commander in accomplishing the mission by illustrating those key knowledge gaps and earmarking them for collection.

The staff develops NAIs and TAIs to effectively target the enemy. (The staff also develops an HVT list that can include geographic NAIs and TAIs as well as adversary and enemy organizations, networks, and individuals identified as key or critical to the operational environment and are considered in branches and sequels.) Named areas of interest should not be tied to a specific terrain; rather, they should be based on adversary or enemy locations or suspected locations.

NAI Example

Rather than looking at an area surrounding a hilltop named 1631 to see if the adversary or enemy has placed an air defense unit there, NAIs should be focused on an adversary or enemy unit or functional capability; for example, the suspected locations where the adversary or enemy might place its combined arms reserve. To refine the locations, analysts should study the adversary's or enemy's doctrinal or historical use of the combined arms reserve, coupled with the capabilities of the critical combat systems associated with the combined arms reserve, and the known rates of march for the terrain in which the combined arms reserve will be operating.

Units must conduct intelligence collection consistently and continuously. Intelligence collection must be based on the IPB results and adjusted as those results are refined through the situation development process. While IPB results drive intelligence collection, the results of reconnaissance, surveillance, security operations, and intelligence operations drive the refinement of IPB. The staff must understand the roles and relationships of reconnaissance, surveillance, security operations, and intelligence operations and how the commander assesses ongoing operations as the unit develops the situation through action.

The commander plans for, and the staff controls, the execution of all intelligence collection means throughout the operation. The unit must carefully plan for and synchronize reconnaissance, surveillance, security operations, and intelligence operations because the adversary or enemy will try to use deception and other means to evade friendly collection efforts. Commanders need to know detailed intelligence about the adversary's or enemy's disposition, capabilities, and intentions. Often, it is necessary to designate a combined arms unit to develop the situation through close contact with the adversary, enemy, or civilian population.

Generate Intelligence

Not all information required to conduct IPB will be readily available to intelligence staffs upon receipt of a mission. Generating intelligence is critical for the G-2/S-2s to maintain analytical proficiency and situational awareness about possible impending missions and contingencies. Generating intelligence begins before mission receipt and provides the relevant knowledge required regarding the operational environment for the conduct of operations. As soon as the intelligence officer and other staff sections begin to collect data on the operational environment, they organize the data into databases. The information obtained is refined for use in problem framing through functional analysis. Information is obtained through intelligence reach; research; data mining; database access; academic studies, products, or materials; intelligence archives; open-source intelligence; reconnaissance and security operations; and other information sources. Sources for generating intelligence include but are not limited to—

- Internet:
  - Nonclassified Internet Protocol Router Network (referred to as NIPRNET).
  - SECRET Internet Protocol Router Network (SIPRNET).
  - Joint Worldwide Intelligence Communications System (JWICS).
  - Intelligence databases.
- Military Services:
  - Marine Corps Intelligence Activity.
  - National Air and Space Intelligence Center.
  - National Ground Intelligence Center.
  - Office of Naval Intelligence.
  - US Coast Guard.
  - US Service special operations forces.
- Outside agencies:
  - Central Intelligence Agency.
  - National Geospatial-Intelligence Agency (NGA).
  - National Security Agency.
  - Defense Intelligence Agency.
  - US Agency for International Development.
- Outside organizations:
  - World Health Organization.
  - International Committee of the Red Cross.
- University research.
- Country studies.
- Area estimates.
- Intelligence summaries.
- Open-source information.

The types of useful information obtained from sources for generating intelligence include but are not limited to:

- Current situation.
- Geography.
- Economy.
- Population.
- Government and military leadership.
- Centers of gravity.
- Demographics.
- Regional partners.
- Adversary systems and functions.
- Past conflicts.
- Rule of law status.
- Infrastructure development.

- Intelligence information (i.e., information used to generate intelligence through the process of analysis) is commonly drawn from the following three types of data (for additional information see MCTP 2-10B):
- Intelligence data is derived from assets primarily dedicated to intelligence collection (e.g., imagery, electronic intercept, human intelligence [HUMINT] sources).
- Sensor data is derived from manned and unmanned systems used for reconnaissance, surveillance, or target acquisition (e.g., air surveillance radar, counterbattery radar, unmanned aircraft systems [UASs], remote ground sensors).
- Combat data is derived from reporting by subordinate, adjacent, or other friendly units. (MCTP 2-10B).

Information gained though generating intelligence can also be used to identify intelligence gaps for possible contingencies, thus reducing the time needed for research in the event of mission receipt. Generating intelligence is the foundation for performing IPB and problem framing. The primary product of the generate intelligence task is the creation of initial data files based on the analysis of the operational variables (PMESII) and the intelligence survey (see MCWP 2-10 for more information on intelligence knowledge development).

Intelligence Cycle

The intelligence cycle is "a six-step process by which information is converted into intelligence and made available to users. The six steps are planning and direction, collection, processing and exploitation, production, dissemination, and utilization" (*USMC Dictionary*).

The intelligence cycle is not a rigid set of procedures that must be carried out in an identical manner on all occasions. Rather, the commander and the intelligence officer must consider each intelligence requirement individually and leverage the best collection resources against that requirement to obtain the required information in the most effective way to support the needs of the mission. Intelligence preparation of the battlespace takes place in the planning and direction

step of the intelligence cycle in support of operations. This step identifies intelligence requirements and develops a plan for satisfying those needs. Figure 1-4 illustrates the typical intelligence cycle.

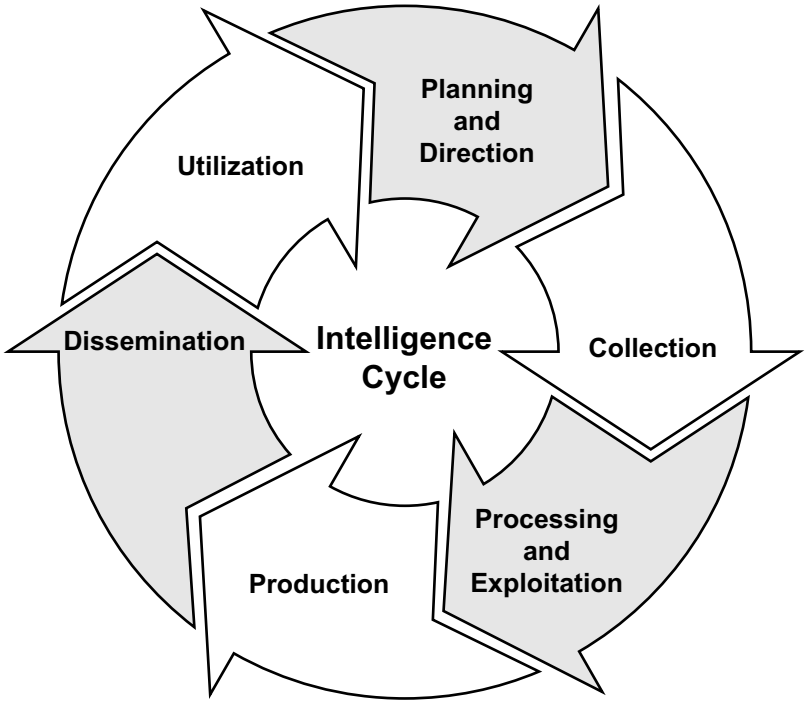


Figure 1-4. Intelligence Cycle.

The IPB products assist in determining information gaps, which then turn into collection requirements. Intelligence planning and direction is a continuous function within the command intelligence section. The commander directs the intelligence effort, and the intelligence officer manages this effort for the commander based on the commander's intent, commander's PIRs, and essential elements of friendly information (referred to as EEFI), as well as any other specific guidance unique to the operation or mission.

The Marine Corps' Generic Intelligence Requirements Handbook (GIRH) promulgates frequently used PIRs and information requirements to facilitate crisis planning for MEFs. The GIRH details baseline intelligence requirements to allow Marines to efficiently request updated, accurate, and complete information. Intelligence Marines can use the GIRH as a checklist to identify information gaps, a reference when requesting information, or a baseline support tool when providing intelligence to operational units. In addition to the original GIRH, the Marine Corps Intelligence Activity produced the following specific GIRHs: police forces, cultural, jungle, riverine, urban, and information. (All GIRHs are available on the Marine Corps' Intelligence Activity's JWICS and SIPRNET websites.)

Situation Development

Situation development is a process for analyzing information and producing current intelligence concerning the portions of the mission variables of enemy, terrain, weather, and civil considerations within the AO before and during operations. The process assists the intelligence staff in recognizing and interpreting indicators of adversary or enemy intentions and objectives. Situation development—

- Confirms or denies adversary or enemy COAs.
- Provides adversary or enemy locations.
- Explains what the adversary or enemy is doing in relation to the friendly force commander's intent.
- Provides an estimate of an adversary's or enemy's combat effectiveness.

Additionally, the locations and actions of noncombatant elements and nongovernmental organizations (NGOs) in the AO that can affect operations are considered. Through situation development, the intelligence officer—

- Quickly identifies information gaps.
- Recommends new information requirements.
- Explains adversary and enemy activities in relation to the unit's operations.
- Assists the commander in gaining and maintaining situational understanding.

Situation development assists commanders in their decision making, including when to execute branches and sequels. The intelligence staff uses the products developed during IPB as a baseline to begin situation development.

CHAPTER 2.
SUPPORT TO DECISION MAKING DURING PLANNING

INTELLIGENCE PREPARATION OF THE BATTLESPACE AND PLANNING

Planning is an essential part of the broader field of command and control. Command and control enhances the commander's ability to make sound and timely decisions. Effective decision making requires both the situational understanding to recognize the essence of a given problem and the creative ability to devise a practical solution. Hence, an essential function of planning is to promote understanding of the problem—the difference between existing and desired conditions—and to devise ways to solve it. Intelligence preparation of the battlespace is one of the processes commanders use to assist in planning. Intelligence preparation of the battlespace supports the MCPP and troop-leading procedures—two of the three methodologies that assist commanders and staffs in planning.

Marine Corps Planning Process

The MCPP is a six-step methodology that assists in organizing the thought processes of the commander and staff throughout the planning and execution of military operations (see Figure 2-1). The MCPP focuses on the mission and threat and is based on the Marine Corps maneuver warfare philosophy. It capitalizes on the principle of unity of command and supports the establishment and maintenance of tempo.

The six steps of MCPP are—

- Step 1. Problem Framing.
- Step 2. COA Development.
- Step 3. COA Wargaming.
- Step 4. COA Comparison and Decision.
- Step 5. Orders Development.
- Step 6. Transition.

(See appendix A and MCWP 5-10 for more information on MCPP.)

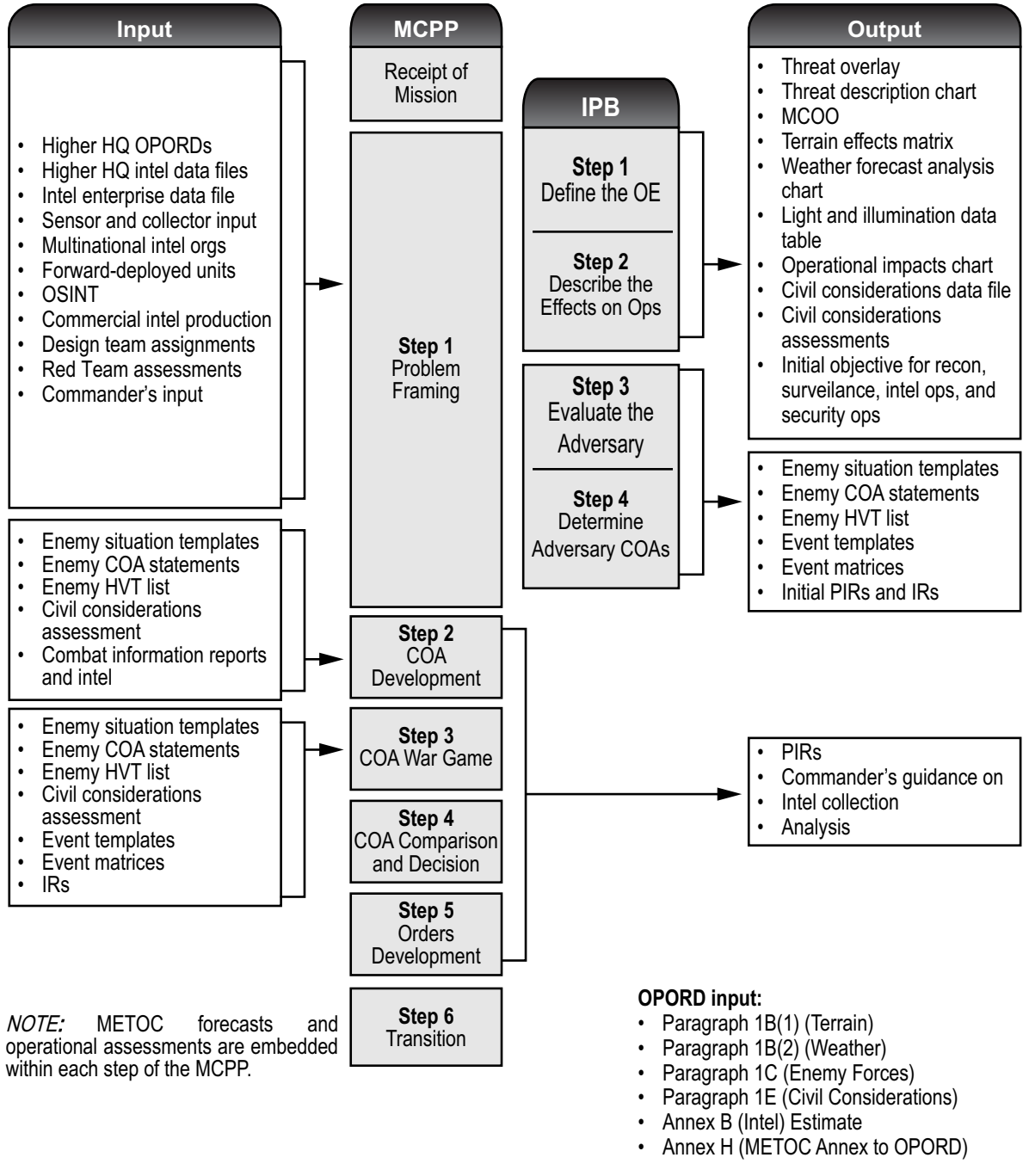


Figure 2-1. Intelligence Preparation of the Battlespace and Marine Corps Planning Process Steps.

The MCPP methodology integrates the activities of the commander, headquarters, and other partners to—

- Understand the operational environment and the problem.
- Develop, evaluate, and compare COAs.
- Decide on a COA that best accomplishes the mission.
- Produce an operation plan (OPLAN) or operation order (OPORD) for execution.

Understand the Operational Environment and the Problem

During the problem framing step of the MCPP, the staff conducts IPB to understand the operational environment and problem set. The products listed below are critical to describing the situation, defining the mission, and continuing the MCPP:

- Intelligence gaps.
- Intelligence requirements.
- Information requirements.
- Adversary and enemy situation templates with associated COA statements and HVT lists.
- Event templates with associated event matrices.
- Center of gravity (COG) analysis.
- Relative combat power matrices for adversary and enemy forces.
- Geospatial intelligence (GEOINT) tactical decision aids required to support continued planning (terrain effects).
- Weather tactical decision aids required to support continued planning (METOC climatology, forecast and analysis charts, and METOC operational impacts charts. Civil considerations tactical decision aids required to support continued planning (civil considerations effects).
- Estimates on how other significant variables may affect the mission.
- The tempo and focus of reconnaissance, surveillance, security operations, and intelligence operations to answer PIRs and meet other requirements.
- Recommended battlespace refinement.

The IPB products developed during this step are discussed fully in Chapters 3 through 6.

Develop, Evaluate, and Compare Courses of Action

In the COA development step of the MCPP, friendly COAs are broad, potential solutions to an identified problem. These solutions are based on conclusions reached during initial IPB and any refinement of those conclusions that occurs between the conclusion of problem framing and the beginning of COA development. The primary IPB product required for COA development is the adversary or enemy situation template with the associated COA statement. The IPB process supports the COA development and COA wargaming steps of MCPP by providing the various intelligence tools, products, and input to planning to include:

- Adversary or enemy situation templates with associated COA statements.
- Event templates with associated event matrices.
- Relative combat power matrices for adversary or enemy forces.
- Synchronization matrix (intelligence portion).

- Intelligence collections products.
- Intelligence concept of support.
- Intelligence staff estimate.

Further in the COA wargame step of MCPP, Red Cell products developed during the IPB are essential to offering realistic and challenging adversary models.

During counterinsurgency operations and stabilization activities, additional products might be required, such as civil considerations overlays and assessments. Intelligence collection operations undertaken at the problem framing step of the MCPP provide pertinent combat information that informs COA development. This information confirms or denies the adversary or enemy situation template and the associated COA statement.

Produce an Operation Order for Execution

Once the commander has compared and decided on a COA, the staff must update all products and begin orders development. The OPORD's Annex B and associated appendixes are key products for intelligence staffs. Most, if not all, information should be derived from IPB. Hence, the results of IPB efforts are included within the base order and appropriate annexes.

TROOP-LEADING STEPS

The six troop-leading steps extend the MCPP to the small-unit level. The MCPP and troop-leading steps are similar but not identical. The troop-leading steps are a dynamic process used by small-unit leaders to analyze a mission, develop a plan, and prepare for an operation (see MCWP 5-10). These steps enable leaders to maximize available planning time while developing effective plans and preparing their units for an operation.

The troop-leading steps assist leaders in effectively using available time to issue orders and execute tactical operations. The sequence of the steps is not rigid. Leaders modify the sequence to meet the mission, situation, and available time. Some steps can be performed concurrently while other steps can be performed continuously throughout the operation.

The intelligence staff develops and provides the IPB products required by the commander to use troop leading steps. Commanders should not need to further refine these products.

The standard IPB products provided by the battalion to assist the commander in using the troop leading steps include the following:

- Adversary or enemy situation templates and COA statements.
- Terrain and weather products.
- Tactical decision aids (such as MCOOs and terrain effects evaluations, METOC climatology, forecast and analysis charts, METOC operational impacts charts, and light and illumination data tables).
- Civil considerations tools and products.

  NOTE: Company commanders coordinate with the G-2/S-2 for any IPB products or tools they might need.

Due to the lack of a staff, resources, and time constraints, the small-unit leader depends on the timely delivery of IPB products developed by higher headquarters tailored to support small-unit planning. The following six troop leading steps align with the mnemonic BAMCIS.

Step 1. Begin Planning

The G-2/S-2 updates friendly and enemy situations; determine available assets, allocations, and fire support coordinating measures; and obtains the battalion's target list worksheet, fire support execution matrix and attack guidance.

Step 2. Arrange for Reconnaissance

The G-2/S-2 provides IPB products to the commander on what to include in warning orders for areas including but not limited to:

- Terrain analysis.
- Enemy forces.
- Area of operations and AOIs.
- Commander's critical information requirements (CCIRs) and essential elements of friendly information.
- Risk guidance.
- Surveillance and reconnaissance to initiate.
- Security measures.
- Deception guidance.
- Mobility and countermobility.

Step 3. Make Reconnaissance

If time permits, leaders verify intelligence from higher headquarters by visually reconnoitering to confirm PIRs that support their tentative plans. These PIRs usually comprise assumptions or critical facts about the enemy (including strength and location). The PIRs can also include information on the terrain to verify that a tentative support-by-fire position can suppress the enemy, or an AA is usable.

Step 4. Complete Plan

The G-2/S-2 provides IPB products to leaders on any movement necessary to continue mission preparation or to posture the unit for the start of the mission.

When developing a tentative plan, the commander relies on the G-2/S-2 to provide IPB tools as the leader conducts the following:

- *Mission analysis*. The G-2/S-2 provides IPB tools and products on mission analysis by evaluating enemy, terrain, weather, and civil considerations, including information and analysis on the terrain, enemy, and friendly forces that most affect tactical operations.
- *COA development*. Intelligence preparation of the battlespace products assist the leader in developing a solid COA. The purpose of COA development is determining one or more ways to accomplish the mission that is consistent with the immediate higher commander's intent. A COA describes how the unit might generate the effects of overwhelming combat power against the enemy at the decisive point with the least friendly casualties.

- *COA analysis*. The G-2/S-2 provides IPB tools the leader can use to determine how the enemy will likely react during wargaming. Wargaming assists the leader in synchronizing friendly actions while considering the enemy's likely reactions. Course of action analysis begins with both friendly and threat COAs and, using a method of action-reaction-counteraction wargaming, results in a synchronized friendly plan, identified strengths and vulnerabilities, and an updated risk assessment. After developing the COA, the leader analyzes it to determine its strengths and vulnerabilities and gains insights into actions at the decisive point of the mission. Course of action analysis (i.e., war gaming) portrays friendly and enemy forces on the actual terrain to visualize how the operation will unfold.
- *COA comparison and selection*. The G-2/S-2 provides IPB products to leaders to determine PIRs, friendly force information requirements, and essential elements of friendly information. Although essential elements of friendly information are not part of CCIRs, they still become priorities, and this information must be protected from enemy identification.

Step 5. Issue Order

Leadership verbally communicates their analysis and scheme of maneuver. During the order brief, subject matter experts who participated in the analysis should attend as required.

Step 6. Supervise

Leadership conducts rehearsals and inspections as required: continues to refine targets and triggers for actual location, ground reconnaissance, or new enemy information; continues to update and coordinate the plan as necessary.

Intelligence Preparation of the Battlespace and Decision Making

Decision making refers to selecting the most favorable COA to accomplish the mission. Commanders make decisions, in part, based on the intelligence developed during initial IPB and on intelligence refinement throughout the operation. Decision making is essential to conduct of war since all actions are the result of decisions or of nondecisions.

Commanders require accurate and timely intelligence about the operational environment to make informed and sound decisions. Through IPB, the staff aids the commander's understanding of how the mission variables of enemy, terrain, weather, and civil considerations influence the operational environment and affect operations. Intelligence preparation of the battlespace also assists the commander in understanding how to influence, use, or employ these variables to achieve the desired conditions and end state. Intelligence preparation of the battlespace is essential in assisting the commander to—

- Understand, visualize, and describe the operational environment:
  - *Understand*. Gain understanding by analyzing the mission variables in a operational environment. Intelligence preparation of the battlespace defines and describes the mission variables of adversary or enemy, terrain, weather, and civil considerations but more importantly, concludes how the interrelationships, dynamics, and interactions of these variables cause changes in the operational environment.

  - *Visualize*. Gain visualization by developing situational understanding, determining an end state, and envisioning the sequence of events the force must ensure to achieve the end state. Every product developed during IPB is essential in assisting the commander to visualize the situation. These products must be produced on time and in accordance with unit standing operating procedures.
  - *Describe*. After commanders visualize an operation, they describe their vision to their staffs and subordinate commands using staff products developed during IPB.
- Make and articulate decisions.
- Direct, lead, and assess military operations.

The rapid-response planning process (also referred to as R2P2) is a technique that commanders and staffs commonly use during execution. Throughout mission execution, continuous intelligence collection is conducted to answer information requirements and to close intelligence gaps. The rapid-response planning process is usually conducted based on an existing OPORD that includes the IPB products and estimates produced during the MCPP (See MCWP 5-10 for more information on the rapid-response planning process).

The rapid-response planning process is a time-constrained version of MCPP:

- *Problem framing*. Problem framing enhances understanding of the environment and the nature of the problem. It identifies what the command must accomplish, when and where it must be done, and the purpose. No amount of subsequent planning can solve an insufficiently understood problem; therefore, problem framing is the most important step in planning.
- *COA development*. The COA development produces options for accomplishing the mission in accordance with commander's intent. It provides options for the commander; refines the design; and promotes understanding of the environment, problem, and the approach to solving the problem.

- *COA wargaming*. The COA wargaming examines and refines the option(s), taking into consideration the adversary or enemy capabilities, potential actions or reactions, and the characteristics peculiar to the operating environment, such as weather, terrain, culture, and non-Department of Defense (DoD) entities or stakeholders. This detailed examination of the operational environment and possible adversary or enemy reactions should forge a greater understanding of the environment, the problem, and possible solutions.
- *COA comparison and decision*. During COA comparison and decision, the commander reviews the pros and cons of the option(s) and decides how he will accomplish the mission, either by approving a COA as formulated or by assimilating what has been learned into a new COA that may need to be further developed and tested with wargaming.
- *Orders development*. Order development translates the commander's decision into oral, written, or graphic direction sufficient to guide implementation and initiative by subordinates.
- *Transition*. The transition step can involve a wide range of briefs, drills, or rehearsals necessary to ensure a successful shift from planning to execution. Numerous factors can influence how the transition step is conducted, such as echelon of command, mission complexity, and, most importantly, available time. Effective decision making requires both the situational understanding to recognize the essence of a given problem and the creative ability to devise a practical solution.

CHAPTER 3.
STEP 1: DEFINE THE OPERATIONAL ENVIRONMENT

During Step 1 of the IPB process, the G-2/S-2 identifies factors for further analysis (i.e., the significant characteristics of activities within the operational environment that can influence friendly, adversary, or enemy COAs and command decisions, as well as the physical space the mission will occupy). Within an operational environment, Marines might face operations that simultaneously encompass multiple domains, military engagements, and humanitarian assistance. Examples 1 and 2 portray planning scenarios.

Example 1

During planning for a foreign humanitarian assistance mission, the S-2 identifies five ethnic groups that have armed militias that have attacked each other, as well as indigenous governmental security forces over the past 12 months. In the previous month, a helicopter from the nation's army was shot down by a rocket-propelled grenade. Although these militias have not attacked any of the nongovernmental aid organizations in the area, they have demonstrated the willingness to use violence. Because of this, the G-2/S-2 determines each of these groups is a potential enemy. There is no information about these groups in the command's intelligence data files or in the data files of their higher headquarters to aid the S-2 in developing valid potential COAs these groups may adopt when US forces enter their AOs.

The S-2 staff conducts a search of various organizations' data files within the intelligence enterprise. The G-2/S-2 determines that while little is known about the enemy order of battle of these militias, there is some information available. Each of these militias is a company-sized element with various types of small-arms and crew-served weapons, mortars, demolitions, and anti-armor rockets. It is not known whether these militias have any air defense artillery.

The G-2/S-2 initiates a request for collection on the current location, disposition, strength, and capabilities of each of these militias. Realizing that the G-2/S-2 will not have this information during IPB, the G-2/S-2 determines possible enemy COAs based on what is known and what is assumed, ensuring that the commander and the rest of the staff understand what is known and what is assumed about the enemy. As intelligence related to the request for collection arrives, the G-2/S-2 updates the enemy COAs and informs the commander and the rest of the staff.

Example 2

During planning for an attack, the G-2/S-2 identifies the enemy has an attack helicopter squadron that could threaten the friendly mission. When developing the enemy situation template, the G-2/S-2 includes the reported location of the attack helicopter battalion, air attack corridors that could be used to support the enemy defense, as well as forward arming and refueling points (FARPs). The G-2/S-2 also generates collection requests to locate and track these assets to support the command's targeting operations.

DESIRED END STATE

Step 1 of the IPB process focuses the IPB effort on the characteristics of the operational environment that can influence friendly, adversary, and enemy operations. The G-2/S-2 acquires the intelligence needed to complete IPB, which, in turn is required to support the MCPP. The following are primary outputs associated with Step 1 of the IPB process:

- Determining the AO, AOI, and area of influence.
- Determining the area of intelligence responsibility.
- Identifying general characteristics of the AO that could influence the unit's mission.
- Identifying gaps in current intelligence holdings and translating them into requirements for collection (RFIs, requests for collection) to complete IPB.

PURPOSE

The "so what" of this step is to clearly define the relevant characteristics of the commander's AOI:

- Outcome of success: Success results in time and effort saved by focusing only on those characteristics that influence friendly COAs and command decisions.
- Consequences of failure:
  - Failure to focus on only the significant characteristics leads to wasted time and effort collecting and evaluating intelligence on characteristics of the operational environment that do not influence the operation.
  - Failure to identify all significant characteristics in all relevant domains can lead to effects on the operation that the commander did not prepare for.

PROCESS

Defining the operational environment consists of the following sub-steps, shown in Figure 3-1.

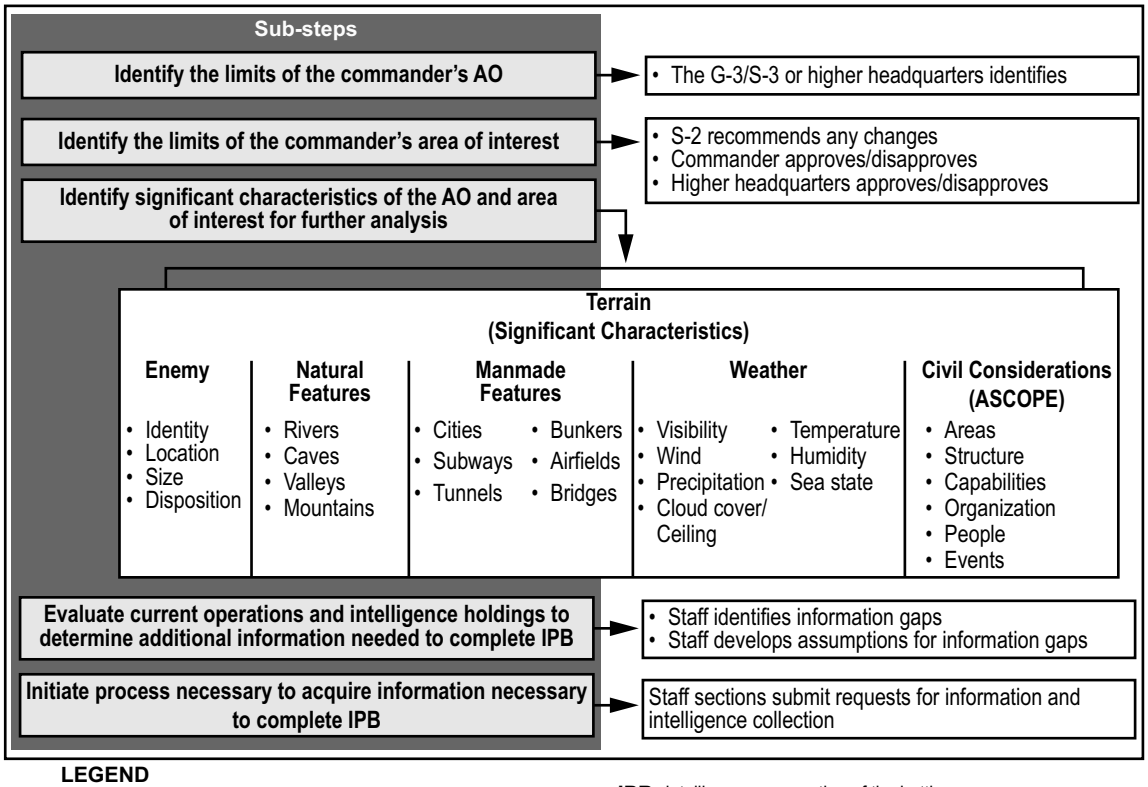


Figure 3-1. Sub-steps of Step 1 of the Intelligence Preparation of the Battlespace Process.

IDENTIFY THE LIMITS OF THE COMMANDER'S AREA OF OPERATIONS

An *area of operations* is "an operational area defined by a commander for land or maritime force commander to accomplish their missions and protect their forces" (DoD Dictionary). The MAGTF commander conducts operations within the context of the single battle. A single battle focus allows the commander to effectively direct the efforts of all MAGTF elements of the force to accomplish the mission. Under this single battle construct, the AO consists of three major areas—deep, close, and rear—where distinctly different operations are performed. The AO comprises an external boundary that delineates the AOs of adjacent units and includes subordinate unit AOs. Subordinate unit AOs may be contiguous or noncontiguous.

The parts of an AO not assigned to subordinate units are called deep areas.

To describe the physical arrangement of forces in time, space, and purpose, commanders can designate the following:

- Deep operations shape the battlespace to influence future operations. They seek to create windows of opportunity for decisive action, restrict the enemy's freedom of action, and disrupt the cohesion and tempo of an adversary or enemy operation.
- Close operations project power against enemy forces in immediate contact. Commanders prioritize fires to weight the main effort and to focus combat power to achieve effects that lead to a decision.
- Rear operation is the portion of the commander's AO that is designated to facilitate the positioning, employment, and protection of base sustainment assets required to sustain, enable, and control operations. Rear operation is also the portion of the commander's AO that is designated to facilitate the security and stability tasks necessary for freedom of action in the close area and to support the continuous consolidation of gains in support of current and future operations.
- Within an AO, commanders conduct decisive, shaping, and sustaining operations to articulate an operation in terms of purpose. Commanders designate main and supporting efforts to establish resource shifting and prioritization (see MCDP 1-0 for more information on AOs).

The AO may be impacted due to political boundaries or other civil considerations. Once assigned, an AO can be subdivided by that command as necessary to support mission requirements. Figure 3-2 illustrates various AOs.

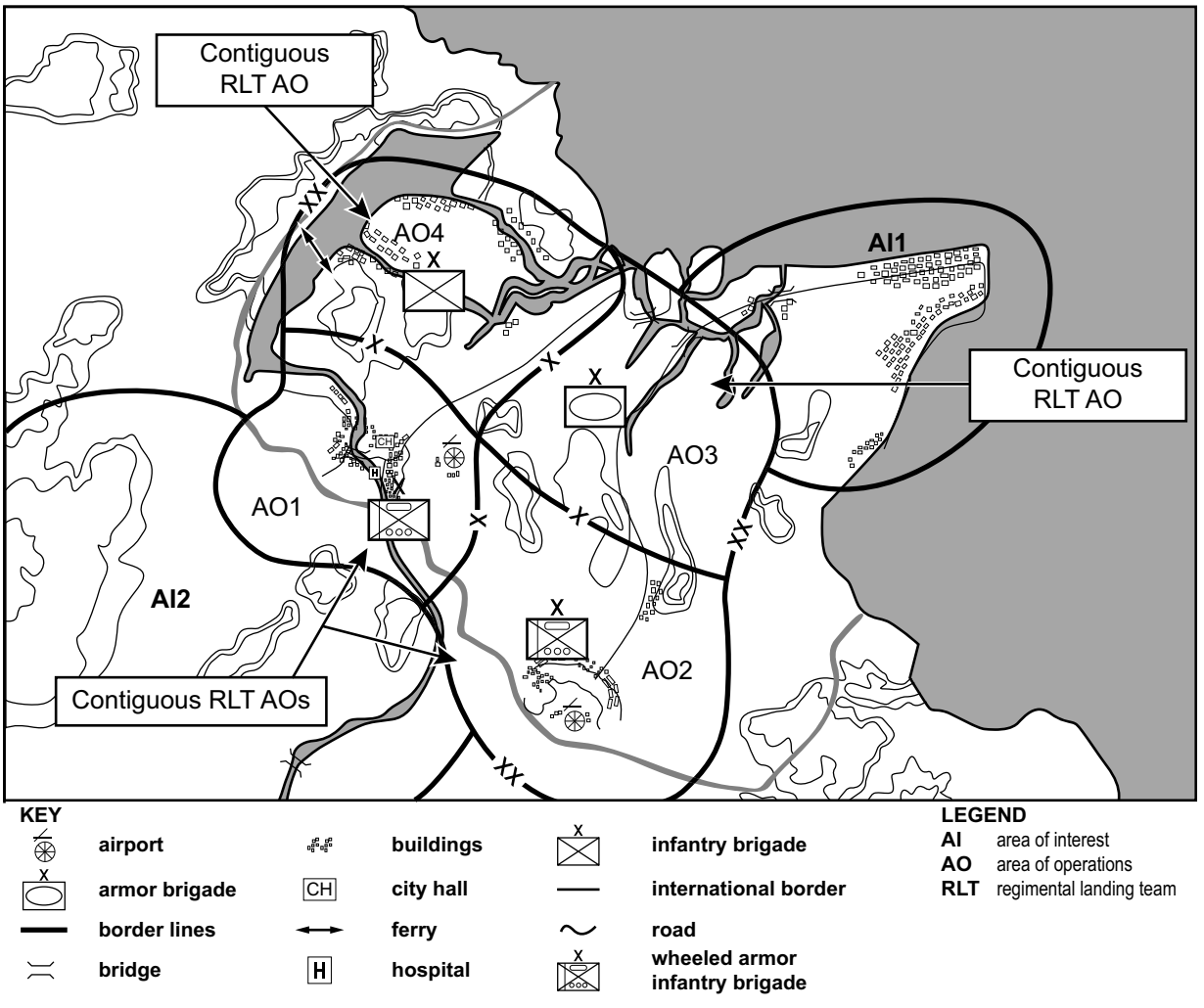
IDENTIFY THE LIMITS OF THE COMMANDER'S AREA OF INTEREST

An area of influence is "an area inclusive of and extending beyond an operational area wherein a commander is capable of direct influence by maneuver, fire support, and information normally under the commander's command or control" (DoD Dictionary). The area of influence is—

- An area that includes terrain inside and outside the AO.
- An area determined by both the G-2/S-2 and G-3/S-3.

An area of interest is "that area of concern to the commander, including the area of influence, areas adjacent to it, and extending into enemy territory" (DoD Dictionary). This area also includes areas occupied by enemy forces who could jeopardize the accomplishment of the mission. The AOI is—

- Established by the commander with input from the G-2/S-2 or G-3/S-3. The mission variables (METT-T) must be considered when establishing an AOI.
- Typically an area larger than or outside the area of influence that directly affects the AO; therefore, it could require more intelligence assets to monitor. It can also include staging areas.
- An area that can be irregular in shape and can overlap the areas of adjacent and subordinate unit AOs.
- An area that extends up to the max service ceiling of threat aircraft and max effective range and altitude of enemy IADs.
- An area that assists in determining NAIs during Step 4 of the IPB process.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 3-2. Area of Operations Examples.

An AOI is the geographical area from which information is required to facilitate planning and the successful conduct of the command's operation. The area changes as the situation changes and as commanders determine new information requirements. It includes any adversary or enemy forces or characteristics that significantly influence accomplishing the command's mission. In major operations, the AOI extends into territory tied to the objectives of current or planned friendly operations if those objectives are located outside the assigned AO. In stabilization activities or defense support of civil tasks, the AOI is typically much larger than that defined for major operations.

> *NOTE:* Since cyberspace is a global domain, adversary and enemy actors can potentially affect a friendly unit's battlespace from anywhere. This must be considered when analyzing and establishing the area of influence and AOI.

In establishing the limits of an AOI, one of the primary considerations is time. Time limits should be based not only on the adversary's or enemy's mobility but also on the amount of time needed to accomplish the friendly mission. For example, if the command estimates that it will take two days to accomplish the friendly mission, the AOI must encompass all adversary and enemy forces and activities that could influence the accomplishment of the command's mission within the two days.

Additional considerations when establishing AOI limits include but are not limited to—

- Dividing the AOI into several domains (for example, land AOI, air AOI, maritime AOI, and cyberspace AOI). Such a division accommodates the types of information relevant to each AOI as well as their different geographical limits. At some point, it might be necessary to integrate the various AOIs into a whole to present the commander with a holistic picture.
- Neutral countries might pose a threat to accomplishing the mission. For example, if a neutral country's political decisions will potentially influence a unit's ability to accomplish their mission, include that country within the limits of the AOI. Likewise, if a segment of a neutral country's population provides a base of support to forces that oppose the command's mission, this would also be included within the AOI.
- Technological advances in communications, such as social media and global media organizations, are likely to increase visibility of friendly operations. This can lead to an increase effects on friendly operations. Therefore, it is important to analyze how civil considerations and the dissemination of information might impact operations.

Analyzing the AO Based on the Area of Influence and AOI

By analyzing a commander's AO in terms of the area of influence and AOI, a commander determines whether the assigned AO is appropriate. This analysis might include the forces' capabilities to conduct actions across the warfighting functions.

Commanders consider the extent of subordinates' areas of influence when defining subordinates' AOs. In identifying an AO, the staff should avoid making it substantially larger than the unit's area of influence. Ideally, the area of influence encompasses the entire AO. The commander can use the area of influence to focus intelligence collection operations, shape the battlespace, and facilitate future operations.

The battlespace includes the AOI, area of influence, and operational area. Operational areas for MAGTFs are usually AOs. The staff might recommend battlespace refinements based on the analysis of the terrain and tasks as well as friendly, adversary, and enemy COGs, capabilities, and limitations. The AOI size can change based on the commander's understanding of the situation. The extent of the area of influence can change if forces are added or removed, equipment capability (for example, the range of lethal and nonlethal weapon systems) and availability changes, or rules of engagement change. The commander's AO might need to change based on the mission scope, operation results, operational reach, or might change to ensure sufficient battlespace to maneuver and protect the force.

IDENTIFY SIGNIFICANT CHARACTERISTICS WITHIN THE AREA OF OPERATIONS AND AREA OF INTEREST FOR FURTHER ANALYSIS

To focus the IPB process, the staff must identify and define the operational environment characteristics of the adversary or enemy, terrain, weather, and civil considerations to determine the significance as it relates to the mission—essentially building an environmental model as the framework for conduction and presenting analysis to the commander. This prevents unnecessary analysis and allows the staff to dedicate and maximize resources in critical areas. The initial analysis that occurs in this sub-step determines the amount of time and resources the intelligence staff commits to the detailed analysis that occurs in Step 2 of the IPB process.

When identifying significant characteristics of the operational environment, the intelligence staff along with the other staff sections can be faced with analyzing multiple domains across the AO. For example, they might analyze how a conventional land-based adversary or enemy using the cyberspace domain will affect friendly operations across multiple domains. Accounting for these effects and determining domain relationships and interdependencies significantly increase the effectiveness of analysis in subsequent steps of the IPB process and provides commanders with multiple options during the MCPP.

Additionally, the intelligence staff and other staff sections must consider adversary or enemy forces and all other aspects of the environment that can affect accomplishing the friendly mission. This includes but is not limited to—

- Geography, terrain, and weather of the area.
- Population demographics (ethnic groups, religious groups, age distribution, income groups).
- Political or socioeconomic factors, including the role of clans, tribes, and gangs.
- Infrastructures such as transportation or telecommunications.
- Rules of engagement or legal restrictions such as international treaties or agreements.
- Adversary or enemy forces and their capabilities, as well as paramilitary forces, criminal organizations, and terrorists.

The intelligence staff should—

- Briefly examine each characteristic to identify those that are significant to the command and its mission.
- Further evaluate the effects of each characteristic in later steps of the IPB process. For example, in Step 1, the evaluation of adversary or enemy forces is limited to identifying forces that can influence the command's mission based on its location, mobility, general capabilities, and weapons ranges.
- Evaluate each adversary's or enemy's specific capabilities and determine probable COAs during later steps of the IPB process.
- Examine each characteristic that can effect decisive, shaping, and sustaining operations.

Adversary and Enemy

An adversary is "a party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged" (DoD Dictionary). Analysis of the adversary or enemy includes not only the known entity, but also other potential adversaries to mission success, such as multiple adversaries posing with a wide array of political, economic, religious, and personal motivations. Additionally, adversaries might wear uniforms, be easily identifiable, and use traditional capabilities such as rifles or mortars. Conversely, they might not wear uniforms, might blend into the population, and might use nontraditional capabilities such as computer networks and social media. To understand adversary and enemy capabilities and vulnerabilities, commanders and staffs require detailed, timely, and accurate intelligence produced by the IPB process.

Terrain and Weather

It is important to identify the types of environments in which the unit will conduct operations. Terrain and weather are natural conditions within the environment that profoundly influence operations and the type of information collected. Terrain and weather favor neither friendly nor adversary or enemy forces unless one is more familiar with or better prepared to operate in the physical environment. Terrain includes natural features (such as rivers, caves, valleys, and mountains), and man-made features (such as cities, subway tunnels, bunkers, airfields, and bridges). Terrain directly affects how commanders select objectives and locate, move, and control forces. Terrain also influences protective measures and the effectiveness of weapons and other systems.

Effectively using terrain reduces the effects of adversary or enemy fires, increases the effects of friendly fires, and facilitates mobility and surprise. Terrain appreciation—the ability to predict its effect on operations—is an important skill for every leader. For tactical operations, commanders analyze terrain using KOCOA, as performed during Step 2 of the IPB process.

Chapter 4 covers broad aspects of terrain analysis essential to intelligence analysts conducting terrain analysis to support adversary and enemy analysis. (See MCRP 2-10B.4, *Geospatial Information and Intelligence*, for detailed information on analyzing the military aspects of terrain.)

Climate refers to the average weather conditions for a location, area, or region for a specific time of the year as recorded for a period of years. Meteorological and oceanographic climatology is used to assess effects on weapon systems, collection systems, ground forces, friendly, adversary, or enemy TTP, and other capabilities based on specific weather sensitivity thresholds when operational planning occurs more than 10 days before the execution. Climatological data is important at both the operational and tactical levels. Weather forecasts and predictions, employing weather models and other tools, are used to assess weather effects on weapon systems, collection systems, ground forces, TTP, and other capabilities within 10 days of operational planning.

Civil Considerations.

Civil considerations address the potential effects that man-made infrastructure; civilian institutions; and attitudes and activities of civilian leaders, populations, and organizations within an area of operations might have on military operations. Commanders and staffs analyze civil considerations in terms of the following ASCOPE characteristics:

- Areas.
- Structures.
- Capabilities.
- Organizations.
- People.
- Events.

Civil considerations assist commanders in understanding the social, political, and cultural variables within the AO and their effect on the mission. Understanding the relationship between military operations and civilians, culture, and society is critical to conducting operations and essential in developing effective plans. Operations often involve stabilizing the situation, securing the peace, building HN capacity, and transitioning authority to civilian control. Major operations directly affect the populace, infrastructure, and the force's ability to transition to HN authority. The degree to which the populace is expected to support or resist US and friendly forces also affects the offensive and defensive operational design.

Commanders and staffs draw on knowledge attained through personal experience and on running estimates to assess social, economic, and political factors. Commanders consider how these factors can relate to potential lawlessness, subversion, or insurgency. Their goal is to develop their understanding to the level of cultural awareness. At this level, they can estimate the effects of friendly actions and direct their subordinates with confidence. Cultural awareness improves how Marines interact with the populace and deters false or unrealistic expectations. They have more knowledge of the society's common practices, perceptions, assumptions, customs, and values, giving better insight into the intent of individuals and groups. This allows the intelligence staff to better understand how friendly actions can affect the operational environment and to assist in planning for possible contingencies.

To improve commanders' sociocultural understanding, intelligence staffs can use sociocultural databases and repositories, international affairs officers, and other cultural enablers, when available, to aid the intelligence analysis conducted as part of assessing civil considerations. Additionally, commanders and staffs should continually seek to improve cultural understanding to improve the IPB process.

SIGNIFICANT CHARACTERISTICS BRIEFING EXAMPLE

During Step 1, intelligence staff's brief commanders on the AO's significant characteristics. This brief should be concise and provide all significant characteristics pertaining to Step 1 only; it should not include specifics, such as the MCOO and adversary or enemy template statements, which pertain to Steps 2 and 3, respectively. The briefing example on the next page provides a brief used by intelligence analysts to inform commanders of the AO's significant characteristics.

Briefing Example: Identifying Significant Characteristics

Terrain

- Wooded areas are primarily composed of pine trees.
- Most creeks require bridging asset to cross if there is no ford or road crossing.
- Major roadways can support four lanes of traffic.
- Marshes within the AO are restrictive most of the year; heavy rains can become severely restrictive.
- The soil composition is loose dirt, and the water table is six to seven feet below ground except where the marshes are located.
- The highest point is located on the ridgeline in the northeastern sector of the AO.

Weather

- The weather during this time of year consists of light rain with mild thunderstorms.
- The average rainfall is three to four inches.
- Precipitation impacts potential river crossing sites.
- Strong gusts usually occur in early mornings and mid-afternoons, which can affect some aerial assets.
- Temperatures range from 65 to 80 degrees Fahrenheit. Fog occurs during the early morning hours and can last up to two hours after sunrise.

Civil Considerations

- Two major groups occupy the AO: the Donovian Military Force and the National Liberation Group. The National Liberation Group is supported by a small Russian-speaking population that is sporadic through the AO and supported indirectly by the Donovian Military Force. The Russian-speaking population provides sustainment and cache locations for the National Liberation Group.
- Apartments are usually several stories high and made of reinforced concrete; single family homes are built of stone or brick with tile roofs.
- The population receives information primarily through television and social media sites.
- The major highway that runs through the AO is a hard surface, and all-weather route, but most of roads are dirt.
- The airfield is all-weather and can support C-130 traffic.
- There is one potable water treatment plant that operates in the AO and supports the entire region.
- The AO's two major cities are L'viv and Chervonohrad, where 40 percent of the population resides.

Adversary or Enemy

- The staff expects to encounter a brigade- to division-sized element in the AO due to recent reporting and historical data.
- The adversary or enemy likely has simple battle positions that are covered for dismounts and uncovered for vehicle fighting positions.
- Battle positions adjacent to mountainous terrain are linked by rudimentary tunnels.
- Most simple battle positions have a tank ditch directly in front of them and a mine field about 50 to 100 meters in front of the tank ditch.
- C2 nodes consist of multiple hardened underground facilities.
- General support assets reside about two to five kilometers from the most forward battle positions.
- The staff expects to encounter antiair assets, artillery, T-90 tanks, and small arms weapons capabilities.

DETERMINE ADDITIONAL INFORMATION REQUIREMENTS

Not all the information needed to complete IPB will be in the commands or higher headquarters' data files and databases. Information gaps should be identified early and prioritized based on the commander's initial guidance and intent for intelligence and intelligence collection. The staff should ensure the commander is aware of any information gaps that cannot be answered within the time allotted for IPB, develop reasonable assumptions to use in place of these answers, and explain to the commander how they arrived at these assumptions.

ACQUIRE THE INFORMATION

After determining that the information necessary to complete IPB is not contained within local and searchable external data files and databases, staff sections submit RFIs or requests for collection to obtain the information. As information is received, IPB products are updated, and intelligence gaps eliminated. New intelligence gaps and information requirements might be developed as IPB continues. (See MCTP 2-10A, *MAGTF Intelligence Collection*, for more information on intelligence collection.)

CHAPTER 4.
STEP 2: DESCRIBE THE EFFECTS ON OPERATIONS

Step 2 of the IPB process determines how significant characteristics of the operational environment can affect friendly, adversary, and enemy operations. The intelligence staff and other staff sections begin evaluation by analyzing existing and projected conditions of the operational environment, and then determining their effects on friendly, adversary, or enemy operations. The following example shows how significant characteristics of the operational environment (specifically the terrain) can affect friendly operations.

Example

A unit S-2 informs the commander that the terrain through which the unit must attack will canalize friendly forces into platoon-sized mobility corridors, preventing friendly forces from supporting each other. The S-2 also informs the commander that the terrain favors adversary or enemy use of obstacles, small antitank ambushes, and indirect fire throughout its security zone.

DESIRED END STATE

Step 2 identifies how the operational environment influences friendly, adversary, and enemy COAs. The primary outputs associated with Step 2 of the IPB process are:

- Completing terrain analysis for the AO and AOI; in particular, ground, air, and maritime AAs, and key terrain.
- Integrating the effects of weather and light data.
- Refining and updating any RFIs or requests for collection.
- Accounting for the physical, temporal, cognitive, and virtual aspects of the AO.

THE "SO WHAT?"

The "so what" of this step is to identify how relevant characteristics of the AOI affect friendly, adversary, and enemy operations:

- Outcome of success: Success results in the commander being able to quickly choose and exploit terrain, weather, and civil considerations to best support the mission during decisive, shaping, and sustaining operations.
- Consequences of failure:
  - The commander might not have the information needed to exploit the opportunities the operational environment provides at a given time and place.
  - The adversary or enemy commander might have the information needed to exploit the opportunities the operational environment provides in a way the friendly commander did

not anticipate. For example, the adversary or enemy commander might use subterranean infrastructure to maneuver against friendly forces. If the friendly commander is unaware of the advantage that the subterranean infrastructure provides to the adversary or enemy, this approach will not be developed as a COA and the effects will not be considered during this step.

HOW TO DO IT: (THE PROCESS)

The sub-steps (shown in Figure 4-1) below describe the effects on operations and are explored further in the following sections:

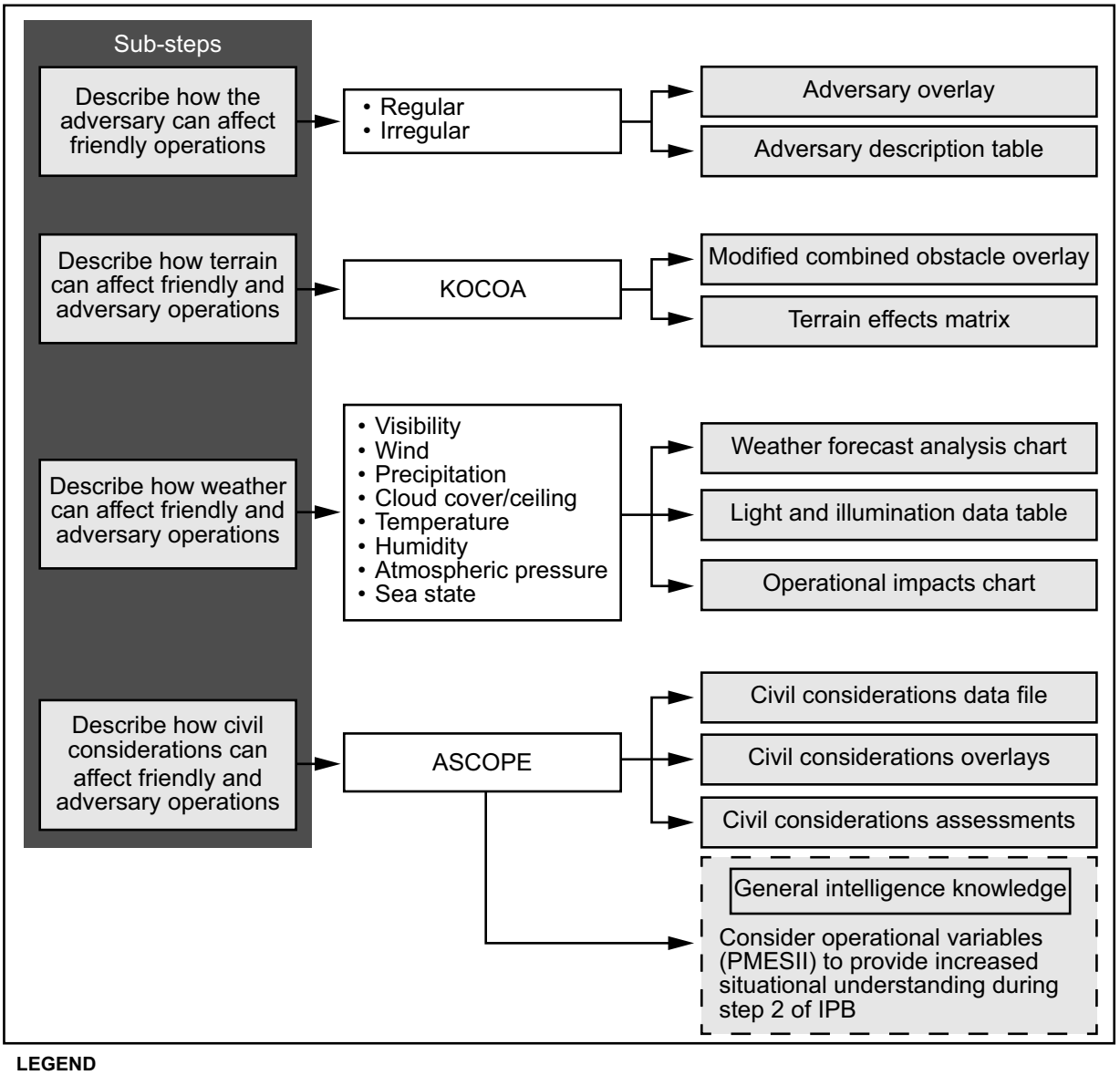
- Describe how the adversary can affect friendly operations.
- Describe how terrain can affect friendly and adversary operations.
- Describe how weather can affect friendly and adversary operations.
- Describe how civil considerations can affect friendly and adversary operations.

DESCRIBE HOW THE ADVERSARY OR ENEMY CAN AFFECT FRIENDLY OPERATIONS

Adversaries and enemies are part of the operational environment; therefore, commanders need to understand all adversaries and enemies within the AO and AOI. Commanders might face one unified adversary or enemy force or several disparate adversary or enemy forces that must be engaged to accomplish the mission. Although detailed analysis of adversary or enemy forces occurs during Steps 3 and 4 of the IPB process, the type of adversary or enemy forces and their general capabilities must be defined during Step 2. This places the existence of these forces in context with other variables in order to understand their relative importance as a characteristic of the operational environment. Examples include the following:

- When facing a regular force during operations, regardless of where the engagement occurs, that force is likely the most important characteristic in that operational environment.
- When facing an irregular force conducting operations as part of an insurgency in a failing nation-state, the state of governance and other civil considerations might be more significant than the adversary or enemy posed by the irregular force.
- When facing an unconventional adversary or enemy during operations, the unconventional adversary or enemy will likely be equipped with capabilities that can be used to exploit perceived friendly vulnerabilities. The mix of regular and irregular force capabilities expands adversary or enemy COA possibilities and can create significant effects outside friendly force decision cycles.

The intelligence staff uses an adversary or enemy overlay and description table to focus their analysis and communicate to the commander.



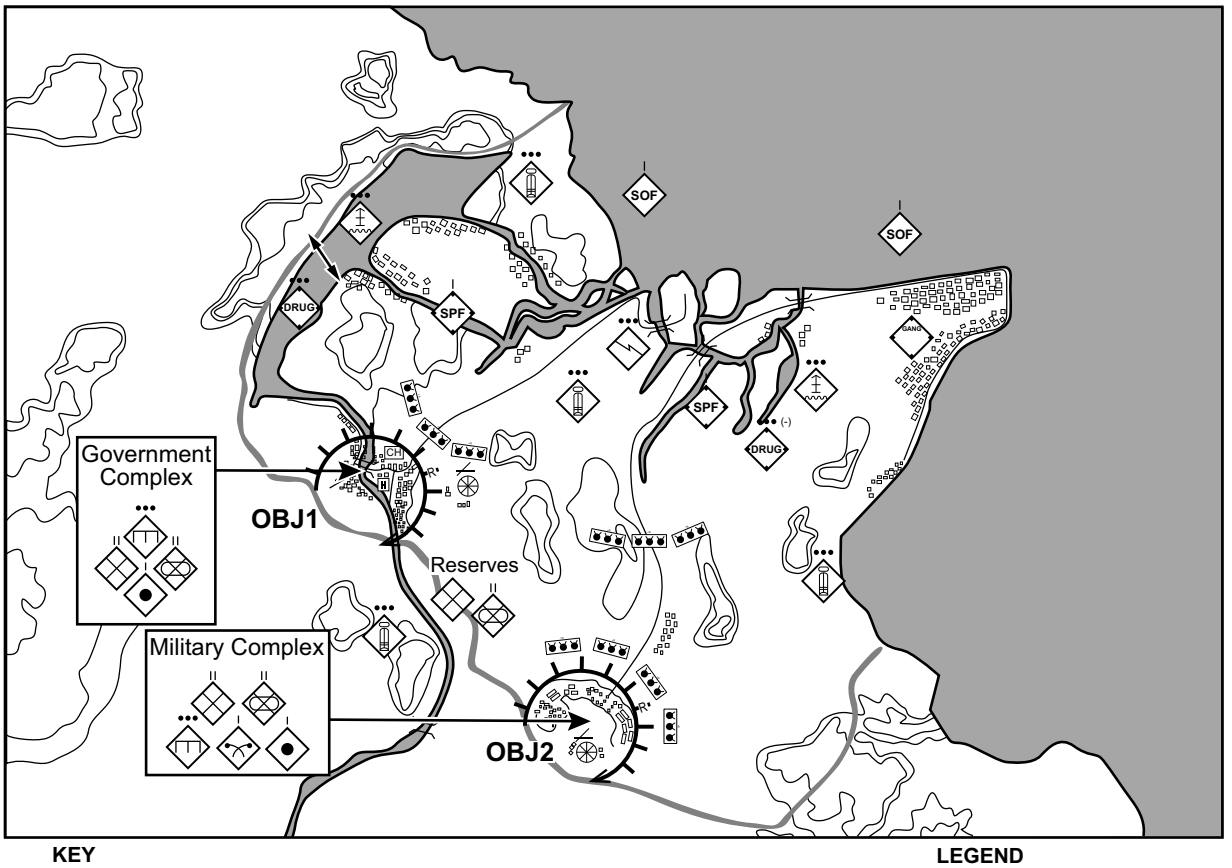
LEGEND

ASCOPE	areas, structures, capabilities, organizations, people, and events
IPB	intelligence preparation of the battlespace
KOCOA	key terrain, observation and fields of fire, cover and concealment, obstacles, and avenues of approach

Figure 4-1. Sub-steps of Step 2 of the IPB Process.

Adversary or Enemy Overlay

The adversary or enemy overlay describes the current physical location of all potential adversaries or enemies in the AO and AOI. It includes the identity, size, location, strength, and AO for each known adversary or enemy location. Figure 4-2 illustrates an overlay example.



KEY

- airport
- amphibious machinegun-light
- armored air defense missile launcher–medium
- bridge
- buildings
- chemical biological radiological nuclear defense
- city hall
- engineer
- ferry
- field artillery
- gang menmber or gang
- hospital
- illegal drug operation
- infantry
- international border
- mechanized infantry
- minefield
- retain
- road
- signal
- special operations force
- special purpose forces

LEGEND

OBJ	objective
DRUG	drug related
GANG	gang member or gang
SOF	special operations force
SPF	special purpose force

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 4-2. Adversary or Enemy Overlay (Irregular Forces).

Adversary or Enemy Description Table

The adversary or enemy description table supports the adversary or enemy overlay by classifying the types of adversaries identified on the overlay and describing the broad capabilities of each. Table 4-1 is an example of an adversary or enemy description for irregular forces.

Table 4-1. Example Adversary or Enemy Description Table (Irregular Forces) Example.

Identity	Location	Description	+Additional information
2x special purpose forces companies	Northern coast	• Companies conduct littoral reconnaissance to provide information on potential regional threat coastal invasion or border incursions.	Companies are known to operate down to platoon and section echelons from sanctuary locations.
Platoon (+) drug trafficking personnel	East and west international boundary	• Platoons oversee smuggling of methamphetamines and their precursor chemicals out of the country. • Platoons are known to work with gangs for distribution of narcotics in urban areas.	Platoons operate in 10-15 personnel teams.
2x platoons riverine infantry	Eastern and western marsh areas	• Key forces prevent regional threats from using riverine network to move south toward key terrain.	Normally maintain platoon integrity while patrolling rivers and littoral areas.
Gang personnel (assessed to be approximately 100 personnel)	Northeast urban center	• Gang personnel support the distribution of narcotics within urban areas. • Gang personnel provide information on regional threats operating near the coast.	Normally operate in cells 7-10 personnel.
2x special purpose forces companies.	Vicinity main north-south highways	• Companies overwatch main north-south highways and establish hasty checkpoints. • Companies use population centers to collect information on regional threats. • Companies also conduct counter-reconnaissance of low-lying march areas.	Companies operate down to section and team echelons from hasty defensive positions and hide sites.
Battery (-) air defense artillery	Coastal and inland regions usually masked by terrain	• Air defense artillery assets conduct area denial in air avenues of approach vicinity leading to the government complex and military complex.	SA-13 systems are positioned to protect air avenues of approach vicinity, the coast, and inland key terrain.
72d Mechanized Battalion (BN)	Government complex	• Top tier BN. • Trained mostly in defensive operations as regional threats have postured for attacks in the past five years. • Retention of government complex and support of regional military partners are key strategies to maintain control of country. • Nested with coastal special purpose forces to provide early warning of regional threat presence.	• BN is manned at 90% strength. • Currently conduction training exercises for the next 15 days. • BN leadership has changed within the past 30 days.
65th Mechanized BN	Military complex	• Trained mostly in defensive operations as regional threats have postured for attacks over the past five years. • Focuses on using obstacle belts and flanking maneuvers.	• BN is manned at 75% strength. • Will initiate training exercises in the next 30 days.
97th Mechanized BN and 10th infantry BN (reserve forces)	Masked by terrain equidistant from government complex and military complex	• Trained in urban operations. • Well-versed in deception and information warfare.	• Both BNs are manned at 60% strength.

DESCRIBE HOW TERRAIN CAN AFFECT OPERATIONS

Terrain analysis is the collection, analysis, evaluation, and interpretation of geographic information on the natural and man-made features, combined with other relevant factors, to predict the terrain's effect on military operations (see MCRP 2-10B.4). It also addresses the effects of weather and climate on these features. Terrain analysis is a continual process, as changes in the operational environment can alter the analysis of its effect on friendly, adversary, and enemy activities and operations.

A command can operate in two types of terrain—natural and urban. Both terrain types are analyzed using KOCOA considerations:

- *Natural terrain analysis* focuses on airspace, surface, and subsurface areas.
- *Urban terrain analysis* also focuses on airspace, surface, and subsurface areas, but must also consider internal and external supersurface areas (See Chapter 10, Figure 10-4).

Analyze the Military Aspects of Terrain

Geospatial Intelligence provides foundational maps and charts, tailored detailed terrain analysis and full spectrum imagery intelligence. The GEOINT capability generally resides within the intelligence battalion throughout major subordinate commands, smaller contingents of GEOINT analysts are also found within the infantry regiments, Marine littoral regiment, as well as operational MEBs and MEUs. The GEOINT sections provide detailed terrain analysis prior to, and during the conduct of operations. The GEOINT capability can be deployed down to the infantry battalion or Marine aircraft group level with additional capability to the regimental landing team.

Geospatial information is derived from data collected through many different sources including platforms and sensors used for imagery data, subsurface sensors, water-based platforms, ground sensors, or humans and open-source information, such as population demographics. Geospatial information can be separated into seven major categories:

- Aeronautical safety of navigation.
- Maritime safety of navigation.
- Topographic safety of navigation.
- Elevation.
- Human geography.
- Geographic names and boundaries.
- Geodetic magnetic and gravimetric data (such as effects on geo-positional systems), navigation tools, surveying, and systems of map grids and coordinate systems.

Full spectrum imagery intelligence can augment terrain analyses but also determine adversarial posture and order of battle, provide force protection posture, change detection, support to targeting, helicopter landing zone studies, raid packages, gridded reference graphics and more. Imagery intelligence is derived from the analyses of overhead or ground based imagery in the

form of visual electro-optical, infrared), synthetic aperture radar and more. GEOINT products may be available classified or unclassified. For more detailed information reference the National System for Geospatial intelligence publication *Geospatial Intelligence Basic Doctrine*.

Tasking, collections, production, exploitation, and dissemination (also known as TCPED) as well as intelligence, surveillance and reconnaissance (ISR) support are coordinated through the MEF-level intelligence operations cell and the MEF ISR collections requirements manager (also known as CRM). Additionally, the National Geospatial-Intelligence Agency provides enhanced GEOINT support capabilities at the MEF level.

At the MEF level, RFIs and essential elements of information drive production and ISR collections. Reference the *Generic Intelligence Requirements Handbook* for additional information.

Geospatial intelligence support should be planned in accordance with the Appendix J of the Annex B of the OPLAN.

Throughout terrain analysis, staff collaboration can assist in identifying and addressing factors such as cross-country mobility, canalizing terrain, LOS impacts on weapon use, terrain impacts on CBRN weapon use, communications dead space, LOCs (transportation, communications, and power), vegetation types and distribution, surface and subsurface (man-made and natural) areas and materials, obstacles (man-made and natural), significant infrastructure, flood zones, bathymetrics, and helicopter and amphibious landing zones (LZs).

Observation and Fields of Fire. Observation pertains to the condition of weather and terrain that permits a force to see friendly, enemy, and neutral personnel, systems, and key aspects of the environment. Commanders evaluate their observation capabilities for electronic and optical LOS surveillance systems, as well as for unaided visual observation. Typically, the highest terrain provides the best observation (For LOS [height of eye] versus statute miles [horizon range], see Appendix C).

In natural terrain, there are limitations on observation caused by relative, localized, and often subtle variations in terrain elevations. These limitations are known as intervisibility lines. Intervisibility is the condition of being able to see one point from the other. Figure 4-3 shows how an observer at Position A can see up the slope to Position B, but the ridgeline prevents the observer from seeing Position D, and the valley prevents the observer from seeing Position C. Whatever the observer cannot see becomes a masked area. An observer at Position B can see Positions A, C, and D because this observer is on the intervisibility line.

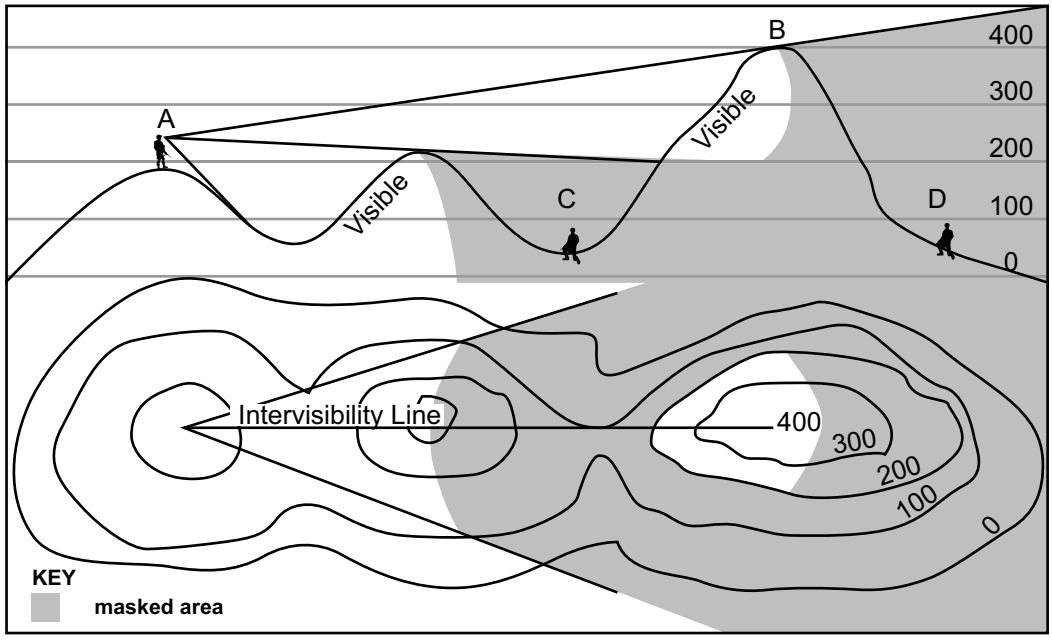


Figure 4-3. Intervisibility Line Example.

Observation can also be limited by adverse weather, smoke, the time of day, and the amount of illumination at night. In urban terrain, observation is primarily limited by man-made structures as well as the activity and debris associated with human activity. Analyzing observation and fields of fire in urban terrain is more complicated than it is for natural terrain. When evaluating observation and fields of fire for urban terrain, analysts must consider surface, subsurface, supersurface, external, and internal areas.

> *NOTE:* Adversary and enemy forces could seek to exploit observation advantages from areas that friendly forces might not consider. For example, adversary or enemy forces might use a building protected under the rules of engagement (religious buildings) to observe friendly forces. Additionally, adversary or enemy forces might use subterranean portal positions to identify friendly forces' movement routes.

Field of fire is "the area that a weapon or group of weapons may cover effectively from a given position" (*USMC Dictionary*). A unit's field of fire is directly related to its ability to observe. Evaluation of observation and fields of fire identifies—

- Potential engagement areas.
- Defensible terrain, which offers good observation and fields of fire.
- Specific equipment or equipment positions.
- Areas where forces are most vulnerable to observation and fires.
- Visual dead space.

Analyzing fields of fire includes evaluating all direct and indirect fire weapon systems in a command's inventory. An ideal field of fire for direct fire weapon systems is an open area where the adversary or enemy can be seen and has no protection out to the maximum effective range of that weapon.

Both observation and fields of fire are based on LOS. A LOS is the unobstructed path from a Marine's weapon, weapon sight, electronic sending and receiving antennas, or piece of reconnaissance equipment from one point to another. In other words, a LOS is a straight line from one point to another. There are two types of LOSs typically evaluated during terrain analysis:

- Horizontal LOS is an unobstructed path from a Marine's weapon, weapon sight, laser designator, and electronic sending and receiving antennas.
- Oblique (or vertical) LOS assists in planning air defense systems locations, selecting LZs and drop zones (DZs), and selecting FARPs.

Identifying areas vulnerable to adversary or enemy aerial information collection systems assists in selecting friendly battle positions. Establishing LOS and identifying intervisibility lines are critical to analyzing observation and fields of fire because they have a bearing on LOS direct fire weapons, antennas, reconnaissance, and some electro-optical systems. Identifying intervisibility lines can assist in identifying potential adversary or enemy locations as well as those locations where friendly forces can evade detection from adversary or enemy forces.

An effective technique for analyzing observation and fields of fire is creating a map displaying observation and fields of fire. Computer-generated terrain applications can assist in producing observation and fields of fire graphics that depict expected ranges and locations of non-present, decreased, or increased observation and fields of fire. An ideal field of fire for direct fire weapons is an open field in which the adversary or enemy can be seen and has no protection from fires. Analysts identify features of terrain that allow good observation for indirect fire weapons and determine if the terrain has any effect on fires support missions. Figures 4-4 and 4-5 show LOS analysis used to determine observation and fields of fire in natural terrain and urban terrain, respectively.

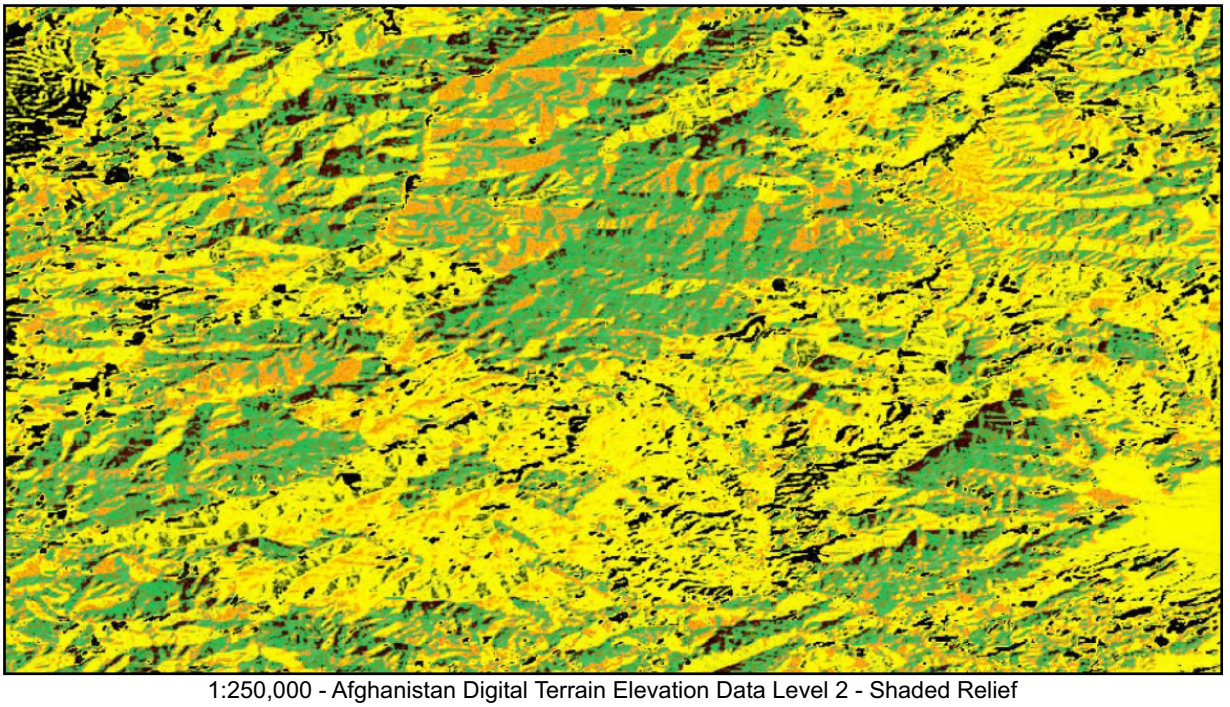


Figure 4-4. Observation and Fields of Fire (Natural Terrain).

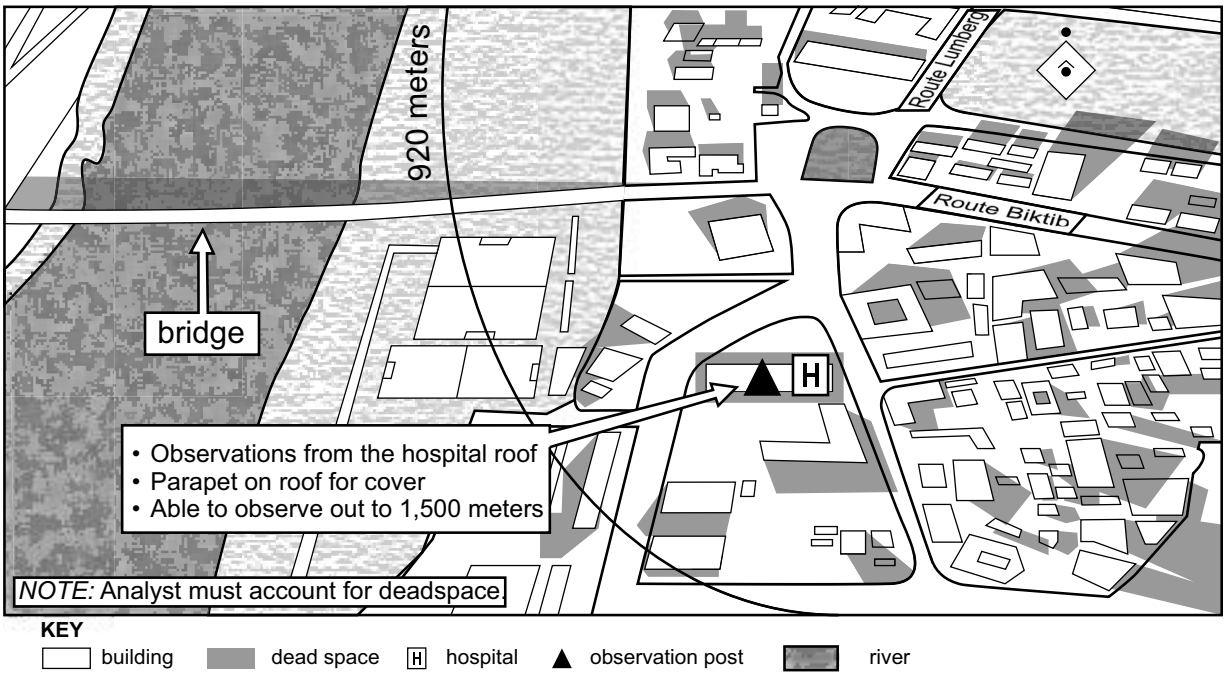


Figure 4-5. Observation and Fields of Fire (Urban Terrain).

Avenues of Approach. An AA is an air or ground route of an attacking force of a given size leading to its objective or to key terrain in its path. All COAs that involve maneuver depend on identifying available AAs. During offensive tasks, AA evaluation leads to —

- A recommendation on the best AAs to a command's objective.
- The identification of avenues available to the enemy for counterattack, withdrawal, or the movement of reinforcements or reserves.

During defensive tasks, it is important to identify AAs that support adversary or enemy offensive capabilities and avenues that support the movement and commitment of friendly reserves. Avenues of approach are developed by identifying, categorizing, and grouping two or more mobility corridors. Avenues of approach are then evaluated and prioritized based on the ability for each AA to support maneuver at various echelons and provide offensive and defensive maneuver options.

Mobility corridors are areas that are relatively free of obstacles where a force can be canalized due to terrain restrictions allowing military forces to capitalize on the principles of mass and speed. Identifying mobility corridors requires knowledge of friendly and adversary or enemy forces and their preferred tactics.

The best mobility corridors use unrestricted terrain that provides enough space for a force to move in its preferred doctrinal formations while avoiding major obstacles. For example, mobility corridors can follow, the direction of roads, trails, rivers, streams, ridgelines, subway lines, foot paths, tunnels, and human-sized drainage ditches. Factors other than obstacles and mobility might require evaluation when identifying mobility corridors.

Mobility corridors, like obstacles, are a function of the type and mobility of the force being evaluated. Military forces, such as mechanized infantry or armored units, require large open areas to move and maneuver. Irregular forces are less effected by present obstacles and terrain that would typically hinder movement of a large formation. Mobility corridors can be determined based on terrain constrictions.

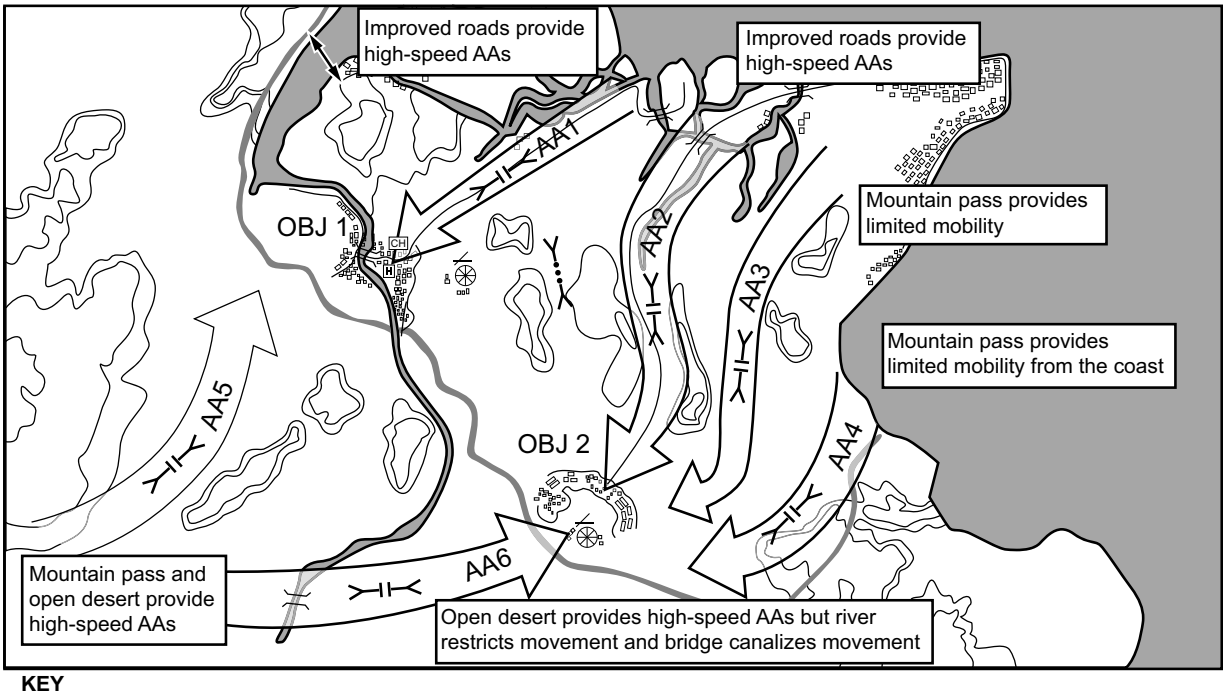
Mobility corridors are categorized by the size or type of force they can accommodate. Mobility corridors can also be categorized by likely use. For example, a mechanized force requires logistical sustainment; therefore, a mobility corridor through unrestricted terrain supported by a road network is generally more desirable. A dismounted force might be able to use more restrictive corridors associated with the arctic tundra, swamps or marshes, jungles, or mountains that may or may not have a road network. Due to their rate of march and lack of fire power, dismounted forces require a more covered and concealed route for survivability to reach their objective.

Avenues of approach consist of a series of mobility corridors through which a maneuvering force must pass to reach its objective (See Figures 4-6 and 4-7). An AA must provide ease of movement and enough width for dispersion of a force large enough to significantly affect the outcome of the operation. Mobility corridors are classified based on the distance between the terrain features that form the corridor. Mobility corridor ranges are not absolute but reflect the relative and approximate distance between terrain features. Table 4-2 identifies these classifications and the typical widths of mobility corridors for a mechanized force.

Table 4-2. Maximum Distance Between and Typical Widths of Mobility Corridor.

Avenue of Approach	Cross-country mobility corridor classification	Approximate distance between terrain features (in kilometers)
Division	Regiment	10 kilometers
Regiment	Battalion	6 kilometers
Battalion	Company	2 kilometers
Typical widths of mobility corridors		
Unit		**Width**
Division		6 kilometers
Regiment		3 kilometers
Battalion		1.5 kilometers
Company		500 meters

Evaluating AAs is a combined effort requiring the entire staff to identify those AAs that best support adversary, enemy or friendly capabilities. The AAs should be prioritized based on how well each supports the ability to timely and efficiently meet the desired end state. Once AAs are evaluated for suitability, they are prioritized based on how well each supports maneuver. Avenues of approach are evaluated for suitability in terms of access to key terrain and adjacent AAs, degree of canalization and ease of movement, sustainability (LOC support), and access to the objective.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 4-6. Avenues of Approach with Mobility Corridors (Natural Terrain).

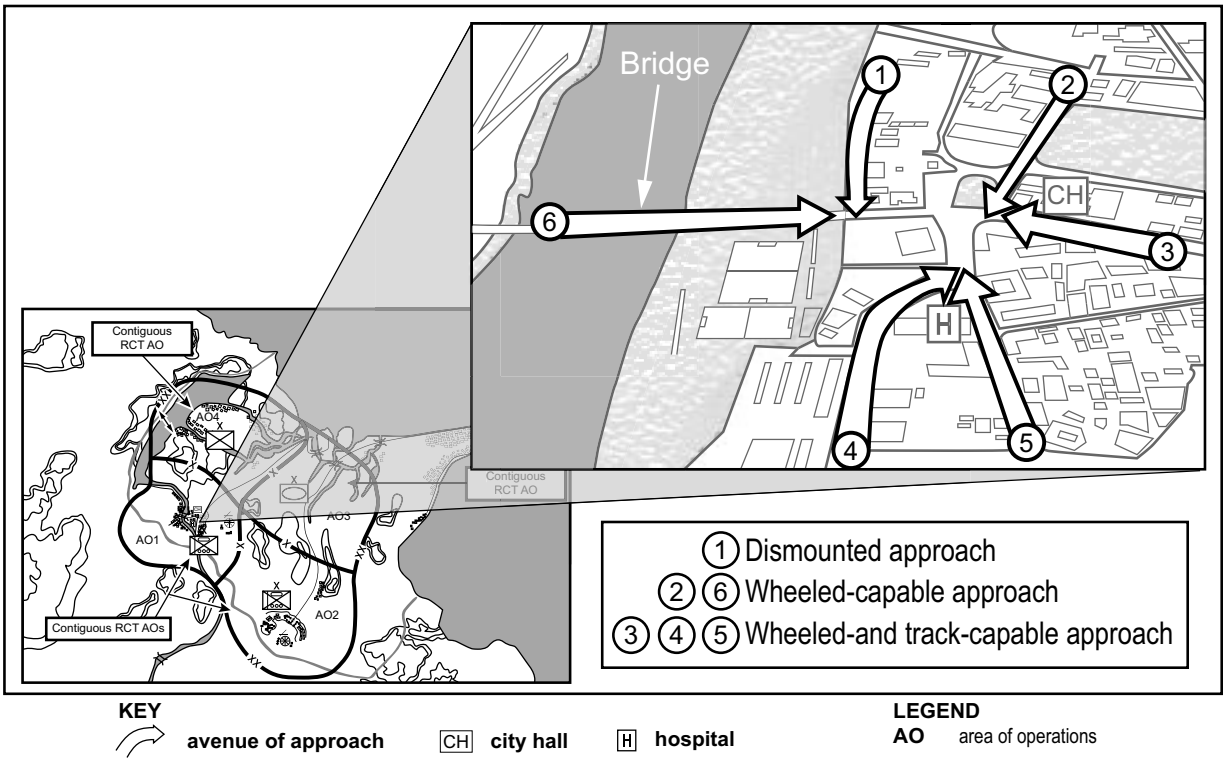


Figure 4-7. Avenues of Approach (Urban Terrain).

Key Terrain. Key terrain is "any locality, or area, the seizure or retention of which affords a marked advantage to either combatant" (DoD Dictionary). In natural terrain environments dominated by restrictive terrain features, high ground can be key terrain because it dominates an area with good observation and fields of fire (see Figure 4-8). In an open or arid environment, a draw or wadi can be key terrain because it offers good cover and concealment.

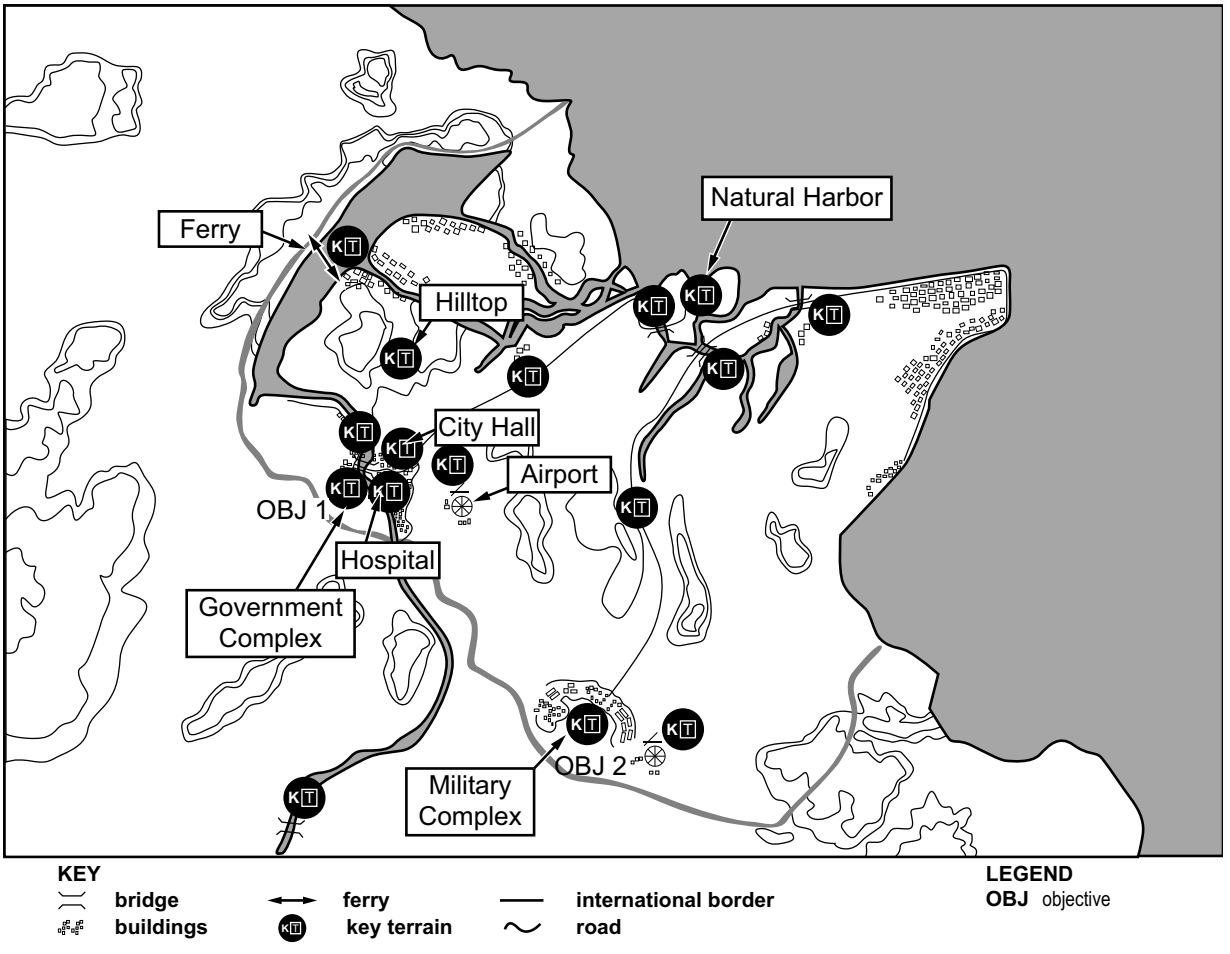


Figure 4-8. Key Terrain (Natural Terrain).

In urban terrain environments, infrastructure (such as bridges, medical facilities; intersections; industrial complexes; and economic, social, and government institutions) can be considered key terrain (see Figure 4-9). This includes the local population and certain local groups or individuals. For example, control of a bridge might equate to control over an AA. However, the command needs to consider the operational and strategic effect on the civil dimension when deciding to control a bridge.

Key terrain is evaluated by assessing the effect of its control by either force. A technique that aids this assessment is evaluating the other four military aspects of terrain to assist in determining key terrain.

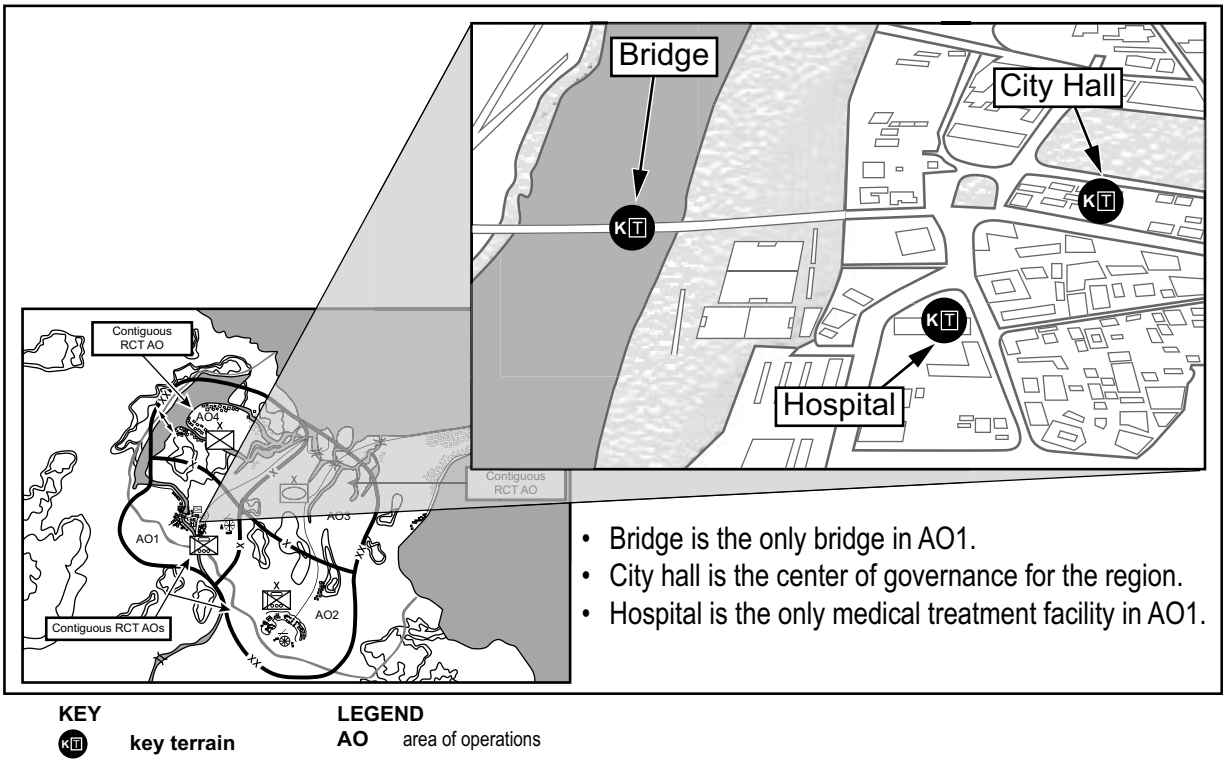


Figure 4-9. Key Terrain (Urban Terrain).

Key Terrain Considerations

Control of a bridge can negatively impact commerce, LOC support, military load class of supporting LOCs, and access to the objective. An example of economic or social institution as key terrain is the main bazaar in a town because whoever controls the bazaar or market controls the town. Economic health of the market will be key to the economic health of the area. If the adversary or enemy can maneuver through and control the key terrain of the market, the adversary or enemy can shut down the town and the economy.

An example for a government institution being key terrain is the local police, who can exert a great deal of influence on the local population (elections, law enforcement, tribal politics, other). Tactical use of terrain is often directed at increasing the capability for applying combat power and at the same time forcing adversaries into areas to reduce their ability to apply combat power.

In the offense, key terrain features are usually forward of friendly dispositions and are often assigned as objectives. Adjacent terrain features might be key terrain if their control is necessary for the continuation of the attack or the accomplishment of the mission.

In the defense, key terrain is usually within or behind the defensive area, such as:

- Terrain that gives good observation over AAs to and through the defensive position.
- Terrain that permits the defender to cover an obstacle by fire.
- Areas along a LOC that affect the use of reserves or sustainment operations.

In counterinsurgency operations, key terrain might include portions of the population, such as:

- Political, tribal, or religious groups or leaders.
- A localized population.
- Infrastructure.
- Governmental organizations.

Decisive terrain is key terrain whose seizure and retention are mandatory for successful mission accomplishment. Key terrain is not necessarily decisive terrain. Decisive terrain has an extraordinary effect on the mission. The successful accomplishment of the mission depends on seizing, retaining, or denying the use of the terrain to an adversary or enemy force. Commanders designate decisive terrain and communicate to the staff and subordinate commanders how important the terrain is to the concept of operations.

Obstacles. An obstacle is "any barrier designed or employed to disrupt, fix, turn, or block the movement and maneuver, and to impose additional losses in personnel, time, and equipment" (DoD Dictionary).

Examples of obstacles to ground mobility include but are not limited to buildings, mountains, steep slopes, dense forests, rivers, lakes, noncombatants, urban areas, minefields, trenches, certain religious and cultural sites, and wire obstacles (concertina wire, barbed wire, and overhead wire).

Obstacles affect certain types of movement differently:

- *Mounted movement*. Obstacles such as rivers, lakes, swamps, dense forested areas, road craters, rubble in the street, or densely populated urban areas can have a greater effect on mounted movement than on dismounted movement.
- *Dismounted movement*. Obstacles such as minefields, concertina wire, or steep slopes are more effective against dismounted movement.

Obstacles to air mobility include terrain features that—

- Exceed the aircraft's service ceiling.
- Affect nap-of-the-Earth (NOE) flight. (Note: "nap" is near as possible.)
- Affect aircraft lift capabilities.
- Force the aircraft to employ a particular flight profile. (Examples include tall buildings, cellular telephone towers, power lines, rapidly rising terrain features, mountains, smoke, geologic features, high mountains, and other obscurants. High mountainous regions can impact rotary- and fixed-wing aircraft lift capabilities.)

Obstacles can also decrease the effectiveness of information-related capabilities to influence adversary or enemy operations and activities, friendly populations, and neutral populations. For example, mountains might block terrestrial-based signals used to broadcast surrender appeals and morale-lowering messages to adversary or enemy-held territory or messages to populations explaining the intent of US operations. Use of other message delivery platforms might be necessary to compensate for local terrain effects (Figures 4-10 and 4-11 illustrate natural terrain and urban terrain obstacles, respectively).

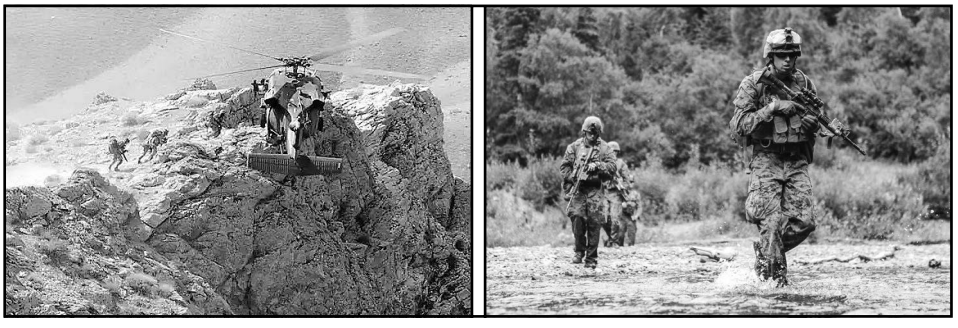


Figure 4-10. Natural Terrain Obstacle Examples.

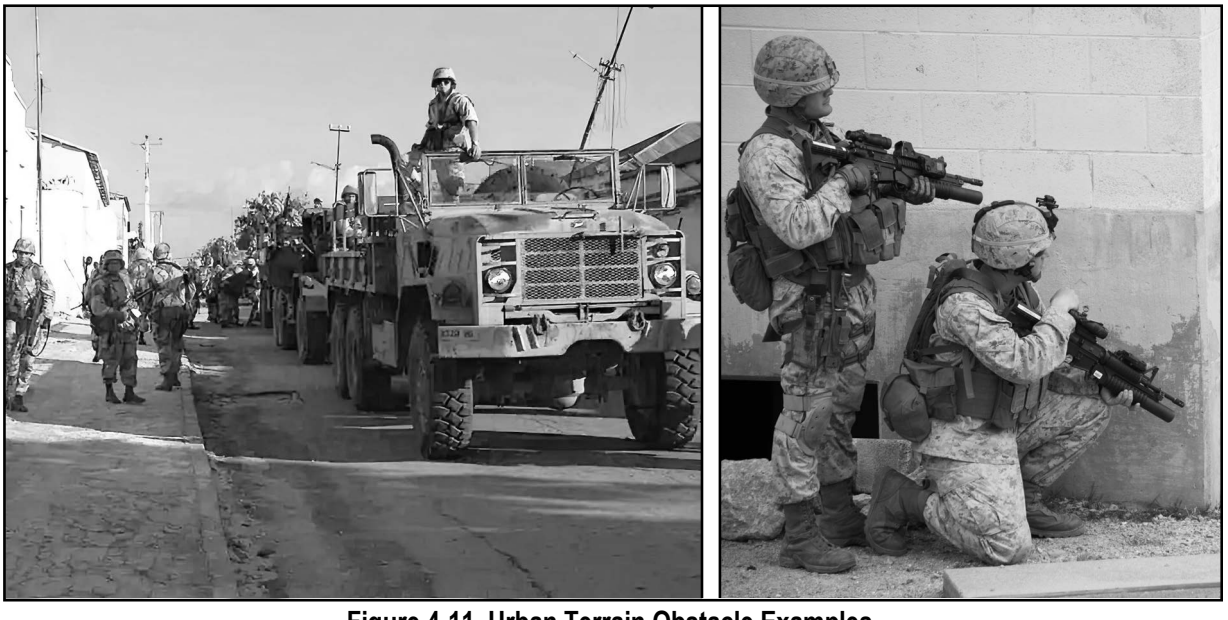


Figure 4-11. Urban Terrain Obstacle Examples.

Cover and Concealment. *Cover* is the "protection from the effects of direct and indirect fire. It can be provided by ditches, caves, riverbanks, folds in the ground, shell craters, buildings, walls, and embankments" (*USMC Dictionary*). Cover is the physical protection from bullets, fragments of exploding rounds, flame, nuclear effects, and biological and chemical agents. Cover does not necessarily provide concealment. An example of cover without concealment is a bunker in plain sight that is intended for the protection of personnel (See Appendix C for examples of cover).

Concealment is "protection from observation or surveillance" (*USMC Dictionary*). It degrades the adversary's or enemy's ability to observe forces, equipment, or positions. Concealment can be provided by trees, underbrush, tall grass, cultivated vegetation, weather conditions (such as snow, fog, or rain), as well as man-made camouflage. Concealment does not necessarily provide cover.

Line of sight analysis determines the observation, fields of fire, and cover and concealment the terrain will provide to both friendly and adversary or enemy forces. The following example combined with Figure 4-12 illustrate the concept of cover and concealment in natural terrain and LOS analysis. Figure 4-13 illustrates the concept of cover and concealment in urban terrain.

LOS Example

The masked areas lie behind terrain that is level with or higher than the defensive position. One cannot see into the masked areas or fire direct weapons into them. One does not have observation or fields of fire behind the masking terrain. The masked areas provide the attacker cover from the defender's direct fire and concealment from the defender's observations. If the adversary or enemy performs proper analysis, then the adversary or enemy will select one or more of the approach routes.

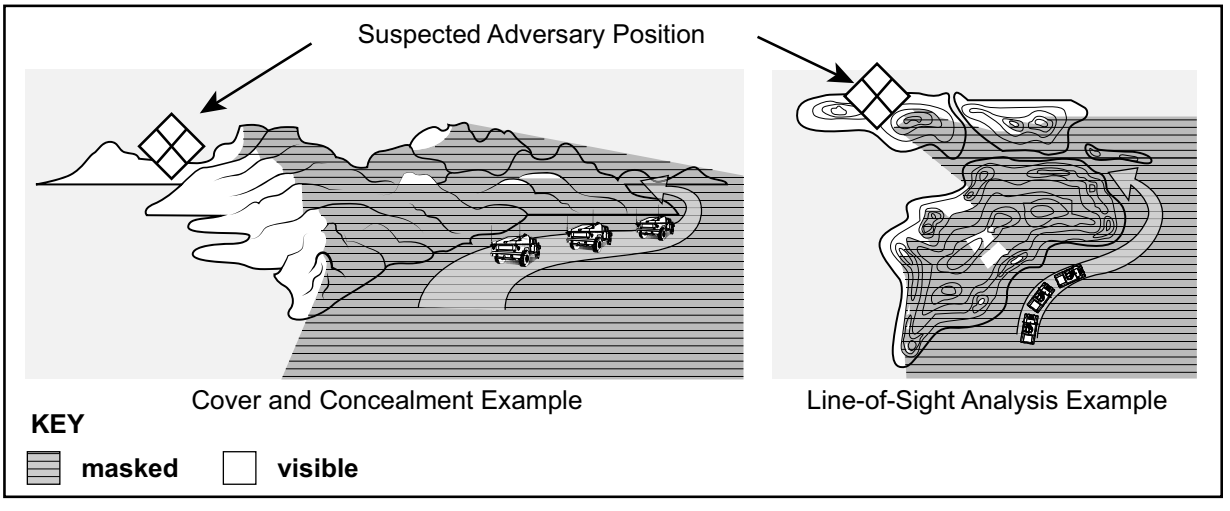


Figure 4-12. Cover and Concealment (Natural Terrain) and Line-of-Sight Analysis Examples.

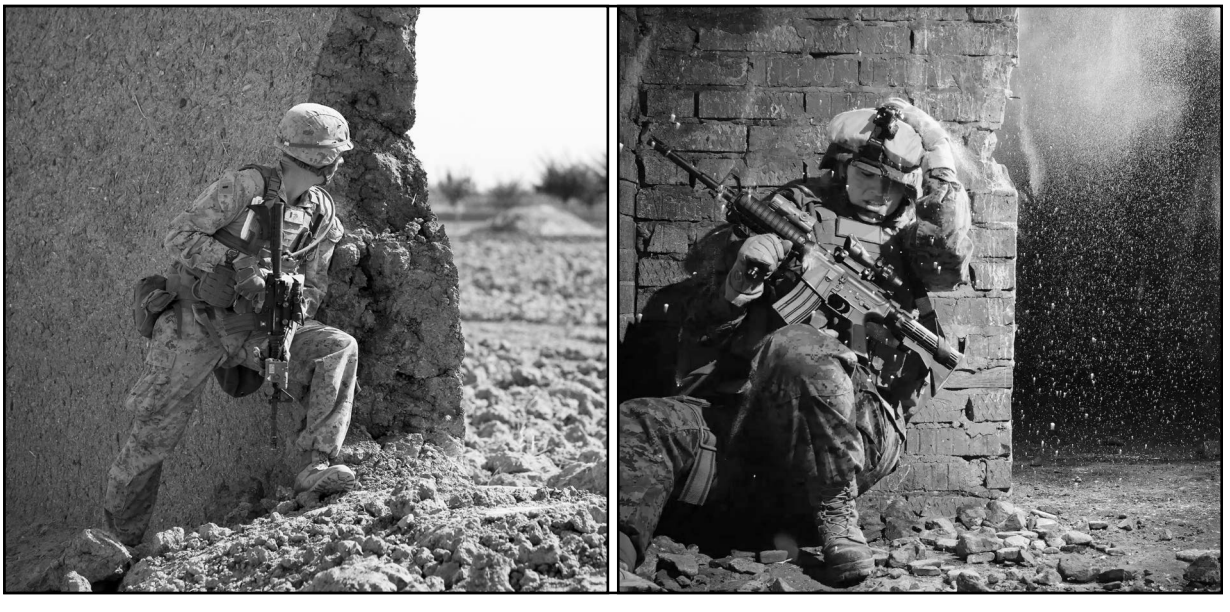


Figure 4-13. Cover and Concealment (Urban Terrain) Examples.

Evaluate Terrain Effects

After determining terrain characteristics, the staff must determine terrain effects on friendly and adversary or enemy operations. The primary analytic tools used to determine these effects are the MCOO and the terrain effects matrix.

Modified Combined Obstacle Overlay. The MCOO is "a joint intelligence preparation of the operational environment product used to portray the militarily significant aspects of the operational environment, such as obstacles restricting military movement, key geography, and military objectives" (JP 2-0). Some specific aspects include the following:

- Friendly, adversary, and enemy AAs.
- Mobility corridors.
- Natural and man-made obstacles.
- Terrain mobility classifications.
- Key terrain.

The combined obstacle overlay provides a basis for identifying ground AAs and mobility corridors. Unlike the cross-country mobility, the combined obstacle overlay integrates all obstacles to vehicular movement, such as built-up areas, slope, soils, vegetation, and hydrology, into one overlay. The overlay depicts areas that impede movement (severely restricted and restricted areas) and areas where friendly, adversary, and enemy forces can move unimpeded (unrestricted areas).

The MCOO is tailored to the mission and is a collaborative effort involving input from the entire staff. It depicts the terrain according to mobility classification. These classifications are severely restricted, restricted, and unrestricted:

- Severely restricted terrain severely hinders or slows movement in combat formations unless some effort is made to enhance mobility. Enhancing mobility can include committing engineer assets to improving mobility or deviating from doctrinal tactics, such as moving in columns instead of line formations, or at speeds much lower than those preferred. For example, severely restricted terrain for armored and mechanized forces is typically characterized by steep slopes and large or densely spaced obstacles with little or no supporting roads. A common technique used to depict this type of terrain on overlays and sketches is marking the areas with green cross-hatched diagonal lines. Another technique is color-coding the areas in red (see Appendix C for examples of severely restricted terrain for mechanized or armored forces).
- Restricted terrain hinders movement to some degree. Little effort is needed to enhance mobility, but units might have difficulty maintaining preferred speeds, moving in combat formations, or transitioning from one formation to another. Restricted terrain slows movement by requiring zigzagging or frequent detours. Restricted terrain for armored or mechanized forces typically consists of moderate-to-steep slopes or moderate-to-densely spaced obstacles, such as trees, rocks, or buildings. Swamps or rugged terrain are examples of restricted terrain for dismounted infantry forces. Logistical or sustainment area movement might be limited to poorly developed roads, which may restrict their movement rates or

volume. A common and useful technique to depict restricted terrain on overlays and sketches is marking the areas with green diagonal lines. Another technique is color-coding the areas in yellow (see Appendix C for examples of restricted terrain for mechanized or armored forces).

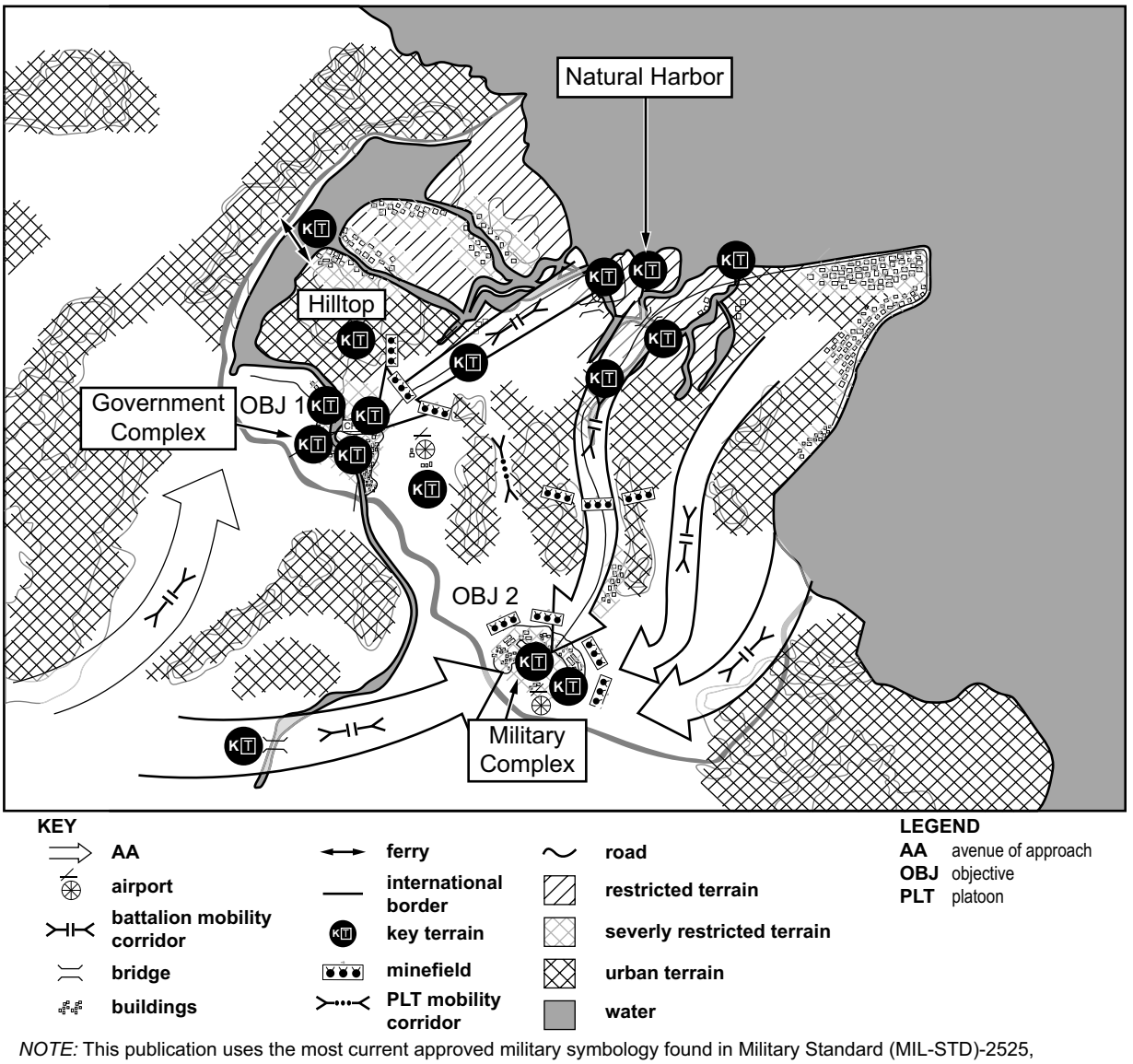
- Unrestricted terrain is free from any restriction to movement. Nothing needs to be done to enhance mobility. Unrestricted terrain for armored or mechanized forces is typically flat to moderately sloping terrain with scattered or widely spaced obstacles such as trees or rocks. Unrestricted terrain allows wide maneuver by the forces under consideration and unlimited travel supported by well-developed road networks. No symbology is needed to show unrestricted terrain on overlays and sketches.

Terrain mobility classifications are not absolute but reflect the relative effect of terrain on the different types and sizes of movement formations. They are based on the ability of a force to maneuver in combat formations or to transition from one type of formation to another. The staff should consider the following:

- Obstacles are only effective if they are covered by observation and fire. However, even undefended obstacles can canalize an attacker into concentrations, which are easier to detect and target or defend against. Obstacles are often shown in green on map overlays.
- When evaluating the terrain's effect on more than one type of organization (for example, mounted or dismounted), obstacle overlays reflect the mobility of the particular force.
- The cumulative effects of individual obstacles should be considered in the final evaluation. For example, individually, a gentle slope or a moderately dense forest might prove to be an unrestrictive obstacle to vehicular traffic; together, the combination of the slope and dense forest might prove to be restrictive.
- The staff should account for the weather's effects on factors that affect mobility.
- The classification of terrain into various obstacle types reflects only its relative effect on force mobility. There are many examples of a force achieving surprise by negotiating supposedly impassable terrain.

Figure 4-14 is an example of a MCOO developed for natural terrain. For urban terrain, graphics typically depict the following:

- Population status overlays (population centers, urban areas, political boundaries).
- Logistics sustainability overlays.
- Lines of communications.
- Route overlays (street names, patterns, and widths).
- Bridges (underpass and overpass information).
- Potential sniper and ambush locations. (This data will likely be a separate overlay.)
- Key navigational landmarks.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 4-14. Modified Combined Obstacle Overlay (Natural Terrain).

In developing urban terrain overlays, the following should be depicted:

- *Natural terrain*. The underlying natural terrain, such as rivers, streams, hills, valleys, forests, desert, bogs, and swamps, on which man-made infrastructure is superimposed.
- *Man-made infrastructure*. Streets, bridges, buildings, railways, canals, sewer systems, subway systems, military bunkers, traffic control points; building density, construct, and dimensions; functional zone disposition; and street construct, materials, disposition, and dimensions.
- *Key facilities, targets, and terrain*. Banks, hospitals, police stations, industrial plants and factories, media and information facilities, bridges, airports, seaports, electric power grids, oil facilities, military facilities, key residences and places of employment, waterways; tall structures (skyscrapers); choke points; street patterns and intersections; industrial complexes; other facilities; and construction or population density.

- *Obstacles*. Rubble and vehicles on the road; fixed barriers; masking of fires, burning of buildings, and other fire hazards; rivers and lakes; power lines and cell phone towers; population; trenches and minefields; certain religious or cultural sites; and wire obstacles (concertina wire, barbed wire).

  NOTE: In urban terrain, the staff should depict storm and drainage systems as well as public transportation routes, which can be obstacles to future friendly operations.

In developing urban terrain graphics, the staff should also consider the following:

- The street level necessary to support the smallest adversary, enemy, or friendly unit size, and the local street names whenever possible (official and unofficial).
- The width of routes in urban terrain. Narrow routes can hinder military vehicle movement.
- The use of certain vehicle-mounted weapon systems. Buildings and other structures can degrade the use of certain vehicle-mounted weapon systems due to the lack of weapon traverse space or ability to aim above certain angles.
- Surface structure composition (cobblestone, concrete, dirt), along with elevation and slope.
- Construction status (building or destroying) if development is underway.
- Time pattern plots, as necessary, to show local population use in terms of movement.
- Parking areas with weight restrictions, electrification of public transport, local airports, heliports, runways, inland-ports, and any known pipelines (with their status [active, inactive] and dimensions).

Terrain Effects Matrix. Using the MCOO as a guide, a terrain effects matrix (Table 4-3) describes KOCOA factor effects on friendly and enemy operations.

Table 4-3. Terrain Effects Matrix.

KOCOA aspects (military aspects of terrain)	Terrain Effects
Key terrain	• Airfield used for resupply and troop movements. • Dam controls water flow on the river and is the enemy's primary objective.
Observation and fields of fire	• Sparse vegetation on generally flat desert terrain with observation of 3 to 5 kilometers. • There are 10 kilometers between intervisibility lines. • Limited air support observation due to sparse terrain and the Earth's curvature. • Fields of fire for direct fire are 300 to 500 meters for small arms. • Intermediate breaks in observation and fields of fire due to runoffs and cuts. • Likely engagement area at Julian pass. • Likely engagement area 1000 meters north of L'viv.
Cover and concealment	• Cover by direct fire systems is provided by intervisibility lines. • Concealment is limited by the open terrain and sparse vegetation.
Obstacles	• Restrictive runoffs and cuts run throughout the area of operations with an average depth of 5 to 10 feet and an average width of 20 feet that runs 6 to 10 kilometers long. • Above-ground oil and transport pipeline (which are severely restrictive terrain). that runs through the central width of the area of operations.
Avenues of approach	• Primary and secondary road systems for high AAs. • Generally flat terrain with brigade-sized mobility corridors between small villages. • Railroad in the north running east to west. • AA2 is the recommended AA due to its ability to place organic weapon systems in range before observation from the enemy in the defense.

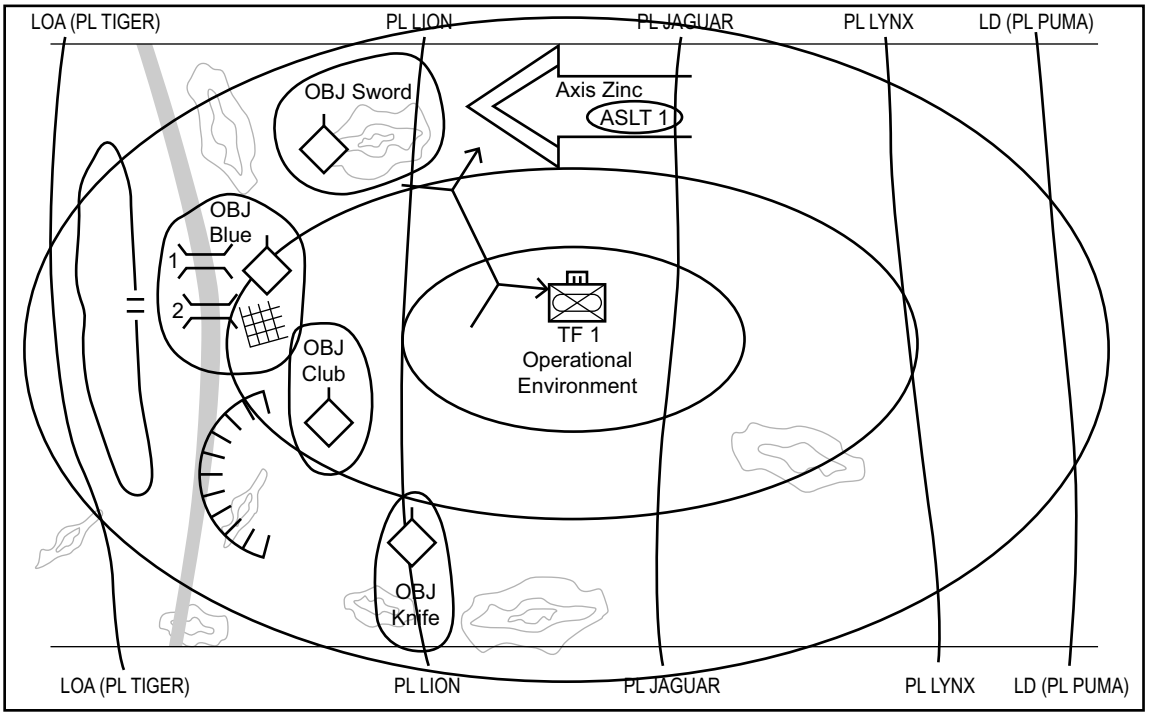
Techniques for Evaluating Terrain Effects. Analysts must relate the evaluation of terrain effects on the COAs available to adversary, enemy, and friendly forces. This evaluation should include a detailed discussion of KOCOA considerations. To evaluate terrain effects on COAs, analysts use four basic techniques:

- *Concentric ring*. The concentric ring technique establishes rings around US forces starting from a unit's base of operations and working outward. Each ring is balanced and based on the adversary's or enemy's environment and the commander's need to develop knowledge of the tactical situation. Once a certain information collection ring is in place, the unit then switches focus outward, establishing the next ring while still maintaining the previous ring(s) (Figure 4-15).
- *Belt*. The belt technique divides the AO into belts (areas) running the width of the AO. The shape of the belt is based on analysis of the mission variables (METT-T). The belt technique is most effective when terrain is divided into well-defined cross-compartments during phased operations (such as river crossings, air assaults, or airborne operations), or when the adversary or enemy is deployed in clearly defined belts. Belts can be adjacent to or overlap each other (Figure 4-16).
- *Avenue-in-depth*. Avenue-in-depth technique focuses on one AA. It is good for defense when canalized terrain inhibits mutual support (Figure 4-17).
- *Box*. The box technique is a detailed analysis of a critical area, such as an engagement area, a river-crossing site, or an LZ. It is most useful when time is constrained, and operations are conducted in a noncontiguous AO (Figure 4-18).

When properly applied, four basic techniques assist in identifying potential areas for use:

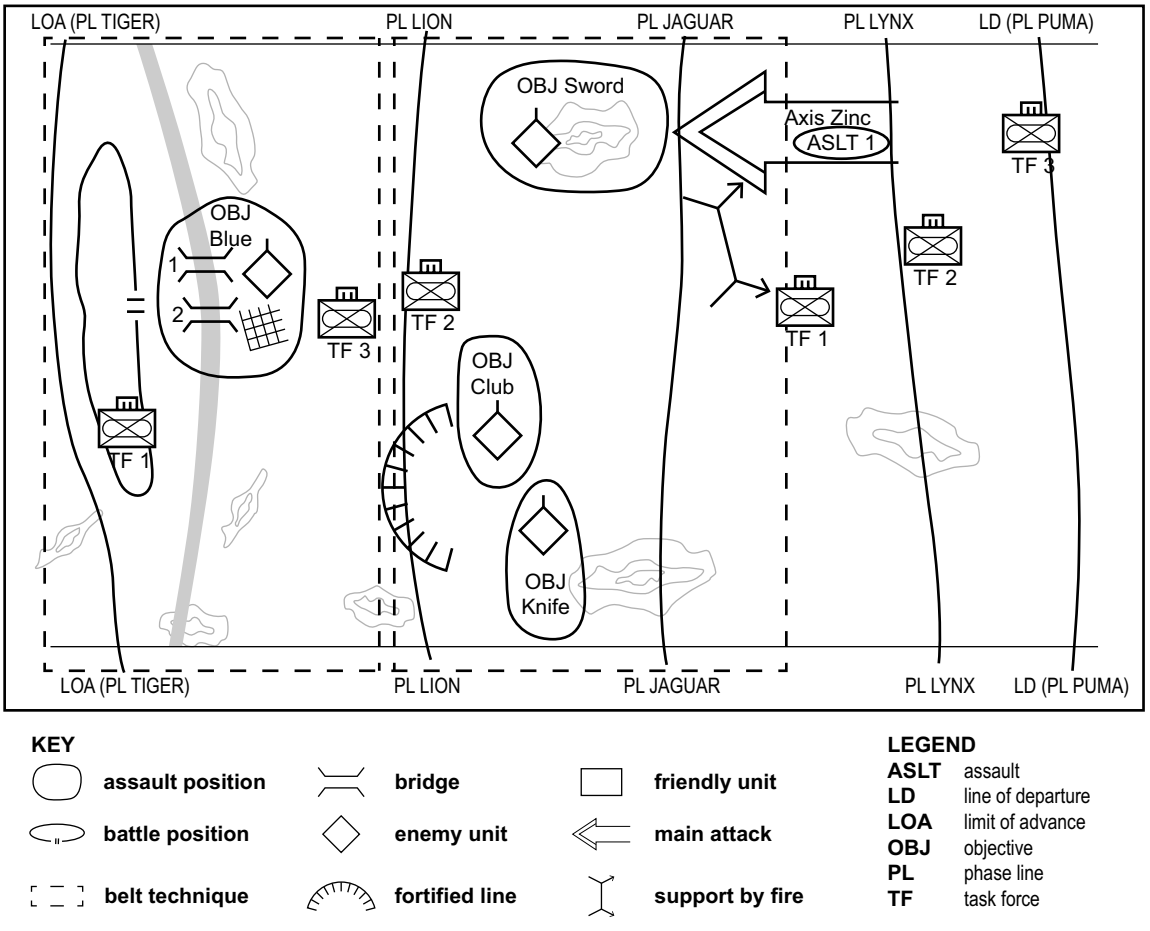
- *Engagement areas and ambush sites*. Using cover and concealment evaluation results, identify areas where the force is vulnerable to enemy fires:
  - If the command is attacking, these are areas where friendly forces are vulnerable to enemy fires.
  - If the command is defending, these are potential engagement areas.
- *Battle positions*. Identify covered and concealed positions that offer observation and fields of fire into potential engagement areas:
  - If the command is attacking, battle positions provide a start point for determining possible enemy COAs.
  - If the command is defending, these positions are potential defensive positions. These battle positions might also be used by friendly attacking forces to block adversary or enemy counterattacks.
- *Immediate or intermediate objectives*. Identify any areas or terrain features that dominate the AAs or assigned objective areas. These objectives usually correspond to areas already identified as key terrain.

The terrain rarely favors one type of operation throughout the width and breadth of the AO. Within a given area, certain subsectors affect various operations to varying degrees. Analysts must determine which areas of the AO favor each COA based on the location and nature of potential engagement areas, battle positions, and objectives. The analysis of the AO, intelligence estimate, and MCOO are useful tools for disseminating the terrain analysis results.



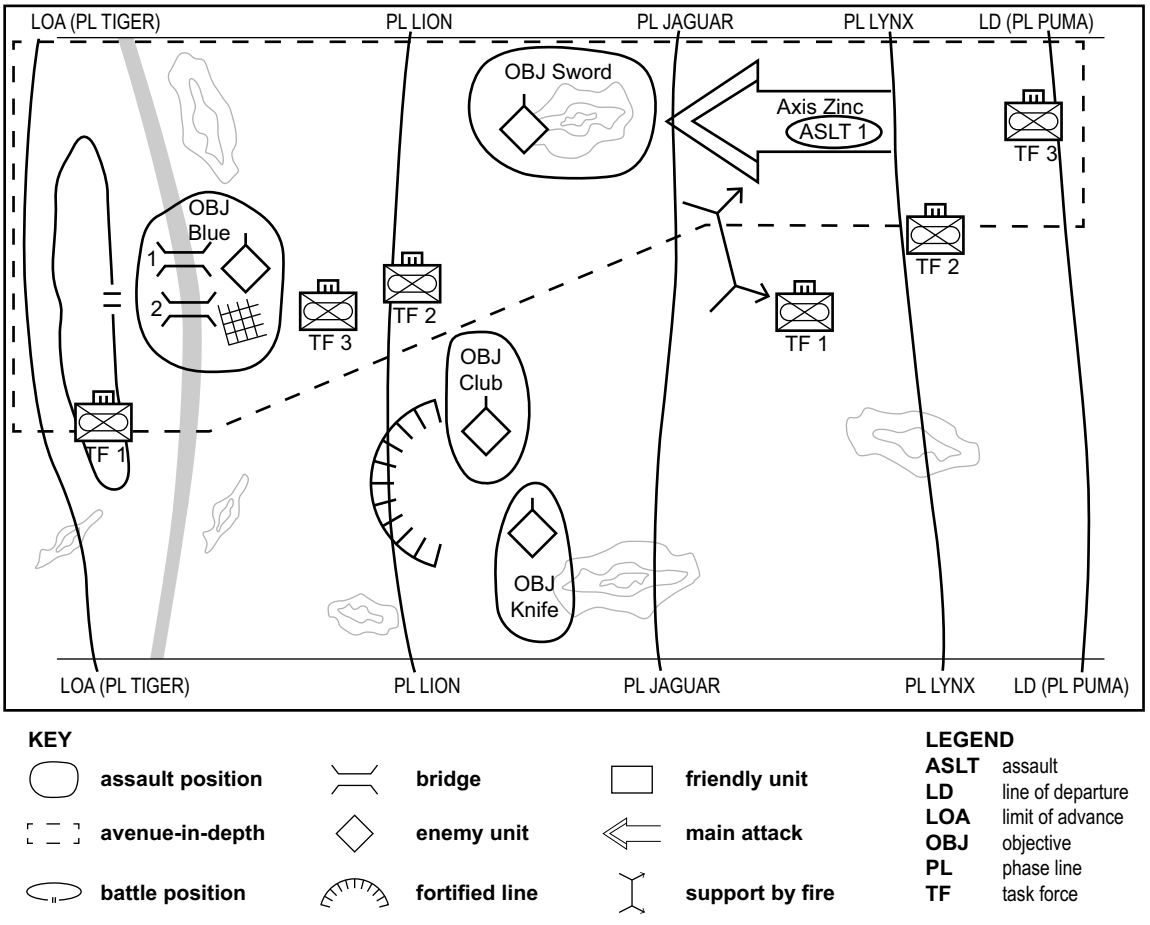
NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 4-15. Concentric Ring Technique.



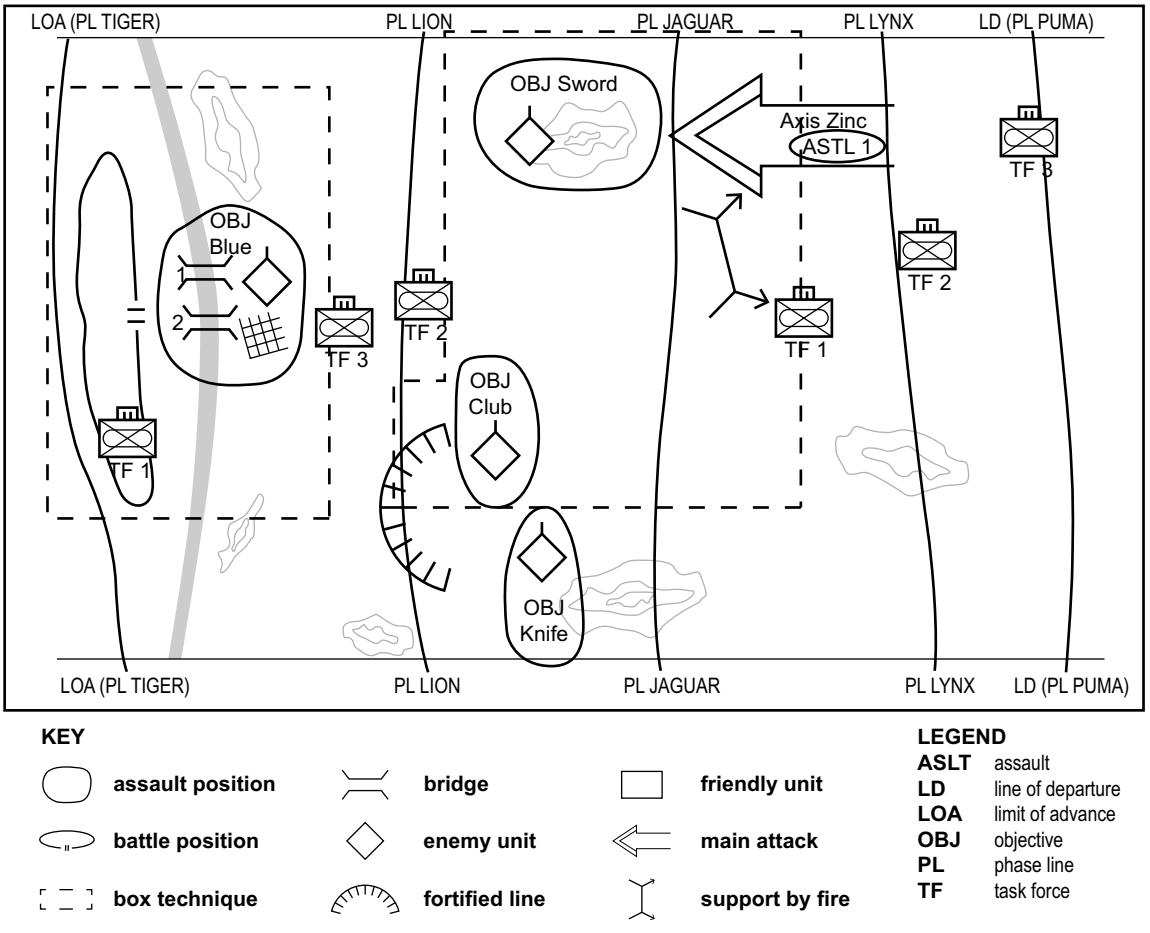
NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 4-16. Belt Technique.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 4-17. Avenue-in-Depth Technique.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 4-18. Box Technique.

DESCRIBE HOW WEATHER CAN AFFECT OPERATIONS

Weather analysis is the collection, processing, evaluation, and interpretation of relevant military aspects of weather. It is the evaluation of forecasted weather effects on operations. Analysts should evaluate the potential friendly, adversary and enemy effects of each aspect of weather. However, just as with terrain analysis, they should focus on the aspects that most affect operations and decision making. Each evaluation should begin with the local climatology, and the analysts should fine-tune the evaluation with the most current forecasts available. There are two sub-steps in weather analysis:

- Analyze the military aspects (characteristics) of weather.
- Evaluate the weather's effects on military operations.

Analyze the Military Aspects of Weather

The military aspects of weather are visibility, wind, precipitation, clouds, temperature, humidity, atmospheric pressure (as required), and sea state.

Visibility. Visibility refers to the greatest distance that prominent objects can be seen and identified by the unaided, normal eye. A major factor in evaluating visibility is the amount of available light based on weather conditions and illumination as determined by the following factors:

- *Begin morning nautical twilight* is "the start of that period where, in good conditions and in the absence of other illumination, the sun is 12 degrees below the eastern horizon and enough light is available to identify the general outlines of ground objects and conduct limited military operations" (JP 3-09.3, *Joint Close Air Support*). Light intensification devices are still effective and may have enhanced capabilities.
- *Begin morning civil twilight* is "the period of time at which the sun is halfway between beginning morning and nautical twilight and sunrise, when there is enough light to see objects clearly with the unaided eye" (JP 2-0). At this time, light intensification devices are no longer effective, and the sun is six degrees below the eastern horizon.
- *Sunrise* is the apparent rising of the sun above the horizon. Rising times depend on latitude.
- *Sunset* is the apparent descent of the sun below the horizon. Setting times depend on latitude.
- *End of evening civil twilight* is the point in time when the sun has dropped 6 degrees beneath the western horizon and is the instant at which there is no longer sufficient light to see objects with the unaided eye. Light intensification devices are recommended from this time until begin morning civil twilight.
- *End of evening nautical twilight* is the point in time when the sun has dropped 12 degrees below the western horizon and is the instant of last available daylight for the visual control of limited military operations. At end of evening nautical twilight, there is no further sunlight available.
- *Moonrise* is the time at which the moon rises above the horizon. Rising times depend on latitude.
- *Moonset* is the time at which the moon sets below the horizon. Setting times depend on latitude.

Other weather conditions can affect visibility as well. Temperature can affect the use of thermal sights. Ceiling can negate illumination provided by the moon. Additionally, precipitation and other obscurants can have varying effects as well. Low visibility is beneficial to offensive and retrograde operations because it conceals concentration of maneuver forces, thus enhancing the possibility of surprise. Low visibility hinders the defense because cohesion and control become difficult to maintain, reconnaissance operations are impeded, and target acquisition is degraded.

Wind. Sufficient wind speed from any direction can reduce the combat effectiveness of a force because of blowing dust, smoke, sand, precipitation, or battlefield induced contaminants. Strong winds and wind turbulence limit airborne, air assault, and aviation operations. High winds near the ground can lower visibility due to blowing dust; they also can affect some vehicle's movement or stability. Blowing sand, dust, rain, or snow can reduce the effectiveness or stability of radar systems, antennas, communications, and other electronic devices. High winds can also affect persistent friendly, adversary, and enemy detection systems like an aerostat or UASs. Evaluation of weather to support operations requires information on the wind at the surface as well as at varying altitudes and elevations.

Precipitation. Precipitation is any moisture falling from a cloud in frozen or liquid form. Rain, snow, hail, drizzle, sleet, and freezing rain are common types. Precipitation affects soil trafficability, visibility, and the functioning of many electro-optical systems needed for information collection. Heavy precipitation can affect sustainment, communications, personnel, military operations, information collection, and many civilian activities.

Clouds. Cloud cover affects ground operations by limiting illumination and can affect the thermal signature of targets. Cloud cover can degrade many intelligence sensors, target acquisition systems, and general aviation operations. Low cloud cover could increase the available level of light when there is ground-based light, such as what is available in urban areas. Excessive low cloud cover can also restrict visibility and limit safe aviation operations.

Ceiling is the lowest cloud layer, or obscuring phenomena above the Earth's surface, covering more than half the sky. It is reported as broken or overcast; it is not classified as few or scattered. Low ceilings also reflect sound waves back to the ground, increasing noise level, making engine noises of mechanized formations and generators, as well as explosions, gunfire, and artillery more audibly detectable.

Temperature. Temperature extremes can reduce the effectiveness of troops and equipment capabilities. They may affect the timing of major operations. For example, extremely high temperatures in a desert environment could require dismounted troops to operate at night. High temperatures will affect the lift capability of medium and heavy-rotary-lift. For example, during the summer months of Operation ENDURING FREEDOM in Afghanistan, the UH 60 could not carry its full complement of passengers. High temperatures can also increase fuel consumption in vehicles, cause overheating, and affect the muzzle velocity of both direct and indirect fire weapons (155-millimeter howitzers, sniper rifles, tanks). Low temperatures will also adversely affect personnel, equipment, and operations. Cold weather periods create an almost constant need for heated shelters; cause difficulty in constructing fortifications; increase the dependence on logistical support; and necessitate special clothing, equipment, and survival training.

Thermal crossover is "the natural phenomenon that normally occurs twice daily when temperature conditions are such that there is a loss of contrast between two adjacent objects on infrared imagery" (JP 3-09.3). Thermal crossover is the condition in which the temperature of a ground-based vehicle is the same as the surrounding land. As a result of this condition, thermal optics are unable to detect adversary or enemy vehicles until a temperature disparity exists between the land and the vehicles. Using weather specific software, METOC personnel can forecast for thermal crossover and determine specific times that the phenomenon will occur.

Humidity. Humidity is the state of the atmosphere with respect to water vapor content. Humidity will affect multiple areas within the battlespace to include storage of medical supplies and munition, radar effectiveness, and the distance sound will travel. High humidity affects the human body's ability to cool. Hence, troops in tropical areas might become less effective because of higher humidity levels. Humidity is usually expressed as either relative humidity or absolute humidity.

Atmosphere Pressure (As Required). Atmospheric pressure has a significant effect on aviation operations. Based on the elevation of the operational area, atmospheric pressure affects the lift capacity of aircraft, particularly rotary-wing and tiltrotor aircraft in mountainous terrain. When combined with extreme temperatures, atmospheric pressure increases the amount of runway an aircraft requires for takeoff

(See MCTP 13-10L, *Multi-Service Tactics, Techniques, and Procedures for Shipboard Helicopter and Tiltrotor Aircraft Operations*, for information on aircraft operations).

Sea State. Sea state is "a scale that categorizes the force of progressively higher seas by wave height" (*DoD Dictionary*). It is the general condition of the surface on a large body of water—with respect to wind waves and swell—at a certain location and moment. Sea State may preclude landing or resupply of landing forces and may cause debarkation to be cancelled, could endanger the use of landing craft, or in severe conditions degrade naval gunfire support. The sea state—

- Is characterized by statistics, including the wave height, period, and power spectrum.
- Varies with time, as the wind conditions or swell conditions change.
- Can either be assessed by an experienced observer, like a trained mariner, or through instruments like weather buoys, wave radar, or remote sensing satellites.

Evaluate the Weather's Effects on Military Operations. Weather has both direct and indirect effects on military operations. The following are examples of direct and indirect effects on military operations:

- Temperature inversions might cause some battle positions to be more at risk to the effects of chemical agents because of atmospheric inversion, a process that occurs when strong high pressure influences an area and prevents particulates from dispersing into the upper atmosphere.
- Local visibility restrictions, such as fog, can affect observation for friendly, adversary, and enemy forces. Severe restrictions to visibility often restrict aviation operations.
- Hot, dry weather might force friendly, adversary, or enemy forces to consider water sources as key terrain.
- Dense, humid air limits the range of loudspeaker broadcast, and can affect sonic deception, surrender appeals to adversary or enemy forces, and the ability to provide instruction to friendly or neutral audiences.
- Sandstorms with high silica content can decrease the strength and clarity of radio and television signals.

Weather and climate effects have an effect on seasonal outlooks, which have utility for seasonal decision making—for example, giving crop selection and rotation advice in a particular area that boosts plant growth. Knowing that a particular area may be susceptible to locust swarms may enable pesticide application to prevent such a swarm. If a drought is expected, civil affairs personnel might advise planting another crop that raises the benefit to the farmer. The following work aids assist in analyzing and describing weather effects on operations:

- METOC operational forecast, forecast and analysis charts are guides for determining the weather information needed for planning and operations (see Figure 4-19).

- Light and illumination data tables are guides for determining periods of high light and low light levels the light and illumination data needed for planning and operations (see Figure 4-20).
- METOC operational impacts charts are guides for determining the weather effects on personnel, weapons, and equipment needed for planning and operations (see Figure 4-21).

See MCRP 2-10B.6, *MAGTF Meteorological and Oceanographic Operations*, MCRP 2-10.2, *Operational Meteorology and Oceanography*, and JP 3-59, *Meteorological and Oceanographic Operations*, for additional weather-related operational and tactical decision aids.

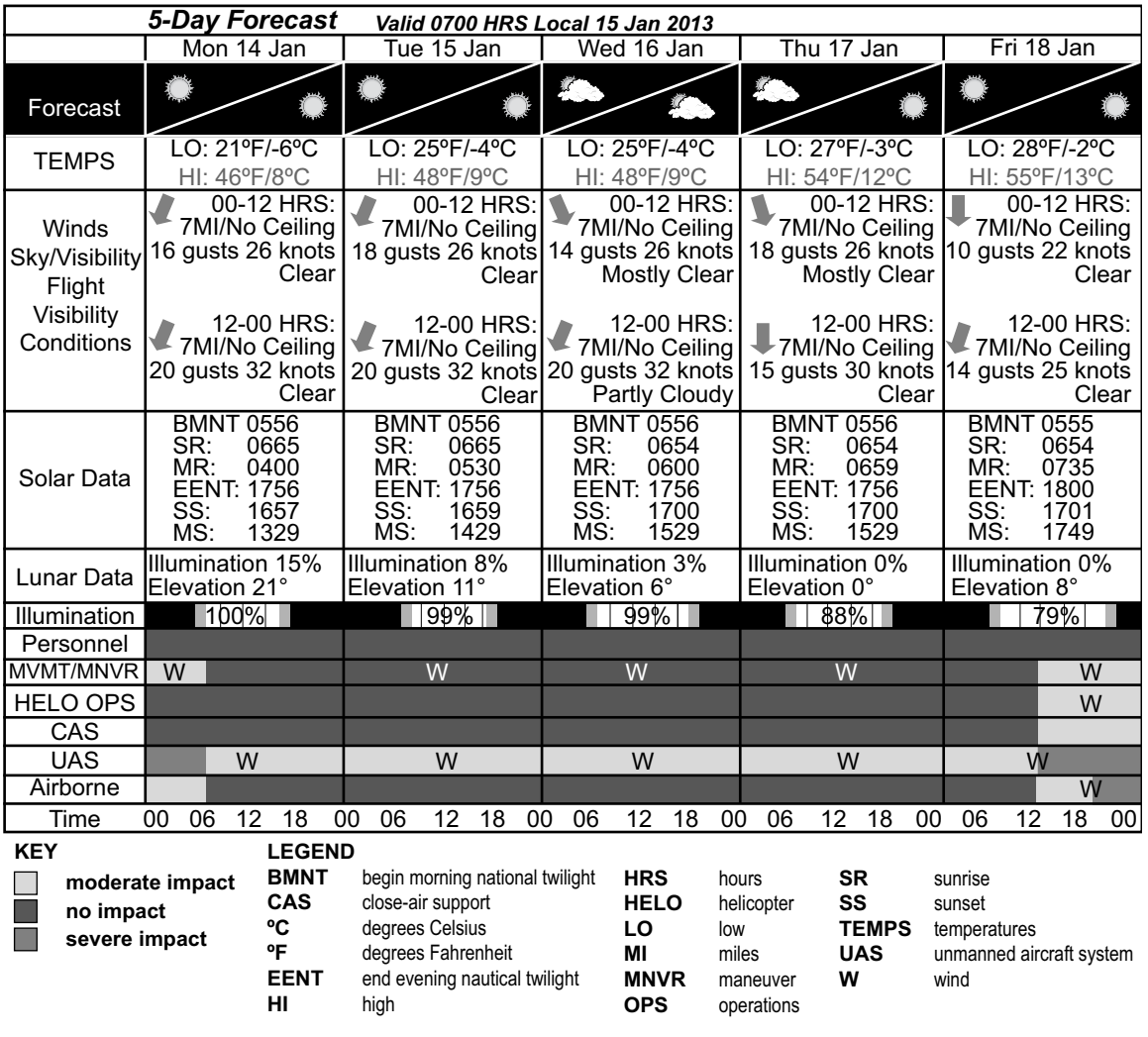


Figure 4-19. Weather Forecast.

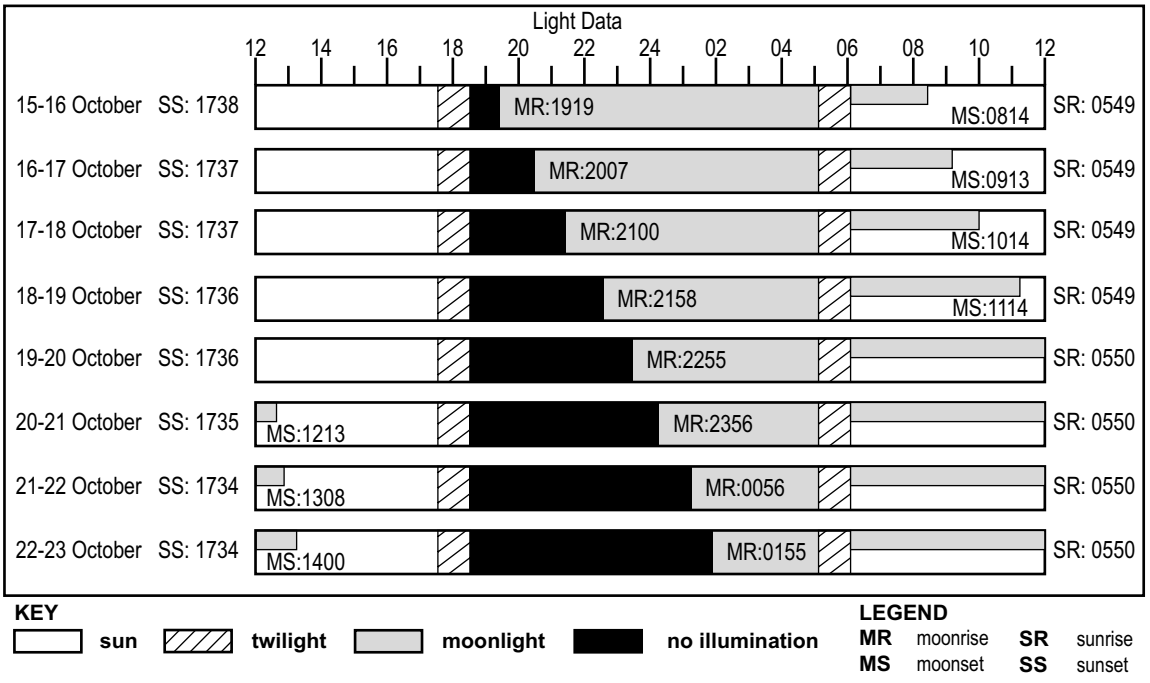


Figure 4-20. Light and Illumination Data Table.

Operation		06-09	09-12	12-15	15-18	18-21	21-24	00-03	03-06	Comment
INTEL	Dismounted Reconnaissance				C	C	C			
	Mounted Reconnaissance				C	C	C			
	Sensors									
	UAS (Based on what is assigned)								W	
Maneuverability (Based on unit composition - foot, wheel, track)					P	P				
AVN	Rotary-Wing	W								
	Fixed-Wing									
	Aircraft Intercept (Radar)									
	Heavy Fixed-Wing									
Airborne Operations										
Civil Considerations										
Indirect Fires (Mortars/Artillery)										
Engineers					P	P				
Laser or Thermal Operation				P	P	P				
MOPP IV			T	T	T	T				

KEY
moderate degradation
severe degradation

LEGEND
AVN aviation
C ceiling
INTEL intelligence
MOPP mission-oriented protective posture
P precipitation
T temperature
UAS unmanned aircraft system
W wind

Figure 4-21. METOC Operational Impacts Chart.

Tactical METOC support is rendered by METOC Marines to every Fleet Marine Forces element. Throughout the IPB process, METOC considerations are embedded within each step of planning to ensure a full understanding of environmental impacts across the full range of military operations. As a Service component, the Marine Corps specializes in amphibious landing—forcible entry from the sea. A core competency unique to the Marine Corps, amphibious

landings have specific METOC support requirements that must be exercised to ensure mission accomplishment. Current and forecast environmental conditions are applied to the array of vehicles used during amphibious insertions—sea states and surf zone conditions effect all amphibious landing craft differently, and a solid forecast is crucial when determining if an amphibious landing is a viable option.

The main amphibious platforms used by Marine Corps personnel are the amphibious assault vehicle; landing craft, air cushioned; combat rubber reconnaissance craft; landing craft, utility; and rigid-hull inflatable boat. Forecasting for amphibious landings requires an in-depth knowledge of the platforms used in the operation, as well as environmental parameters that establish go/no-go criteria. Each of these platforms has specific operational thresholds while operating over the open ocean as well as within the surf zone at the landing site. Before launching any amphibious assets, METOC personnel analyze sea and surf zone conditions, and in concert with topographic and imagery Marines, conduct environmental and geographical analysis on proposed beach landing sites. Key beach landing site analysis points include, but are not limited to:

- Hydrographic surveys (usually accomplished by force reconnaissance Marines or embedded Navy sea, air, and land teams).
- Beach slope (with a measurement of degrees between 1/30 – 1/60 is favorable, less than 1/30 or more than 1/60 is unfavorable).
- Soil composition.
- Breaker type (surf observations).
- Sea state.
- Modified surf index at the proposed landing time.
- Underwater hazards.
- Littoral current speed and direction.
- Immersion survivability time/water temperature.

Marine Corps METOC personnel work with their Navy METOC counterparts to provide a unified forecast. This coordination usually occurs aboard Navy amphibious ships but can also occur among Marine Corps METOC sections attached to intelligence units.

Example

During the D-day invasion at Normandy, surf zone conditions were extremely choppy; however, the date of 6 June 1944 was specifically chosen because that date offered a slight break in sea conditions that were otherwise impassable. Allied forces were able to execute a successful landing, and the German stronghold in France was finally broken.

Throughout the history of amphibious warfare, METOC conditions served a crucial role in operational planning and are no less important today. Figures 4-22 through 4-29 are examples of METOC products used during Navy and Marine Corps METOC collaboration while at sea (see Chapter 11 for additional examples of METOC products). They illustrate Marine Corps METOC support to amphibious operations. (For additional information on Navy and Marine Corps METOC collaboration while at sea and during the execution of METOC support, see MCRP 2-10B.6, NWP 3-59M or MCRP 2-10.2, and JP 3-59.)

Amphibious Landing Brief

Sky Condition:
Mostly clear, becoming mostly cloudy by the late afternoon

Visibility:
Unrestricted/Occasionally 2 to 3 miles with mist in the late evening

Maximum/Minimum Temperature:
67ºF/51ºF

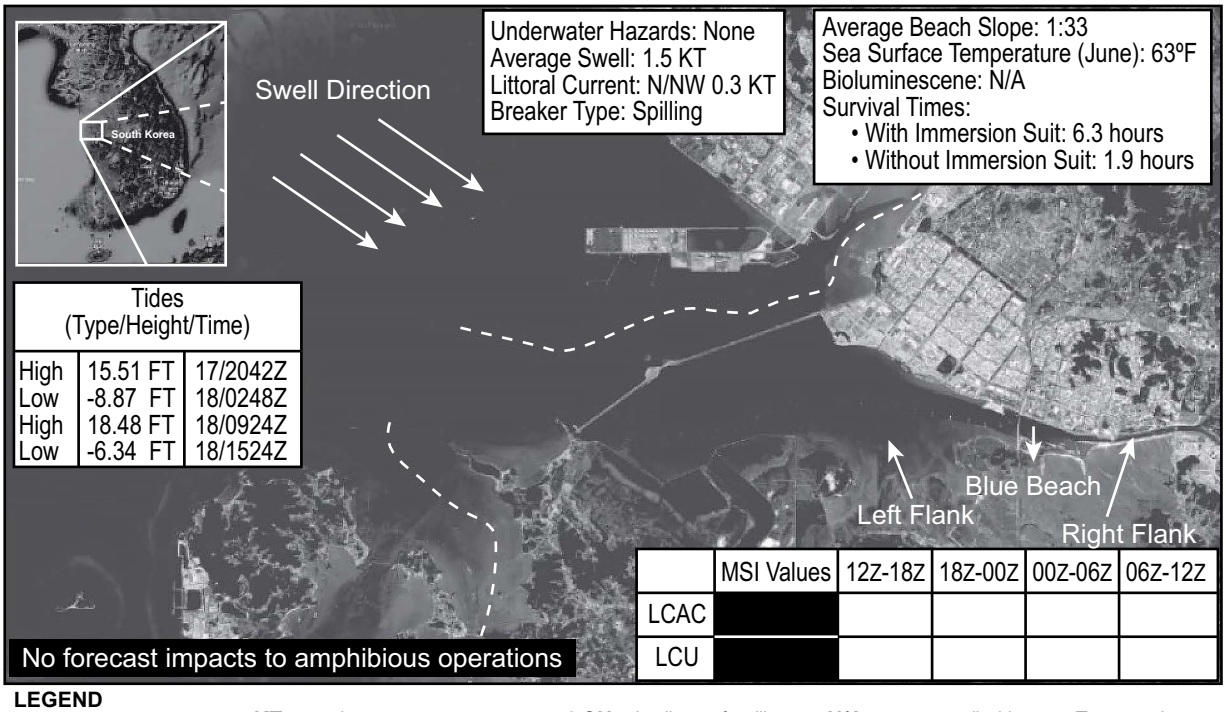
Winds:
Winds will be out of the north from 9 to 11 knots overnight

48-72 Hours Extended Outlook:
Another period of rain will affect the Camp Pendleton area on 27 Jan

Tidal Date for 24 Jan:		Surf Zone	Flight-Level Winds	
Time	**Depth**		**Altitude**	**Speed**
0408 hours	4.9 feet	Modified Surf Index: 2.0	1,000 feet	06005 knots
1212 hours	0.3 feet	Breaker Height: 1.5 feet	2,000 feet	07005 knots
1856 hours	2.8 feet	Breaker Angle: 10 degrees	3,000 feet	08005 knots
2218 hours	2.5 feet	Period: 13 seconds	4,000 feet	08007 knots
		Winds: 01005 knots	5,000 feet	09008 knots

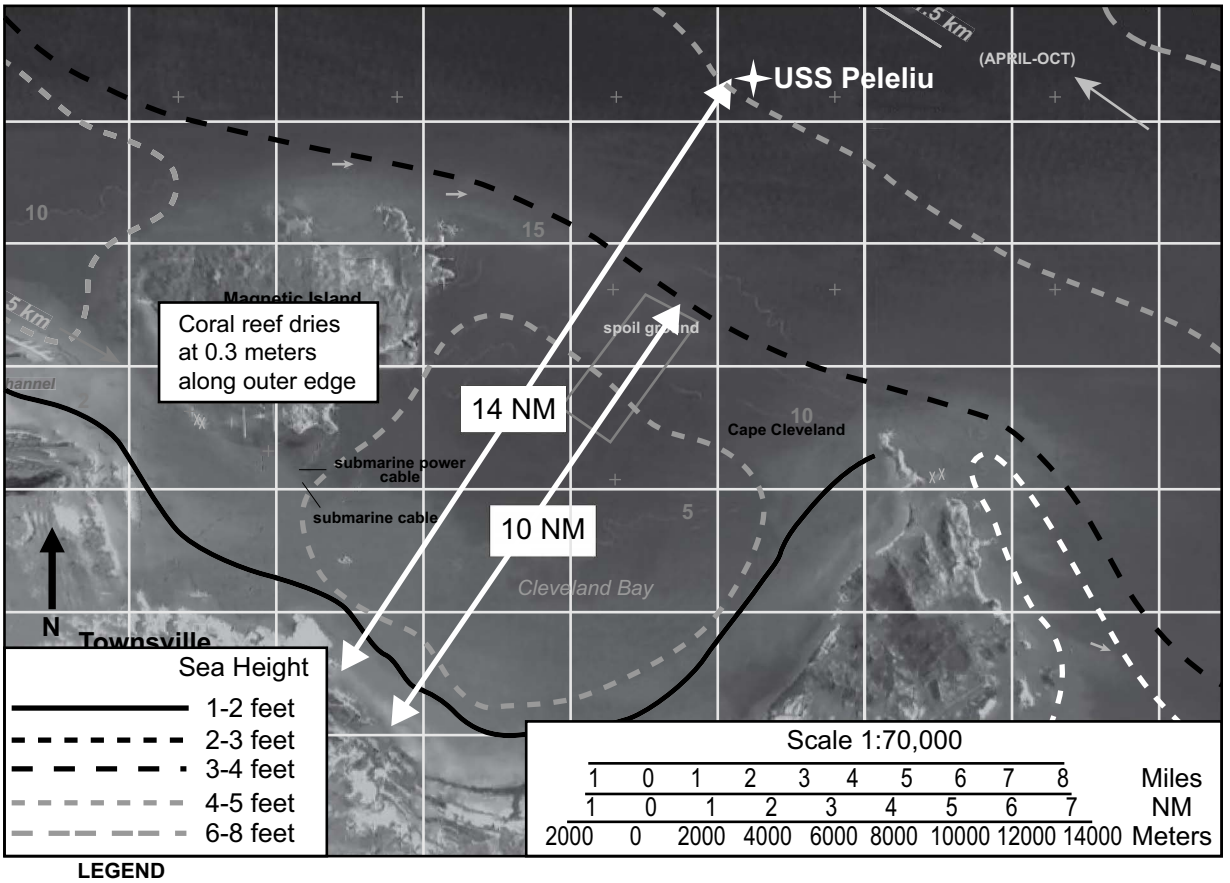
LEGEND
ºF degrees Fahrenheit

Figure 4-22. Amphibious Landing Weather Example.



LEGEND
ºF degrees Fahrenheit **KT** knot **LCU** landing craft, utility **N/A** not applicable **Z** zulu
FT feet **LCAC** landing craft, air cushion **MSI** modified surf index **N/NW** north/northwest **VT** valid time

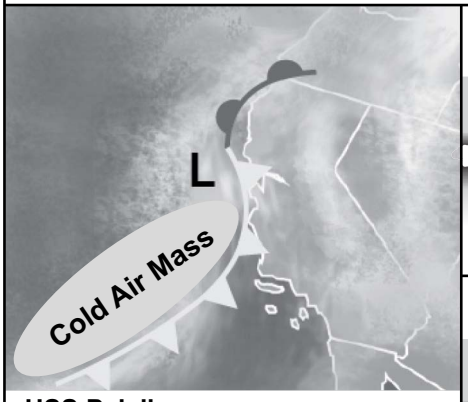
Figure 4-23. Beach Landing Site Example.



LEGEND
NM nautical mile **USS** United States Ship

Figure 4-24. Littoral Analysis Example.

96-Hour Forecast



USS Peleliu

A cold front will move over the southern California region today, bringing rain showers and thunderstorms late this afternoon and evening. The system will move through the area tonight and tomorrow morning, with precipitation expected to end by the early afternoon on Sunday.

Flight-Level Winds

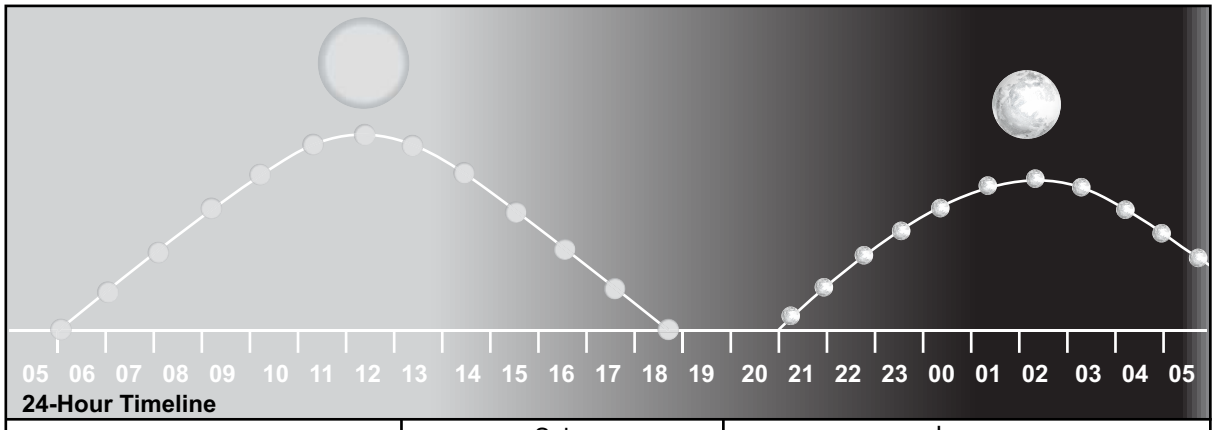
1,000 feet - 20,018 knots
2,000 feet - 20,020 knots
3,000 feet - 21,016 knots
4,000 feet - 25,020 knots
5,000 feet - 25,020 knots
10,000 feet - 26,035 knots
15,000 feet - 24,050 knots
20,000 feet - 23,060 knots
30,000 feet - 23,085 knots

Saturday Jan 4 Rain Showers	Sky CON: Mostly cloudy VIS: Unrestricted, 1 to 3 miles in moderate rain showers Winds: SW 10 to 12 knots becoming W/NW 18 to 20 knots by early evening MAX/MIN TEMP: 62ºF/49ºF Relative Humidity: 75% PRECIP: Afternoon rain showers and evening thunderstorms	TURB: LT/MOD SFC-150 FRZ LVL: 5,000 feet Icing: MOD MXD 080-160 In the evening Seas: W/NW 3 to 5 feet
Sunday Jan 5 Morning Rain	Sky CON: Mostly cloudy VIS: Unrestricted, 1 to 3 miles In rain showers and thunderstorms Winds: W/NW 15 to 17 G27 knots MAX/MIN TEMP: 54ºF/42ºF Relative Humidity: 85% PRECIP: Rain showers/ thunderstorms tampering off by early afternoon	TURB: MOD SFC-200 FRZ LVL: 5,000 feet Icing: MOD MXD 050-110 Seas: W/NW 3 to 5 feet
Monday Jan 6 Mostly Clear	Sky CON: Mostly cloudy VIS: Unrestricted Winds: W/NW 12 to 14 knots MAX/MIN TEMP: 57ºF/47ºF Relative Humidity: 55% PRECIP: None	TURB: None FRZ LVL: 7,500 feet Icing: None Seas: W/NW 4 to 7 feet
Tuesday Jan 7 Mostly Clear	Sky CON: Mostly cloudy VIS: Unrestricted Winds: W/NW 12 to 14 knots MAX/MIN TEMP: 57ºF/47ºF Relative Humidity: 55% PRECIP: None	TURB: None FRZ LVL: 9,000 feet Icing: None Seas: W/NW 4 to 7 feet

LEGEND

CON	conditions	**MOD**	moderate	**TEMP**	temperature
ºF	degrees Fahrenheit	**MXD**	mixed	**TURB**	turbulence
FRZ LVL	freeze level	**PRECIP**	precipitation	**USS**	United States Ship
L	low pressure	**SEAS**	sea conditions	**VIS**	visibility
LT	light	**SFC**	surface	**W/NW**	west/northwest
MAX/MIN	maxium/minimum	**SW**	southwest	**SW**	southwest

Figure 4-25. Example of 96-Hour Weather forecast.



Sunrise: 0517
Sunset: 1827
Hours of Daylight: 13:10
Moonrise: 2029
Moonset: 0834
% Illumination: 89
Begin Civil Twilight: 0421
End Civil Twilight: 1853
Begin Morning Nautical Light: 0421
End Evening Nautical Light: 1923

Solar			Lunar		
Time	Angle (Degrees)		Time	Angle (degree)	Luminous (LUX)	
0600	7.7		2200	11.3	.006	
0700	20.2		2300	23.6	.017	
0800	32.7		2400	35.9	.028	
0900	44.6		0000	47.8	.039	
1000	55.8		0100	59.4	.047	
1100	64.5		0200	68.3	.051	
1200	67.5	Rising	0300	71.4	.052	
			0400	35.8	.042	Rising
1300	62.7	Failing	0500	55.8	.032	Falling
1400	53.2		0600	31.3	.016	
1500	41.7					
1600	29.4					
1700	16.9					
1800	4.5					

Figure 4-26. Astronomical Data Weather Example.

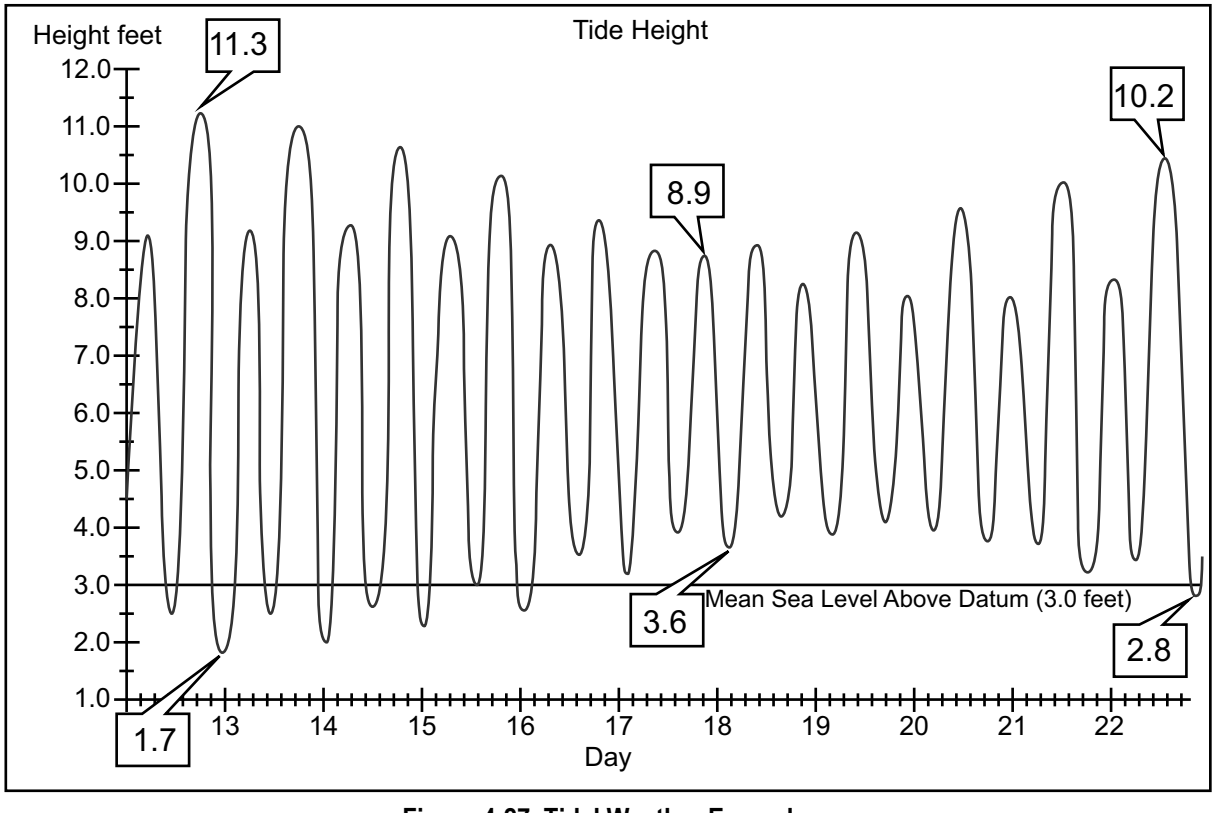
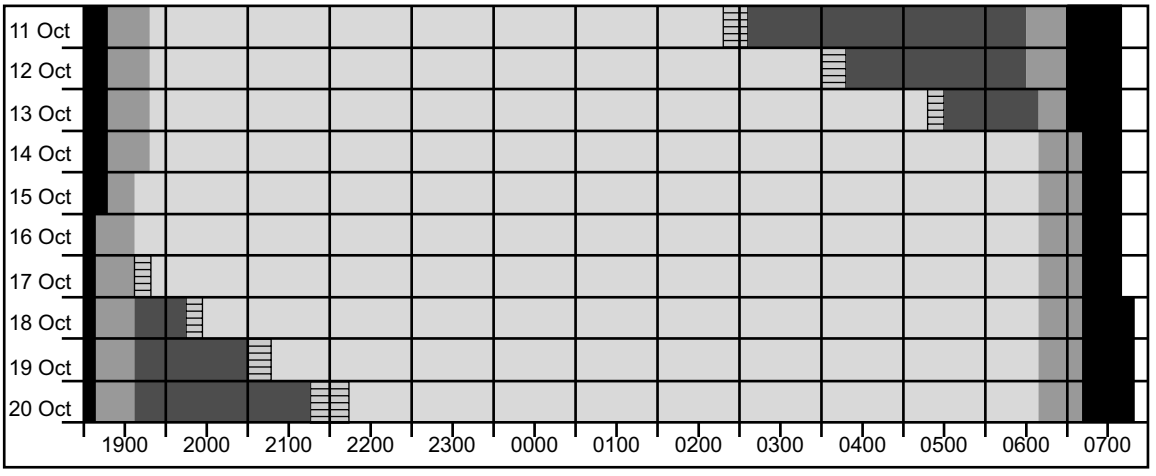


Figure 4-27. Tidal Weather Example.



Mean Astronomical Times:

Date	SR	SS	% ILLUM	BMNT	EENT
11-20 Oct	Oct 0655	1814	57%-99%-89%	0600	1908

KEY

civil twilight
low moonlight level (<0.0022 LUX)
nautical twilight
high moonlight level (≥ 0.0022 LUX)
moon below horizon
sun above horizon

LEGEND

BMNT begin morning nautical light
EENT end evening nautical light
ILLUM illumination
LUX luminous
OCT October
SR sunrise
SS sunset

Figure 4-28. Light Level Weather Example.

	0800	1200	1600	2000	0000	0400	48 HR	72 HR	96 HR
Fixed-Wing		Occasionally Severe Due to			C,V,TS	C,V,TS	C,V	C	
Rotary-Wing		Ceiling and Visibility			C,V,TS	C,V,TS	C,V	C	
Personnel	C	C	C	C,V	C,V,TS	C,V,TS	C,V	C	
UAS Operations	C	C	C	C,V	C,V	C,V	C,V	C	
Collections			C	C	C	C	C,V	C,V	C
Night Vision Goggle				C	C	C	C		
Communications				C	C	C	C		
Trafficability				P	P	P	P	P	
LCAC (Inner area)							S	S	
LCU (Inner area)							S	S	
ACV/AAVs	S	S	S	S	S	S	S	S	
CRRC/RHIB	S	S	S	S	S	S	S	S	

- Marginal-to-severe impacts to fixed-wing and rotary-wing assets, UAS operations, and collections due to extensive cloud cover, rain, low visibilities, and area of thunderstorms.
- Marginal-to-severe impacts to surface craft due to high seas during the 48-to 96-hour period.
- Severe impacts to personnel due to freezing temperatures on land.

KEY

no impacts
marginal impacts
severe impacts
not applicable

LEGEND

ACV amphibious combat vehicle
C ceiling
CRRC combat rubber reconnaissance craft
HR hour
HVI high-value individual
HVFL high-value facility list
HVIL high-value individual list
LCAC landing craft, air cushion
LCU landing craft, utility
P precipitation
RHIB rigid hull inflatable boat
S seas
TS thunderstorm
UAS unmanned aircraft system
V visibility

Figure 4-29. Operational Impacts Weather Example.

DESCRIBE HOW CIVIL CONSIDERATIONS CAN AFFECT OPERATIONS

Understanding civil considerations—the ability to analyze their effect on friendly, adversary, and enemy activities and operations—enhances several operational aspects including the selection of objectives; location, movement, and control of forces; use of weapons; and protection measures. The intelligence staff should leverage the rest of the staff (and outside agencies who have expertise in civil considerations) to aid the intelligence analysis in this area. Generating intelligence knowledge is an opportunity to leverage nonorganic units, agencies, organizations, or other Services not deploying with the unit but that have relevant regional knowledge. This is particularly true when accounting for cyberspace considerations, which might not be an organic expertise at the G-2/S-2 levels.

Civil considerations (ASCOPE) encompass the man-made infrastructure, civilian institutions, and the attitudes and activities of the civilian leaders, populations, and organizations within an AO and how these elements influence military operations. Civil considerations assist commanders in understanding the social, political, and cultural variables within the AO and their effects on the mission. Marine Corps staffs use ASCOPE to analyze civil considerations that are essential in supporting the development of effective operational plans. Table 4-5 presents one method of cross-walking civil considerations (including examples for each ASCOPE characteristic) with the

Table 4-4. Crosswalk of Civil Considerations (ASCOPE) with Operational Variables (PMSEII) .

	Areas	Structures	Capabilities	Organizations	People	Events
	Enclaves Municipalities Provinces Districts Political districts Voting/Party affiliation areas Shadow government influence areas	Courts (court house, mobile courts) Government centers Provincial/ District centers Meeting halls Polling sites	**Public administration:** • Civil authority • practices, and rights • Political system • stability, traditions • Standards and effectiveness **Executive and Legislative:** • Administration • Policies • Powers • Organization **Judicial/Legal:** • Administration • Capacity • Policies • Civil and criminal codes • Powers • Organization **Law enforcement:** • Dispute resolution, grievances • Local leadership • Degrees of legitimacy	Banks Business organizations Cooperatives Economic nongovernment organizations Guilds Labor unions Major illicit industries Large landholders Volunteer groups	United Nations representatives Political leaders Governors Councils Elders Community leaders Paramilitary members Judges Prosecutors	Elections Council meetings Significant speeches Security and military training sessions Significant trials Political Motivation Treaties Will

Table 4-4. Crosswalk of Civil Considerations (ASCOPE) with Operational Variables (PMSEII) (Continued).

	Areas	Structures	Capabilities	Organizations	People	Events
MILITARY	Areas of influence Areas of interest Areas of operations Safe havens or sanctuaries Multinational/ local nation bases Historic data on operations by opposition	Bases Headquarters (police) Known leader houses/ businesses	Doctrine Organization Training Materiel Leadership Personnel Manpower Facilities History Nature of civil-military relationships Resource constraints Local security forces Quick-reaction forces Insurgent strength Enemy recruiting	Host-nation forces present Insurgent groups Present and networks Multinational forces present Paramilitary organizations Fraternal organizations Civic organizations	Key leaders Multinational insurgent military	Combat Historical Noncombat Kinetic events Unit reliefs Loss of leadership
ECONOMIC	Commercial Fishery Forestry Industrial Livestock dealers Markets Mining Movement of goods/services Smuggling routes Trade routes Black market areas	Banking Fuel: distribution, refining, source Industrial plants Manufacturing Mining Warehousing Markets Silos, granaries, warehouses Farms/Ranches Auto repair shops	Fiscal: access to banks, currency, monetary policy Can tolerate drought Black market Energy Imports/Exports External support/aid Food: distributing, marketing, production, processing, rationing, security, storing, transporting Inflation Market prices Raw materials Tariffs	Banks Business organizations Cooperatives Economic nongovernment organizations Guilds Labor unions Major illicit industries Large landholders Volunteer groups	Bankers Employers/ Employees Labor occupations Consumption patterns Unemployment rate (if this exists) Job lines Landholders Merchants Money lenders Black marketers Gang members Smuggling chain	Drought, harvest, yield, domestic animals, livestock (cattle, sheep), market cycles Labor migration events Market days Payday Business openings Loss of business

Table 4-4. Crosswalk of Civil Considerations (ASCOPE) with Operational Variables (PMSEII) (Continued).

	Areas	Structures	Capabilities	Organizations	People	Events
SOCIAL	Refugee camps Enclaves: ethnic, religious, social, tribal, families or clans Neighborhoods Boundaries of influence School districts Parks Traditional picnic areas Markets Outdoor religious sites	Clubs Jails Historical buildings/ houses Libraries Religious buildings Schools/ universities Stadiums Cemeteries Bars and tea shops Social gathering places (meeting places) Restaurants	Medical: traditional, modern Social networks Academic Strength of tribal/ village traditional structures Judicial	Clan Community councils and organizations School councils Familial Patriotic/Service organizations Religious groups Tribes	Community leaders, councils, and members Education Ethnicity/racial: biases, dominant group, percentages, role in conflict Key figures: criminals, entertainment, religious leaders, chiefs/elders Languages/ dialects Vulnerable populations Displaced persons Sports Influential families Migration patterns Culture: Artifacts, behaviors, customs, shared beliefs/values	Celebrations Civil disturbance National holidays, religious holidays and observance days Food lines Weddings Birthdays Funerals Sports events Market days Family gatherings History: major wars/ conflicts
INFORMATION	Broadcast coverage area (newspaper, radio, television) Word of mouth Gathering points Graffiti Posters	Communications: Lines, towers (cell, radio, television) Internet service: satellite, hard wire, cafes Cellular phone Postal service Print shops Telephone Television stations Radio stations	Availability electronic media Internet access Intelligence services Propaganda Radio Television Social media Literacy rate Word of mouth	Media groups, news organizations Religious groups Insurgents inform and influence activity groups Government groups Public relations and advertising groups	Decision makers Media personalities Media groups, news organizations Community leaders Elders Heads of families	Disruption of services Censorship Religious observance days Publishing dates Inform and influence activity campaigns Project openings

Table 4-4. Crosswalk of Civil Considerations (ASCOPE) with Operational Variables (PMSEII) (Continued).

	Areas	Structures	Capabilities	Organizations	People	Events
INFRASTRUCTURE	Commercial Industrial Residential Rural Urban Road systems Power grids Irrigation networks Water tables	Emergency shelters Energy: distribution system, electrical lines, natural gas, power plants Medical: hospitals, veterinary Public buildings Transportation: airfields, bridges, bus stations, ports and harbors, railroads, roadways, subways Waste distribution, storage and treatment dams, sewage, solid Construction sites	Construction Clean water Communications Law enforcement Fire fighting Medical: basic, intensive, urgent Sanitation Maintenance of roads, dams, irrigation, sewage systems Environmental management	Construction companies: government contract	Builders Road contractors Local development councils	Scheduled maintenance (road/ bridge construction) Natural/ man-made disasters Well digging Community center construction School construction

operational variables (PMESII). Marine Corps staffs employ the civil preparation of the battlespace (CPB) methodology to examine the impact of civil considerations and to support the MCPP (see Appendix A for more on CPB).

Sociocultural factors are the social, cultural, and behavioral factors characterizing the relationships and activities informal and formal power structures, laws and policies, access to resources, and decision making of the population of a specific region or operational environment (*DoD Dictionary*). They must be closely analyzed during irregular warfare and unconventional conflicts. This cultural information incorporated into the IPB process provides the backdrop against which an analysis of social and political factors allows for successful operations. The Marine Corps Intelligence Activity produced a cultural GIRH and Cultural Intelligence Indicator Guide that assist Marine Corps forces in understanding foreign cultures. Both documents are available on the Marine Corps Intelligence Activity's JWICS and SIPRNET websites. Used in conjunction with ASCOPE analysis, an appreciation of cultural intelligence enables Marines to understand the environment in which they operate and ultimately lead to more effective operations.

Due to the complexity and volume of data involving civil considerations, there is no simple model for presenting civil considerations analysis. The intelligence staff maintains this information in the civil considerations data file and constructs intelligence products composed of overlays and assessments areas overlay to assist in planning.

Areas

Key civilian areas are localities or aspects of the terrain within an AO that often are not militarily significant. This encompasses civilian perspectives when conducting terrain analysis (KOCOA). The intelligence staff analyzes key civilian areas in terms of how they might affect the missions of friendly forces as well as how friendly military operations might affect these areas. Examples of key civilian areas include but are not limited to:

- Areas defined by political boundaries, such as districts within a city or municipalities within a region.
- Locations of government centers.
- Social, political, religious, or criminal enclaves.
- Ethnic and sectarian enclaves, neighborhoods, and fault lines.
- Agricultural and mining regions.
- Trade routes.
- Possible sites for the temporary settlement of displaced civilians or other civil functions.

Structures

Existing structures can have various degrees of significance. Analyzing a structure involves determining how the location, functions, capabilities, and consequences of its use can support or hinder the operation. Using a structure for military purposes often competes with civilian requirements. Commanders must carefully weigh the expected military benefits against costs to the community that have to be addressed in the future. Commanders also need to consider the significance of the structure in providing stability to the AO. Certain structures are critical in providing a state of normalcy back to the community and need to be maintained or quickly restored (Appendix C provides examples of how to determine the importance of some structures in the operational environment).

Repaying locals for the use of shared facilities or of building more of the same facilities, time and cost permitting, should also be considered. Examples of structures include, but are not limited to, military bases; military underground facilities; police stations; jails; courtrooms; political offices; electrical power plants and substations; petroleum, oils, and lubricants refineries; dams; water and sewage treatment and distribution facilities; communications stations and networks; bridges and tunnels; warehouses; airports and bus terminals; and universities and schools.

Other structures are cultural sites, generally protected by international law or other agreements. Examples include but are not limited to:

- Religious structures.
- National libraries and archives.
- Hospitals and medical clinics.
- Monuments.
- Works of art.
- Archaeological sites.
- Scientific buildings.
- Museums.
- Crops, livestock, and irrigation works.
- UN Educational, Scientific, and Cultural Organizations-designated World Heritage sites.

Capabilities

Commanders and staffs analyze capabilities from different levels. They view capabilities in terms of those required to save, sustain, or enhance life (in that priority). Capabilities can refer to the local authorities' ability—those of the HN, aggressor nation, or some other body—to provide a populace with key functions or services, such as:

- Public administration.
- Public safety.
- Emergency services.
- Media outlets.
- Technology.
- Basic necessities (food, water, medical availability).

Capabilities include those areas, such as public works and utilities, public health, economics, and commerce, in which the populace might need help after major operations. Capabilities also include resources and services that can be contracted to support the military mission, such as interpreters, laundry services, construction materials, and equipment.

Organizations

Intelligence preparation of the battlespace considers the organization dimension (such as the nonmilitary groups or institutions) and political influence and their influence in the AO. An organization influences and interacts with the populace, friendly forces, the adversary or enemy, and other organizations. An important aspect of civil considerations is the political dimension of the local population and its expectations relative to adversary, enemy, and friendly operations.

Political structures and processes hold varying degrees of legitimacy with populations from local through international levels. Formally constituted authorities and informal or covert political powers strongly influence events. Political leaders can use ideas, beliefs, violence, and other actions to enhance their power and control over people, territory, and resources. There are many sources of political interest. These can include charismatic leadership, indigenous security institutions, and religious, ethnic, or economic factors. Political opposition groups or parties also affect the situation. Each might cooperate differently with US or multinational forces.

Understanding the political circumstances assists commanders and staffs in recognizing key organizations and determining their aims and capabilities. Understanding political implications requires analyzing all relevant partnerships—political, economic, military, religious, and cultural. This analysis captures the presence and significance of external organizations and other groups, including groups united by a common cause. Examples include private security organizations, transnational corporations, and NGOs that provide humanitarian assistance.

Political analysis must include an assessment of varying political interests and the adversary's or enemy's political COG and will. Will is the primary intangible factor; it motivates participants to sacrifice to persevere against obstacles. Understanding what motivates key groups (for example, political, military, and insurgent) assists commanders in understanding the groups' goals and willingness to sacrifice to achieve their ends.

These organizations generally have a hierarchical structure, defined goals, established operations, fixed facilities or meeting places, and a means of financial or logistical support. Some organizations might be indigenous to the area. These organizations can include the following:

- Religious organizations.
- Fraternal organizations.
- Patriotic or service organizations.
- Labor unions.
- Criminal organizations.
- Community watch groups.
- Political groups.
- Agencies, boards, committees, commissions (local and regional, councils).
- Multinational corporations.
- Intergovernmental organizations, such as United Nations agencies.
- Other HN government agencies (such as the foreign version of the Department of Education, US Agency for International Development).
- Nongovernment organizations, such as the International Committee of the Red Cross.
- Media outlets.

> *NOTE:* The other HN government agencies designated in Chapter 4 are separate from organizations within the adversary or enemy capability (military, intelligence, police, paramilitary), such as the Central Intelligence Agency.

To enhance their situational awareness, commanders must remain familiar with organizations operating in their AOs, such as local organizations that understand the political dimension of the population. Situational awareness includes having knowledge of how the activities of different organizations may affect military operations and how military operations may affect these organizations' activities. From this, commanders can determine how organizations and military forces can collaborate toward common goals when necessary.

In almost every case, military forces have more resources than civilian organizations. However, civilian organizations might possess specialized capabilities that they may be willing to share with military forces. Although commanders do not command civilian organizations in their AOs some operations require achieving unity of effort between them and the force. These situations require commanders to influence the leaders of these organizations through persuasion and examples of their actions.

People

Generally, the term "people" describes nonmilitary personnel encountered by military forces. The term includes all civilians within an AO as well as those outside the AO whose actions, opinions, or political influence can affect the mission. Individually or collectively, people can affect a military operation positively, negatively, or neutrally. In stabilization activities, Marines work closely with civilians of all types. Therefore, understanding the sociocultural factors of the people

in the AO is a critical component of understanding the operational environment. Commanders and staffs make decisions on which human networks to engage and how to engage them based not only on a comprehensive understanding of the operational environment but also on the dynamics.

Network. To better understand how civil considerations can affect the operational environment, the intelligence staff along with other staff sections must collaborate. It takes multiple warfighting functions to understand population intricacies, the people within the population, and the people's interactions. Staffs support the commander in understanding, visualizing, and describing an operational environment, to include the characteristics related to network engagement in their planning.

A *network* is an interconnected or interrelated chain, group, or system. *Network engagement* is "the interactions with friendly, neutral, and threat networks, conducted continuously and simultaneously at the tactical, operational, and strategic levels, to help achieve the commander's objectives within an operational area" (*DoD Dictionary*). Network engagement uses supporting, influencing, and neutralizing activities to achieve the commander's desired end state. Network engagement activities are intended to examine and consider the entire environment in a comprehensive manner. This is accomplished by considering all the networks (friendly, neutral, and threat) and their effects on both operations and the operational environment (see Figure 4-30). (For a detailed discussion about network engagement, see MCTP 3-02A, *Network Engagement: Targeting and Engaging Networks*.) Typically, commanders and staffs use network engagement activities to align to human networks by seeking to—

- Support friendly or neutral networks.
- Influence friendly, neutral, adversary, or enemy networks.
- Neutralize adversary or enemy networks.

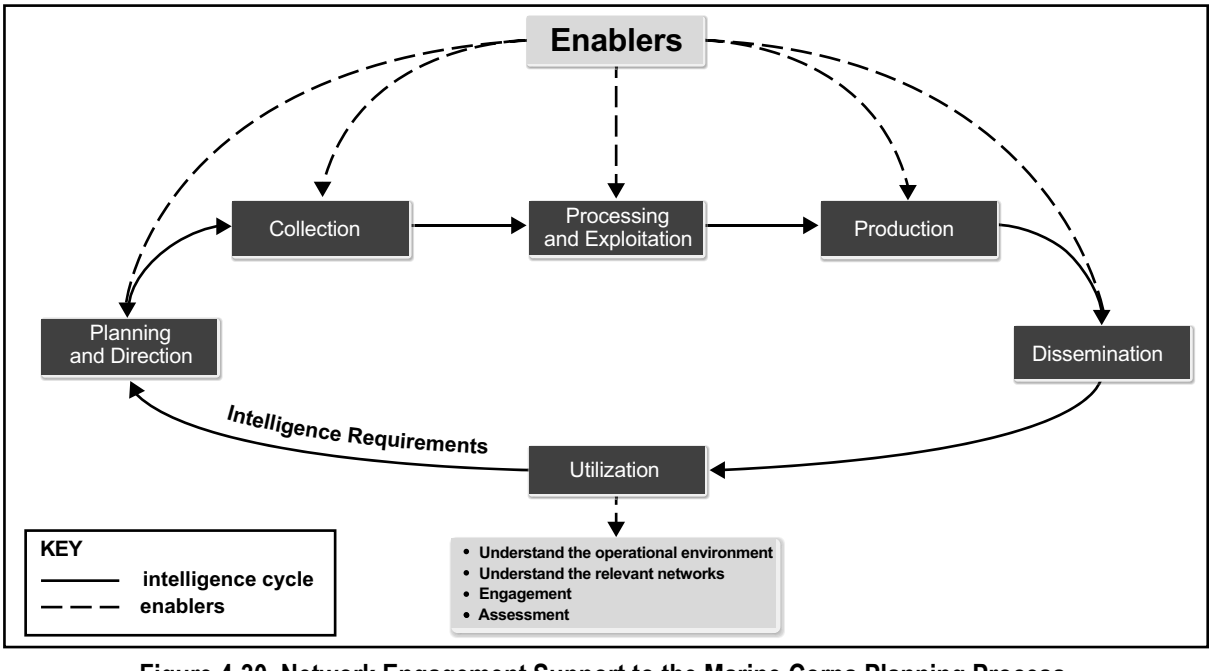


Figure 4-30. Network Engagement Support to the Marine Corps Planning Process.

Analyzing human factors provides the necessary network perspective of the relationships of adversary or enemy elements to other adversary or enemy elements and neutral, friendly, and unknown elements in a single picture. This information is necessary to progress from a myopic adversary or enemy perspective to one that recognizes that any single entity has an effect on others in the operational environment (for more information on human network analysis, see MCRP 2-10A.2, *Counterintelligence and Human Intelligence*). Human factor analysis is based on six elements:

- Understand the mission.
- Understand the operational environment.
- Understand the networks.
- Organize for network engagement.
- Engage the networks.
- Assess effects on networks.

Like IPB, human network analysis is only effective when all pertinent staff sections provide input. Staff collaboration during the IPB process increases the accuracy of human network analysis and assists in decision making during the MCPP.

Dynamics in the operational environment reflect the social, cultural, physical, informational, and psychological elements that shape human behavior. Actors often perceive these elements from a historical perspective. A region's history and the situation within which actors exist influence developments. For example, the past behavior of relevant actors might offer insights into their current values, priorities, interests, grievances, relationships, and decision-making processes, as well as suggest how people might behave under similar circumstances in the future.

Understanding dynamics within a given population can assist the intelligence staff in determining relevant aspects of the operational environment that might affect friendly operations. For example, if it has been determined that for the past 50 years, population X—with support from the national government—has persecuted population Y due to religious and cultural differences, further analysis might determine methods on how to support and influence population Y to assist in restoring a legitimate government.

There can be many kinds of people living and operating in and around an AO. As with organizations, people can be indigenous or introduced from outside the AO. An analysis of people identifies them by their various capabilities, needs, and intentions. It is useful to separate people into distinct categories such as demographic groups, social and political groups, and target audiences. (A target audience list can be obtained from the military information support operations element or information environment officer/G-7.) When analyzing people, commanders consider historical, cultural, ethnic, political, economic, religious, and humanitarian factors. They also identify the key communicators and the formal and informal processes used to influence people.

Language. The languages used in the region have a huge effect on operations. The staff identifies the languages and dialects used within the AO so language training and communications aids (such as phrase cards and the requisitioning of translators) can be provided. Translators can be crucial for collecting intelligence, interacting with local citizens and community leaders, and developing products.

Another aspect of language involves the transliteration guide written in the native language, which poses difficulty for operators as they attempt to determine the English translation. This effects all intelligence operations, including collection, analysis, dissemination, and targeting. In countries that do not use the English alphabet, a theater-wide standard should be set for spelling names. Without a spelling standard, it can be difficult to conduct effective analysis. Additionally, insurgents or criminals may be released from custody if their names are misidentified. To overcome these issues, there must be one spelling standard for a theater. Because of the interagency nature of counterinsurgency operations, the standard must be agreed upon by non-Defense agencies. Intelligence staffs should also be aware of family naming conventions in places like the Middle East where various cultures do not use an individual's surname and family name.

Religion. Another major consideration when analyzing people is religion. Religion has been a factor of almost every conflict in world history, and there are indicators that its influence will only grow. Religious entities can—

- Shape the operational environment.
- Add a higher intensity, severity, brutality, and lethality to conflicts than almost any other factor.
- Motivate and mobilize the masses quickly and inexpensively.

The staff must consider the following when incorporating religion in planning:

- Know when religious traditions will be affected by the mission and try to determine how religion will affect the mission.
- Know when religious figures have influenced social transformations both negatively and positively.
- Attempt to understand all parties, no matter how violent or exclusive.

Culture. Part of the analysis of people is identifying cultural terms and conditions. Cultural terms and conditions describe both American and foreign ways of thought and behavior. Understanding culture gives insight into motives and intent of nearly every person or group in the operational environment—friendly, adversary, enemy, or other relevant actors. In turn, this insight allows commanders and staffs to allocate resources, outmaneuver opponents, alleviate friction, and reduce the fog of war. The study of culture for military operations is not an academic exercise and therefore requires specific military guidelines and definitions. Analyst must set aside personal bias and judgment and examine the cultural group dispassionately, basing their analysis purely on facts. The military studies broad categories of cultural factors, such as—

- Social structure.
- Behavioral patterns.
- Perceptions.

- Religious beliefs.
- Tribal relationships.
- Behavioral taboos.
- Centers of authority.
- Lifestyles.
- Social history.
- Gender norms and roles.

Culture is studied to give insights into the way people think, the reasons for their beliefs and perceptions, and what kind of behavior they can be expected to display in given situations. Because cultures are constantly shifting, the study of culture is an enduring task that requires historical perspective as well as the collection and analysis of current information to understand motivation and intent (for additional information on culture, see Chapter 5 of this publication).

Events

Events are routine, cyclical, planned, or spontaneous activities that significantly affect organizations, people, and military operations. Examples include but are not limited to:

- National and religious holidays.
- Internationally observed cultural and religious holidays.
- Agricultural crop or livestock and market cycles.
- Elections.
- Civil disturbances.
- Celebrations.
- Natural phenomenon (such as monsoons, seasonal floods and droughts, volcanic and seismic activity, natural disasters).
- Man-made disasters.

Examples of events precipitated by military forces include major operations, congested road networks, security restrictions, and economic infrastructure disruption or stimulus. Once significant events are determined, it is important to template and analyze the events for their political, economic, psychological, environmental, and legal implications. Events occurring in the area of influence and AOI can significantly affect the AO and lead to contingency operations.

Civil Considerations Data File, Overlays, and Assessments

The intelligence staff maintains a civil considerations data file that organizes all the information it has collected and analyzed based on the ASCOPE characteristics. This data file organizes the raw data the intelligence staff uses to assess civil considerations during IPB, as well as to support targeting and civil affairs operations.

One way to maintain civil considerations data is in a data file and database; this contributes to the continual evaluation of civil considerations as part of the running estimate by organizing the vast amounts of information necessary to analyze civil considerations.

Example

Under the capabilities characteristic there might be a section for the sub-characteristic of oil. This section includes—

- Information on the location of all the infrastructure components associated with oil.
- How oil may affect other sectors such as financial institutions and regional partnerships.
- The biographical, contact, and location information for the personnel associated with this capability.
- Any intelligence assessments and recommendations associated with oil.

Civil considerations overlays are graphic depictions of the data file. They assist in planning throughout the MCPP, as well as in aiding situation development during operations. These overlays assist the intelligence staff in describing civil considerations effects, as assessed in the data file, to the commander and the rest of the staff.

The civil considerations data file and associated overlays assist the commander and staff in identifying information and intelligence requirements not typically identified through the event templating process associated with determining adversary or enemy COAs. In contingency operations, or when conducting stabilization activities, these work aids are critical in assisting the intelligence staff in determining and assessing adversary or enemy COAs.

Civil considerations assessments are used throughout the MCPP. They use both civil considerations data file and overlays to provide the supported commander with a detailed analysis of the civil component of the AOI in accordance with ASCOPE characteristics. Potential areas of investigation in the civil considerations assessment can include the mapping of social and political patterns, including formal and informal leadership, as well as identifying key societal friction points.

Understanding the relationship between military operations and civilians, culture, and society is critical to operations and essential in developing effective plans. The development of the civil considerations data file, overlays, and assessments can be augmented by regional civil considerations data repositories maintained at national and theater levels. During—

- Predeployment, unit intelligence staffs should become familiar with the information available on assigned or contingency regions in military and other data repositories, websites, and portals.
- Operations, units use, update, and add to the body of information available to them and others.
- Relief in place or transfer of authority, it is critical for outgoing units to educate incoming units on the information sources available for their AO.

Civil affairs and foreign affairs officers, international affairs officers, and other cultural enablers can also provide detailed information and analysis pertaining to sociocultural factors as an aspect of civil considerations.

There is no standard set of sub-characteristics and overlays produced by the intelligence staff under this task. Determining what is needed is based on the intelligence staff's assessment of the situation and complexity of the AO.

The civil considerations data file is a spreadsheet set up in a workbook format that is tabbed using the categories identified in the ASCOPE characteristics. Figures 4-31 and 4-32 present examples a civil considerations data file and an associated overlay.

1		TABLE OF CONTENTS		
2	HVIL	PRIORITY INDIVIDUAL (HVI)		
3	HVFL	PRIORITY FACILITIES (HVFL)		
4	A	COUNCIL MEMBERS		
5	B	POLICE		
6	C	SECURITY FORCES		
7	D	SCHOOL & EDUCATION FACILITIES		
8	E	GOVERNMENT AGENCIES		
9	F	MEDICAL FACILITIES		
10	G	OIL FACILITIES		
11	H	GAS STATION & GARAGES		
12	I	BANKS		
13	J	POWER & WATER		
14	K	BRIDGES		
15	L	MASS TRANSIT		
16	M	BUSINESSES		
17	N	HOTELS		
18	O	FACILITIES PROTECTION SERVICES		
19	P	CHECK POINT/PATROL BASES		
20	Q	MARKETS/GARDENS/SQUARES/PARKS		
21	R	CEMETERIES		
22	S	LANDING ZONES & FORWARD OPERATING BASES		
23	T	BASIC NECESSITIES		

Table of Contents | HVIL | I1 | I2 | I3 | I4 | I5 | I6 | I7 | I8 | I9 | I10 | HVFL | F1

LEGEND

HVFL high-value facility list **HVI** high-value individual **HVIL** high-value individual list

Figure 4-31. Civil Considerations Data File.

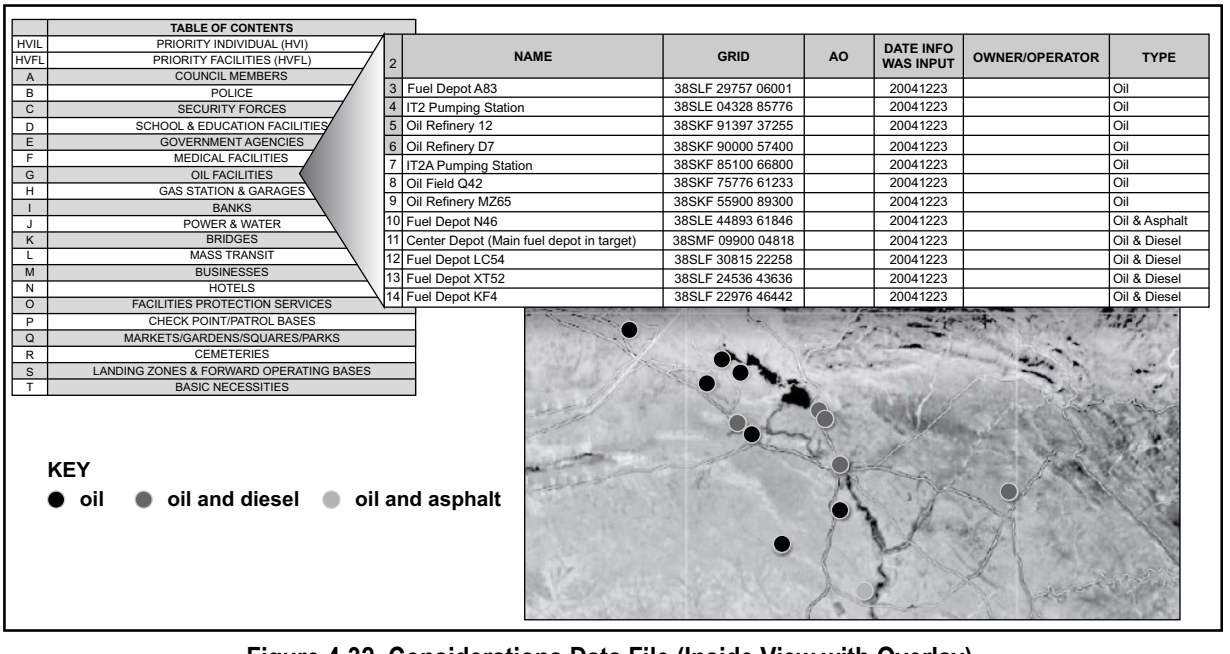


Figure 4-32. Considerations Data File (Inside View with Overlay).

CHAPTER 5.
STEP 3: EVALUATE THE ADVERSARY OR ENEMY

WHAT IS IT?

Step 3 of the IPB process determines adversary or enemy force capabilities and the doctrinal principles and TTP adversary or enemy forces prefer to employ. This can include enemies that create multiple dilemmas for Marines by simultaneous employment of regular, irregular, terrorist forces, and criminal elements, using an ever-changing variety of traditional and nontraditional tactics.

Example

While planning a contingency show-of-force operation, a G-2 directs the Joint Intelligence Center to study the decisions on record of the targeted country's dictator. As a result of this research, the intelligence center produces a model of how the dictator makes decisions, with special emphasis on the dictator's tendencies during political crises. Meanwhile, the unit's S-2 conducting the operation evaluates the adversary or enemy, to include the S-2's contingency area adversary or enemy order-of-battle files. The S-2 determines that the two adversary or enemy brigades within the target area are equipped, organized, and trained well enough to be capable of offensive as well as defensive tasks against the friendly unit. The S-2 prepares adversary or enemy models depicting typical adversary or enemy offensive and defensive tasks in built-up areas (the setting for the show-of-force operation).

Over the past three decades, adversaries and enemies have studied the way US forces have deployed and conducted operations. Several have adapted, modernized, and developed capabilities to counter US advantages in the air, land, maritime, space, and cyberspace domains. Military advances by Russia, China, North Korea, and Iran most clearly portray this changing pacing threat. Understanding adversary and enemy capabilities is critical to developing COAs.

Adversaries are a fundamental part of an overall operational environment for any operation but are discussed separately here simply for emphasis. An adversary is "a party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged" (*DoD Dictionary*). Adversaries may include paramilitary or military forces, nation-states, national alliances, individuals, groups of individuals (organized or not organized), or conditions that can damage or destroy life, vital resources, or institutions.

While Marine forces must be manned, trained, and equipped to operate across the range of military operations, amphibious operations in the littorals against a peer/near-peer adversary or enemy represents the most significant readiness requirement.

MCDP 3, *Expeditionary Operations*, focuses on smaller-scale contingencies that will involve military operations other than war that could involve peer/near peer adversaries. Peer/near peer adversaries are those entities with capabilities and capacity to oppose US forces across multiple domains worldwide or in a specific region where they enjoy a position of relative advantage. Peer/near peer adversaries possess roughly equal combat power in geographical proximity to a conflict area with US forces. Peer adversaries—

- Employ strategies that capitalize on their capabilities to achieve their objectives.
- Prefer to achieve their goals without directly engaging US forces in combat.
- Often employ information warfare in combination with conventional and irregular military capabilities to achieve their goals.
- Will try to weaken the resolve of the United States and its partners to sustain conflict.
- Will exploit friendly sensitivity to world opinion and attempt to exploit American domestic opinion and sensitivity to friendly casualties.
- Believe they have a comparative advantage because of their willingness to endure greater hardship, casualties, and negative public opinion.

Peer adversaries employ their resources across multiple domains to attack US vulnerabilities. They use their capabilities to create lethal and nonlethal effects throughout an operational environment. During combat operations, adversaries or enemies seek to inflict significant damage across multiple domains in a short time. They seek to delay friendly forces long enough to achieve their goals and end hostilities before friendly forces reach culmination. Peer adversaries will employ various methods to employ their national elements of power to render US military power irrelevant. Five broad peer adversary or enemy methods, often used in combination, include information warfare, preclusion, isolation, sanctuary, and systems warfare.

Marine Corps doctrine divides these adversaries into the following categories: regular, irregular, disruptive, catastrophic, and hazards. This publication discusses the evaluation of regular and irregular adversary and enemy forces.

Regular Adversary and Enemy

Regular adversary and enemy forces are part of nation-states employing recognized military capabilities and forces in understood forms of military competition and conflict. The Islamic Republic of Iran Army and the People's Liberation Army of China are examples of regular pacing threats.

Regular adversaries or enemies from peer competitors with significant ability to act in all domains are considered as multi-domain adversaries. These peer adversaries are only peer in the military or economic elements of power. In the diplomacy and informational elements of power, multi-domain adversaries use their lack of democratic institutional constraints, realpolitik (practical politics) approaches, and cyberspace capabilities to overmatch US forces. When analyzing the peer adversary or enemy, it is important to understand the complexity of the operational environment, since all types of force structures, capabilities, and domains are available to use against US forces to accomplish the adversary or enemy goals and objectives.

Peer adversaries seek to reduce the United States' ability to achieve dominance in the land, air, maritime, space, and cyberspace domains. By using state and nonstate actors, peer adversaries attempt to apply technology across the domains to disrupt US advantages in communications, long-range precision-guided munitions, movement and maneuver, and surveillance. Peer adversaries also seek to reduce the United States' ability to achieve dominance in those domains. Marine Corps forces cannot be assured they will have the advantage in technology, communications, and intelligence collection.

To capitalize on the perceived vulnerabilities of the United States and its allies, peer adversaries can use nation-state and non-nation-state actors to establish proxy forces. These forces can act on behalf of peer adversaries to achieve a desired end state in territories where peer adversaries do not want to disclose their involvement. Proxy force capabilities range from using insurgent tactics to using technologically advanced capabilities. Historic conflicts that relied on proxy force capabilities include, but are not limited to, the Ukraine crisis (2014), the Syrian Civil War (2011), Nicaraguan Civil War (1979 to 1990, and the Korean War (1950 to 1953).

Irregular Adversary or Enemy

Irregular adversary or enemy forces are opponents employing unconventional, asymmetric methods and means to counter US advantages, such as overwhelming firepower and technological overmatch. A weaker enemy often uses unconventional methods to exhaust the US collective will through protracted conflict. Unconventional methods include terrorism, insurgency, and guerrilla warfare. Economic, political, informational, and cultural initiatives usually accompany and can even be the chief means of irregular attacks on US influence. Hamas and al Qaeda are examples of irregular adversary or enemy forces. Additional examples include the People's Army of Vietnam conducting simultaneous operations with the Vietcong during the Vietnam War, and Russian forces conducting operations with local militias in Aleppo, Syria in 2016.

Adversary or Enemy Capabilities

Adversary or enemy capabilities provide the means for accomplishing goals, attacking friendly vulnerabilities, and degrading or neutralizing their strengths. Adversary and enemy actors employ a combination of four major capabilities:

- *Conventional capabilities* are those military assets employed by states in identifiable formations. International law, military tradition, and custom govern conventional capabilities. Nearly every recognized nation-state maintains some conventional forces.
- *Irregular capabilities* are those means of employing unconventional methods, including asymmetric ways to counter US advantages. Irregular capabilities are unregulated; they can act without legal restrictions on the use of violence. Additionally, they are used to create conditions for a protracted conflict to exhaust US political will. Targeting economic or political centers with irregular capabilities or exacerbating cultural differences to promote instability are often the preferred means of attack on the US influence.
- *Disruptive capabilities* involve the use of technologies to reduce friendly advantages. Disruptive capabilities use technology to provide the enemy with an advantage over similar technology used by friendly forces.
- *Catastrophic capabilities* involve the acquisition, possession, and use of CBRN weapons—also referred to as weapons of mass destruction (WMD). The proliferation of these weapons provides potential enemies the capability to inflict sudden and catastrophic effects likely to have more significant military and political effect today than in the past.

DESIRED END STATE

The G-2/S-2 develops adversary or enemy models that accurately portray how adversary or enemy forces typically execute operations and how adversaries or enemies have reacted to similar situations in the past. The primary output associated with Step 3 of the IPB process is a compilation of adversary or enemy models for each identified adversary and enemy in the AO that the intelligence staff uses to guide the development of adversary or enemy COAs. This can include but is not limited to the following:

- Researching or creating and updating adversary or enemy order of battle files.
- Developing the adversary or enemy template.
- Creating an adversary or enemy capabilities statement.
- Establishing the adversary or enemy COGs and critical vulnerabilities.
- Determining the HVT list.
- Updating the intelligence estimate.
- Any RFIs or requests for collection, which are refined and updated.

THE "SO WHAT?"

The "so what" in this step is to enhance commanders' understanding of the regular, irregular, catastrophic, or disruptive adversary or enemy forces within their AOI:

- Outcome of success: adversary or enemy COAs developed in the next step of IPB reflect what the adversary or enemy is capable of and trained to do in similar situations.
- Consequences of failure:
  - The staff might lack the intelligence needed for planning.
  - The adversary or enemy might surprise the friendly force with capabilities not accounted for by the G-2/S-2.
  - The staff might waste time and effort planning against nonexistent adversary or enemy capabilities.
  - The friendly force's ability to exploit enemy windows of vulnerability might be degraded.

HOW TO DO IT: (THE PROCESS)

Step 3 of the IPB process consists of the sub-steps shown in Figure 5-1.

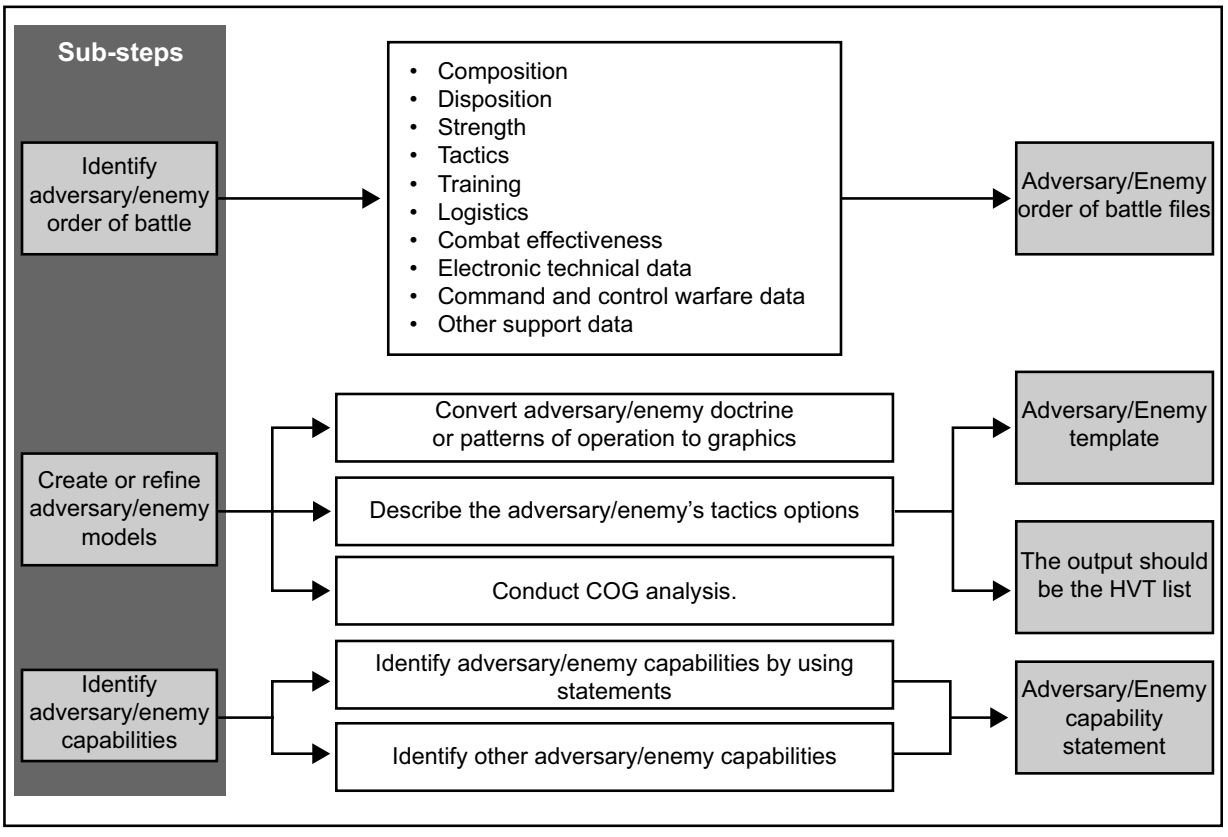


Figure 5-1. Sub-steps of Step 3 of the Intelligence Preparation of the Battlespace Process.

Evaluating the adversary or enemy begins with the identification of all adversaries operating or influencing the operating environment, followed by the analysis of the adversary or enemy order of battle, identification of adversary or enemy models (regular, irregular, or unconventional) and ultimately leads to the identification of HVTs from COG analysis.

A commander's understanding of the adversary or enemy is based, in part, on the intelligence staff's research and analysis on adversary or enemy factors. To ensure this understanding is as completely as possible, the intelligence staff considers the following when assessing these factors:

- Adversary or enemy order of battle form a framework for the consistent evaluation of any force.
- The adversary or enemy order of battle evaluation framework should be adapted to the adversary or enemy mission and the unit's needs.
- Properly maintained files at multiple echelons and organizations are sources of information on adversary or enemy operations, capabilities, and vulnerabilities.
- Adversary or enemy order of battle are analyzed as a whole.

Although adversary or enemy forces might conform to some of the fundamental principles of warfare that guide Marine Corps operations, these forces have both obvious and subtle differences in how they approach situations and problem solving. Understanding these differences is essential to understanding how an adversary or enemy force reacts in each situation (see MCTP 2-10B for additional information on adversary or enemy capabilities).

IDENTIFY ENEMY ORDER OF BATTLE

During Steps 1 and 2 of the IPB process, the intelligence staff begins identifying and defining each individual adversary or enemy within the commander's AOI. During Step 3, the intelligence staff analyzes the characteristics associated with each of these adversaries or enemies. The intelligence staff also develops models for each adversary or enemy.

There are 11 broad areas the intelligence staff considers when analyzing adversary or enemy order of battle:

- Composition.
- Disposition.
- Strength.
- Combat effectiveness.
- Doctrine and tactics.
- Support and relationships.
- Electronic technical data.
- Capabilities and limitations.
- Current operations.
- Historical data.
- Miscellaneous data.

See MCTP 2-10B for a discussion on adversary or enemy order of battle factors.

> *NOTE:* When operating against a new or emerging adversary or enemy that is not identified and described in the unit's enemy data files, the intelligence staff must develop new data files for each of these adversaries. Other units' and organizations' data files can also assist in developing enemy products.

Composition

Composition is physical in nature and focuses on the identification and organization of an adversary or enemy. It describes how an entity is organized and equipped—particularly the name; number and type of unit (e.g., mechanized, motorized); types of personnel, weapons, and equipment available for a given operation; and subordination (identification of higher and subordinate units relative to that adversarial unit). Composition applies to specific units or commands as opposed to types of units. Regular forces are normally self-identified and organized similarly to friendly forces. Irregular forces can follow similar rules but are mostly organized based on a cellular structure. The staff uses line and block chart products to visually see the adversary's or enemy's composition. Understanding an adversary's or enemy's composition—

- Is essential in determining its capabilities and limitations.
- Assists in constructing an adversary or enemy template that supports development of valid enemy COAs in Step 4 and friendly counteractions during COA Wargaming in the MCPP.
- Assists in determining an adversary's or enemy's combat effectiveness and conducting combat assessment.

Composition also refers to how an entity is commanded and controlled. Military forces have distinct and well-defined organizational structures typically built around a linear chain of command. These forces include air and ground forces that, regardless of national origin, generally follow a modern or contemporary military organizational model. Irregular forces also have distinct and well-defined organizational structures, generally cellular in nature and directed through a decentralized chain of command usually unique to the area or conflict. Regardless of the type of adversary or enemy, knowing its structure assists in understanding its capabilities and limitations.

Regular Adversary or Enemy Forces. The identity and organization of regular forces belonging to the world's various nation-states are generally known by the US intelligence community and maintained by the National Ground Intelligence Center. Fleet Marine Force intelligence staffs can access this data, as needed, to support respective commands. The composition of regular forces is organized around a central command structure, illustrated via organizational charts that depict the number and types of units in the force as well as the number and types of personnel, weapon systems, and equipment associated with these units. Figure 5-2 shows an example of the organization of a regular adversary or enemy force.

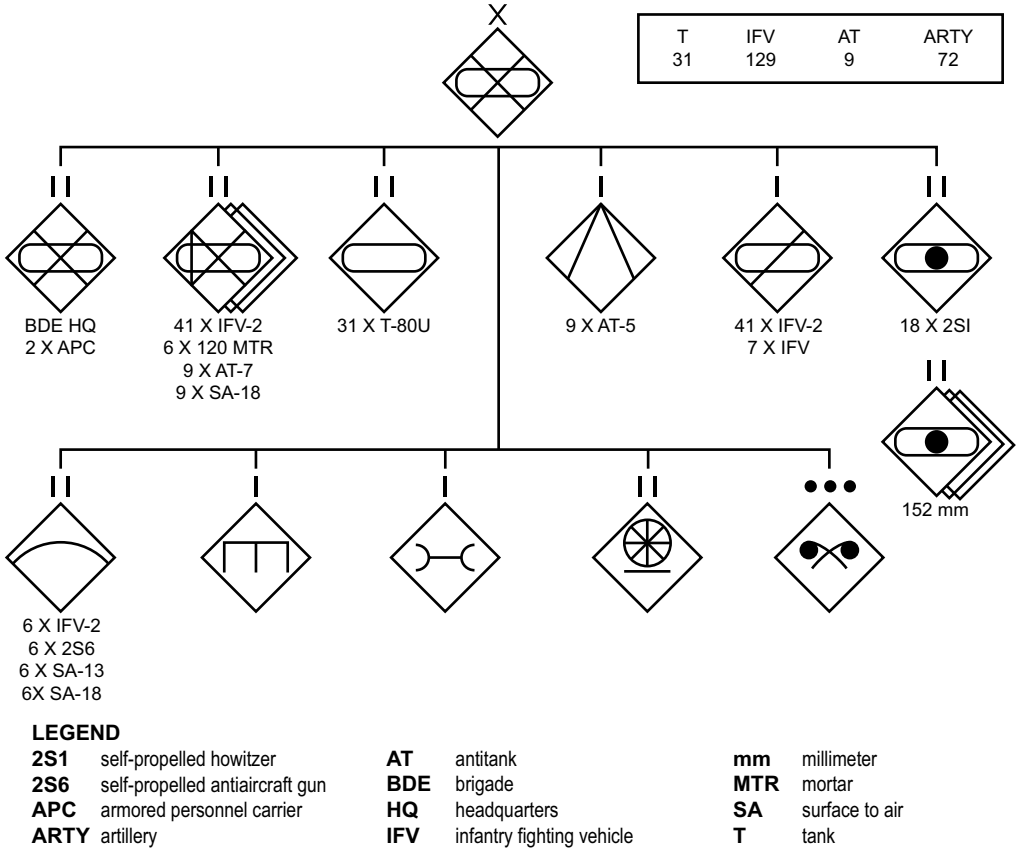


Figure 5-2. Regular Adversary or Enemy Force Organizational Chart.

Irregular Adversary or Enemy Forces. Determining composition for irregular adversary or enemy forces (see Figure 5-3) involves the identification of military, political, religious, ethnic, criminal, or terrorist organizations. Intelligence staffs typically become cognizant of these irregular forces during research conducted during Step 2 and further refine this information throughout the IPB process. Unit identification consists of the complete designation of a specific entity by name or number, type, relative size or strength, and subordination. Composition includes—

- • Operational and support cells (similar to sections in a military unit).
- • Echelons.
- • Staff elements.
- • Political, religious, ideological, and military aims.
- • Internal and external command and control.
- • Operational organizations.
- • Internal and external support structure.
- • External ties.
- • Assassination squads.
- • Bomb and demolition squads.
- • Attack or hit squads.

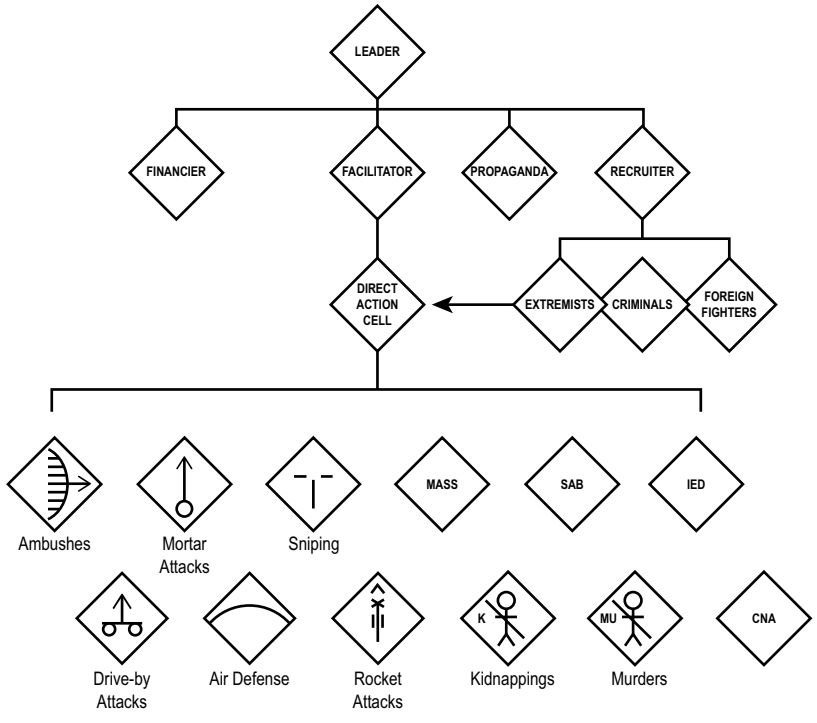


Figure 5-3. Irregular Adversary or Enemy Force Organizational Chart.

The identity and organization of irregular adversary or enemy forces is not always known. Irregular adversary or enemy forces are generally part of an insurgency and are often relatively new organizations. Intelligence analysts might need to identify and develop the composition of irregular adversary or enemy forces in the absence of existing information. Generally, there are two kinds of insurgencies:

- *National insurgency*. In this type of insurgency, the conflict is between the government and one or more segments of the population. The insurgents seek to change the political system, take control of the government, or secede from the country. A national insurgency polarizes the population and is generally a struggle between the government and insurgents for legitimacy and popular support.
- *Resistance movement*. In contrast to national insurgency, a resistance movement (sometimes called a liberation insurgency) exists when insurgents seek to expel or overthrow what they consider a foreign or occupation government. The grievance is foreign rule or foreign intervention. Resistance movements tend to unite insurgents with different objectives and motivations. However, such an insurgency can split into competing factions when foreign forces leave, and the focus of resistance is gone. That situation might result in a civil war.

Irregular forces typically have political objectives and are motivated by an ideology or grievances. These grievances can be real or perceived. Identifying these objectives and motivations can be difficult for several reasons:

- There might be multiple insurgent groups with differing goals and motivations and they might be in competition with or supporting each other.
- Insurgent leaders might change, and the movement's goals might change with them.
- Movement leaders might have different motivations from their followers.
- Insurgents might hide their true motivations and make false claims.
- The goals of an insurgency might change due to changes in the operational environment.

Irregular forces are usually armed military organizations or terrorist groups that have bypassed legitimate political authority and have taken up arms to pursue a common cause. Table 5-1 lists and describes some potential irregular forces.

Table 5-1. Description of Potential Irregular Forces .

Type	Description
Revolutionaries	Organizations involved in a revolution. These forces almost always have a political component that established its goals and objectives.
Guerrillas	Organizations that use unconventional tactics to combat regular forces that have an advantage in size, capability, and support.
Militia	Generally comprises ordinary citizens who have been organized for a specific purpose. This can include foreign nationals.
Partisans	Generally unconventional forces that oppose control of an area by a foreign power or by an army of occupation by some kind of insurgent activity.
Paramilitaries	Usually, elements of a regular force using unconventional tactics to combat an occupying regular Army.

Table 5-1. Description of Potential Irregular Forces (Continued).

Type	Description
Terrorist Groups	Organizations that target civilians or regular forces to gain political leverage and legitimacy.
Insurgent Organizations	Organizations that have no regular table of organization and equipment structure. The mission, environment, geographic factors, and many other variables determine the configuration and composition of each insurgent organization and its subordinate cells. A higher insurgent organization can include organizations at regional, provincial, district, national, or transnational levels. Higher insurgent organizations can contain a mix of local insurgent and guerrilla organizations. Each of these organizations might provide differing capabilities.
Mercenaries	Armed individuals who use conflict as a professional trade and service for private gain. Depending on the circumstances, a mercenary might not be a lawful combatant. The term mercenary applies to those acting individually and in formed units. Ground forces officially serving in foreign armed forces are not mercenaries. Loaned service personnel sent to help train ground forces of other countries as part of an official training agreement between sovereign governments are not mercenaries even if they take a direct part in hostilities.
Criminal Organizations	Organizations that are typically independent of nation-state control. Large-scale criminal organizations often extend beyond national boundaries to operate regionally or worldwide and include a political influence component. Individual criminals or small gangs do not typically have the capability to adversely affect legitimate political, military, and judicial organizations. Large-scale criminal organizations can challenge governmental authority with capabilities and characteristics similar to a paramilitary force. By mutual agreement or when their interests coincide, criminal organizations can become affiliated with other actors, such as insurgents or individuals. They might provide capabilities similar to a primitive army for hire. Insurgents or guerrillas controlling or operating in the same area as a criminal organization can provide security and protection to the criminal organization's activities in exchange for financial assistance, intelligence, arms and materiel, or general logistical support.

NOTE: To capitalize on perceived US forces' vulnerabilities, nation-state actors can use proxy forces that have a wide array of capabilities.

Irregular Adversary or Enemy Forces. An irregular adversary or enemy force comprises two or more of the following entities that combine, associate, or affiliate to achieve mutually beneficial goals and objectives:

- A nation-state regular force.
- A nation-state irregular force.
- Insurgent organizations.
- Guerrilla units.
- Criminal organizations.

Although there is no standard organizational structure for irregular adversary or enemy force, Figure 5-4 provides one example. Like regular adversary or enemy forces, intelligence analysts might need to identify and develop the composition of irregular adversarial forces. Regional peer, multi-domain threats can use all forces—regular and irregular.

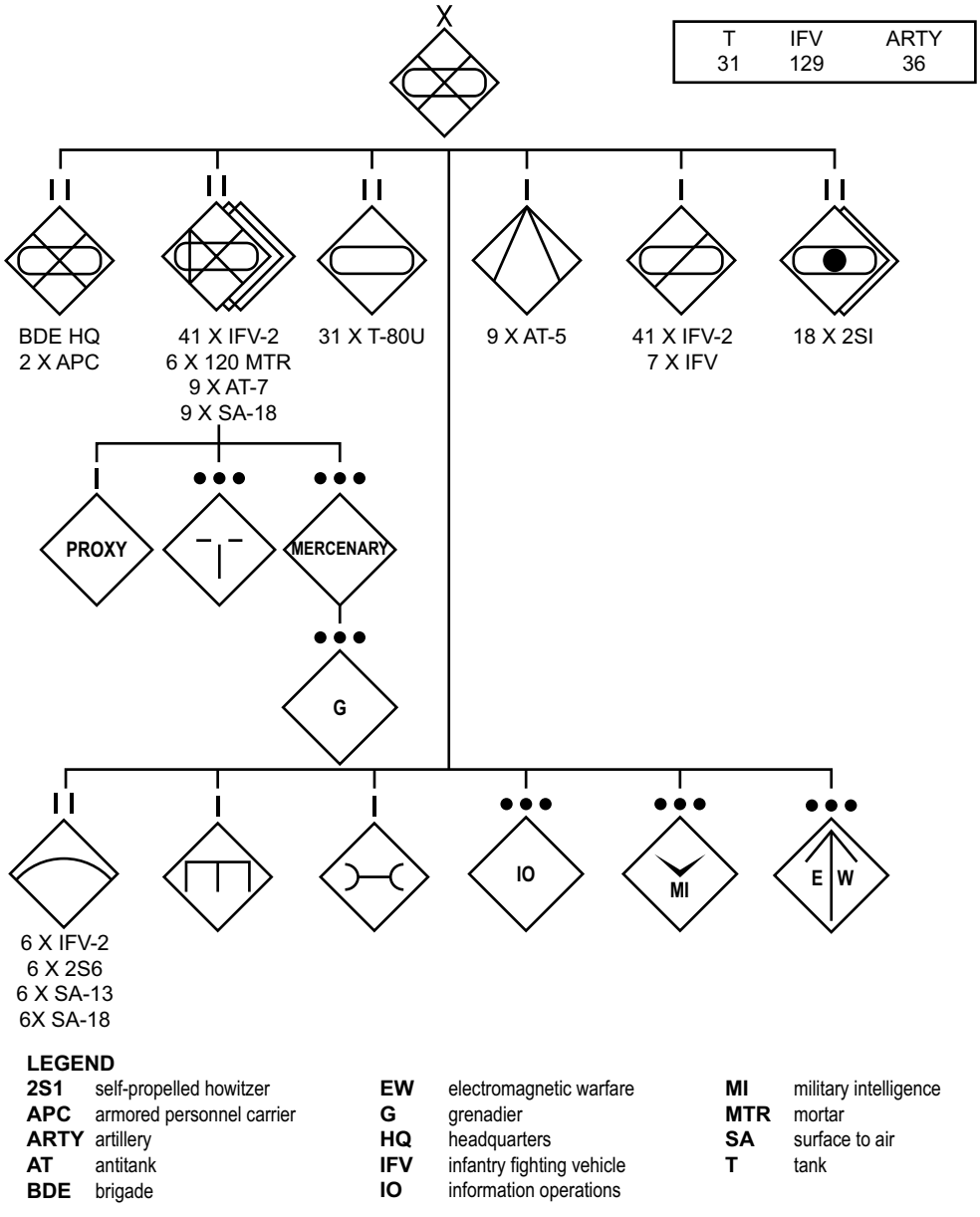


Figure 5-4. Figure 54. Irregular Adversary or Enemy Force Organizational Chart.

Disposition

Disposition refers to how adversary or enemy forces are arrayed on the battlespace. It includes the recent, current, and projected movements or locations of tactical forces. Disposition is both geographic and temporal in nature, pertaining both to a location and a specific time the adversarial or enemy force occupies that location. Regular adversary or enemy forces generally conduct some form of offensive or defensive maneuver. Irregular adversary or enemy forces are generally in some part of the plan, prepare, execute, and assess activities of an operation, such as a raid or ambush. In an irregular adversary or enemy scenario, irregular forces might have the capability to mass and be the main effort or fixing force on the battlespace. Understanding how the adversary or enemy doctrinally arrays itself on the battlespace is essential in developing adversary or enemy models in Step 3 of the IPB process and adversary or enemy situation templates in Step 4 of the

IPB process. The intelligence staff becomes familiar with graphic training aids that visually depict range fans with weapons' fire limits and direct and indirect weapons capabilities to better understand adversary or enemy weapon systems.

Regular Adversary or Enemy Forces. When evaluating a regular adversary or enemy force, disposition refers to—

- *Geographical location*. Location refers to a geographical area or position occupied by a unit or units at a specific or estimated time. Knowing the adversary's or enemy's strength and location assists the intelligence staff in determining the force's capabilities and its effect upon accomplishing the friendly mission. This data is collected during peacetime and forms the basis for accessing capabilities during the initial period of hostilities.
- *Tactical deployment*. Tactical deployment is the relative position of units—
  - With respect to one another: Tactical formations are designed for executing the various tactical maneuvers. If this deployment can be predetermined, it can lead to an accurate appraisal of intentions. Knowing how enemy units are echeloned might indicate (if the enemy assumes the offensive) which units will be used in the main attack and which units will be used in supporting reserve roles.
  - With respect to terrain: Studying dispositions and analysis of the terrain assists in developing conclusions concerning enemy capabilities, vulnerabilities, and intentions. This further helps develop the situation template described in Step 4 (see Chapter 6 for more information situation templates).
- *Movement of formations*. Movement is a unit's physical relocation from one geographical point to another. Patrol activity can be an indication of planned movement. Movement is significant because it automatically changes the tactical deployment of the enemy forces. When an enemy unit has moved, is moving, or will be moving, there are several actions that can affect the situation; for example, a unit might be moving into an attack position, moving to reinforce or replace a unit, or performing other missions unknown to friendly forces. Consequently, units are always monitored so analysts can provide correct and detailed data on enemy dispositions.

When evaluating a regular enemy force at any point before receipt of mission, intelligence staffs do not know the terrain on which either the enemy or friendly force operates. Therefore, arraying the enemy on the battlespace as commonly seen on an adversary situation template is not possible. However, it is possible to doctrinally portray how the enemy arrays itself on the battlespace to conduct specific operations. This process is called adversary templating and is part of the adversary model process. This ongoing process is part of garrison intelligence operations. Intelligence staffs at any echelon develop adversary or enemy doctrinal templates. Developed adversary doctrinal templates are reexamined and refined during IPB. See Figure 5-8 for an example of an adversary doctrinal template.

Irregular Adversary or Enemy Forces. Disposition of irregular adversary or enemy forces includes recent, current, and projected movements or locations of tactical forces. It consists of, but is not limited to, the geographic location of the following elements: safe houses, movement routes, training camps, base camps. logistics bases, and resupply points. These factors can be identified through pattern-of-life analysis.

Strength

Although composition identifies the types of personnel, weapons, and equipment of a given adversary or enemy, strength describes a unit in terms of numbers of personnel, weapons, and equipment. Strength is determined by comparing how an adversary or enemy organization is doctrinally staffed and equipped with what the organization has on hand. Information concerning strength provides commanders with an indication of enemy capabilities and helps determine the probable COAs or options open to adversary or enemy commanders. A lack of strength or a preponderance of strength has the effect of lowering or raising the estimate of the capabilities of an enemy force. Likewise, a marked concentration or build-up of units in an area gives commanders certain indications of enemy objectives and probable COAs. During peacetime, changes in the strength of potential adversary or enemy forces are important factors that can indicate changes in the adversary's or enemy's intention.

The strength of an adversary or enemy force is determined by understanding the synergy of regular and irregular forces. The adversary or enemy force understands that the environment that produces the most challenges to Fleet Marine Forces is one in which conventional military operations occur in concert with unconventional warfare. The adversary or enemy force concept is not one of only managing with what is available but is primarily one of deliberately created complexity.

Each component of the adversary or enemy force brings with it a capability to bear. The synergy of these capabilities is not to be understated. Operational environments by their very nature provide myriad complexities based on their characteristics and reliance on multiple domains. The adversary or enemy force seeks to introduce additional complexity using an ever-shifting array of forces, technologies, domains, and techniques. An adversary or enemy can switch the main effort (action element) between regular and irregular forces.

Regular Adversary or Enemy Forces. Strength for regular forces is described in terms of personnel, weapons, and equipment. The most important aspect of strength when evaluating a regular force is determining whether the force can conduct specific operations. For example, a unit might have adequate weapon systems to conduct an operation but might not have enough trained personnel or crews to man the systems or provide leadership to conduct certain operations.

Irregular Adversary or Enemy Forces. For irregular forces, strength is the capability of direct-action teams, political cadre or cells, and, most importantly, popular support. Popular support can range from, but is not limited to, the following:

- Storage or movement of combat equipment.
- Assistance in conducting operations.
- Logistics.
- Sympathizers.
- Providing or withholding information.

Combat Effectiveness

Combat effectiveness describes a unit's abilities and fighting quality. Numerous tangible and intangible factors affect combat effectiveness.

Regular Adversary or Enemy Forces. Assessing the following tangible and intangible factors determines the combat effectiveness of regular adversary or enemy forces:

- Personnel strength, including estimated losses and combat replacements.
- Amount and condition of weapons and equipment.
- Status of training.
- Efficiency of the officer and non-commissioned corps.
- Quality of leadership.
- Length of time a unit is committed in combat.
- Traditions and past performance.
- Personality traits of the unit commanders.
- Geographical area in which committed.
- Morale, spirit, health, nutrition, discipline, and political reliability (or belief in the cause they fight for).
- Status of technical and logistical support of the unit.
- Adequacy of military schooling at all levels.
- National and socioethnic characteristics of the people.

Irregular Adversary or Enemy Forces. Combat effectiveness for irregular adversary or enemy forces is measured differently from combat effectiveness for regular adversary or enemy forces. The adversary or enemy is motivated by many factors, including but not limited to a goal of independence, equality, religion or ideology, occupation of a foreign nation, or economic concerns. Combat effectiveness is determined by, but not limited to:

- *External support* (financial, physical, moral, propaganda). Adversaries or enemies are often interconnected with other transnational groups, organizations, or governments. Irregular adversaries might depend on this external support, which can noticeably increase their influence. External support can establish materiel (weapons and weapons technology) and financial resources (cash, commodities, legal or illegal services of value) to fund operations. The intended use of these resources is of greater significance than their inherent value.
- *Fear and intimidation*. Enemies often use attacks on civilians or elements of the civilian population (murder, kidnapping, and extortion) and attacks on US forces and HN governmental or political organizations, businesses, civil, critical infrastructures, and security organizations. Irregular enemies also use the threat of ambushes, raids, sabotage, terror, and violence. Without a stable environment, the power of intimidation on the local population is substantial.
- *Political change*. Adversaries might act as a political entity in a vacuum and claim to be able to fix real or perceived political issues. Irregular adversaries use persuasion and coercion to reinforce their political means. They conduct propaganda activities to target the population and international public opinion. These activities might enhance the adversary's or enemy's legitimacy and undermine the HN.
- *Popular support*. Adversaries typically use the population's coerced or uncoerced cooperation. Armed groups involved in insurgent operations directed against the HN government often

draw their strength from the population or at least a segment of the population. These groups establish sanctuary locations among segments of the population and use civilian transportation, communications, financial services, and general services to sustain operations. They receive funding by winning the approval of segments of the population or by extorting and using segments of the population to provide warnings of US operations.

The intelligence staff and other staff determine the combat effectiveness for irregular adversary or enemy forces by considering tangible and intangible factors associated with determining the combat effectiveness for regular and irregular adversary or enemy forces.

Tactics

Tactics include tactical doctrine as well as methods employed by specific units. Although tactical doctrine refers to the adversary's or enemy's accepted organization and employment principles, tactics refer to the adversary or enemy force's conduct of operations. Based on knowledge of an adversary's or enemy's tactical doctrine, the intelligence staff can determine how the adversary or enemy might employ its forces in the offense and defense under various conditions. Analysts integrate tactics in adversary or enemy templates and other intelligence products. Analysts identify the adversary's or enemy's tactics for the broad COAs (defend, reinforce, attack, withdraw, delay [DRAW-D]).

Regular Adversary or Enemy Forces. Tactics for regular adversary or enemy forces refer to the TTP that guide adversary or enemy force operations. Understanding how the adversary or enemy force prefers to operate aids the commander's understanding of potential adversary or enemy COAs. Generally, TTP for regular adversary or enemy forces can be grouped in the following categories:

- Offensive tasks:
  - Movement to contact.
  - Attack.
  - Exploitation.
  - Pursuit.
- Defensive tasks:
  - Area defense.
  - Maneuver defense.
- Other tactical operations:
  - Delay.
  - Withdraw.

Irregular Adversary or Enemy Forces. Tactics and operations for irregular forces include strategy, methods of procedure, and doctrine. Each refers to the adversary or enemy force's accepted principles of organization and employment of forces. Tactics also involve political, military, psychological, and economic considerations. Irregular force tactics and operations vary in sophistication according to the level of training the individual or organization has received.

Irregular forces carefully plan and train for individual and small-group operations. (For more information on potential irregular force tactics and operations, see Field Manual [FM] 3-24 and MCWP 3-02, *Insurgencies and Countering Insurgencies*.)

Adversaries and enemies to the United States and its allies employ irregular forces as part of a sophisticated, comprehensive, and multidimensional strategy to achieve specific goals and objectives. The doctrine and tactics that guide irregular forces are similar to Marine Corps doctrine and tactics in that strategic, operational, and tactical actions are coordinated to achieve objectives and end states.

Irregular force doctrine is based on countering an adversary's or enemy's capabilities. Irregular adversary or enemy forces often study US and allied military forces and their operations and conduct lessons learned based on their assessments and perceptions. By studying and understanding US and allied military force operations, irregular adversary or enemy forces seek to gain knowledge of when, where, and how to best use their capabilities to gain advantages in the operational environment.

Irregular adversary or enemy forces use nations that they see as adversaries (such as the US and its allies) as baselines for planning adaptive approaches for dealing with the strengths and vulnerabilities of their forces. These forces use the following principles for applying their various instruments of diplomatic, informational, economic, and military power:

- Access limitation.
- Control tempo.
- Cause politically unacceptable casualties.
- Neutralize technological and systems overmatch.
- Conduct information activities to influence at the local population, international opinion, and their adversaries' domestic population.
- Change the nature of conflict.
- Allow no sanctuary.
- Employ operational exclusion.
- Employ operational shielding.
- Avoid defeat.

Support

The adversary or enemy force's adoption of a COA should depend on the ability of its support system to support that action. However, depending on the adversary or enemy force's objectives, possible time constraints, or willingness to assume risk—particularly as dictated by political leaders or dynamics of political-military circumstances— could substantially alter adoption of a COA. With knowledge of these factors, analysts can better evaluate the adversary or enemy force's capabilities, strength, and combat effectiveness.

Regular Adversary or Enemy Forces. The location of a regular adversary or enemy force's logistics support structure elements assists intelligence staffs in determining the disposition of

maneuver formations. Logistics information critical for effective intelligence analysis includes but is not limited to—

- Classes and types of supply.
- Lines of communications.
- Logistical requirements.
- Procurement methods.
- Distribution priorities and procedures.
- Transportation networks and modes.
- Installations and terminals.
- Damaged equipment evacuation and salvage procedures.
- Maintenance.

Irregular Adversary or Enemy Forces. The effectiveness of unconventional warfare heavily depends on support and relationships. This dependency fluctuates horizontally and vertically between the various groups and levels of operation. The intensity of support activity is based on operations. Critical support components include but are not limited to—

- Financing.
- Food.
- Water.
- Weapons and ammunition.
- Bomb-making components.
- Medical.
- Military information support operations materials (paper, ink, printing press, electronic communications devices).
- Transportation.
- Support of the population.

Irregular adversary or enemy forces incorporate these critical support components with the traditional logistics support associated with conventional military operations.

Because an irregular force is a composite of many different groups, these groups often have no standard, readily identifiable organizational relationship. A common purpose—typically opposition to US goals—brings together the irregular force's capabilities and intent of the components. This unity of purpose can even bring together groups that typically fight among themselves.

Affiliated organizations cooperate toward a common goal despite having no formal command or organizational relationship. Affiliated organizations are typically nonmilitary or paramilitary groups such as criminal cartels, insurgencies, terrorist cells, or mercenaries.

Affiliated forces are those irregular forces operating in a military unit's AO. These forces might be able to influence the military forces to cooperate for a limited time (or can receive support as part of an agreement). No command relationship exists between an affiliated organization and the unit in whose AO it operates.

Electronic Technical Data

Electronic technical data derived from targeting and EW is required to conduct EW. This data is also derived from cyberspace electromagnetic activities. This data includes communications and noncommunications equipment parameters such as emitter type and nomenclature, modulation, multiplex capability, pulse duration, pulse repetition frequency, bandwidth, associated weapon systems, and other technical characteristics of electronic emissions. This information can be developed into an overlay. To produce the overlay, signals intelligence personnel require the assistance and input of the targeting and EW staff.

Regular Adversary or Enemy Forces. For regular adversary or enemy forces, this data also includes critical adversary or enemy communications nodes such as command posts and logistical control points. This information supports adversary or enemy template development. With electronic technical data—

- A more accurate evaluation of the adversary's or enemy's vulnerability to electronic countermeasures and deception is made.
- Signals intercept and direction finding to produce signals intelligence is made easier.
- Support is given to counter adversary or enemy EW by assessing the adversary's or enemy's EW capabilities.

Irregular Adversary or Enemy Forces. When combating irregular adversary or enemy forces, the lack of an obvious formal organizational structure or architecture impedes the development of extensive adversary or enemy communications network diagrams and electronic technical database. The insurgent can have communications equipment available ranging from the most modern to the most primitive. Insurgent forces can use high-frequency, short-wave ham radio and citizen band sets; cellular phones; satellite phones; the internet; mail; and couriers. Historically, insurgent use of radar has not been significant; however, the potential use cannot be ruled out.

Irregular adversary or enemy forces can employ a combination of capabilities used by regular and irregular forces and available commercial-off-the-shelf technology and existing civilian communications networks.

Capabilities and Limitations

Capabilities and capability limitations influence COAs and supporting operations that the adversary or enemy can take to achieve its goals and objectives. The following tactical COAs are generally open to military forces in conventional operations: defend, reinforce, attack, withdraw, delay (DRAW-D). Each of these COAs can be divided into more specific COAs. For example, an attack could be envelopment, penetration, or other variations. A retrograde movement could be a delaying action, a withdrawal, or a retirement. Other adversary or enemy force capabilities include support to broad COAs or specific types of operations, such as—

- Information warfare:
  - Cyberspace warfare.
  - Perception management.
  - Deception.
  - Electromagnetic Warfare.
  - Physical destruction.
  - Operations security.

- Intelligence operations.
- CBRN employment.
- Espionage, sabotage, subversion, and terrorist operations.

Adversary or enemy capability descriptions take the form of statements, such as the following examples:

- The adversary or enemy can insert up to two infantry battalions in a single lift operation.
- The adversary or enemy can employ A2 and AD assets before friendly force establishment of an aerial port of debarkation.
- The adversary or enemy can use cyberspace to employ misinformation and propaganda to affect the population before friendly force occupation.
- The adversary or enemy can emplace six 200-meter antitank minefields at three rows each.
- The adversary or enemy can employ disinformation prior occupation to influence regional allies.
- The adversary or enemy can establish a prepared defense by 14 May.
- The demonstrators can effectively block traffic at up to seven intersections in the AO.
- The adversary or enemy has personnel able to introduce malware into friendly and HN communications networks.

When identifying adversary or enemy capabilities, intelligence staffs—

- Start with developed adversary or enemy models.
- Consider the adversary's or enemy's ability to conduct each operation based on all factors related to the current situation. (The enemy might be lacking in equipment or personnel, short of logistical support, or lacking in air support, or the enemy's troops might be inexperienced or poorly trained.)

Regular Adversary or Enemy Forces. A regular adversary or enemy force is designed to attack or defend, as necessary, to accomplish objectives. Determining capabilities and limitations for a regular adversary or enemy force requires an understanding of the art and science of war, as well as an understanding of the adversary or enemy force itself.

Irregular Adversary or Enemy Forces. The irregular adversary's or enemy's most influential capability is its ability to blend in with the population or to hide in complex terrain. This allows the adversary or enemy to plan and prepare an operation and attack to its advantage without interference from friendly forces.

From a friendly perspective, another challenging capability of an irregular force is its ability to adapt and transition. The irregular force employs speed, agility, versatility, and changeability as the keys to its success in a fight against a larger, more powerful opponent.

Adaptation. Adaptation refers to the ability to adjust behaviors based on learning. Adaptation is closely linked to the operational environment and its variables. Adversary or enemy forces approach adaptation from two perspectives:

- *Natural adaptation* occurs as a nation-state or non-nation-state actor acquires or refines its ability to apply its political, economic, military, or informational power. Natural adaptation can be advanced through acquisition of technology, key capabilities, or resources (financial and material); effective organization; effective use of the information environment; or even key regional or global alliances.
- *Directed adaptation* refers to adaptation, based specifically on lessons learned, to counter US power and influence. Counters to US actions are ever-changing and likely conducted by an irregular force. Irregular forces offer a mix of capabilities along the range of military operations to counter US military actions. Adversaries learn from US operations what works and what needs refinement. Like natural adaptation, directed adaptation informs issues of force design, military strategy, and operational designs.

Transition. One of the most dangerous aspects of an irregular force is the ability of its components to transition in and out of various forms. Military forces, for example, can remove uniforms and insignias and other indicators of status and blend in with the local population. Insurgent forces might abandon weapons and protest innocence of wrongdoing. Criminals might impersonate local police forces to gain access to a key facility. Therefore, it is important for analysts to archive TTP to ensure they can be referenced in data files for future use when developing adversary or enemy models.

The difficulties of positively identifying irregular forces are an advantage to adversary or enemy forces. Operational environments are replete with many actors conducting activities counter to US interests but without a clear visual signature that identifies them as adversaries or enemies. Often these actors provide signatures similar to friendly or neutral actors.

The concepts of conventional and unconventional warfare and traditional versus adaptive methods are weapons to irregular forces. These concepts do not have meaning to irregular forces beyond their ability to be used against their opponents. Irregular forces see war holistically and do not try to break it up into convenient pieces. They need to perform certain functions for them to succeed. Some functions might be performed by uniformed military forces. At other times or for other reasons, some functions are best performed by irregular forces. At some points, both types of forces act together. At others, they shift between the status of regular and irregular. They may also use deception to shift between combatant and noncombatant status. Irregular forces present themselves in many ways but maintain the ability to aggregate at the time and place of their choosing.

Current Operations

Current operations are those operations in which an enemy force is currently engaged. This includes operations against US military forces or interests or against the military forces or interests of other nation-states. Analyzing current operations provides up-to-date information on other adversary or enemy characteristics.

Regular Adversary or Enemy Forces. The Marine Corps' knowledge of regular adversary or enemy forces is based on its understanding of these forces before 11 September 2001. These forces have evolved as the Marine Corps has evolved. Intelligence staffs at all echelons continuously study these forces to gain a better understanding of them.

Irregular Adversary or enemy Forces. The Marine Corps gained valuable experience in combating irregular forces during Operation Iraqi Freedom and Operation Enduring Freedom. As a result, the Marine Corps has learned how diverse and adaptive these adversaries can be. It is unlikely that the irregular adversaries the Marine Corps will face in the future will mirror those it fought in Iraq and Afghanistan. However, adversary or enemy forces might adopt effective tactics from those conflicts. To gain the best understanding of the evolving nature of irregular adversaries worldwide, intelligence staffs must analyze these adversaries whenever and wherever they appear.

Although the Marine Corps believes the primary adversary or enemy it will face in the future will come from irregular adversarial forces, little is known about the character of these adversaries. The Marine Corps has developed an irregular adversary or enemy force model to use in training combined arms teams; however, this model is of limited value in preparing the intelligence staff to understand this adversarial force. Like the previous contemporary operational environment adversary or enemy model, this model is a generic construct that does not reflect the adversary or enemy order of battle of any real-world adversary or enemy. Therefore, intelligence staffs at all levels must study irregular adversaries or enemies wherever they operate to continually increase their understanding of irregular forces. Intelligence staffs must also continue to study historical examples of irregular adversary or enemy operations.

Historical Data

Compiling the history of any adversary or enemy organization involves researching and gathering all relevant information regarding the adversary or enemy and producing the materials needed to communicate that information to the commander and staff. Information briefings and papers are the two most common methods used for this purpose. Both methods can be used to support intelligence training, officer professional development, and noncommissioned officer professional development. The history component of the adversary or enemy data file includes the original information sources used to compile information briefings and papers. These sources form part of the professional readings required by all the unit's intelligence personnel.

Regular Adversary or Enemy Forces. Regular adversary or enemy forces are characterized based on how they have been employed over time and on how they conducted themselves during those employments. While not definitive, understanding a unit's lineage and past performance can provide insight into the extent a unit will go to accomplish its objectives. This can also provide insight into what actions the unit might avoid.

Irregular Adversary or Enemy Forces. Irregular adversary or enemy forces are also characterized based on how they have been employed over time and on how they conducted themselves during those employments.

The historical record of irregular adversary or enemy operations and activities is one of the results of current operations analysis. However, history does provide examples of adversary or enemy forces using irregular approaches against a superior force.

Historical Examples of Irregular Approaches

- *1754 to 1763*. Regular British and French forces fought each other among irregular Colonials fighting for the British and American Indians fighting for both sides.
- *1814*. Peninsular War ended after the combination of regular and irregular multinational forces from Britain, Portugal, and Spain prevented France from controlling the Iberian Peninsula.
- *1954 to 1976*. Viet Cong and People's Army of Vietnam combined irregular and regular forces to fight the French and US forces. Viet Cong would organize into conventional and unconventional units.
- *2006*. Hezbollah mixed conventional capabilities (such as antiarmor weapons, rockets, and C2 networks) with irregular tactics (including information operations, nonuniformed combatants, and civilian shielding). The result was a tactical stalemate and strategic setback for Israel.
- *2016*. Russian, Syrian Army, and Hezbollah mixed capabilities used to isolate the Free Syrian Army in Aleppo.

Supporting Data

Intelligence staffs use supporting information to develop adversary or enemy force characteristics and to construct comprehensive intelligence estimates. This information includes biographic data, personality data, and biometric data, as well as other information important to mission accomplishment:

- Biographic data contains information on characteristics and attributes of an adversary or enemy force's members. Knowledge of personalities is important in identifying units and, in some cases, predicting a unit's COA.
- Personality data is valuable because the tactics and combat efficiency of units are closely tied to the commander's character, schooling, and personality traits.
- Biometric data can include tribal, clan, or ethnic group traits and their effects on the combat capabilities or limitations of the adversary or enemy force.

Operations in Iraq and Afghanistan have seen an extensive use of biometric and forensic collection to support counterinsurgency operations. This collection was used to—

- Establish the identity, affiliations, and authorizations of an individual.
- Deny anonymity to the adversary or enemy.
- Protect friendly assets, facilities, and forces.

Valuable intelligence can and has been gleaned from identity operations, known as identity intelligence. is the collection, analysis, protection, exploitation, and management of identity attributes, associated technologies, and processes to locate, track, and maintain continuity on identities across multiple or disparate instances or incidents, or across space and time. Future conflicts will likely involve an adversary or enemy that seeks to blend into a civilian populace. Intelligence Marines should seek to deny anonymity to the adversary or enemy by directing focused biometric and forensic collections and incorporating identity intelligence into the IPB process.

Regular Adversary or Enemy Forces. When evaluating regular forces, miscellaneous data includes biographic data on the commander and other key leaders in the organization. When combined with the other adversary or enemy characteristics, this information can provide insight on how an enemy commander might react in a particular situation or attempt to solve a particular problem.

Irregular Adversary or Enemy Forces. When evaluating irregular adversary or enemy forces, miscellaneous data includes information on personalities, culture, and internal organizational processes.

Personalities

Evaluating personality is an important factor when combating irregular forces. Analysts focus on leaders and other important individuals. Personality files assist analysts in evaluating the adversary or enemy. Personality files include but are not limited to:

- Leaders (political, ideological, religious, military, other).
- Staff members.
- Spokespeople.
- Family members (immediate and extended).
- Previous experience and skill training in professional disciplines, trades, and specialties.
- Media manipulation personnel.
- Trainers.
- Code names and nicknames.

Analysts use these personality files to help conduct link analysis and build organizational diagrams to determine relationships between critical personalities and their associations to various groups or activities. When combating irregular forces, this task is often known as network analysis. Network analysis is critical in determining the roles and relationships of many different people and organizations and assessing their loyalties, political significance, and interests.

> *NOTE:* Any relationship or organization can span across illegal, terrorist, and other adversary or enemy activities, as well as legitimate people, money, and activities.

Culture

Culture is the ideology of a people or region and defines a people's way of life. Culture is reflected in daily manners and customs. It outlines the existing systems of practical ethics, defines what constitutes good and evil, articulates the structures and disciplines that direct daily life, and provides direction to establish patterns of thinking and behavior. Intelligence analysts must consider that adversary or enemy motivations and intentions might outweigh cultural norms and practices. Cultural considerations include but are not limited to:

- *Religion*. Beliefs, customs, and protocols.
- *Political and economic beliefs*. Ideology and work ethic.
- *Tribe*. Family allegiances and loyalties; family economic interests; and matriarchies versus patriarchies.
- *Clan*. Caste, class, social group, standing, status, hierarchies.

- *Ethnicity*. Race and nationality (for example, Arab, Bedouin, and Turkic; Kurd and Armenian; Tibetan, Korean, Mongolian, and Chinese).
- *Regional affiliations*. Internal to a nation and those that extend past national borders.
- *Military attitudes*. Order, weapons, honor.
- *Law and justice*. One system of law or multiple systems, property rights, and correction versus punishment.

Internal Organizational Processes

An organization's flexibility or rigidity is a key determinant as to its strengths and vulnerabilities. This flexibility or rigidity can be accurately estimated by answering several questions:

- Are achievers viewed as potential competitors, or as important organizational contributors? Is the attitude consistent throughout the organization?
- How do organizations replace leader and cadre casualties? What are the primary factors that determine how these replacements are selected?
- What are the rewards and punishments? Are they consistently applied?
- Are internal rivalries complex, or does organizational discipline have primacy?
- Are policies adjusted and adjudicated through gunfights or dialogue?
- What are potential divisions and policy fractures?
- Which leaders support specific positions, and why?
- Are leader motivations organizational, family, or personal?

Miscellaneous data associated with adversary or enemy order of battle represent a combination of data required for analysis of regular and irregular forces.

IDENTIFY ADVERSARY OR ENEMY CAPABILITIES

Adversary and enemy capabilities are specific abilities that can impact supporting operations that the adversary or enemy can take to influence accomplishing friendly missions.

Identify Adversary or Enemy Capabilities by Using Statements

Analysts identify capabilities by using statements such as the following examples:

- The adversary or enemy has the capability to attack with up to eight divisions supported by 150 daily sorties of fixed-wing aircraft.
- The criminal organization has the ability to pay off local law enforcement agencies.
- The adversary or enemy has the capability to disrupt friendly reception, staging and onward integration operations at port X by 14 May.
- The terrorists have the capability to send destructive viruses over the internet that can destroy computer files and archives.
- The adversary or enemy has air defense capabilities to counter rotary-wing support during infiltration operations.
- The adversary or enemy can establish a prepared defense by 14 May.

- The terrorists have the capability of using CBRN weapons.
- The adversary or enemy can conduct information warfare from Site X.
- The drug smugglers can conduct three drug-smuggling operations simultaneously.
- The terrorists have the ability to conduct multiple car bombings simultaneously.
- "The adversary or enemy has the ability to target friendly convoys along main supply motely detonated improvised explosive devices (IEDs).
- The adversary or enemy has the ability to counter friendly UASs before crossing Phase Line Green.

Identify Other Adversary or Enemy Capabilities

Other adversary or enemy capabilities include support to COAs, which can include DRAW-D, or other specific types of operations, as well as operations that would allow adversary or enemy forces to use a COA that would not typically be available or would be severely hindered if the supporting operation were not conducted. Examples of these types of operations include:

- Use of CBRN weapons.
- Intelligence collection.
- EW operations.
- Use of air assets (fixed- and rotary-wing).
- Engineering operations.
- Air assault or airborne operations.
- Amphibious operations.
- River operations.
- Propaganda.
- Recruitment.
- Deception operations.
- Car bombings, bomb scares, and suicide bombers.
- Raids on weapons storage facilities.
- Carjacking or hijacking of vehicles used in transporting personnel, weapons, or drugs.
- Theft of chemicals related to drug manufacturing.
- Counter-UAS assets.
- Offensive cyberspace operations.
- Antiaccess and AD assets.
- Social media exploitation.

When identifying adversary or enemy capabilities and COAs, analysts start with a full set of adversary or enemy models and consider their ability to conduct each operation based on the current situation and the adversary's or enemy's METT-T conditions. Most situations do not present the adversary or enemy with ideal conditions envisioned by its doctrine. As a result, their actual capabilities usually do not mirror the ideal capabilities represented by the complete set of adversary or enemy models. This, in turn, causes the adversary or enemy to use certain capabilities during friendly windows of vulnerability.

The adversary or enemy could be under strength in personnel and equipment or may be lacking in logistical support, or adversary or enemy personnel might be inexperienced or poorly trained. For example, a terrorist group's typical tactics might call for using car bombs as a diversionary tactic to conduct other operations elsewhere. The evaluation of the adversary's or enemy's logistics might indicate a critical shortage of explosives. Analysts should consider the following:

- Avoid limiting adversary or enemy models and capabilities strictly to the adversary's or enemy's conventional forces. For example, student rioters during a noncombatant evacuation operation (NEO) may be or may become an adversary or enemy during the operation. By not limiting adversary or enemy capabilities, intelligence staffs have a more accurate picture of all possible COAs when conducting Step 4 of the IPB process.
- Avoid overstating adversary or enemy models and capabilities. The proper use of findings and recommendations developed from adversary or enemy assessments develops realistic models and reserves valuable time and resources for the commander and staff.
- During any discussion of the adversary or enemy, be culturally aware, as it is an important factor. By developing an awareness of the culture, friendly units can identify groups or individual members of the population that may be friendly, an adversary or enemy, somewhere in between, or both.

CREATE OR REFINE ADVERSARY OR ENEMY MODELS

Adversary and enemy models accurately portray how adversary or enemy forces typically execute operations and how they have reacted to similar situations in the past. This also includes knowledge of adversary or enemy capabilities based on the current situation. Adversary and enemy models are initially created by analyzing information in various databases concerning typical adversary or enemy organization, equipment, doctrine, and TTP. Higher agencies and organizations typically create regular adversary or enemy models; but in immature operational environments or when a new adversary or enemy emerges, analysts must develop the models.

Analysts must use all available sources to update and refine adversary or enemy models. The most useful sources are adversary or enemy characteristic files that contain information that assists analysts in making conclusions about adversary or enemy operations, capabilities, and vulnerabilities. Staff integration during model development is essential in achieving the most accurate depiction of how the adversary or enemy conducts operations in ideal situations with no terrain constraints.

An adversary or enemy model is an analytical tool designed to assist in developing situation templates during Step 4 of the IPB process. Adversary or enemy models consist of three activities (see Figure 5-5):

- Create adversary or enemy doctrine or patterns of operations to graphics (adversary or enemy template).
- Describe the adversary's or enemy's preferred tactics and options.
- Identify HVTs.

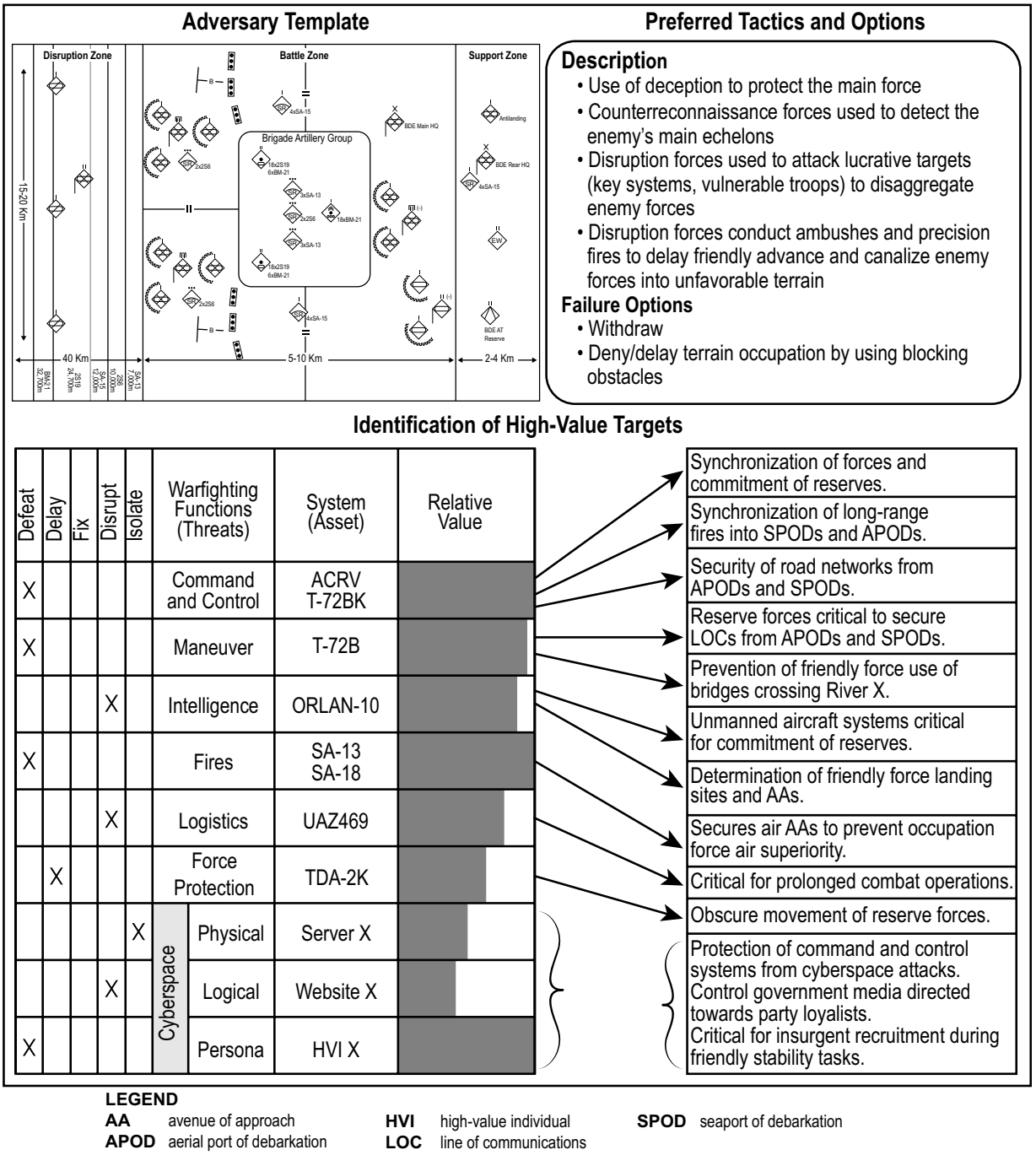


Figure 5-5. Adversary or Enemy Models.

Convert Adversary or Enemy Doctrinal Template

Adversary and enemy templates graphically portray how the adversary or enemy might use its capabilities to perform the functions required to accomplish its objectives when not constrained by the effects of the operational environment. Adversary and enemy doctrinal templates are scaled to depict the adversary's or enemy's disposition and actions for a particular type of operation (for example, offense, defense, insurgent ambush, or terrorist kidnapping). When possible, doctrinal templates should be depicted graphically as an overlay on a supporting system.

Adversary and enemy doctrinal templates are tailored to the needs of the unit or staff creating them. For example, a G-2 section's adversary and enemy doctrinal template differs in scope from a unit S-2 section's doctrinal template. Some adversary ans enemy doctrinal templates consider the adversary or enemy forces as a whole, while others focus on a single warfighting function such as intelligence or fires support. Other products depict pattern analysis, time event charts (see Figure 5-8), and association matrices. Adversary and enemy doctrinal templates can depict, but are not limited to, unit frontages, unit depths, boundaries, engagement areas, and obstacles.

When creating adversary and enemy doctrinal templates, analysts—

- Construct the templates by analyzing the intelligence database and evaluating the adversary's or enemy's past operations.
- Determine how the adversary or enemy typically organizes for combat and how it deploys and employs its forces and assets.
- Look for patterns in how the adversary or enemy organizes its forces, timing, distances, relative locations, groupings, or use of terrain and weather.

Developing an adversary or enemy template requires continuous refinement to accurately portray patterns and practices. For example, while there may be no adversary or enemy doctrinal template for emplacement of kidnapping cells or money-laundering activities, evaluating the database can indicate specific patterns of kidnapping and money laundering. Because the implementation time is a consistent planning factor, an analyst can use the implementation time evaluation to determine the likelihood of location or participants (see Figure 5-9 for a depiction of the adversary or enemy template).

Describe the Adversary's or Enemy's Tactics and Options

When creating the adversary or enemy model, analysts describe the adversary's or enemy's tactics and options. The description of tactics and options is developed from an evaluation of the adversary's or enemy's doctrine and previous and current operations. Analysts include a description of the branches and sequels available to or preferred by the adversary or enemy should their initial operation succeed or fail.

Tactics. The adversary or enemy model includes a description of the adversary's or enemy's preferred tactics (including but not limited to DRAW-D). A description is still needed even if the preferred tactics are depicted in a graphic form. It assists in mentally wargaming the operation over its duration during the development of adversary or enemy COAs and situation templates.

Options. The description lists options such as identified adversary or enemy capabilities and branches and sequels. Branches and sequels are primarily used for changing deployments or direction of movement and accepting or declining combat. According to JP 5-0, *Joint Planning*, branches provide a range of alternatives often built into the basic plan and sequels anticipate and plan for subsequent operations based on the possible outcomes of the current operation—victory, defeat, or stalemate. Analysts list branches and sequels available to the adversary or enemy should the operation succeed or fail. For example, the adversary or enemy might prefer to follow successful attacks with pursuit. Should an attack begin to fail, the preferred branches might include committing reserves or reinforcements or shifting the main effort. Should the attack fail, the preferred sequel might be a hasty defense.

Additionally, analysts—

- Describe supporting warfighting function relevant actions to identify and develop HVTs. They examine timelines and phases of operations because target values may change from phase to phase.
- Describe and determine goals the adversary or enemy is trying to achieve. Adversary and enemy objectives are often, but not always, what the unit's mission tries to prevent; they are often actions the adversary or enemy takes to prevent unit mission accomplishment. Adversary and enemy objectives are specific to the type of adversary or enemy, the AO, the unit's composition and mission, and other factors, such as when and where a unit transitions from one form of maneuver to the next. Analysts also describe adversary or enemy objectives in terms of purpose and end state. Several different functions must be executed each time an adversary or enemy force attempts to achieve a goal.

Figure 5-6 shows an example of the description component of the adversary or enemy model.

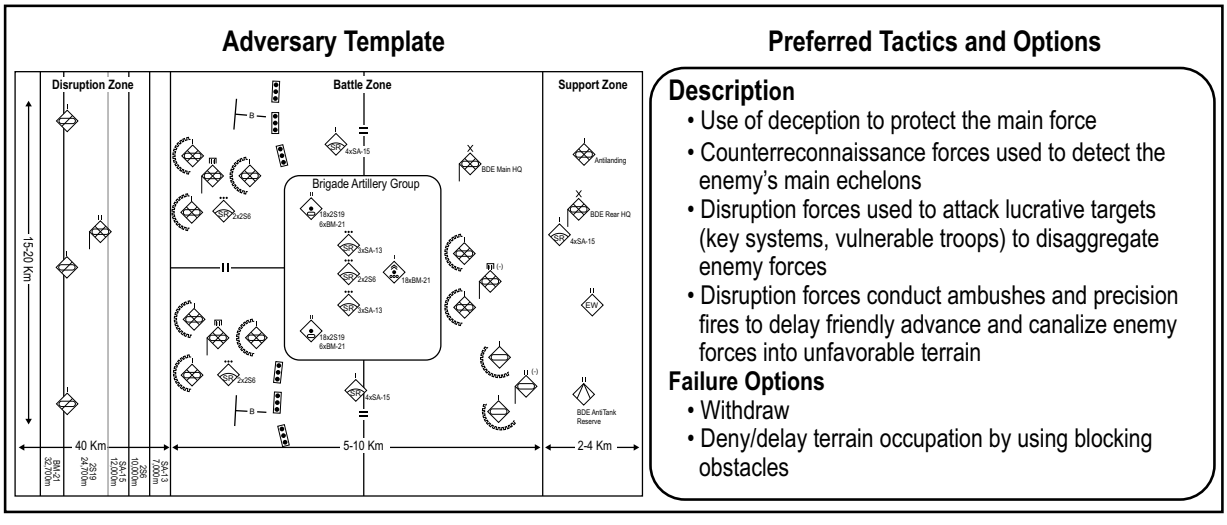


Figure 5-6. Description Component of an Adversary or Enemy Model.

Center of Gravity and Critical Vulnerabilities

Marine Corps Doctrinal Publication 1, *Warfighting*, defines a center of gravity as "any important source of strength." It can be mental or physical strength, power, or will. Centers of gravities can exist at each level of war: strategic, operational, and tactical. It can be tangible or intangible, and there can be multiple COGs. While knowledge of a threat's COGs at all levels is useful, the analyst should focus on the COGs appropriate to the level of operations that concern their friendly force. At this stage of IPB process, the identification of the COGs is an initial assessment.

While there are multiple methods for analyzing an adversary's or enemy's COG, the essence of the theory remains the same – every adversary or enemy has a key strength significant enough to allow them to conduct their operation. In turn, every adversary or enemy has a weakness that undermines that strength. When evaluating the COG, or strength, analysts must strive to answer the questions:

- Which factors are critical to the adversary or enemy?
- Which can the adversary or enemy not do without?
- Which, if eliminated, will cause the adversary or enemy to abandon their current COA or require significant external resources to continue?

Critical Vulnerabilities. Critical vulnerabilities are those aspects of a COG that, if exploited, will do the most significant damage to an adversary's or enemy's ability to resist. A vulnerability cannot be critical unless it undermines a key strength. Additionally, to be vulnerable, the commander must be able to target (lethal or nonlethal, directly, or indirectly) with effects. Any critical vulnerability that cannot be actioned by a commander becomes conditionally irrelevant. Some vulnerabilities can significantly contribute to the enemy's downfall while others might only lead to minimal gains. Therefore, analysts must focus on a vulnerability that will do the most damage to the enemy's ability to resist.

Critical vulnerabilities provide an aiming point for applying friendly strengths against adversary or enemy weaknesses. Identified critical vulnerabilities are then considered potential HVTs.

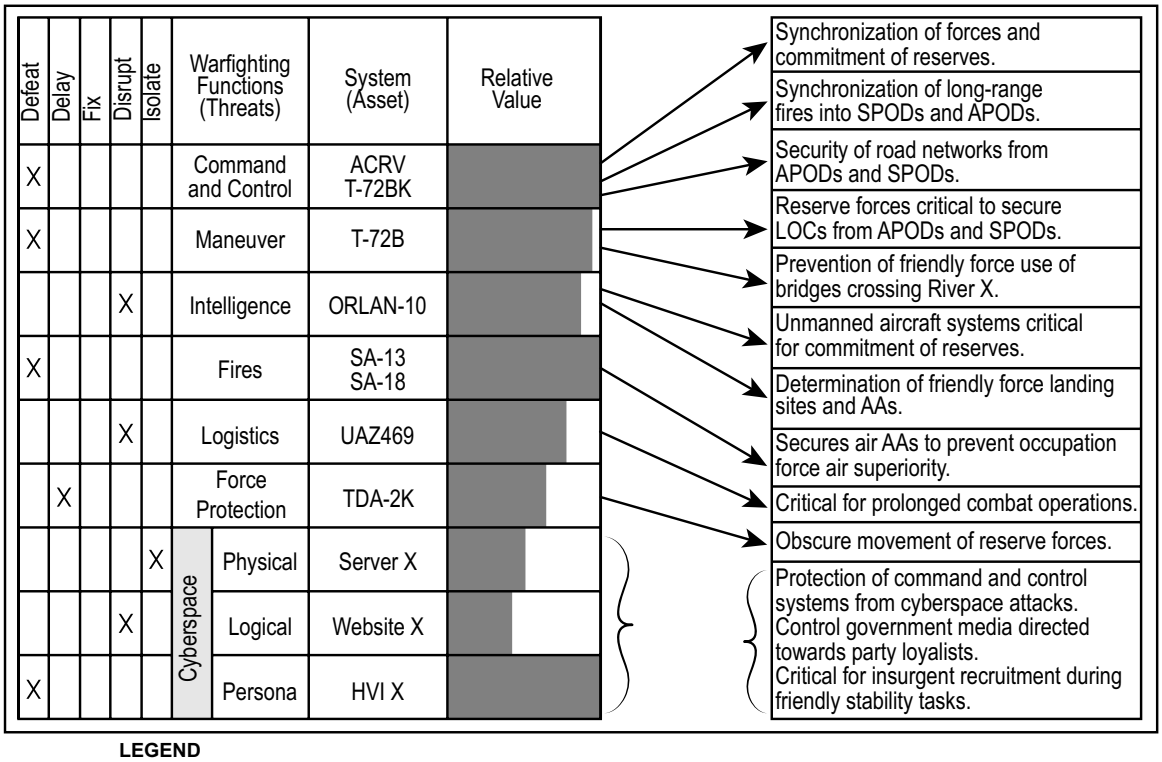
Identify High-Value Targets

High-value targets are "targets the enemy commander requires for the successful completion of the mission" (JP 3-60). The following techniques can be useful in identifying and evaluating HVTs:

- Identify HVTs from—
  - Existing intelligence studies.
  - The evaluation of the databases.
  - Size, activity, location, unit, time, and equipment (also called SALUTE) reports.
  - Patrol debriefs.
  - The adversary or enemy doctrinal template and its adversary or enemy capabilities statement.
  - The use of tactical judgment.
- Review adversary or enemy TTP and previous adversary or enemy operations as well as understand the adversary's or enemy's task, purpose, method, and end state.
- Consider that HVTs usually (but not always) fall within the non-maneuver warfighting functions (command and control, intelligence, fires, logistics, and force protection).
- Identify assets key to the adversary or enemy executing the primary operation or sequels.
- Determine how the adversary or enemy might react to the loss of each identified HVT. Consider the adversary's or enemy's ability to substitute other assets as well as adopt branches or sequels.
- Conduct mental wargaming and think through the operation under consideration and how the adversary or enemy will use assets from each of the warfighting functions (such as fires support, CBRN, high-yield explosives, and engineers).

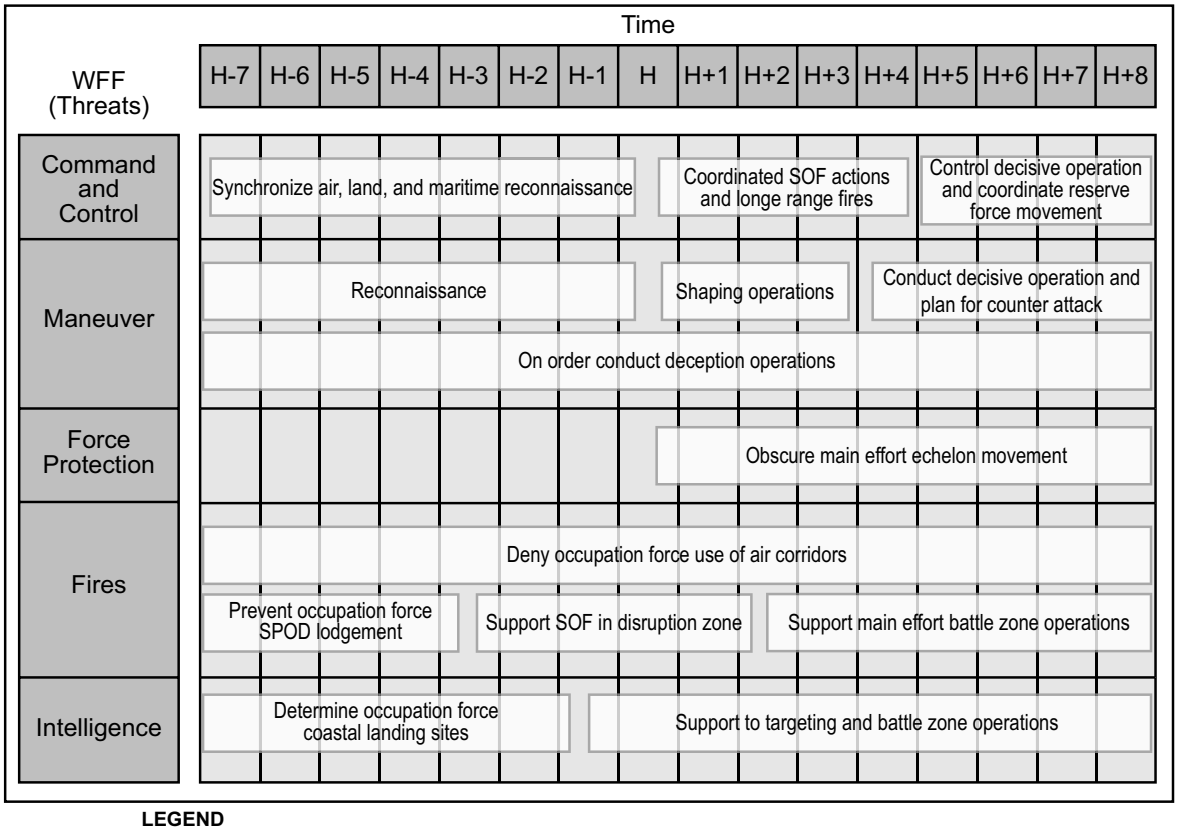
As analysts identify key assets (see Figure 5-7), they group them into categories to assist in identifying adversary or enemy objectives. Categories include, but are not limited to, the warfighting functions and cyberspace:

- Command and control.
- Maneuver.
- Intelligence.
- Fires.
- Logistics.
- Force Protection.
- Information (including cyberspace).



LEGEND
AA avenue of approach **APOD** aerial port of debarkation **HVI** high-value individual **LOC** line of communications **SPOD** seaport of debarkation

Figure 5-7. Identifying High-Value Targets.



LEGEND
H hour **SOF** special operations forces **SPOD** seaport of debarkation **WFF** warfighting function

Figure 5-8. Example Time Event Chart.

The identification of HVTs assists the staff in creating HPTs (see Chapter 1). High-payoff targets can include various adversary or enemy considerations potentially detrimental to the success of friendly missions. These HPTs are incorporated into the scheme of fires and used to create target selection standards and attack guidance matrices.

Marine Corps staffs conduct a COG analysis based on the understanding gained through design and task analysis to identify or refine adversary, enemy, and friendly COGs and to determine which vulnerabilities might become critical. A critical vulnerability is some aspect of the COG that is, or can be made, vulnerable to attack.

Target Value Analysis. High value targets should be prioritized by their relative value to the adversary's or enemy's operation. Target value analysis assists in prioritizing HVTs. Target value analysis is a process led by the fires cell as part of targeting that quantifies the relative value of HVTs with each other in relation to a particular enemy operation. This analysis is based in part on the conclusions reached by the intelligence staff upon evaluating the adversary or enemy order of battle. The IPB products required to support target value analysis are the adversary or enemy template, the HVT list, and the adversary or enemy capabilities statement (See Figures 5-9, 5-11 and 5-13). These products assist the fires cell and the rest of the staff in—

- Providing a focus for the commander's target acquisition effort.
- Identifying priorities for the engagement of enemy targets to facilitate the mission's success.
- Identifying effects criteria.

> *NOTE:* While target value analysis is initially conducted during IPB, it is a separate process that is repeated throughout the operations process as part of targeting. To be effective, this analysis depends on the most current intelligence related to the adversary or enemy. Based on the initial adversary or enemy templates developed during Step 3 of the IPB process, target value analysis should be refined based on the adversary or enemy COAs developed during Step 4 of the IPB process, and continually refined based on changes to the adversary or enemy overlay during operations. Whenever conducted, the intelligence staff supports target value analysis with the most up-to-date adversary or enemy-related intelligence.

Target value analysis is a method of identifying and ranking potential HVT sets in a COA. The target analyst, in coordination with the G-3/S-3, G-2/S-2, fires support coordinator, and other staff members, war-games the COAs to—

- Finalize individual staff estimates.
- Develop a fires support plan and a scheme of maneuver, as well as friendly and adversary or enemy DSTs.
- Determine critical assets required by the adversary or enemy commander to accomplish the commander's mission.

The criticality, accessibility, recuperability, vulnerability, effect, and recognizability matrix (also known as the CARVER matrix), is a target value analysis tool used to identify and prioritize specific targets so attack resources can be used efficiently (see Table 5-2). (See and JP 3-60 for more information on target value analysis).

Table 5-2. CARVER Matrix Tool.

Value	Criticality	Accessibility	Recuperability	Vulnerability	Effect	Recognizability
5	Loss would end the mission	Easily accessible; not in the vicinity of security	Extremely difficult to replace, long replacement time	Have the means and expertise to attack	Favorable impact on civilians	Easily recognized by information collection assets
4	Loss would reduce mission performance	Easily accessible	Difficult to replace with long down time (<1 year)	Probably have the means and expertise to attack	Favorable impact, no adverse impact on civilians	Easily recognized by information collection assets
3	Loss would reduce mission performance	Accessible	Can be replaced in relatively short time (months)	May have the means and expertise to attack	Favorable impact, some adverse impact on civilians	Recognized with some training
2	Loss would reduce mission performance	Difficult to gain access	Easily replaced in a short time (weeks)	Little capability to attack	No impact, on forces, adverse impact on civilians	Hard to recognize, confusion probable
1	Loss would reduce mission performance	Very difficult to gain access	Easily replaced in a short time (days)	Very little capability to attack	Unfavorable impact, assured adverse impact on civilians	Extremely difficult to recognize without extensive orientation

OUTPUTS FROM STEP 3

The following IPB products are developed based on outcomes from Step 3 of the IPB process:

- Adversary or enemy doctrinal template.
- High-value target list.
- Description of adversary or enemy tactics and options.

Adversary or Enemy Doctrinal Template

As operations commence, developing sound and accurate adversary or enemy models by carefully analyzing an adversary's or enemy's capability, vulnerabilities, doctrinal principles, and preferred TTP is imperative. Analysts construct templates from the adversary's or enemy's doctrine, training practices, and observed patterns and activities.

Adversary and enemy templates graphically portray how the adversary or enemy prefers to use its capabilities to perform the functions required to accomplish its objectives They are scaled depictions of adversary or enemy deployment patterns and dispositions for a particular operation (for example, offense, defense, insurgent ambush, or terrorist kidnapping operation) when not constrained by operational environment effects. Depending on the mission variables, developing templates can be time intensive.

> *NOTE:* Analysts should create as many adversary or enemy templates as time allows to assist in creating situation templates during Step 4 of the IPB process.

Adversary and enemy templates are tailored to the needs of the unit or staff creating them. When possible, they should be depicted graphically as an overlay on a supporting system. Adversary and enemy templates do not include environmental effects, such as terrain and weather. They include—

- The location of all enemy units two levels down. For example, an infantry battalion in the defense template would depict platoon and specialty team locations.
- The distance or time between adversary or enemy forces conducting a specific operation or activity.
- Graphic control measures associated with the operation such as unit depths, boundaries, engagement areas, and obstacles.

Adversary and enemy templates allow analysts and the staff to—

- Fuse all relevant combat information.
- Assist in identifying intelligence gaps.
- Predict adversary or enemy activities and adapt COAs.
- Synchronize information collection.

Figure 5-9 is an example of a regular adversary or enemy doctrinal template. Figure 5-10 exemplifies a doctrinal template for an irregular adversary or enemy.

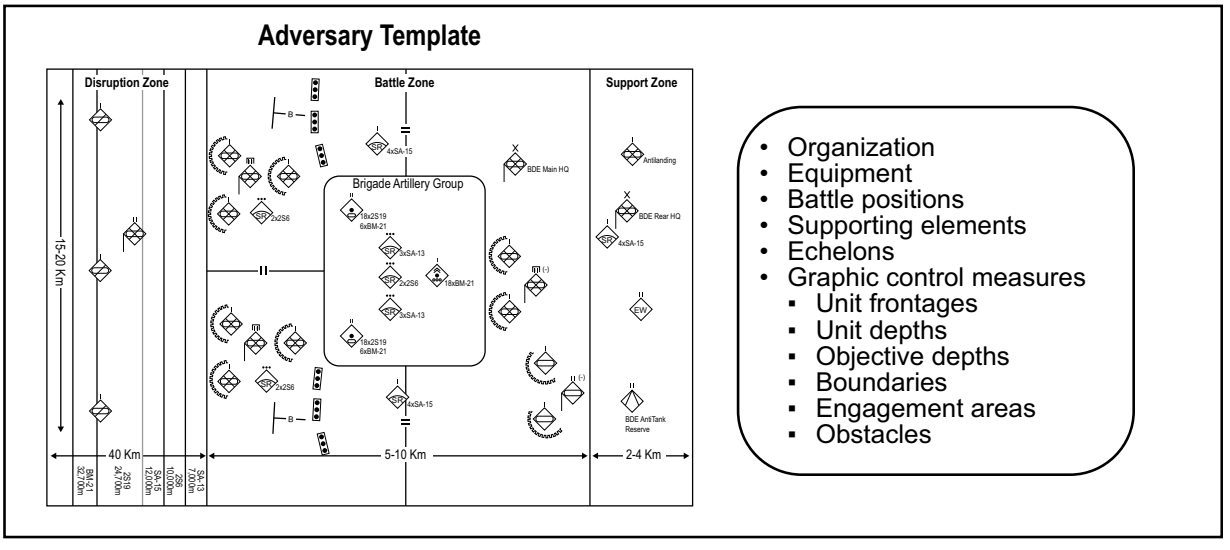


Figure 5-9. Doctrinal Template (Regular Adversary or Enemy) Example.

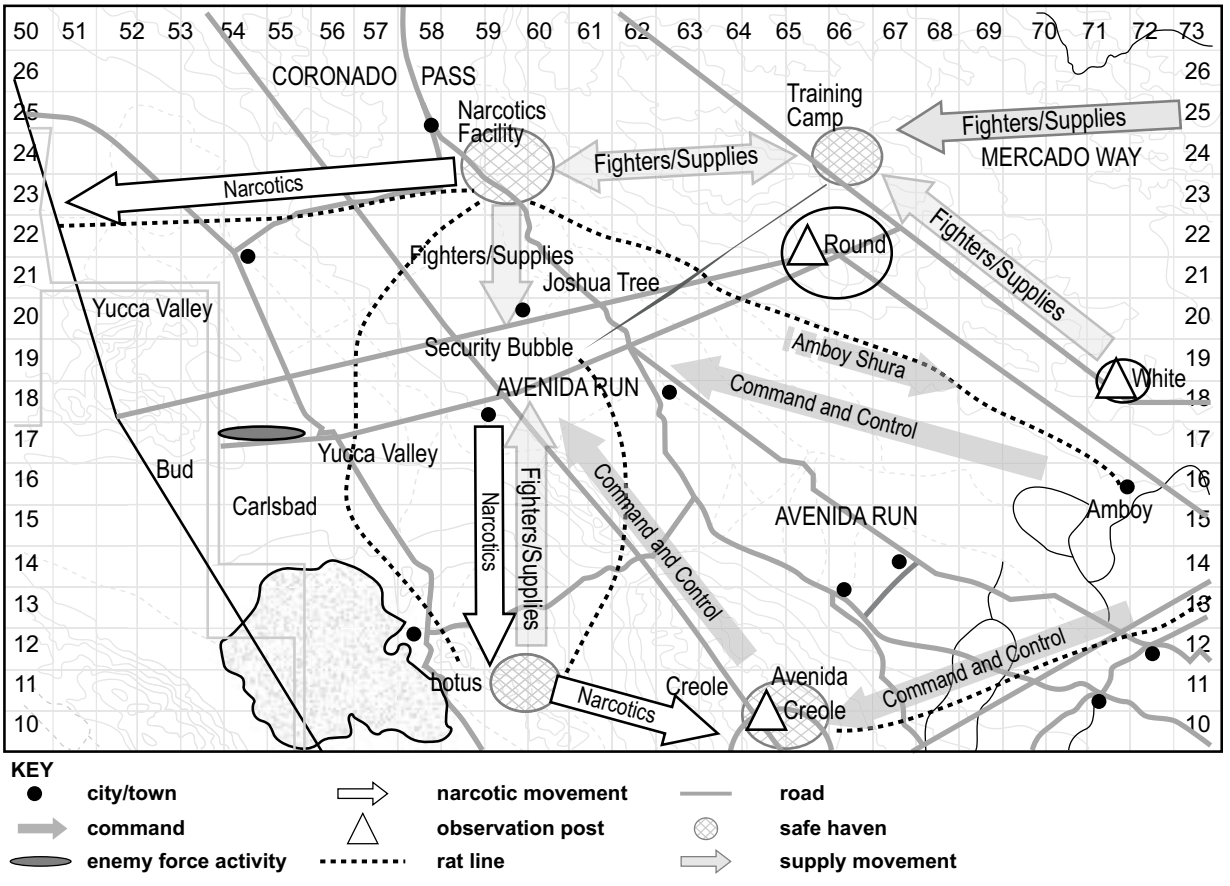


Figure 5-10. Doctrinal Template (Irregular Adversary or Enemy) Example.

High-Value Target

The HVTs identified during Step 3 are initially refined during Step 4 of IPB and are refined again during the COA wargaming step of the MCPP. The HVT list is developed based on identified HVTs and is used as a guide to develop the HPT list, which is continually refined during execution by targeting groups and boards. Table 5-3 provides an example HVT list; Table 5-4 provides an example HPT list.

Table 5-3. High-Value Target List Developed During Step 3.

WFF (Threats)	High-Value Targets	
Command and Control	• Commander's variant main battle tank (T-72 BK) • Command and staff vehicle (BMP-1KShM) • SAM system fire control (SA-15b)	• Artillery command and reconnaissance vehicle (1V14-3) • Command infantry fighting vehicle (BMP-3K)
Maneuver	• Main battle tank (T-72B) • Excavating vehicle (MDK-3) • Tracked minelaying vehicle (GMZ-3) • Infantry fighting vehicle (BMP-3)	• Towed mechanical minelayer (PMZ-4) • Mine-clearing plow attached (KMT-8) • Armored personnel carrier (BTR-80)
Force Protection	• NBC reconnaissance vehicle (RKhm-4-01)	• NBC reconnaissance vehicle (BRDM-2RKh)
Fires	• 122-mm multiple rocket launcher (BM-21) • 30-mm self-propelled anti-aircraft gun/ missile system (2S6M1) • 152-mm self-propelled howitzer (2S19M1)	• 120-mm self-propelled mortar (2S12) • Man-portable SAM system (SA-18) • SAM system (SA-15b) • SAM system (SA-13b)
Intelligence	• Signal van (GAZ-66) • Battlefield surveillance radar (SNAR-10) • Armored scout car (BRDM)	• Short range drone (ORLAN-10) • SAM system radar system (SA-15b) • Artillery locating radar (ARK-1M)
Logistics	• Tactical utility vehicle (UAZ-469) • 2-mT 4x4 cargo truck (GAZ-66)	• 4.5-mT 6x6 cargo truck (URAL-4320)

LEGEND

mm	millimeter	NBC	nuclear, biological, chemical
mT	metric ton	SAM	surface-to-air missile
		WFF	warfighting function

Table 5-4. High-Payoff Target List Developed During Step 3.

Time (H-hour)	Priority	WFF (threats)	Targets	Desired Effect
H-1	1	Fires	• Surface-to-surface sites • Man-portable air defense systems	Destroy
	2	Intelligence	• Enemy UAS assets	Neutralize
	3	Command and Control	• Mission command • Synchronization of long-range fires	
H-H+1	4	Maneuver	• Bridge demolition teams	Destroy
	5		• Mechanized infantry • Armored elements	

LEGEND

H-hour	Specific hour at which a particular operation commences
UAS	unmanned aircraft system
WFF	Warfighting function

Description of Adversary or Enemy Tactics and Options

An adversary or enemy capabilities statement, typically a narrative, describes the data that identifies a particular action for which the adversary or enemy has the capability to complete and the tactics the adversary or enemy prefers to use to accomplish its objectives. Even if the threat's preferred tactics can be depicted graphically, the threat model includes a description. It addresses the unit's major operations that will be portrayed on the adversary or enemy template and the activities of each warfighting function. Table 5-5 is an example of an adversary or enemy capability statement.

Table 5-5. Adversary or Enemy Capability Statement .

WFF (Threats)	Zones		
	Disruption Zone	**Battle Zone**	**Support Zone**
Command and Control	1x reconnaissance BN HQ with: • 2x BTR-80K • 1x BMP-1KSh with: ◆ Line-of-sight communications ◆ High frequency communications ◆ Satellite communications capabilities	3x MECH INF BN HQ with: • 1x BMP-3K • 2x self-propelled artillery BN HQ with 8x ACRV • 1x tank BN HQ with 2x BTR-80AK • 1x MRL BN HQ with 8x ACRV • 1x BDE main command post • 1x BDE rear command post	• 1x signal BN HQ with 11x BMP-1KSh • 1x antitank BN HHQ with 4x BMP-1KSh • 1x MECH INF CO HQ with 1x BMP-3K
Maneuver	• 3x CSOP • 2x BMP-2 • 26x RPG-27 • 4x AT-14 *Note. Capability to ambush with antitank capabilities and to over-watch obstacles.*	• 8x MECH INF CO with: ◆ 13x BMP-3 ◆ 10x RPG-29 ◆ 3x AT-14 ◆ 1x AGS-30 • 3x tank CO with 12x T-90 • 1x engineer BN with: ◆ 3x BMZ-3 ◆ 3x PMZ-4 ◆ 3x KMT-7 ◆ 4x MDK-3 ◆ 4x TMM ◆ 2x IMR-2M ◆ 1x GAT-2 ◆ 1x MTU-80 *Note. Each minefield supports simple battle positions that consist of 10-meter intervals, 200 to 300 meters wide and 3 to 4 rows deep, and a 400-meter wide antitank ditch 3 meters deep.*	1x MECH INF CO—anti landing reserve with: • 13x BMP-3 • 10x RPG-29 • 3x AT-14 • 1x AGS-30 *Note. Able to interdict airborne operations within the area of operations in a maximum of 45 and a minimum of 15 minutes.*
Force Protection	1x chemical defense CO with 2x ARS-14K and 3x BRDM-2RKh Note. Capability to detect airborne and ground contaminations.		

Table 5-5. Adversary or Enemy Capability Statement (Continued).

WFF (Threats)	Zones		
	Disruption Zone	**Battle Zone**	**Support Zone**
Fires		• 8x MECH INF CO with 3x SA-18 and 6x 2S12 • 3x tank CO with 2x SA-18 • 2x self-propelled artillery BN with 18x 2S19 and 6x BM-21 • 1x MRL BN with 18x BM-21 • 1x air defense artillery BN with 8x SA-15—provide security for BNs • 6x 2S6—provide security for BNs • 6x SA-13—provide security for BDEs *Note. Artillery in the battle zone can affect targets out to 37 kilometers from the BDE artillery group; ADA can protect out to 25 kilometers from the BDE artillery group.*	1x air defense artillery CO with 4x SA-15
Intelligence	• 1x BRM-3 • 4x BRDM-2 • 3x ORLAN-10 • 8x signal CO with: ◆ 12x signal vans ◆ 1x URAL-4320 ◆ 8x BMP-1KSh	• 2x self-propelled artillery BN with 1x SNAR-10 and 1x ARK-1M • 1x MRL BN with 1x SNAR-10 and 1x ARK-1M *Note. Can detect points of origin of artillery operations and air platforms out to 40 kilometers for tanks, 30 kilometers for rotary assets, and 15 kilometers for dismounts.*	1x signal BN HQ with: • 12x signal vans • 1x URAL-4320 • 11x BMP-1KSh
Logistics	8x signal CO with 3x motorcycles	• 8x MECH INF CO with 5x GAZ-66 • 2x self-propelled artillery BN with 20x URAL-4320 • 1x MRL BN with 8x URAL-4320	• 1x medical BN with 8x UAZ-469 and 3x URAL-4320 • 1x material support BN with: ◆ 43x URAL-375D ◆ 2x URAL-4320 (water) ◆ 4x URAL-4320 (POL) • 1x maintenance BN with: ◆ 3x motorcycles ◆ 31x UAZ-469 ◆ 22x light trucks ◆ 45x medium trucks ◆ 2x water trucks ◆ 4x light vans *Note. Can provide refuel, resupply, and medical services throughout the BDE; medical facility is Role 3 capable.*

LEGEND

BDE	brigade	INF	infantry
BN	battalion	MECH	mechanized
CO	company	MRL	multiple rocket launcher
HHQ	higher headquarters	POL	petroleum, oils, and lubricants
HQ	headquarters	WFF	warfighting function

CHAPTER 6.
STEP 4: DETERMINE ADVERSARY OR ENEMY COURSES OF ACTION

WHAT IS IT?

Step 4 of the IPB process identifies and describes adversary and enemy COAs that can influence friendly operations. The following example is adapted from *The Defense of Duffer's Drift*, by Sir Ernest Swinton. It illustrates the proper use of tactics, IPB, and the practical application of doctrine.

Example

A Boer S-2 tells his commander, "Sir, the enemy platoon leader's likely objective is to retain control of the only crossing point suitable for wheeled traffic over the Silliaasvogel River. He can defend the crossing, known as Duffer's Drift, with his 50 Soldiers in any one of the following ways:

- He can leave it undefended until tomorrow (being inexperienced and thinking that we will not arrive until the next day). He can dig his platoon into a small enclosure just on the other side of the drift. A variant of this COA would be for him to establish a trench line astride the main road.
- He can occupy and fortify the Kraal village that overlooks the drift.
- He can occupy the riverbed itself with only a small outpost in the Kraal village. This goes against every canon in British doctrine; however, we must consider this COA because it is so dangerous to the accomplishment of our mission.

The S-2 tells his commander, "Sir, I think the platoon leader will adopt one of these COAs, in order of probability as I gave them. We need to conduct reconnaissance of the riverbed and the Kraal in order to find out which of these COAs he has chosen."

When evaluating the adversary or enemy, the intelligence staff should consider the following:

- How PMESII and ASCOPE may impact how the adversary or enemy operates.
- How friendly actions may impact adversary or enemy operations and adversary or enemy COAs.

DESIRED END STATE

The desired end state of Step 4 of the IPB process is the development of graphic overlays (adversary or enemy situation templates) and narratives (adversary or enemy COA statements) for each possible COA that has been identified. The staff uses these products during the friendly COA development and COA wargaming step of the MCPP:

- Replicate the set of COAs that the adversary or enemy commander and staff are considering.
- Identify all COAs that may influence the friendly command's mission.
- Identify those areas and activities that, when observed, discern which COA the adversary or enemy commander has chosen. The primary outputs associated with Step 4 are:
  - Representing the adversary or enemy action or COAs with associated COA statements and HVT lists.
  - Developing an event template and associated event matrix.
  - Determining the HVT list and providing input to HPTs and the HPT lists.
  - Providing input into the collection plan.
  - Providing input into PIRs.
  - Updating the intelligence estimate.
- Providing input into OPORDs and OPLANs (annexes or appendixes).

THE "SO WHAT?"

The "so what" in this Step is to determine the adversary or enemy COAs necessary to aid in developing friendly COAs:

- Outcome of success: The friendly commander will avoid being surprised with an unanticipated adversary or enemy action, thus quickly narrowing the set of possible adversary or enemy COAs to the one the adversary or enemy has chosen.
- Consequences of failure:
  - Failure to identify which COA the adversary or enemy has chosen leads the friendly commander being surprised.
  - The adversary or enemy commander might have the information needed to exploit the opportunities the operational environment provides in a way the friendly commander did not anticipate.

HOW TO DO IT: (THE PROCESS)

Determining adversary or enemy COAs consists of the sub-steps shown in Figure 6-1.

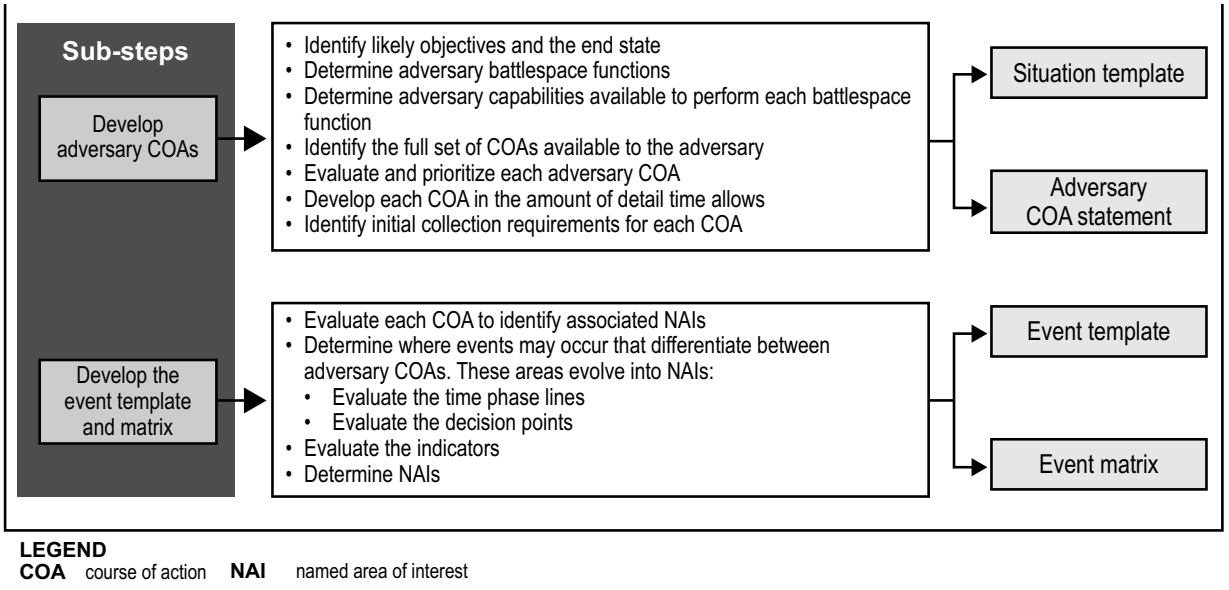


Figure 6-1. Sub-steps of Step 4.

DETERMINE ADVERSARY OR ENEMY COURSES OF ACTION

Determining an adversary or enemy COA requires understanding the adversary or enemy order of battle discussed in Chapter 5, and the effects of terrain, weather, and civil considerations on operations discussed in Chapter 4. Population effects to operations must be clearly annotated with full details. This ensures population effects and adversary or enemy actions are portrayed during the wargaming. The most important element in determining adversary or enemy COAs is understanding their operational art and tactics. As mentioned in Chapter 5, there are three types of adversary or enemy forces that US forces may encounter: regular, irregular, and unconventional. The process of determining the COAs these forces employ is identical, mirrors friendly COA development, and consists of the following:

- Identify likely objectives and the end state.
- Determine adversary or enemy battlespace functions.
- Determine adversary or enemy capabilities available to perform each battlespace function.
- Evaluate and prioritize each adversary or enemy COA.
- Develop each COA in the amount of detail time allows.
- Identify initial collection requirements for each COA.

To plan for all possible contingencies, the commander must understand all COAs an adversary or enemy commander can use to accomplish objectives. The staff provides the commander with all valid adversary or enemy COAs, prioritized from most likely to least likely. The staff also determines which COA is the most dangerous to friendly forces. To be considered valid, adversary or enemy COAs should be feasible, acceptable, suitable, distinguishable, and complete—the same criteria used to validate friendly COAs.

When determining COAs for regular and irregular adversaries where the adversary or enemy operates under the command and control of a unified command structure, the staff develops COAs focused on the objectives and end state of that command structure. However, when faced with multiple adversaries or enemies with varied and competing objectives, such as those encountered during stabilization activities, the staff develops COAs for each adversary or enemy.

Adversaryand enemy COAs are developed in the same manner as friendly COAs; therefore, intelligence staffs can use the same methodology. When developing an adversary or enemy COA, the intelligence staff accounts for all relevant adversary or enemy activity, including all possible branches and sequels the adversary or enemy commander might adopt (see MCWP 5-10 for further discussion of the development of friendly COAs).

Functional analysis is another method that graphically depicts how the adversary or enemy might use its capabilities to perform the actions required to accomplish its objectives. It is based on the concept that, although every action or battle is unique, certain actions are always performed to bring about mission accomplishment.

Several different functions are executed each time an adversary or enemy force attempts to accomplish a mission. Adversary or enemy commanders identify the specific functions they intend their various subordinate forces or elements to perform. The functions do not change, regardless of forces or element's location on the battlespace.

Identify Likely Objectives and the End State

Based on results of the mission variables analysis conducted earlier in the IPB process, the staff can now identify the adversary's or enemy's likely immediate and subsequent objectives and desired end state. These elements are included in the adversary or enemy COA statements.

An objective is "a clearly defined, decisive, and attainable goal toward which every operation is directed" (*DoD Dictionary*). Adversary or enemy objectives are usually terrain- or force-oriented. For example, an adversary or enemy might attack to destroy a friendly force or to seize key terrain; defend to delay a friendly force or retain control of key terrain; or conduct guerrilla operations to disrupt friendly operations.

The end state is "the set of required conditions that define achievement of the commander's objectives" (*USMC Dictionary*). The end state, if achieved, meets the conditions of policy, orders, guidance, and directives issued by the commander. For example, the end state for an attack to destroy might be the destruction of all friendly forces down to the platoon level and rendering friendly forces incapable of conducting a coordinated defense.

For regular forces, objectives can be either terrain- or force-oriented, and the end state is usually based on effect and time. For example, the objective of a lead echelon infantry unit performing an attack might be to neutralize defending forces. The unit's end state might be to prevent defending forces from affecting the movement of second echelon forces. Additionally, the unit's operations are synchronized in time with higher headquarters operations to ensure combat power is applied where and when needed to ensure success.

For irregular forces, although the end state remains based on effect, objectives are not always linear or time-based. Often, the objectives for irregular forces are driven by event rather than time. For example, the objective of an extremist group might be to prevent US forces from providing security to the general population by increasing the amount of time spent on resources. The group's end state might be to convince the population to rely on security provided by the extremist group rather than by US forces. In this case, the group's operations are synchronized with the operations of US forces attacking patrols, convoys, combat outposts, and security forces.

For irregular forces, objectives are typically based on terrain, or they are force-oriented; the end state is typically based on effect and time. For example, the objective of an insurgent cell performing an IED attack may be to disrupt attacking forces. The mechanized infantry unit echeloned with the insurgent cell may have an end state of preventing attacking forces from increasing an occupation force's sphere of influence. Additional objectives of an unconventional force might include but are not limited to—

- Preserving power.
- Degrading the adversary's or enemy's will and capacity to fight.
- Gaining time for aggressive strategic operations to succeed.

Determine Adversary or Enemy Battlespace Functions

The adversary or enemy executes numerous battlespace functions each time that force attempts to accomplish a mission. While the various functions required to accomplish any given mission can be quite diverse, they can be divided into two very broad categories: action and enabling.

Action Function. The action function (also known as the exploitation, decision, or mission function) is performed by employing certain capabilities to accomplish a mission. If the adversary or enemy objective is to destroy a city with a WMD, then the WMD is performing the action function. If the adversary or enemy objective is to seize a friendly capital city and it employs a WMD in another area to force a response by friendly forces that leaves the capital exposed, then the force used to seize the capital is performing the action function and the WMD is performing an enabling action.

One part of the unit or grouping of units conducting a particular action is typically responsible for performing the primary function or task that accomplishes the objective or goal of that action. Therefore, that part of the unit can be called the action force or action element. However, in most cases, the higher commander gives the action force or element a more specific designation that identifies the specific function it is intended to perform. This equates to achieving the objective of the higher command's mission. Some examples include the following:

- If the objective of the action is to conduct an assault, the element designated to complete that action is the assault element.
- In larger offensive actions, an action force that completes the primary offensive mission by exploiting a window of opportunity created by another force is called the exploitation force.
- In defensive actions, the unit or grouping of units that performs the main defensive mission in the battle zone is called the main defense force or main defense element. However, in a maneuver defense, the main defensive action is executed by a combination of two functional forces: the contact force and the shielding force.

Enabling Function. The enabling function (also known as the assault function and designated as disruption, fixing, or security enabling function) is performed by a set of capabilities that acts to assist those capabilities in performing the action function. For example, if the mission is to enter a US base and set off an explosive device, an enabling function would be to penetrate the perimeter defenses of the base or to assist in its infiltration. In relation to the forces or elements conducting the action function, all other parts of the organization or grouping of organizations conducting an action provide enabling functions of various kinds. Therefore, each of these parts can be called an enabling force or enabling element. However, each subordinate force or element with an enabling function can be more clearly identified by the specific function. Some examples include—

- A force that enables by fixing adversary or enemy forces so they cannot interfere with the primary action is a fixing force.
- An element that creates a breach that enables an assault element to assault the adversary or enemy forces on the far side of an obstacle is a breach element.

In larger offensive actions, one force can enable another by conducting an assault that enables another force to exploit the effects of that assault to accomplish the primary objective. Thus, that type of enabling force can be called the assault force. In this case, the force that conducts the initial assault is not the one that is intended to achieve the objective of the higher command's mission. The role of the assault force is to create an opportunity for another force—the exploitation force—to accomplish the objective. Thus, the assault force conducting the first part of a two-part offensive action acts as an enabling force. To create a window of opportunity for the exploitation force to succeed, the assault force might be required to operate at a high degree of risk and might sustain substantial casualties. However, other enabling forces or elements might not need to make contact the adversary or enemy. In the defense, an enabling function might be to counterattack to restore a portion of the area of responsibility to adversary or enemy control.

Disruption. Disruption forces or elements operate to prevent US forces from executing friendly COAs the way they want, and to prevent US forces from interfering with adversary or enemy COAs. Untied States forces can—

- Disrupt adversary or enemy preparations or actions.
- Destroy or deceive adversary or enemy reconnaissance.
- Begin reducing the effectiveness of key components of the adversary's or enemy's combat system.

Fixing. The fixing function is performed employing certain capabilities to prevent opposing capabilities from interfering with mission accomplishment. If the mission is to ambush a convoy moving through an urban area, a fixing function would be to delay the arrival of a quick reaction force. If the mission is to destroy a force in a defensive battle position, a fixing function would be to prevent the opposing reserve from maneuvering. Fixing is accomplished when a part of the adversary or enemy force does not participate in actions that could lead to the failure of adversary or enemy COAs. Fixing actions include but not limited to—

- Suppressing an enemy with fires.
- Deceiving an adversary or enemy.
- Forcing an adversary or enemy to conduct disaster relief and humanitarian assistance.
- Involving a force in a firefight away from the main action.

- Restricting a force's movement with countermobility effects.
- Depriving a force of logistics resources.

Security. The security function is performed by a set of capabilities that acts to protect other capabilities from observation, destruction, or becoming fixed. Security is provided by isolating the battlespace from adversary or enemy elements that could alter the outcome. This can be accomplished by providing early warning and reaction time or actively delaying or destroying arriving adversary or enemy forces.

Other Functions. The adversary or enemy commander can designate a subordinate unit or grouping to conduct a deception action (such as a demonstration or feint). Therefore, this unit or grouping is considered a deception force or deception element. Its function is to lead the adversary or enemy to act in ways prejudicial to adversary or enemy interests or favoring the success of an adversary or enemy action force or element.

An adversary or enemy commander can also designate subordinates to other support functions. These support elements can provide the following types of support:

- Perform support by fires (in which case, it can be called a support by fires element).
- Provide combat support, sustainment, or combat service support.
- Provide C2 functions.

At a commander's discretion, some forces or elements might be held in reserve, pending determination of their specific function, so that the commander can influence unforeseen events or take advantage of developing opportunities. These forces or elements are designated as reserves (reserve force or reserve element). If, and when, such units are subsequently assigned a mission to perform a specific function, they receive the appropriate functional force or element designation. For example, a reserve force in a defensive task might become the counterattack force.

Determine Adversary or Enemy Capabilities Available to Perform Each Battlespace Function

Upon determining which battlespace functions the adversary or enemy needs to perform and what objective or goal the adversary or enemy commander seeks to accomplish through the performance of those functions, analysts must then determine what capabilities the adversary or enemy has to execute each function.

While the functions required for a high chance of success in achieving a military objective or goal are universal, the means to accomplish them depend on the location, adversary or enemy, and environment. For example, in one battlespace, the adversary or enemy might employ an infantry platoon equipped with infantry-fighting vehicles and sophisticated thermal sensors to execute the security function. In another, the same function might be performed by a civilian in a third-floor apartment window using a cellular phone.

When analysts apply their knowledge of common and necessary military functions to specific adversary or enemy capabilities, they are performing functional analysis (see Appendix A). Functional analysis is a methodology that—

- Forces analysts and the staff to learn and understand tactics instead of rote memorizations.
- Reduces the ability of the adversary or enemy to deceive analysts and the staff.
- Is transportable between theaters and works all along the range of military operations.

Identify the Full Set of Courses of Action Available to the Adversary or Enemy

Each force conducts primary types of operations:

- *Regular forces* can conduct two primary types of operations: attack and defend. Based on its objectives, the adversary or enemy must select one of these options. Once selected, the adversary or enemy generally has multiple options to consider when developing its plan.
- *Irregular forces* can attack or defend on a small scale for short periods, or in complex terrain, but it is difficult to sustain these types of operations without degradation to their effectiveness and their operations. The primary types of operations conducted by irregular forces include activities associated with insurgent or guerrilla operations, raids, ambushes, sabotage, and acts of terror.
- *Unconventional forces* can combine the capabilities of regular and irregular forces to engage US forces from all points to overwhelm US capabilities.

Regardless of the type of force and the type of operation conducted, an adversary or enemy force plans operations based on a task, purpose, method, and end state. Activities within its operations are planned to support that task and purpose. The staff identifies the task, purpose, method, and end state for each COA developed. By identifying these for each COA, the intelligence staff can better determine the chosen adversary or enemy COA during the conduct of operations. Regardless of the type of force, when developing an adversary or enemy COA, the staff determines—

- Current adversary or enemy situation.
- Mission (includes task and purpose).
- Adversary or enemy objectives, methods and functions, and end state.
- Commander's intent, purpose, and end state.
- Task organization.
- Capabilities.
- Vulnerabilities.
- HVTs.
- DPs (essential in determining branches and sequels).
- COGs (source of strength, power, and resistance).
- Critical events.
- Branches and sequels.
- Intent for (includes task, purpose, method, and end state)—
  - Movement and maneuver.
  - Reconnaissance and surveillance.
  - Fires support.
  - Logistics.
  - Adversary or enemy command and control.
  - Protection.
  - Information activities.
  - Denial and deception.

- How civil considerations affect adversary or enemy operations.
- How displaced civilians and displaced persons affect adversary or enemy operations.
- How the presence and actions of US forces affect adversary or enemy operations.
- How terrain and weather affect adversary or enemy operations.

This includes a G-2/S-2 red cell analysis. In addition to adversary or enemy composition and disposition, METOC parameters are factored in to determine what, if any, advantage or disadvantage weather conditions have on adversary or enemy forces, and how they can use anticipated weather conditions to move against friendly forces (see MCWP 5-10 for more information on the red cell).

For adversary or enemy offensive tasks, the staff focuses on determining the main, supporting, and reinforcing efforts; use of reserves; use of special munitions; use of air support; and use of UASs to support fires.

For adversary or enemy defensive tasks, the staff focuses on determining the following:

- Location of engagement areas and obstacles.
- Location, type, and size of security zone forces.
- Location, type, and size of counterattack forces.
- Use of special munitions.
- Use of air support.
- Use of UASs.
- Use of A2 and AD systems.

For irregular warfare, the staff generally considers the following:

- Guerrilla and terror attacks on US forces and HN governmental, civil, and security organizations.
- Guerrilla and terror attacks on local populations.

Upon identifying all valid adversary or enemy COAs, the staff compares each COA to the others and prioritizes them based on likelihood. For example, if four COAs are developed, COA one is the adversary's or enemy's most likely COA, and COA four is the least likely. Additionally, the staff determines which COA is the most dangerous to US forces. The most likely COA can also be the most dangerous. Additionally, a COA needs to answer six basic questions:

- *Who* (the organizational structure of the adversary or enemy organization, including external organizations providing support)?
- *What* (type of tactical mission task such as defeat, destroy, seize)?
- *When* (the earliest time the action can begin)?
- *Where* (the battlespace geometry that frames the COA (boundaries, objectives, routes, other)?
- *How* (the adversary or enemy attacks, defends)?
- *Why* (the adversary's or enemy's objectives)?

Evaluate and Prioritize Each Adversary or Enemy Course of Action

The commander approves a plan that is optimized to counter the most likely adversary or enemy COA, while allowing for contingency options should the adversary or enemy choose another COA. Therefore, the staff evaluates each adversary or enemy and prioritizes it according to how likely it is that the adversary or enemy adopts that option. Generally, adversary or enemy forces are more likely to use a COA that offers the greatest advantage while minimizing risk. However, based on the situation and its objectives, the adversary or enemy might choose to accept risk to achieve a desired end state. It is impossible to predict what COA the adversary or enemy will choose. Therefore, the staff develops and prioritizes as many valid adversary or enemy COAs as time allows but, at a minimum, develops the most likely and most dangerous COAs.

Develop Each Course of Action in the Amount of Detail Time Allows

An adversary or enemy COA consists of the following products:

- Situation template for the adversary or enemy COA.
- Adversary or enemy COA statement.

Situation Template for the Adversary or Enemy Course of Action. A situation template is "a depiction of assumed enemy dispositions, based on that enemy's preferred method of operations and the impact of the operational environment if the adversary should adopt a particular course of action" (JP 2-0). A situation template graphically depicts a potential adversary or enemy COA as part of a particular operation. It usually depicts the most critical point in the operation as agreed upon by the commander, the operations officer, and the intelligence officer. However, the operation might require the preparation of several templates as overlays representing different snapshots in time, starting with the adversary's or enemy's initial array of forces. These snapshots in time are useful in depicting—

- Points where the adversary or enemy might adopt branches or sequels to the main COA.
- Places where the adversary or enemy is particularly vulnerable.
- Other key points in the battle, such as initial contact with friendly forces.

Situation templates are developed using the adversary's or enemy's current situation, based on adversary or enemy doctrine and the effects of terrain, weather, and civil considerations. The situation template can include—

- Doctrinal rates of march (see Appendix C for examples).
- Time phase lines.
- Graphic control measures, including but not limited to—
  - Obstacles (natural and reinforcing) (see Appendix C for examples).
  - Engagement areas.
- Adversary or enemy composition, disposition, and strength.
- Task, purpose, method, and end state.
- Key adversary or enemy weapon systems range fans.
- AAs.
- NAIs.

The adversary or enemy situation template is modified based on the significant effects the operational environment might have on the adversary or enemy COA. For example, the adversary or enemy might prefer to establish battle positions 1 to 1.5 kilometers apart. However, the terrain might force it to increase this distance to protect its flanks. As another example, the adversary or enemy might prefer to attack on high-speed AAs but also prefers to avoid complex terrain. Therefore, the location of an urban area along a high speed, optimal AA might force the adversary or enemy to use a suboptimal approach.

To construct a situation template, analysts can use the following process:

- Begin with the adversary or enemy template developed as part of the adversary or enemy model during Step 3 of the IPB process. Overlay the adversary or enemy template on those products that depict operational environment effects on operations (typically, the MCOO, but this can vary depending on the operation and situation) (see Figure 6-2).
- Adjust the dispositions portrayed on the adversary or enemy template to account for operational environment effects:
  - Since there are many options available, use judgment and knowledge of the adversary's or enemy's preferred tactics and doctrine as depicted in the adversary or enemy model.
  - Attempt to view the situation from the point of view of the adversary or enemy commander when selecting from the adversary or enemy templates.
  - Consider the operational environment, including but not limited to terrain, weather, civil considerations (ASCOPE).
- Check the situation template. Account for all adversary or enemy major assets, ensuring no inadvertent duplications (see Figure 6-3).
- Ensure the template reflects the main effort identified for the COA:
  - Compare the depicted dispositions to the adversary's or enemy's known doctrine and check for consistency.
  - Consider the adversary's or enemy's capability to present an ambiguous situation to achieve surprise.
- Include as much detail on the situation template as the time and situation warrants. For example, if the adversary or enemy is defending—
  - Identify the likely engagement areas, reinforcing obstacle systems, and counterattack objectives that form part of his defensive COA.
  - Depict the locations and activities of the HVTs listed in the adversary or enemy model.
- Use the description of preferred tactics that accompanies the adversary or enemy model as a guide:
  - Think through the COA scheme of maneuver.
  - Visualize how the adversary or enemy might transition from its current positions to those depicted on the template.
- Mentally war-game the scheme of maneuver from the positions depicted on the template through to the COA's success or failure:
  - Identify points where forces may transition from one formation to another.
  - Identify how each adversary or enemy order of battle fits in and supports the operation.

- Evaluate time and space factors to develop time phase lines depicting adversary or enemy movement. Draw time phase lines on the template to depict the expected progress of attacking forces and the movement of forces in the deep and rear battle areas.
- Base time phase lines on the adversary's or enemy's doctrinal rates of movement, with some modification:
  - Evaluate actual movement rates, as revealed in the database, with written doctrine.
    NOTE: Analysts might need to reach out to outside organizations, such as the National Ground Intelligence Center, to attain accurate and up-to-date doctrinal rates (see Appendix C for examples).
  - Consider operational environment effects on mobility.
  - If contact with friendly forces is expected, mentally wargame the effects this can have on the adversary's or enemy's speed as well.
- When placing time phase lines, consider only the time (assuming that time-consuming planning, issuance of orders, reconnaissance, and logistical preparations can occur during movement)—
  - It may take to adopt movement formations.
  - To conduct movement to the selected location.
  - For the unit to close after arrival.
- During staff wargaming of the situation templates against potential friendly COAs, update time phase lines to consider when adversary or enemy movement might be triggered or how they might be influenced by friendly actions.

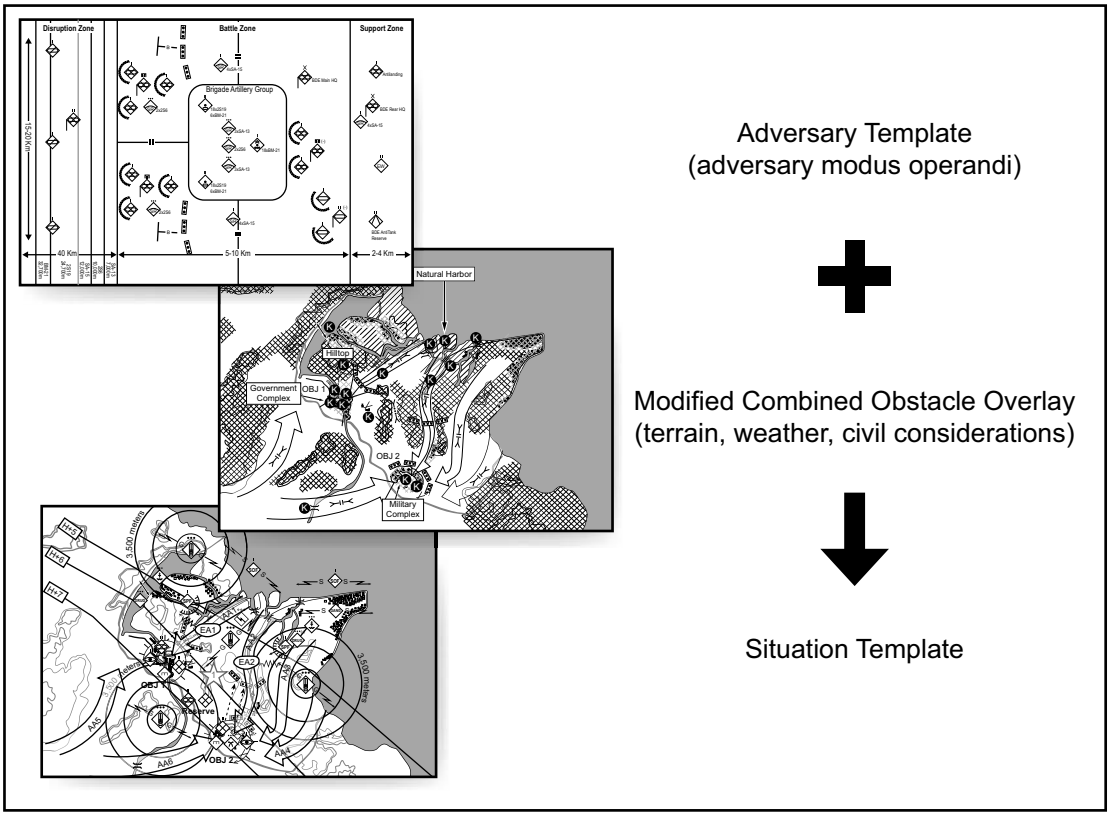
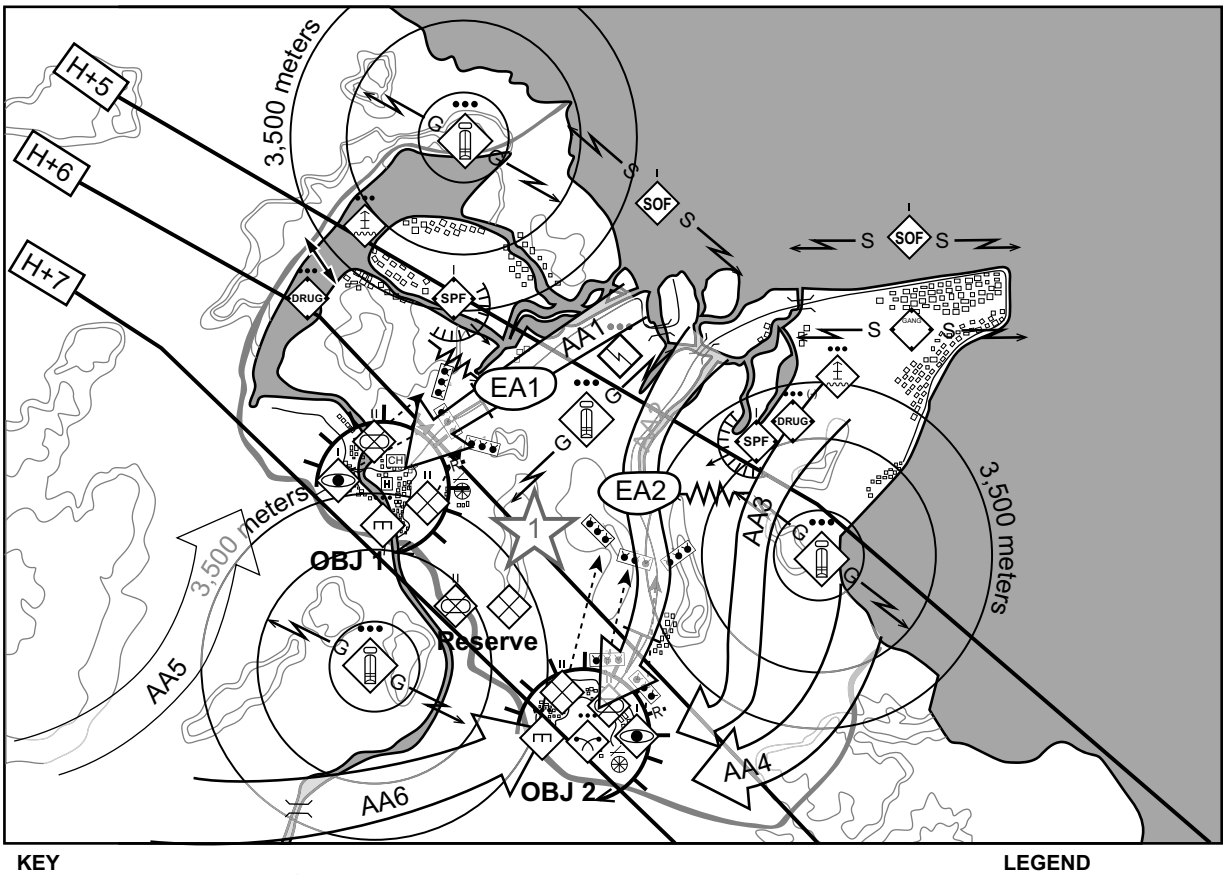


Figure 6-2. Situation Template Development.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-3. Completed Situation Template.

Analysts prepare as many graphics as necessary to depict the COA in sufficient detail to support staff wargaming and collection planning. For example, a COA can begin as a movement to contact and transition to a hasty attack, followed by pursuit operations that include a river crossing. Each of these phases might require a separate template.

Analysts should tailor situation templates to their needs by focusing on factors important to the commander or mission area. For example, the situation might focus only on the adversary's or enemy's reconnaissance assets when determining and developing adversary or enemy COAs. Situation templates might show only the location and movement routes of these assets, their likely

employment areas, and their likely NAIs. For example, an aviation unit might develop situation templates that depict details such as specific radar and air defense weapon locations and their range fans or areas of coverage.

At higher echelons, situation templates usually focus on culminating points and installations, or activities associated with centers of gravity rather than specific military units. Some situation templates are better presented in a matrix format. Table 6-1 illustrates a situation template in a matrix format that shows one adversary or enemy COA for area defense. The timeline indicates when the adversary or enemy is most likely to use assets to reach a desired end state, as well as the time adversary or enemy assets or effects are expected within each NAI.

Table 6-1. Situation Template in a Matrix Format.

NAI/Time (H-hour)	H+5	H+6
NAI1	**Task**: Disrupt forces in vicinity EA1. **Purpose**: Delay movement along western avenue of approach. **Method**: Special purpose forces conduct ambushes. **End State**: Adversary or enemy forces able to maneuver into secondary defensive positions if needed.	**Task**: Destroy aviation assets in vicinity EA1. **Purpose**: Prevent seizure of airfield in vicinity OBJ1. **Method**: SA-13 and SA-18. **End State**: Retain capability to use airfield to conduct operations.
NAI2	**Task**: Destroy forces in vicinity EA2. **Purpose**: Prevent seizure of the military complex. **Method**: Coordinated long-range fires. **End State**: Retention of military mission command networks.	**Task**: Block maneuver forces from moving south of EA2. **Purpose**: Provide targets for long-range fires. **Method**: Deliberate obstacle belts in vicinity EA2. **End State**: Maneuver forces not able to exfiltrate kill sacks.
LEGEND EA engagement area H-hour specific hour at which a particular operation commences		NAI named area of interest OBJ objective

Generally, there is not enough time during the MCPP to develop adversary or enemy situation templates for all COAs. A good technique is to develop alternate or secondary COAs, write a COA statement, and produce a HVT list to use during the mission analysis briefing and COA development. Once these tools and products are complete, the staff constructs overlays depicting the adversary's or enemy's most likely and most dangerous COA to use during friendly COA analysis.

> *NOTE:* Sometimes, situation templates are replaced by other products, such as a key facilities and targets overlay. Use the technique that best graphically illustrates the adversary's enemy's COAs.

There are three primary types of adversary or enemy situation templates the staff might need to develop as overlays:

- Adversary or enemy in the offense.
- Adversary or enemy in the defense.
- Irregular forces conducting guerrilla or terror operations.

During IPB, these overlays are largely based on assumption and depict adversary or enemy locations and activities that are usually templated. This is particularly true of overlays depicting adversary or enemy offensive tasks or guerrilla r terrorist activities. Because the adversary or enemy is more static in defensive tasks, the staff might have information related to adversary or enemy locations that can assist in developing the overlay.

When developing an overlay depicting regular forces conducting offensive or defensive tasks, the staff should depict adversary or enemy locations and activities two levels down. For example, a friendly unit would construct an overlay showing maneuver companies and specialty platoons. An element two levels down from the unit would refine that overlay for its zone or sector showing maneuver platoons and specialty teams.

When developing an overlay depicting irregular forces, the staff at every echelon depicts adversary or enemy locations and activities at the cellular level. For example, regardless of the level of the unit, the staff templates adversary or enemy cells where the cells are believed to be operating. Staffs template where they believe the activity associated with each cell can occur. This activity is determined by evaluating adversary or enemy activity through predictive and pattern analysis.

Overlays Depicting the Adversary or Enemy in Offensive Tasks. The staff constructs an adversary or enemy offensive task overlay using a five-step process that includes the following steps and sub-steps:

Step 1—Determine the adversary's or enemy's end state to make US forces combat ineffective. Visualize adversary or enemy success and how they might achieve those objectives given the forces available. Many adversary and enemy offensive objectives are force orientated.

Step 1A: Review the US forces' defensive plan. Even if the commander has not approved the plan, the planning staff should have a rough idea of the friendly force defense based on the IPB process thus far.

Step 1B: Identify the US forces' key targets on the battlespace that the adversary or enemy commander would attack (adversary or enemy commander HPTs).

Step 1C (Regiment and above): Determine the vulnerability of this operation based on the operational variables gathered from previous IPB process steps.

Step 1D: Review the adversary or enemy commander's purpose for the offense: gain freedom of movement; restrict freedom of movement; gain control of key terrain, personnel, or equipment; gain information; dislocate; and disrupt.

Step 2—Identify the functions used by the adversary or enemy to reach the end state:

Step 2A: Determine the action element (what the adversary or enemy uses to accomplish the mission).

Step 2B: Determine the enabling elements (what makes it possible for the action element to accomplish the mission).

Step 2C: Display the action form, task, and purpose for each element (for example, action form: enabling element; task: fix US battalion; purpose: prevent US forces from maneuvering).

Step 3—Allocate the adversary's or enemy's resources:

Step 3A: Determine how many adversary or enemy units are required to accomplish the mission.

Step 3B: Determine what types of capabilities are required to support the adversary's or enemy's mission:

Step 3B1: Determine locations of adversary or enemy reconnaissance assets needed to support the offensive mission. This is typically associated with the adversary or enemy commander's DPs and locations where reconnaissance assets can provide observation to support targeting.

Step 3B2: Determine initial and subsequent artillery and air defense firing positions and display the range fans for each type of adversary or enemy direct fire system and indirect fire system required to support the mission.

Step 3B3: Determine potential locations where the adversary or enemy may employ special munitions to isolate part of the friendly defense.

Step 3B4: Determine adversary or enemy air AAs that enable the adversary's or enemy's use of close air support (CAS) to support the mission.

Step 4—Synchronize the adversary or enemy mission:

Step 4A: Determine adversary or enemy attack sequence and movement formations.

Step 4B: Determine the adversary or enemy commander's DPs.

Step 5—Continue refining the adversary or enemy COA; collaborating with staff sections, review staff estimates and changes to the US forces' array.

Figure 6-4 illustrates an adversary or enemy situation template as an overlay depicting a mechanized infantry brigade in the attack.

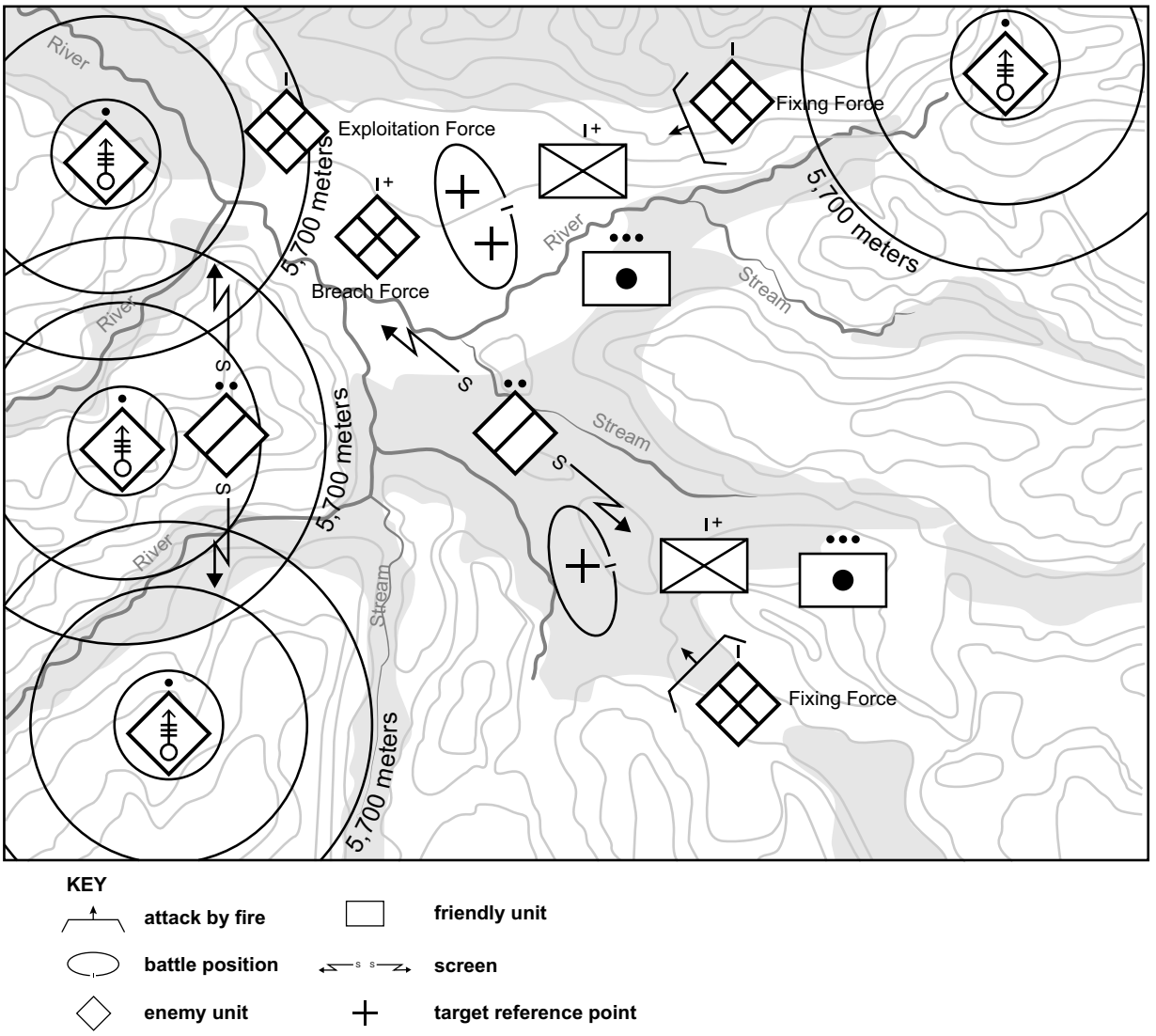
Offensive Action: Integrated Attacks

An integrated attack is an offensive action where the adversary or enemy seeks a military decision by destroying their adversary's or enemy's will or ability to continue fighting through the application of combined arms effects (See Figure 6-5). An integrated attack is often employed when the adversary or enemy determines overmatch of their adversary or enemy and can mass all elements of offensive combat power for mission effects. It can also be employed against a more sophisticated and capable opponent if the appropriate advantage or opportunity is created or available. Integrated attacks are characterized by the following:

- Not being focused solely on destruction of ground combat power but often on adversary or enemy command and control and logistics.
- Fixing most of the adversary's or enemy's force in place with the minimum force necessary.
- Isolating targeted subcomponents of the adversary's or enemy's combat system from its main combat power.
- Using complex terrain to force the adversary or enemy to fight at a disadvantage.
- Using deception to degrade the adversary's or enemy's situational understanding and ability to target adversary or enemy formations.
- Using flank attack and envelopment, particularly of adversary or enemy forces that have been fixed.

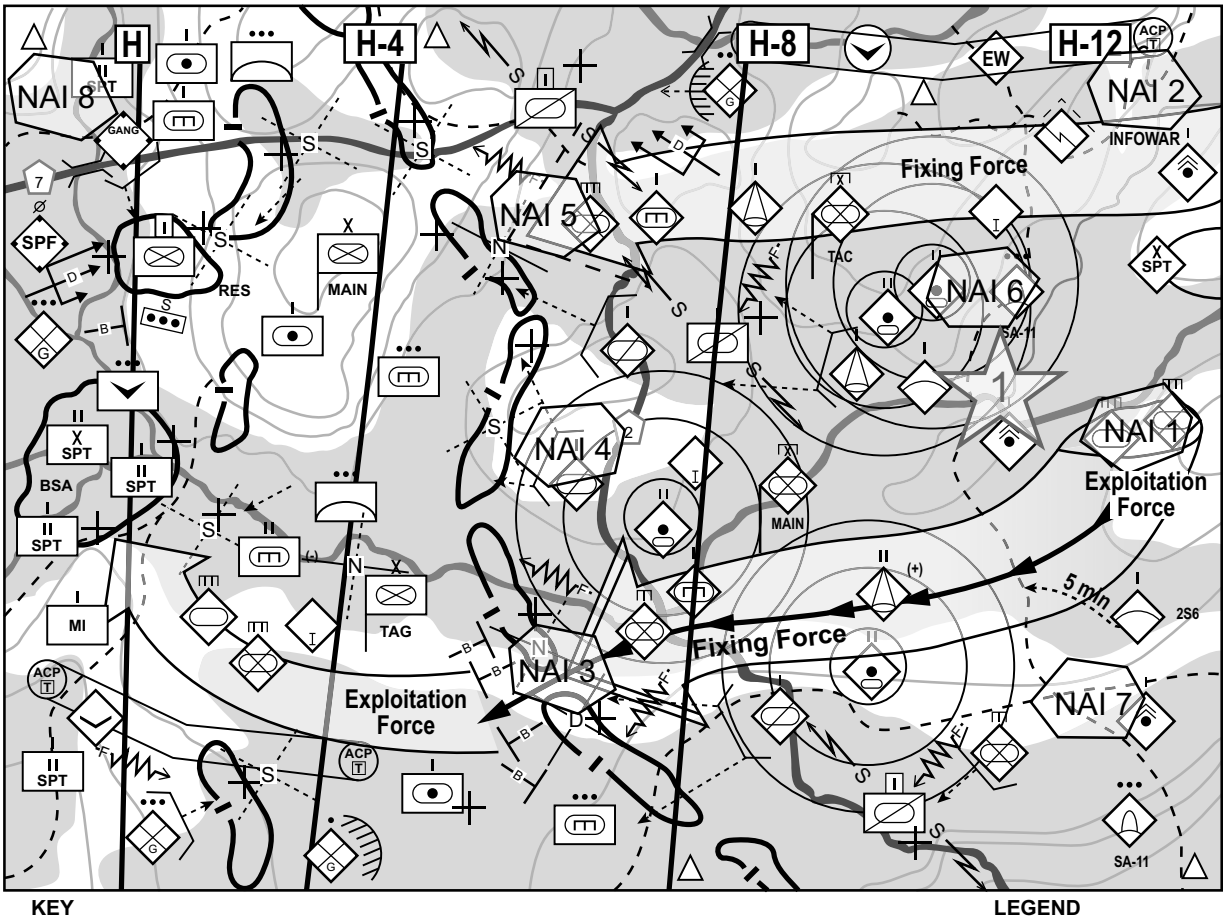
The adversary or enemy prefers to conduct integrated attacks when most or all the following conditions exist:

- They recognize significant overmatch in combat power over adversary or enemy forces.
- They possess at least air parity over the critical portions of the battlespace.
- They operate sufficiently free of adversary or enemy standoff reconnaissance and attack systems to be able to operate without accepting high levels of risk.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-4. Situation Template as an Overlay Depicting the Adversary or Enemy in Offensive Tasks.



KEY

air control point	enemy unit	target reference point			
air corridor	fix	stream			
ambush	fortified line	support by fire			
attack by fire position	friendly unit	supporting attack			
battle position	main attack	suppress			
block	named area of interest				
bridge	neutralize				
brigade support area	observation post /outpost				
decision point	planned friendly direction of supporting attack				
destroy	road				
disrupt	screen				

LEGEND

H	hour
INFOWAR	information warfare
enemy	
min	minute
NAI	named area of interest

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-5. Situation Template of an Adversary or Enemy Integrated Attack.

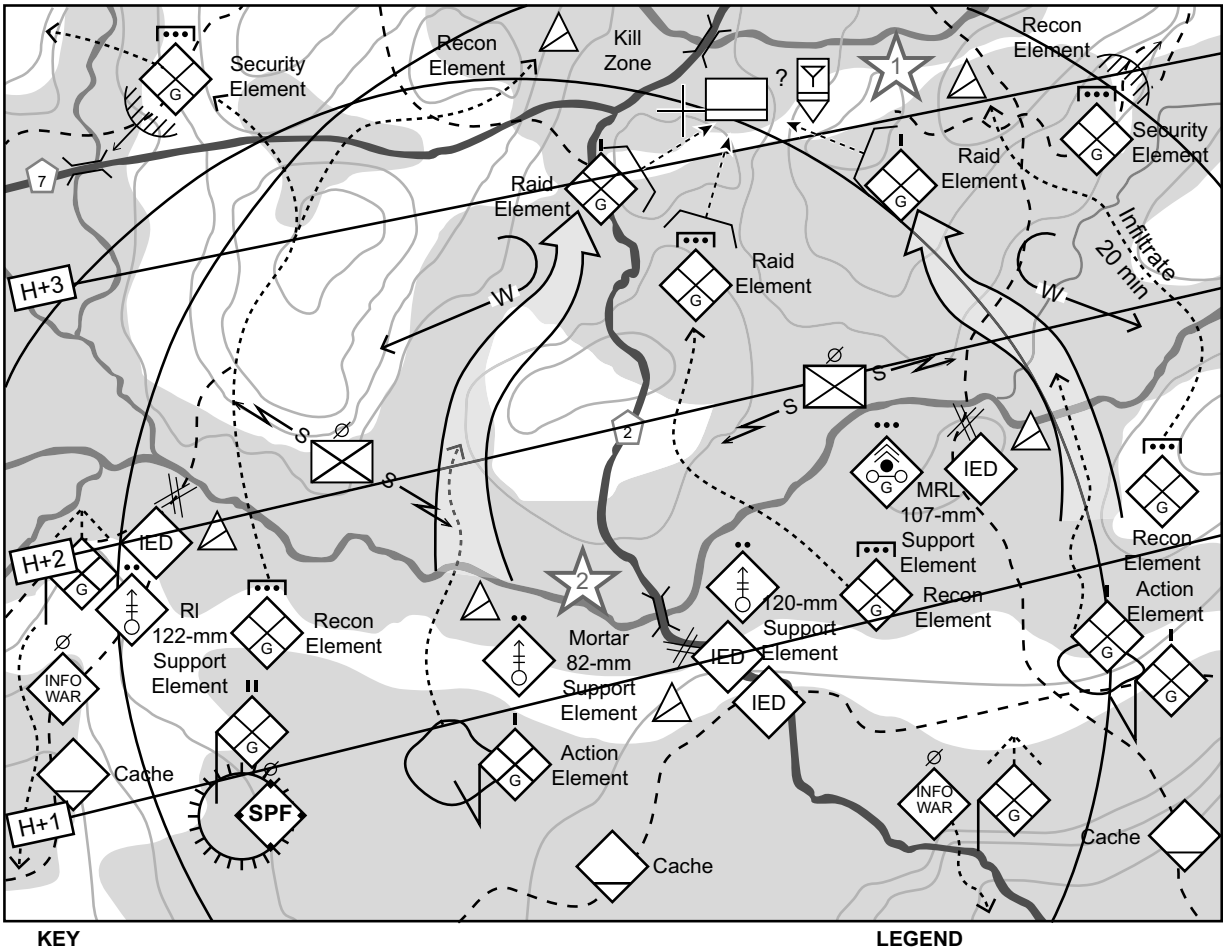
Offensive Action: Reconnaissance Attacks

A reconnaissance attack is a tactical offensive action that locates moving, dispersed, or concealed adversary or enemy elements and either fixes or destroys them (see Figure 6-6). It can also be used by the commander to gain information about the adversary's or enemy's location, dispositions, military capabilities, and quite possibly its intentions. Recognizing that it will take significant measures to prevent others from gaining critical intelligence, quite often the adversary or enemy may have to fight for information, using an offensive task to penetrate or circumvent their own security forces to determine who or what is located where or doing what.

The reconnaissance attack is the most ambitious—and least preferred—method of gaining information. When other means of gaining information have failed, a detachment can undertake a reconnaissance attack. Key factors in the reconnaissance attack include situational awareness, contact conditions, and tempo.

Significant adversary or enemy actions portrayed in an integrated attack include the following activities in the disruption zone by task-organized detachments and affiliated insurgent organizations and guerrilla units, supported by special purpose forces:

- Destroy MEB reconnaissance and counter-reconnaissance forces.
- Identify and report MEB forces disposition and composition.
- Disrupt MEB forces movement with integrated fires and air defense, maneuver, counter-mobility, and other means.
- Report information and intelligence updates on follow-on US forces.
- Acquire, target, and attack HVTs.
- Fix designated MEB forces.
- Ambush to disrupt or destroy critical MEB combat multipliers and sustainment units and assets.
- Attack to suppress or neutralize MEB command nodes.
- Significant adversary or enemy actions in the attack zone by the same adversary or enemy organization are:
- Accept battle handover from battalion tactical group security forces and continue coordinated fires and maneuver on selected MEB units.
- Fix designated MEB elements.
- Isolate designated MEB elements to support the battalion tactical group offensive main effort and supporting efforts.
- Coordinate irregular organizations and units in actions to support the defeat of the MEB.
- Disrupt MEB mission command nodes and systems using EW and signals information warfare capabilities.
- Suppress or neutralize selected MEB units and capabilities by massed fires and conduct immediate dispersal-reposition of firing units.
- Defeat MEB UASs and any supporting Marines and joint aviation using the battalion tactical group's IADSs.
- Coordinate for rotary-wing and fixed-wing support in coordination with the battalion tactical group's mission.
- Seize assigned objectives and exploit to seize or destroy follow-on objectives.
- Destroy designated MEB units and critical systems; defeat the MEB's ability to keep fighting.
- Defeat MEB and other forces in zone, continue offensive momentum; be prepared to continue attack.



KEY

ambush	**river**
block	**road**
bridge	**roadblock complete (executed)**
enemy unit	**strong point**
fortified line	**supporting attack**
friendly unit	**screen**
decision point	**target reference point**
planned friendly direction of supporting attack	**US Class III**
reconnaissance outpost	**withdraw**

LEGEND

H	hour
INFOWAR	information warfare enemy
min	minute
mm	millimeter
MRL	multiple rocket launcher
Recon	reconnaissance
RL	rocket launcher

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-6. Situation Template of an Adversary or Enemy Reconnaissance Attack.

Overlays Depicting the Adversary or Enemy in Defensive Tasks. The staff constructs an adversary or enemy defensive overlay using a five-step process that includes the steps and sub-steps on the following page.

Figure 6-7 illustrates a situation template as an overlay depicting an enemy defensive attack.

Step 1—Determine the adversary's or enemy's end state to make US forces combat ineffective. Visualize adversary or enemy success and how the adversary or enemy force achieved those objectives given the forces available.

Step 1A: Review the US forces' offensive plan. Even though the commander might not have approved the plan, the planning staff should already have a rough idea of the friendly force plan for an attack based on the IPB process thus far.

Step 1B: Identify the US forces' key targets on the battlespace that the adversary or enemy commander would attack (adversary or enemy commander HPTs).

Step 1C: (Regiment and above) Determine the vulnerability of this operation based on the operational variables gathered from previous IPB process steps.

Step 1D: Review the adversary or enemy commander's purpose for the defense:

- Protect personnel and equipment.
- Restrict freedom of movement.
- Control key terrain.
- Gain time.

Step 2—Identify the functions used by the adversary or enemy to reach the end state:

Step 2A: Determine the action element (what the adversary or enemy uses to accomplish the mission).

Step 2B: Determine the enabling elements (what makes it possible for the action element to accomplish the mission).

Step 2C: Display the action form, task, and purpose for each element (for example: action form: enabling element; task: fix US battalion; purpose: prevent US forces from maneuvering).

Step 3—Allocate the adversary's or enemy's resources:

Step 3A: Determine how many adversary or enemy units are required to accomplish the mission.

Step 3B: Determine the capabilities required to support the adversary or enemy mission.

Step 3B1: Determine locations of adversary or enemy reconnaissance assets needed to support the defensive mission. This is typically associated with the adversary or enemy commander's DPs and locations where reconnaissance assets can provide observation to support targeting.

Step 3B2: Determine initial and subsequent artillery and air defense firing positions and display the range fans for each type of adversary or enemy direct fire system and indirect fire system required to support the mission.

Step 3B3: Determine potential locations where the adversary or enemy can employ special munitions to isolate part of the friendly offense.

Step 3B4: Determine adversary or enemy air AAs that enable the adversary's or enemy's use of CAS to support the mission.

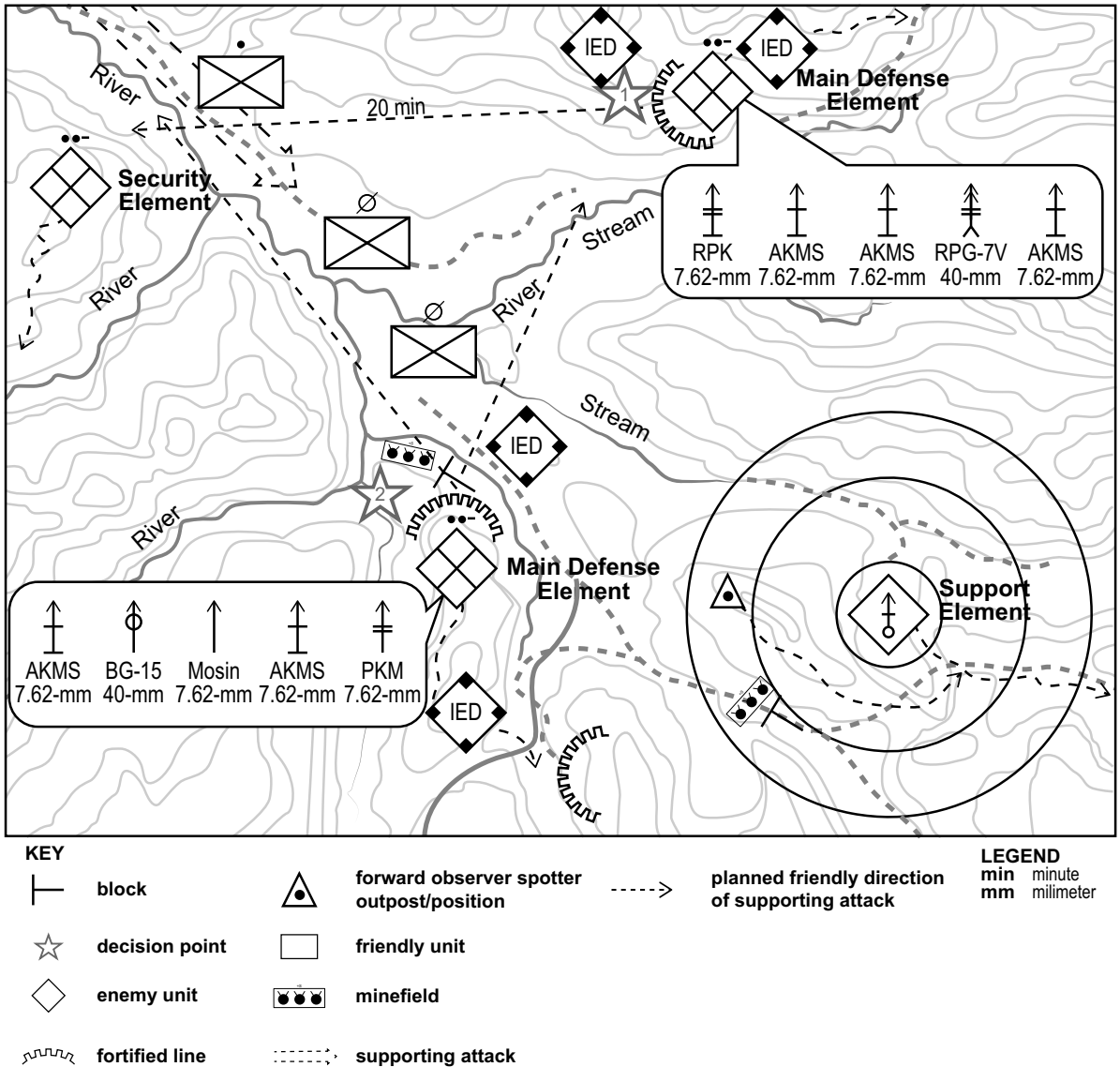
Step 3B5: Determine the locations of adversary or enemy disruption zones, battle zones, and support zones with suspected unit boundaries. Add time phase lines, supplementary and primary simple battle positions, ambush locations, and observation posts.

Step 4—Synchronize the adversary or enemy mission:

Step 4A: Determine adversary or enemy attack sequence and movement formations.

Step 4B: Determine the adversary or enemy commander's DPs.

Step 5—Continue refining the adversary or enemy COA, collaborating with staff sections; review staff estimates and changes to the US forces' array.



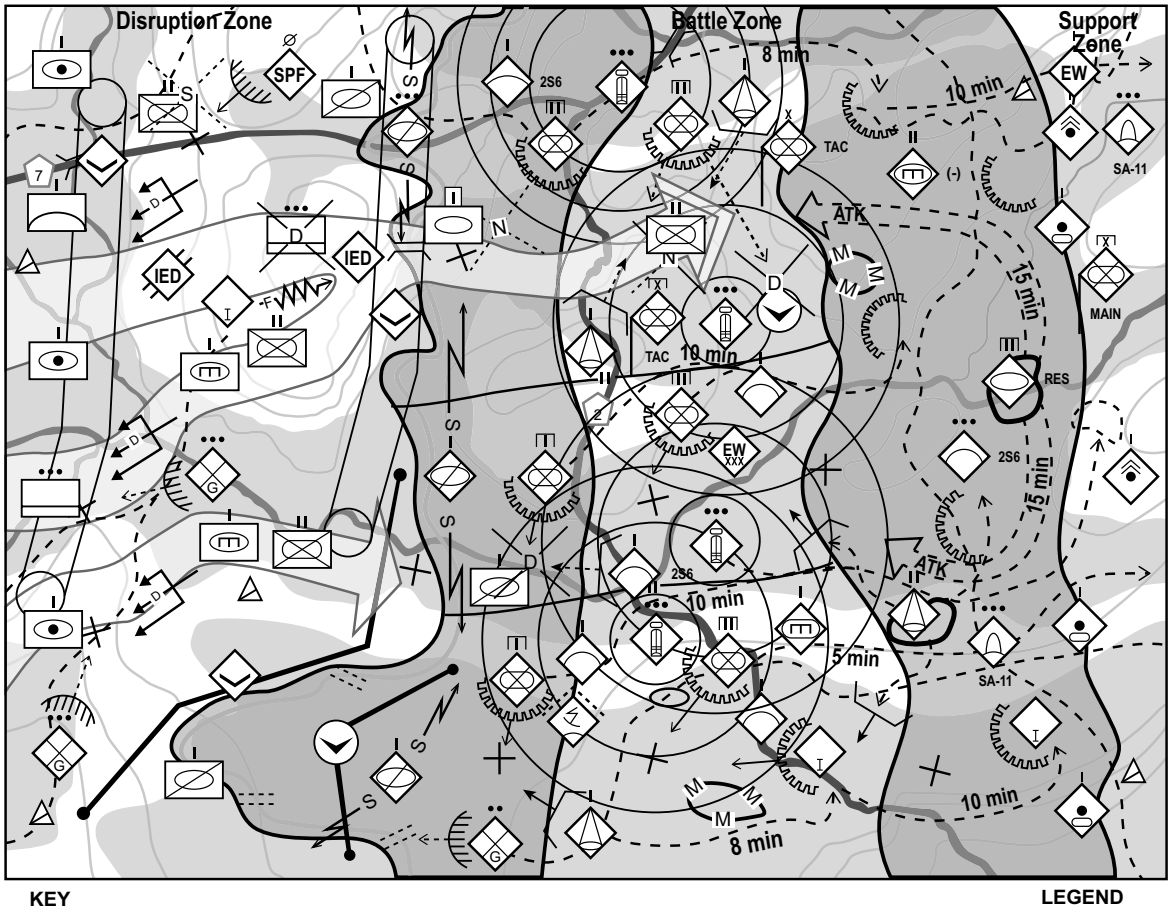
NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-7. Situation Template as an Overlay Depicting the Adversary or Enemy in Defense Task.

Defensive Action: Maneuver Defense

In situations where the adversary or enemy is not completely overmatched, it might conduct a tactical maneuver defense. A maneuver defense is a type of defense designed to achieve a tactical decision by skillfully using fires and maneuver to destroy key elements of the adversary's enemy's combat system and deny adversary or enemy forces their objective, while preserving the friendly force (see Figure 6-8). Maneuver defenses cause the adversary or enemy to continually lose effectiveness until it can no longer achieve its objectives. They can also economize forces in less important areas while the adversary or enemy moves additional forces onto the most threatened axes.

Even within a maneuver defense, the tactical group commander can use area defense on some adversary or enemy attack axes, especially on those where the commander can least afford to lose ground. Conversely, the commander might employ maneuver defense techniques to conduct actions in the disruption zone if it enhances the attack on the adversary's or enemy's combat system and an area defense in the battle zone.



KEY

air control point	feint/decoy/dummy	road
air corridor	fortified line	reconnaissance outpost
ambush	friendly unit	screen
assembly area (AA)	fix	supporting attack
attack by fire position	main attack	suppress
bridge	mined area	target reference point
destroy	neutralize	UAS lanes/route
enemy unit	planned	
disrupt	planned friendly direction of supporting attack	

LEGEND

min minute

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Figure 6-8. Situation Template of an Adversary or Enemy Maneuver Defense.

Maneuver Defense Scenario

In the situation template depicted in Figure 6-8, an adversary or enemy battalion tactical group conducts a maneuver defense to defeat an attack in zone (adversary or enemy terminology) by MEB. Affiliated insurgent organizations and guerrilla units supported by special purpose forces augment the battalion tactical group's combat power.

The adversary or enemy main defense zone is organized in a succession of integrated kill zones, obstacles, and battle positions. The battalion tactical group uses deception to convince the MEB that battalion tactical group strength is in the south and allows MEB offensive progress in the north. Figure 6-9 shows that adversary or enemy deception actions were successful.

Battalion tactical group forces displace their contact force using alternating bounds as the contact force gains contact with MEB elements or will make that contact imminently. The adversary or enemy battalion tactical group employs a shielding force that accepts battle engagements from the battalion tactical group contact force as it withdraws under pressure and seeks to break contact with advancing MEB elements. This way, the contact force can occupy subsequent battle positions. Adversary or enemy battle position arrays orient on designated kill zones.

In Figure 6-9, the red-color band at the battle handover line of the river indicates the initial contact force area. The adjacent gray area is the shielding force area that accepts the battle from the initial contact force. The red-color band to the right of the gray area indicates where the initial contact force displaces to after battle handover and becomes a shielding force in defense.

The adversary or enemy battalion tactical group arrays its integrated fires and IADSs in dispersed positions throughout the contact and shielding battle zones. Battalion tactical group contact and shielding forces are not to become decisively engaged. However, the battalion tactical group commander can order a specific subordinate force to defend to set conditions for a counterattack, to attack the adversary or enemy with area or precision fires or allow the use of the uncommitted reserve.

Significant actions portrayed in the disruption zone illustrated in Figure 6-8 include:

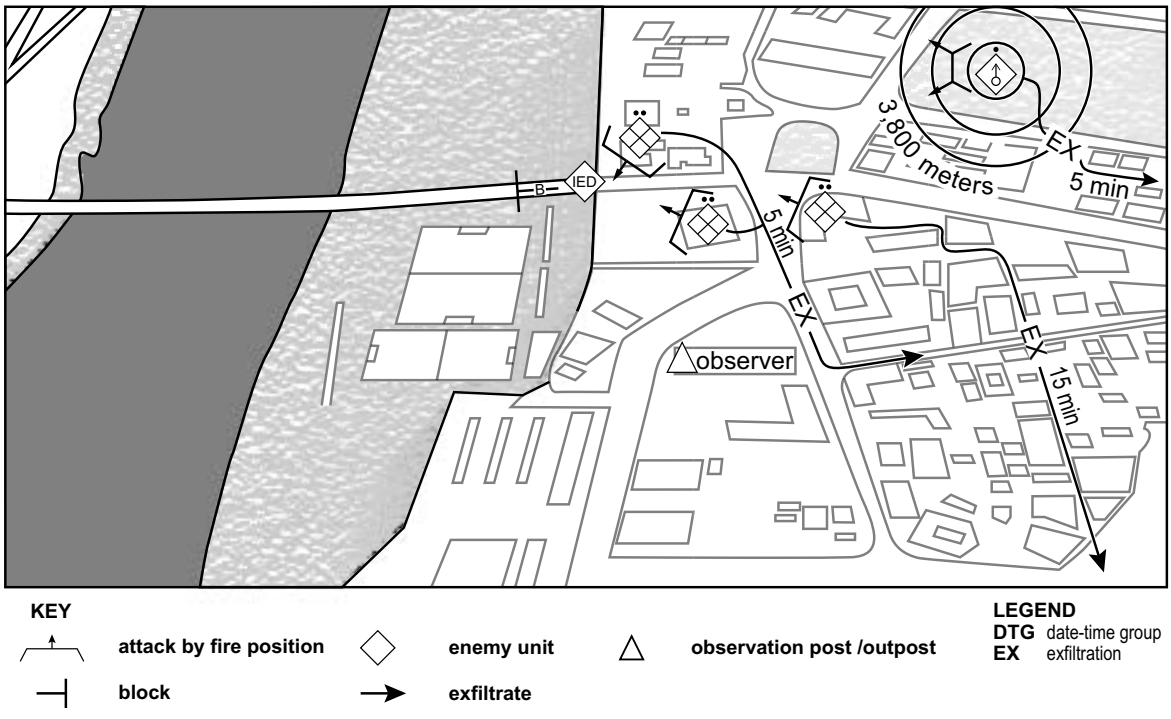
- Identifying and reporting the axes of the MEB main and supporting efforts.
- Acquiring, targeting, and adjusting long-range fires.
- Reporting intelligence updates on follow-on US forces.
- Ambushing to suppress or neutralize MEB mission command nodes.
- Fixing lead MEB forces with fires and obstacles, employing a mix of military grade munitions and IEDs.
- Disrupting MEB forces, leading and follow-on forces, and sustainment assets with command-detonated mines and ambushes.
- Defeating lead MEB forces by destroying them in kill zones with contact forces.

Significant actions portrayed in the main defense zone illustrated in Figure 6-8 include:

- Continuing to coordinate battalion tactical group, subordinate battalion tactical group fires, and movement on MEB forces after accepting battle handover from battalion tactical group disruption forces.
- Fixing lead elements of MEB combat formations in direct and indirect fire kill zones.
- Separating lead units within the MEB combat formation from MEB support elements.

- Integrating direct, antitank missile, and air defense fires from dispersed battalion tactical group forces, located forward within the main defense zone, with the contact force fires as they retrograde out of the disruption zone.
- Coordinating guerrilla unit and insurgent cell actions to support kill zones.
- Disrupting MEB mission command and target acquisition by employing EW, EW jamming capabilities, and radar/signal decoy signatures.
- Bounding the contact force to subsequent battle positions while engaging the remaining MEB elements with the shielding force after it accepts battle handover from the contact force.
- Employing the shielding force to destroy those remaining MEB elements in subsequent and successive kill zones (shielding and contact forces continue to conduct alternate bounds, as required, until the MEB's final defeat).
- Engaging and destroying MEB UASs with all-arms air defense when the battalion tactical group's IADS is not available.
- Positioning battalion tactical group fires units to conduct massed fires followed by immediate dispersal and repositioning to subsequent firing locations.
- Coordinating insurgent organization actions, such as defense in urban areas, rural areas, and chokepoints within the battalion tactical group's defensive zone.
- Coordinating for rotary-wing and fixed-wing attack support in coordination with the battalion tactical group's mission.

Overlays Depicting Irregular Adversary or Enemy Forces. Overlays depicting irregular adversary or enemy forces conducting operations typically focus on armed forces in a tactical array. Figure 6-9 depicts an adversary or enemy situation template as an overlay showing an irregular force operating in an urban area. Staffs should consider whether to create overlays that depict the adversary's or enemy's less visible elements, such auxiliary support networks, and popular support groups, as well as the activities in which they engage. Additionally, staffs should capture the process used to template the overlay so they and subordinate staffs can replicate the process as required.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-9. Situation Template as an Overlay Depicting Irregular Adversary or Enemy Forces.

The staff constructs an irregular adversary or enemy force overlay using a 10-step process that includes the following steps:

Step 1—Template the physical objectives irregular adversary or enemy forces may attack. These objectives typically include the following:

- Friendly unit locations and movement routes.
- Elements or individuals associated with HN political, civil, and security organizations.
- Critical infrastructure.
- Elements of the civilian population.

Step 2—Template ingress and egress routes around objectives. Analysis of these routes includes consideration of non-traditional approaches associated with infiltration and sabotage.

Step 3—Template range fans around objectives. Analysis is based on the ranges of adversary or enemy indirect fire and air defense systems.

Step 4—Template potential locations of reconnaissance and surveillance assets. Analysis includes consideration of the physical areas of observation around and on the objective. It also focuses on identifying TTP used by the adversary or enemy to conduct reconnaissance.

Step 5—Template potential ambush sites along movement routes and near objectives. Analysis is based on pattern and predictive analysis, as well as on analysis of friendly activities and movement.

Step 6—Template potential sniper locations along movement routes and near objectives. Analysis is based on pattern and predictive analysis, as well as on analysis of friendly activities and movement.

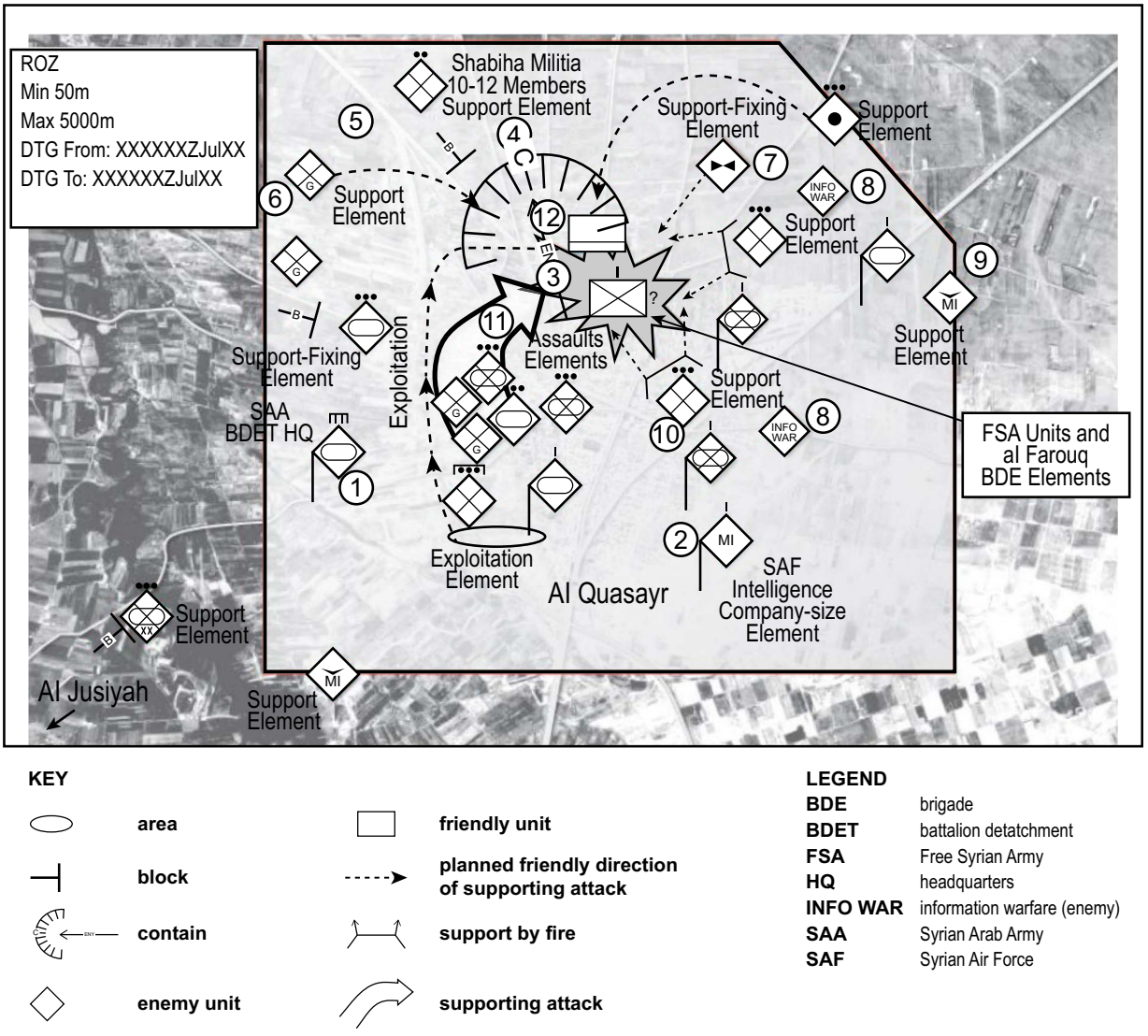
Step 7—Template potential IED attack locations along movement routes and near objectives. Analysis is based on pattern and predictive analysis, as well as on analysis of friendly activities and movement.

Step 8—Template potential cache sites. Analysis is based on pattern and predictive analysis, as well as on analysis of TTP.

Step 9—Template the bed-down area for direct action cells and HPTs (individuals). Analysis is based on pattern and predictive analysis.

Step 10—Draw the AO for each direct-action cell. Analysis is based on pattern and predictive analysis.

Figure 6-10 illustrates an integrated attack on Al Qusayr, described in the ensuing sections.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-10. Situation Template of an Integrated Attack on Al Qusayr.

The Battle of Al Qusayr. In August 2011, Syrian forces entered Al Qusayr to stop the so-called "Arab Spring" protests against the Syria government. The army entered with more than 50 armored vehicles and isolated the area by cutting telephone, electricity, and water supplies. Eyewitness described it as a full-scale military invasion, which resulted in about 13-20 casualties in the first 48 hours. Most of the city's residents fled to the countryside; some fled to the border near Lebanon. By the fall of 2011, Al Qusayr was isolated from the rest of the country and traffic was controlled by military checkpoints, preventing freedom of movement in and out of the city. The antigovernment protests continued despite increased security, the Syrian forces were heavy-handed in their execution of counterinsurgency operations, occupying the town hall and turning the local hospital into an army barracks.

Opposition forces known as the Free Syrian Army, aided by the defection of Syria government soldiers and supplied by external actors, began to fortify their positions in the Sunni quarters of Al Qusayr. These positions included weapons caches and support zones to provide support for the opposition and a base of operations. After opposition group and hit-and-run guerrilla-type attacks, including IED placements and a tunnel blast underneath the local Syrian-occupied hospital, the situation degraded to a stalemate. With the northeastern quarter of Al Qusayr under rebel control, Syria's army employed siege and starve operations to force the rebels to give up positions. The Syrian Arab Army (the land force of Syria's armed forces) continued to man checkpoints and shell the city to dislodge rebels but attempts to mount an attack were met with stiff resistance.

Recognizing rebel safe havens and smuggling routes from Syria to Lebanon, the guerrilla organization, Hezbollah, increased its presence in the Shia-dominated areas west of the Orontes River to prevent rebels from using the area as a transit point. By providing technical support (e.g. training, organizing militias), Hezbollah was able to conduct raids and launch rockets into Al Qusayr from the haven of Hermel, Lebanon. Elements of Hezbollah and the Iranian Quds force created the pro-regime militia Syrian National Defense Forces, allowing Syria's governmental forces and Hezbollah to hold ground around Al Qusayr while preparing for another offensive in the spring.

By the spring of 2013, Hezbollah fighters were a mainstay in the countryside outside Al Qusayr. One objective included Tell Qadesh, a town south of Lake Homs. Tell Qadesh was deemed a strategic location due to its relative height (200 meters above sea level) and its proximity to AAs into Al Qusayr from the north. Hezbollah fighters led the charge with the National Defense Forces and Syria's army as support. This resulted in the capture of many towns in the outlying area as the regime tightened its hold around Al Qusayr. With the countryside under regime control, the last phase of the operation was an assault on Al Qusayr.

In late May 2013, the second assault on Al Qusayr culminated with Syria's governmental forces and the Hezbollah-led guerrilla force clearing the town of the opposition. The Hezbollah fighters' specialized training provided a tactical advantage as they integrated the movement of light infantry and armor and used skilled demining teams to breach defensive positions. Rebel leaders attempted to salvage the situation and called for the Free Syrian Army and other rebel forces to converge and rescue Al Qusayr. The pro-government Syrian Arab Army's new strategy, however, produced the intended results. As pro-regime web pages tracked the loyalists' and Hezbollah forces' progress on the internet, it became apparent to the international press that Al Qusayr was under regime control once again.

As many as 1,700 Hezbollah fighters were deployed to retake Al Qusayr to support the pro-government Syrian army. These units operated in small two- to five-man teams to conduct surveillance on rebel positions and provide support to the Syrian army. Syrian commanders were assigned designated sectors within the AO to coordinate efforts and prevent friendly fire. The Hezbollah fighters methodically cleared booby traps and tunnels on the objectives and cleared the path for Syria's army units. Additionally, reconnaissance units acted as forward observers and were instrumental in calling in airstrikes and artillery. Command and control was enhanced by using a system of code words for each of the city sectors to provide interoperability between Hezbollah and Syrian regime forces.

Syrian forces began the final operation by shelling and conducting airstrikes in and around Al Qusayr. Syria's army elements assaulted from the south and the west toward the northwestern part of the city, seizing the town hall and other buildings in the vicinity. Hezbollah fighters were able to attack strongholds with Syria's army support by taking the city section-by-section. Resistance at opposition strong points was defeated with a combination of indirect fires, air raids, and attacks by infantry. Once the opposition was pushed out of the city, Syria's forces began exploitation operations to stop any emerging resistance within the city. Hezbollah forces pursued the remaining rebels in the surrounding towns as the opposition retreated.

Significant actions portrayed by numbers in Figure 6-10 are:

- 1: The Syrian Arab Army secures foothold in urban areas and continues assault.
- 2: The Syrian Air Force provides intelligence on the opposition's simple battle positions, command and control, and logistics.
- 3: Free Syrian Army elements attempt to mass limited combat capabilities.
- 4: The Syrian Arab Army contains rebel elements throughout the urban area.
- 5: Local militia supports the Syrian Arab Army with direct actions and intelligence.
- 6: Regional guerrillas support the Syrian Arab Army with indirect rocket and mortar fires.
- 7: The Syrian Arab Army uses aviation and artillery to fix opposition attempts to exfiltrate.
- 8: Information warfare optimizes perception management with near real-time media coverage.
- 9: Syrian Arab Army UAS assets collect-conduct battle zone surveillance.
- 10: The Syrian Arab Army masses direct and indirect supporting fires on rebel positions.
- 11: Regional guerrillas, along with the Syrian Arab Army, assault with overwhelming combat power and defeat the opposition.
- 12: The Syrian Arab Army exploitation element avoids rebel simple battle positions in order to assault support areas.

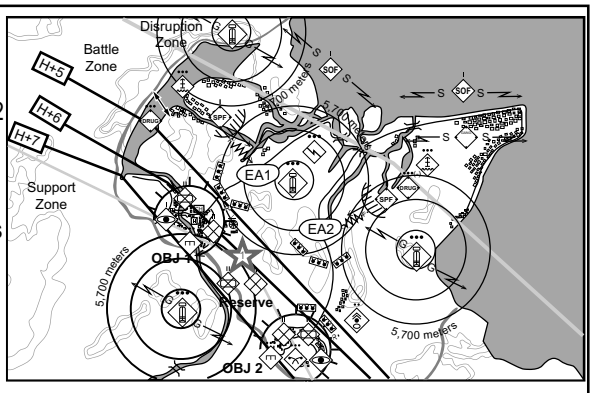
Adversary or Enemy Course of Action Statement. Every adversary and enemy COA includes an adversary or enemy COA statement, which is a narrative that describes the situation template as an overlay. Figure 6-11 illustrates an adversary or enemy COA example statement.

Mission: 375th Brigade Tactical Group conducts an area defense at OBJ1 and OBJ2 no later than 110900NOV16 to prevent occupation force seizure of government and military infrastucture.

Enemey Commander's Intent: Retain control of OBJ1 and OBJ2 with minimal key infrastructure losses.

Enemy State:
Enemy: Occupation force denied seizure of OBJ1 and OBJ2.
Friendly: Maintain combat effectiveness of 75% until negotiations or regional partner assistance obtained.
Terrain: Key coastal and inland infrastructure remain intact.

Decisive Operations: 65th and 72d Mechanized BNs conduct area defense no later than 110900NOV16 to deny occupation force seizure of OBJ1 and OBJ2.



Shaping Operations:
Shaping Operation 1: Special purpose forces conduct ambushes along high-speed AAs to disrupt occupation force freedom of movement toward southern infrastructure.
Shaping Operation 2: Engineer emplacement of minefields along high-speed AAs to block occupation force.

Movement and Maneuver
Disruption Zone:
85th Special Purpose Force
Task: Disrupt occupation force in vicinity EA1 and EA2.
Purpose: Delay occupation force movement to the south.
Method: Conduct ambushes on occupation force using complex terrain features and hasty defensive positions.
End State: Occupation force ground movement is delayed in vicinity EA1 and EA2.

Battle Zone:
65th Mechanized BN
Task: Prevent western movement of occupation force.
Purpose: Protect southern flank of 72d Mechanized BN.
Method: Use of obstacle belts and attack by fire positions.
End State: Occupation force is unable to turn west to OBJ1.

72d Mechanized BN
Task: Prevent occupation of OBJ1.
Purpose: Retain control of government.
Method: Use of obstacle belts and attack by fire positions.
End State: Government status quo is maintained.

Support Zone:
97th Mechanized BN and 10th Infantry BN (Reserve)
Task: Reinforce 65th and 72d Mechanized BNs.
Purpose: Prevent occupation force flanking of 65th and 72d Mechanized BNs.
Method: Conduct a counterattack..
End State: Occupation force is prevented from seizing OBJ1 and OBJ2.

Fires
Disruption Zone:
Task: Disrupt occupation force coastal lodgement.
Purpose: Delay movement to the south.
Method: Long-range precision fires.
End State: 65th and 72d Mechanized BNs are afforded additional time to prepare defenses.

Battle Zone:
Task: Disrupt air AAs.
Purpose: Prevent light infantry air assault in vicinity OBJ1 and OBJ2.
Method: Use SA-13s to close air corridors.
End State: Occupation force unable to control friendly rear.

Sustainment:
Task: Conduct resupply operations across all zones.
Purpose: Maintain the initiative.
Method: Support echelons aligned to support main and supporting efforts.
End State: Friendly forces are able to maintain momentum of battle to repel occupation force.

Reconnaissance:
Disruption Zone:
Task: Identify coastal landing areas.
Purpose: Direct long-range precision fires.
Method: Special purpose forces.
End State: Occupation force lodgement is contested and delayed.

Battle Zone:
Task: Identify occupation force AAs.
Purpose: Direct long-range precision fires.
Method: Special purpose forces.
End State: C2 elements are able to direct the main effort.

LEGEND

AA	avenue of approach	**EA**	engagement area
BN	battalion	**OBJ**	objective
C2	command and control		

Figure 6-11. Adversary or Enemy Course of Action Statement.

Identify High-Value Targets for Each Course of Action

Identifying HVTs involves mentally wargaming an adversary or enemy COA to determine the assets required to complete the mission. This process involves—

- Using the HVT list, which was developed based on HVTs identified as part of the adversary or enemy model in Step 3 of the IPB process, as a guide.
- Determining the effect on the adversary or enemy COA if the target is lost.
- Identifying possible adversary or enemy responses if the target is lost.

Based on the situation, one or more of the targets from the adversary or enemy model might be validated as HVTs. Additionally, targets that were not identified in the adversary or enemy model can be HVTs. During planning, the staff uses the HVT list (see Table 6-2) developed for each adversary or enemy COA to construct the HPT list. Once identified and nominated, HPTs are grouped into a list—identified for a specific time and space in the battle and prioritized based on the commander's approval for formal targeting. The HPT list (see Table 6-3) is continuously refined during execution by targeting groups. The HPTs can include various threat considerations potentially detrimental to friendly missions' success. The HPTs are incorporated into the scheme of fires and used to create target selection standards and attack guidance matrices.

Table 6-2. Notional High-Value Target List Developed During Step 4.

WFF (threats)	High-Value Targets	
Command and Control	• SAM system fire control (SA-15b) • Government complex • Military complex	• Artillery command and reconnaissance vehicle (1V14-3)
Maneuver	• Main battle tank (T-72B) • Tracked minelaying vehicle (GMZ-3)	• Towed mechanical minelayer (PMZ-4) • Special purpose forces
Force Protection	• NBC reconnaissance vehicle (BRDM-2RKh)	
Fires	• 152-mm self-propelled howitzer (2S19M1) • TDA-2K smoke generator	• Man-portable SAM system (SA-18) • SAM system (SA-13b)
Intelligence	• Battlefield surveillance radar (SNAR-10) • Short range drone (ORLAN-10)	• SAM system radar system (SA-15b)
Logistics	• 2-metric ton 4x4 cargo truck (GAZ-66)	

LEGEND
mm millimeter
SAM surface-to-air missile
WFF warfighting function

Table 6-3. Notional High-Payoff Target List Developed During Step 4.

Time (H-hour)	Priority	WFF (threats)	Targets	Desired Effect
H24H+10	1	Intelligence	• Air defense radar	Destroy
	2	Fires	• Air missile defense (SA-13, SA-18)	
	3	Intelligence	• Artillery locating radar (ARK-1M)	
H-H+10	4	Fires	• Field artillery companies (2S1)	Neutralize
H-H+10	4	Command and Control	• Control node/Government complex • Adversary or enemy communications networks	

LEGEND
H-hour Specific hour at which a particular operation commences
UAS unmanned aircraft system
WFF Warfighting function

Identify Initial Collection Requirements for Each Course of Action

After identifying all potential adversary or enemy COAs, the staff develops the tools necessary to determine which COA the adversary or enemy might implement. Because the adversary or enemy has not acted yet, this determination cannot be made during IPB. However, the staff can develop the information requirements and indicators necessary to support the construction of an intelligence collection plan that can provide the information necessary to confirm or deny adversary or enemy COAs and locate adversary or enemy targets.

Information requirements, in intelligence usage, are "those items of information regarding the relevant aspects of the operational environment that need to be collected and processed in order to meet the intelligence requirements of a commander" (*DoD Dictionary*). An indicator, in intelligence usage, is "an item of information that reflects the intention or capability of an enemy and/or adversary to adopt or reject a course of action" (*DoD Dictionary*). Identifying and monitoring indicators are fundamental tasks of intelligence analysis, as they are the principal means of avoiding surprise. Indicators are often described as forward looking of predictive indicators. Tables 6-4 and 6-5 list offensive and defensive indicators, respectively.

After identifying potential adversary or enemy COAs, the analyst must determine which COA the adversary or enemy will adopt. Initial collection requirements are designed to assist in answering the challenge. Identifying initial intelligence collection requirements revolves around predicting specific areas and activities, which, when observed, reveal the adversary's or enemy's COAs. The areas where the analyst expects key events to occur are designated as NAIs. The activities that reveal the selected COA are indicators.

Table 6-4. Offensive Indicators .

Activity	Explanation
Massing of maneuver elements, armor, artillery, and logistic support	Can indicate the main effort by weakening areas of secondary importance
Deployment of combat elements on relatively narrow frontage (not forced by terrain)	• Can provide maximum combat power at attacking point by reducing frontages • Likely threat decisive effort
Massing of indirect fire support assets	Can indicate initiation of main effort
Extensive artillery preparation of up to 50 minutes in duration or longer	Initiates preparation preceding an attack
Dispersal of tanks and self-propelled artillery to forward units	Can indicate formation of combined arms assault formations with tanks accompanying the leading maneuver elements and artillery following in bounds
Surface-to-surface missile units located forward	• Provides depth to threat offensive tasks • Places friendly support and unassigned areas in range • Can also indicate, when employed alone, harassing, or special weapons (chemical) delivery
Antiaircraft artillery and mobile surface-to-surface missiles located well forward with maneuver elements	• Provides increased protection to massed forces before attack • Extends air defense umbrella forward as units advance
Demonstrations and feints	• Can precede an attack • May deceive actual point of attack
Establishment and strengthening of counter-reconnaissance screen	• Protects assembly areas and forces as they prepare for attack • Can be effort to prevent friendly forces from seeing attack preparations

Table 6-4. Offensive Indicators (Continued).

Activity	Explanation
Concentration of mass toward one or both flanks within the forward area	Can indicate intent for single or double envelopment, particularly if massing units are armor heavy
Increased patrolling or ground reconnaissance	Can indicate efforts to gather detailed intelligence regarding friendly dispositions before attack
Command posts located well forward; mobile command posts identified	Indicates preparation to command an offensive task from as far forward as possible
Movement of noncombatants from the area of operations	Indicates preparation for rapid forward advance of troops and follow-on forces
Extensive conduct of drills and rehearsals in unassigned areas	Often indicates major attacks, particularly against fortified positions or strongly defended natural or man-made barriers, which require rehearsal of specialized tactics and skills
Cessation of drills and rehearsals	• Unit completes rehearsals • Unit prepares for offensive tasks
Increased activity in supply, maintenance, and motor transport areas	• Can indicate movement of additional forces to the front to sustain a major attack • Stocking of sustainment items, such as ammunition and medical supplies, before an attack
Increased aerial reconnaissance (including unmanned aircraft systems)	Threat effort to collect further intelligence on friendly dispositions or defensive positions
Establishment of forward arming and refueling points, auxiliary airfields, or activation of inactive airfields	• Indicates preparation for increased sorties for aircraft and faster turnaround time and aviation sustainment • Indicates preparation to support offensive tasks with aircraft as far forward as possible
Clearing lanes through own obstacles	Facilitates forward movement and grouping of assault units, particularly at night, and usually immediately precedes an attack
Reconnaissance, marking, and destruction of defending force's obstacles	Indicates where assaults will occur
Gap-crossing equipment (swimming vehicles, bridging, ferries, assault boats) located in forward areas (provides large water obstacle or gap)	Expect a substantial effort to cross a water obstacle during a main attack
Staging of airborne, air assault, or special forces with transportation assets such as transport aircraft or helicopters	• Airborne or air assault operations likely indicates efforts to attack friendly commands, communications, or sustainment nodes • Can indicate a main effort in which airborne forces will link with ground maneuver forces
Increased signals traffic or radio silence	• Can indicate intent to conduct offensive tasks; however, increased traffic may be an attempt to deceive • Radio silence denies information derived from signals intelligence
Signals intelligence and EW assets located forward	Provides electromagnetic attack and surveillance support for the attack

Table 6-5. Defensive Indicators

Activity	Explanation
Preparation of battalion and company defensive areas consisting of company and platoon strong points	Indicates intent for holding terrain with defense in-depth, normally supported by armored counterattack forces
Extensive preparation of field fortifications, obstacles, and minefields	Indicates strong positional defense
Attachment of additional antitank assets to frontline defensive positions	• Indicates intent to contest friendly armor in forward positions • Attempts to attrite and channel friendly armor into engagement areas for armor counterattack forces
Formation of antitank strong points in depth along avenues of approach	• Can allow penetration of friendly armor into engagement areas • Can engage armor in depth
Preparation of alternate artillery positions	• Increases survivability of artillery in the defense • Indicates great effort to support main defensive area with artillery—no withdrawal of maneuver forces from main defense unless defeated
Concentration of armor units in assembly areas in the rear of the main defensive area	Indicates holding armor units in reserve for possible counterattack or counteroffensive tasks
Presence of concentrated antitank reserves	Provides quick reaction capability against armor penetrations of the main defense
Displacement of sustainment and medical units toward the rear area	Facilitates defensive repositioning, maneuver, and counterattacks (support units are not “in the way”)
Pre-stocking of ammunition, supplies, and engineer or pioneer equipment in forward positions	• Reduces the burden on sustainment support during the battle • Reduces vulnerability of interdiction of supplies • Ensures strong points can survive for reasonable periods if bypassed or cut off by advancing forces
Withdrawal from defensive positions before becoming heavily engaged	Indicates delaying action to avoid decisive engagements
Numerous local counterattacks with limited objectives; counterattacks broken off before position is restored	Assists disengaging units in contact, rather than an attack to restore position
Units bounding rearward to new defensive positions, while another force begins or continues to engage	• Indicates units conducting local withdrawals to new positions • Usually, an effort to preserve the defending force and trade space for time
Maximum firepower located forward, firing initiated at long ranges	• Intent to inflict casualties thus slowing advance of attacking force and provide sufficient volume of fire to avoid decisive engagements • Allows for time to disengage and reposition defending forces
Extremely large unit frontages compared to usual defensive positions	Indicates delaying action to economize force, allowing larger formations to withdraw
Chemical or biological weapons in forward areas. Reports of threat in chemical protective clothing while handling munitions	• Indicates possible chemical munitions use • Chemically contaminated areas cause significant delays to attacking forces
Identification of dummy positions and minefields	• Indicates defending force using economy of force • Causes advancing force to determine if mines are live or inert

Chapters 7, 8, and 9 discuss the types of information needed to support offensive, defensive, and stabilization activities. These requirements are generally related to confirming or denying an adversary or enemy COA and locating adversary or enemy HVTs.

DEVELOP THE EVENT TEMPLATE AND MATRIX

Intelligence analysts develop event templates and event matrices as analytical planning tools. The initial event template and event matrix are typically developed before COA analysis, refined during COA analysis, and further refined during execution as the situation changes. In addition to using the event template and matrix to support its own planning, the staff generally disseminates the event template to subordinate units to assist in developing subordinate unit intelligence collection plans.

Event Template

An event template is "a guide for collection planning that depicts the named areas of interest where activity, or its lack of activity, will indicate which course of action the enemy and/or adversary has adopted" (*DoD Dictionary*). It is a graphic overlay used during the COA wargaming step of MCPP to confirm or deny adversary or enemy COAs throughout wargaming. Additionally, the event template is used to develop the intelligence collection overlay or matrix and the DST during COA analysis (see MCTP 2-10A or MCTP 2-10B for additional information on event templates). The event template is used during the execution phase of the operations process to assist in determining which COA the adversary or enemy has adopted. An event template is accompanied by an event matrix.

The event template comprises the following elements:

- *Time phase lines*. Time phase lines are linear geographic areas that depict when adversary or enemy activity may occur.
- *NAI*. An NAI is "the geospatial area or systems node or link against which information that will satisfy a specific information requirement can be collected, usually to capture indications of enemy and adversary courses of action" (*DoD Dictionary*). Although NAIs are usually selected to capture indications of adversary or enemy COAs, they may also be related to conditions of the operational environment.
- *Adversary or Enemy DPs*. A DP is "a point in space and the latest time when the commander or staff anticipates making a key decision concerning a specific course of action" (*DoD Dictionary*).

Constructing an event template is an analytical process that involves comparing the multiple adversary or enemy COAs developed earlier in Step 4 of the IPB process to determine the time or event and the place or condition in which the adversary or enemy commander must make a decision on a particular COA. To create an event template:

- Begin with the situation template.
- Evaluate each COA to identify associated NAIs.

- Determine where events may occur that differentiate between adversary or enemy COAs. These areas evolve into NAIs: evaluate both the time phase lines and DPs.
- Determine what action confirms or denies a particular adversary or enemy COA (indicators).
- Determine the specific hour at which a particular event occurs (H-hour).
- Compare and contrast the NAIs and indicators associated with each COA against the others and identify their differences.
- Focus on the differences that may provide the most reliable indications of the adoption of each unique COA.
- Mark the selected NAIs on the event template.
- Upon refining, overlay the adversary or enemy COAs with DPs and NAIs.

Figure 6-12 provides an example of the basic mechanics of this process. The figure displays minimal information for what is included on the event template. Figures 6-13 through 6-15 illustrate the situation templates in the area, mobile, and retrograde defensive operations. In adversary or enemy doctrine, these types of defensive tasks are tactical methods and guides to the design of operational COAs (see Chapter 7 for more on defensive tasks).

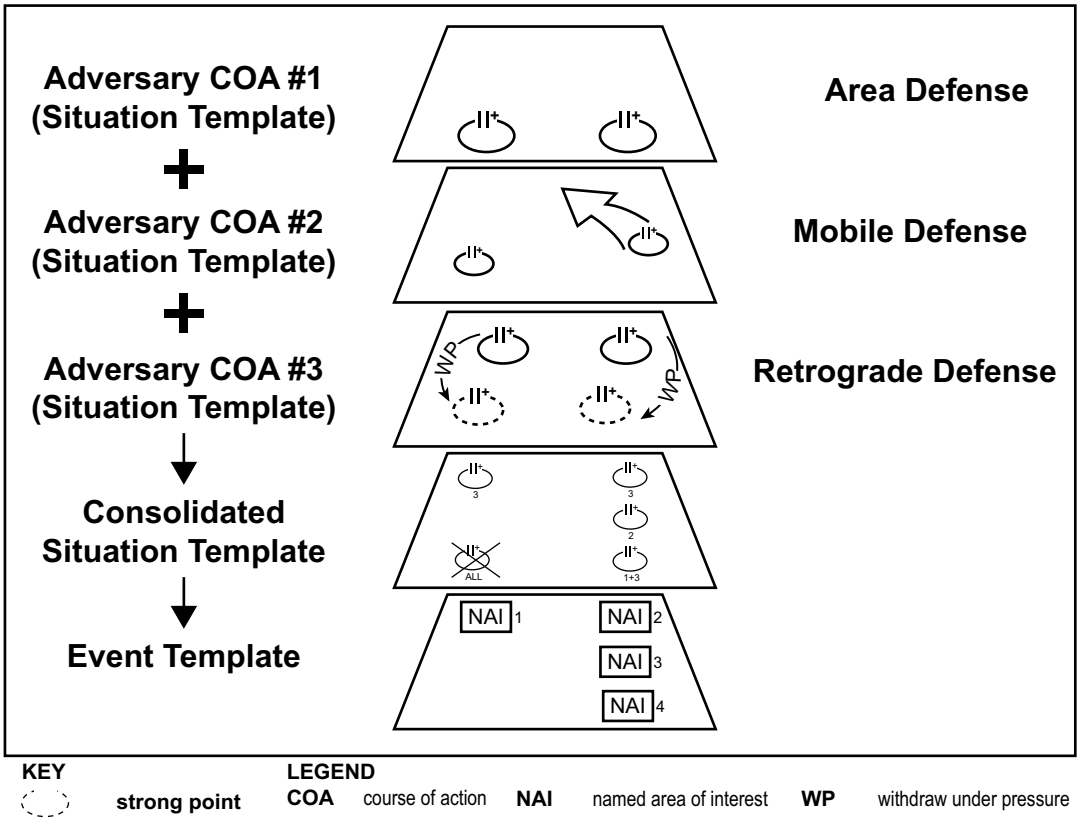
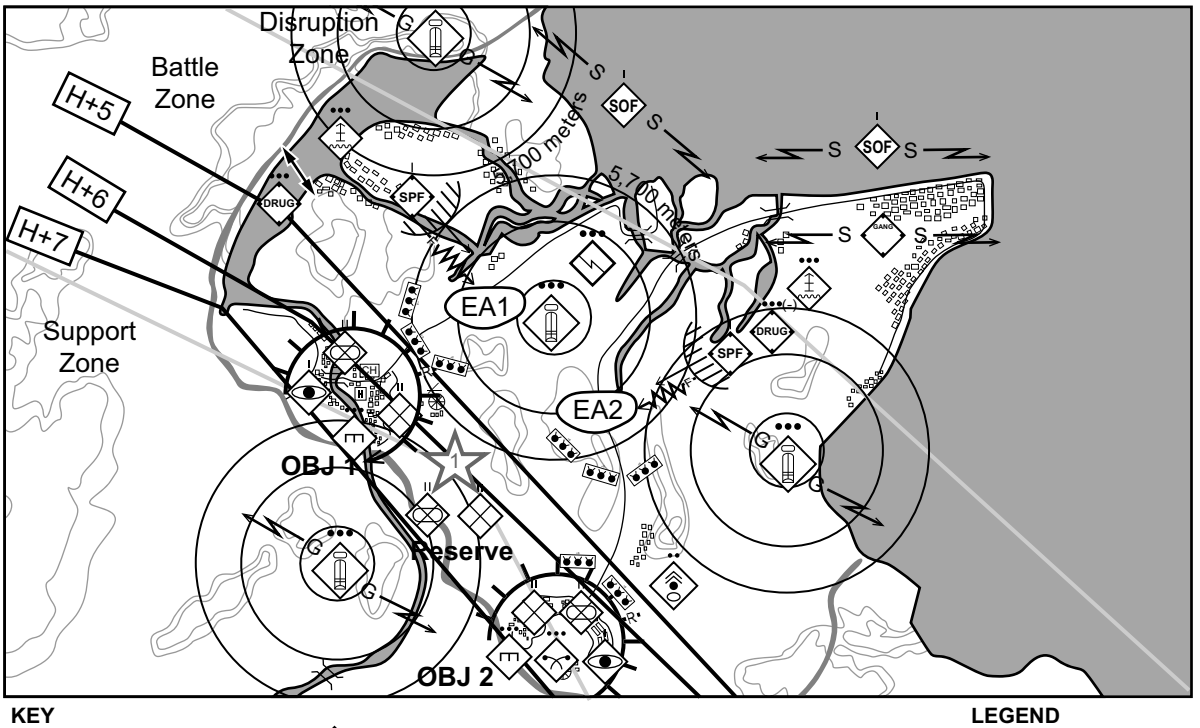


Figure 6-12. Constructing an Event Template.



KEY

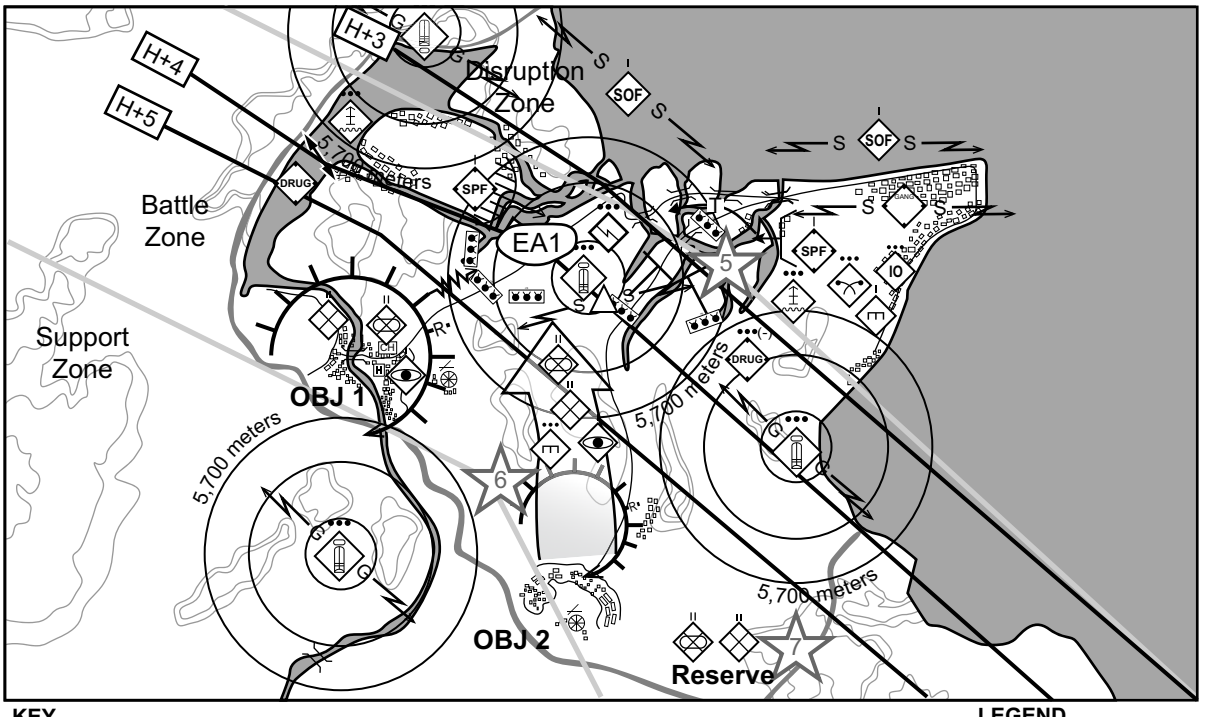
airport	enemy unit	international border			
ambush	engagement area	retain			
bridge	ferry	minefield			
buildings	fix	road			
CH city hall	guard	screen			
decision point	H hospital	H time phase line			

LEGEND

EA	engagement area
H	hour
OBJ	objective

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-13. Situation Template of an Area Defense.

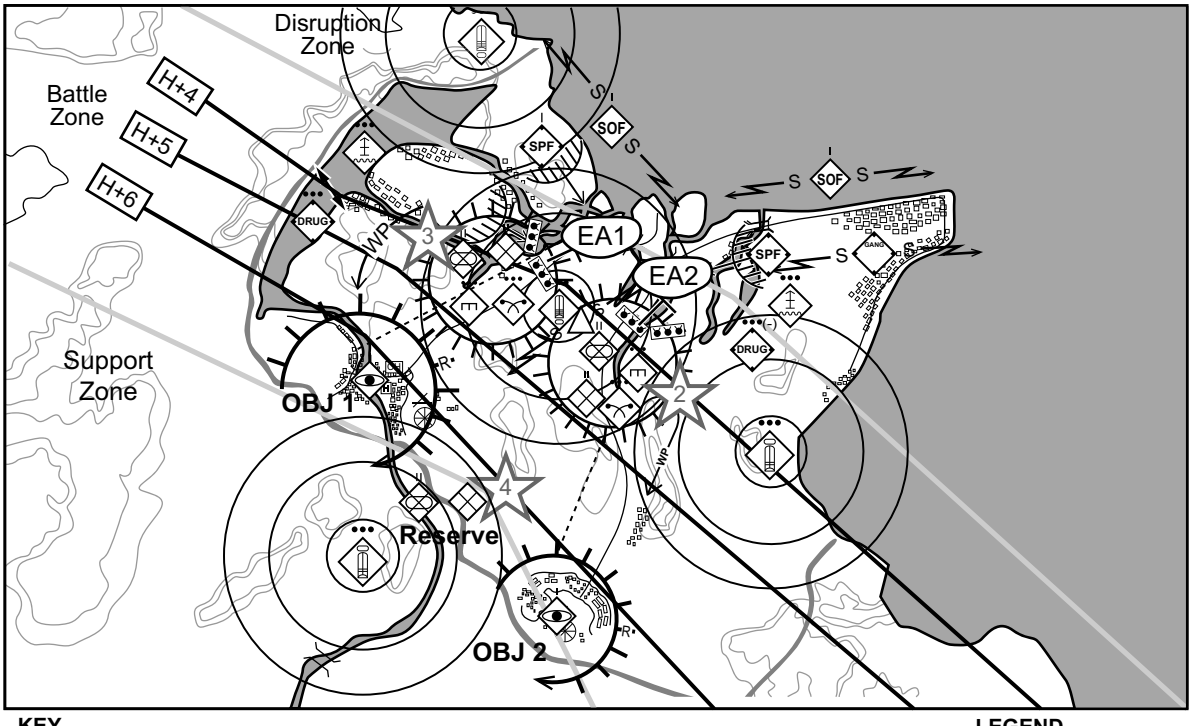


KEY

airport	enemy unit	retain	**LEGEND**	
ambush	engagement area	minefield	**EA**	engagement area
attack by fire position	ferry	road	**H**	hour
block	fix	screen	**OBJ**	objective
bridge	guard	supporting attack		
buildings	hospital	time phase line		
city hall	international border			
decision point	observation post/outpost			

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-14. Situation Template of a Mobile Defense.



KEY

airport	enemy path	retain
ambush	enemy unit	minefield
block	engagement area	road
bridge	ferry	screen
buildings	hospital	time phase line
CH city hall	international border	withdraw under pressure
decision point	observation post/outpost	

LEGEND

EA engagement area
H hour
OBJ objective

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-15. Situation Template of a Retrograde.

Figure 6-16 provides an example of a completed event template based on the consolidation of the area, mobile, and retrograde defensive tasks illustrated in Figures 6-13 through 6-15, respectively.

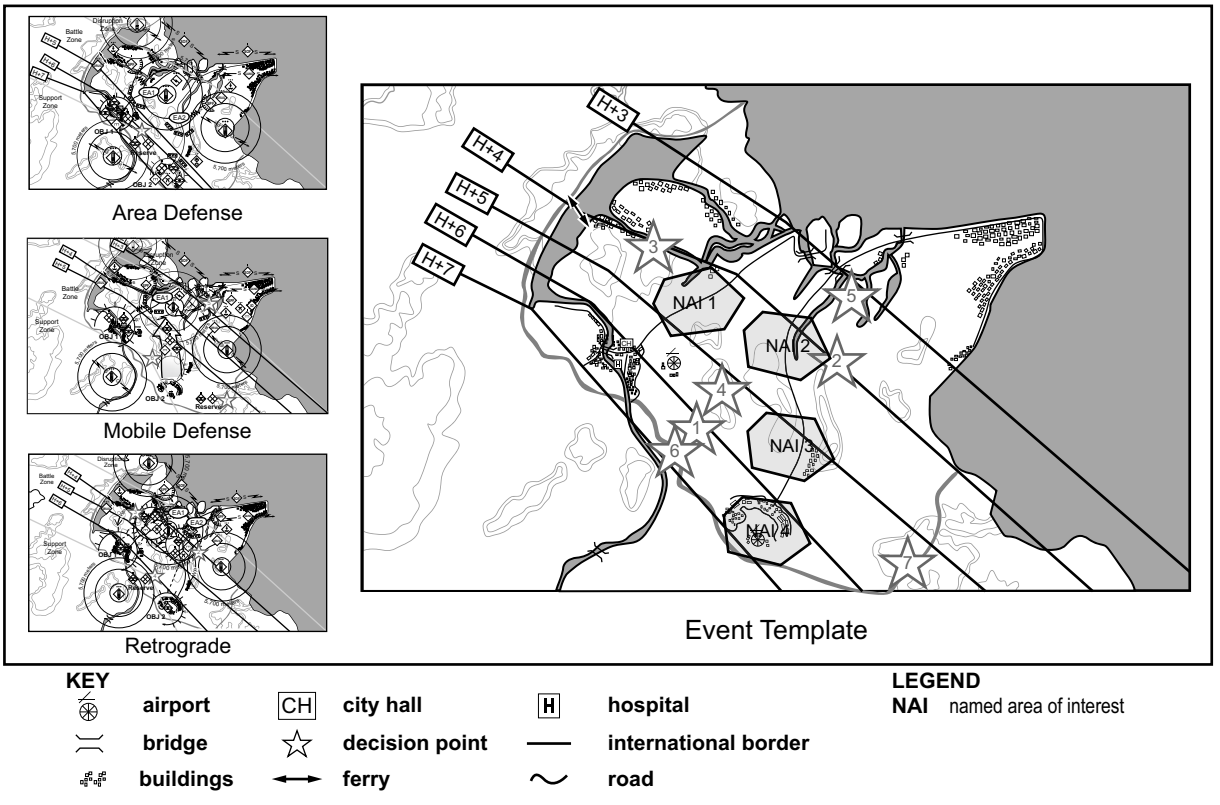
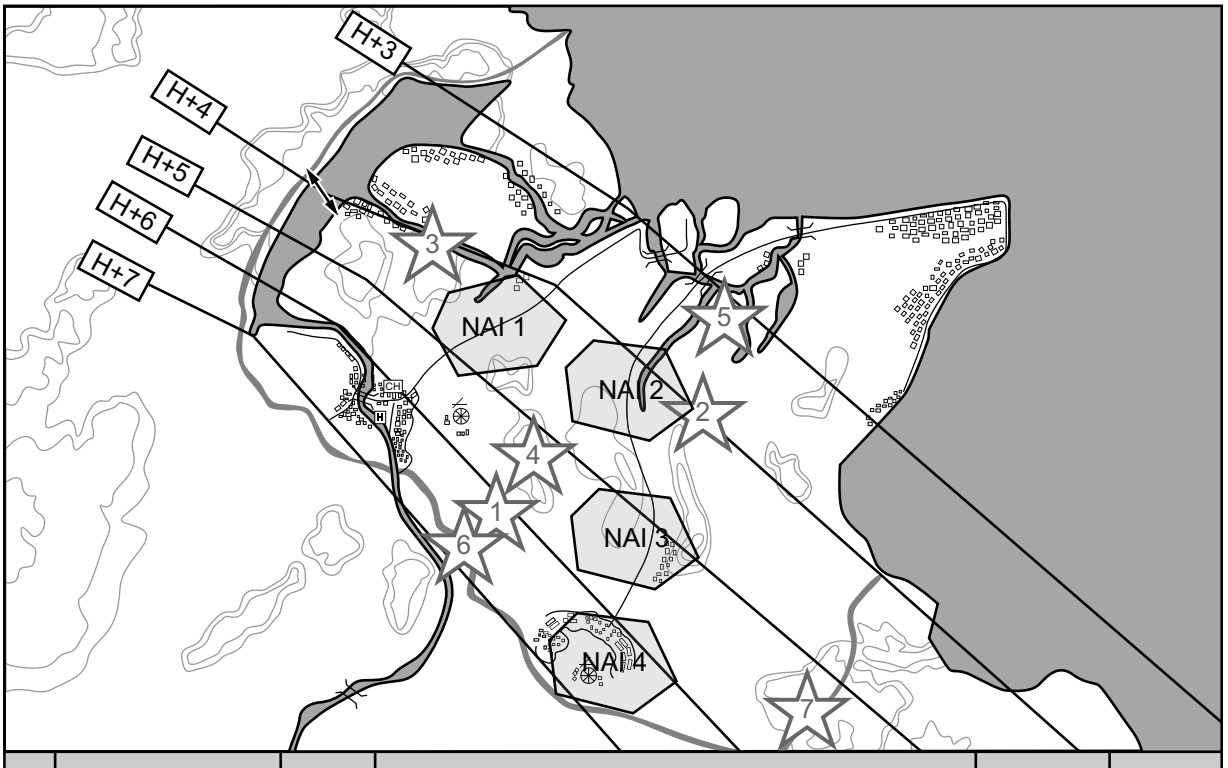


Figure 6-16. Completed Event Template.

Event Matrix

An event matrix is a cross-referenced description of the indicators and activity expected to occur in each NAI. Constructing an event matrix table is an analytical process that involves associating NAIs, and adversary or enemy DPs identified on the event template with indicators to assist in determining which COA the adversary or enemy commander is implementing (see Figure 6-17). To create an event matrix:

- Using the event template, examine the events associated with each NAI and restate the events as indicators.
- Enter the indicators into the event matrix along with the associated times they are likely to occur. Use the time phase lines from the event template to establish the expected times in the event matrix.
- Take the adversary or enemy DPs from the event template and list them in the event matrix.



NAI	Grid Location	EN COA	Indicators	HVT	NET/NLT
1	10A BC 1234567891	COA1	1. SPF in hasty defensive positions in vicinity EA1 2. Blocking obstacles on southern portion of AA1	BMP-1KshM T-72B SPF SA-18	H+4/H+5
2	10A BC 2345678910	COA2	1. SPF in hasty defensive positions in vicinity EA2 2. Blocking obstacles on southern portion of AA2	BMP-1KshM T-72B SPF SA-18	H+4/H+5
3	10A BC 2122324252	COA3	1. Staging of 65th Mechanized Battalion north of OBJ2 2. 72d Mechanized Battalion is positioned as fixing force in vicinity minefields on AA1 3. Presence of turning obstacles on northern portion of AA2	BMP-1KshM T-72B SPF SA-18	H+3/H+4
4	10T BC 2345678910	COA4	1. Presence of 72d and 65th Mechanized Battalions in foward defensive positions 2. 2ST91s remain in southern urban areas	BMP-1KshM T-72B SA-18 TDA-2K UMZ-K 2ST91	H+3/H+7

KEY

airport	decision point	international border
bridge	ferry	road
buildings	hospital	time phase line
city hall		

LEGEND

AA	avenue of approach
COA	course of action
EA	engagement area
ENY	enemy
H	hour
HVT	high-value target
NAI	named area of interest
NET	no earlier than
NLT	no later than
SOF	special operations force

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-17. Completed Event Template and Associated Event Matrix.

Figure 6-18 shows an event template for adversaries conducting regular warfare.

NOTE: This figure is for illustrative purposes and not based on a tactical scenario.

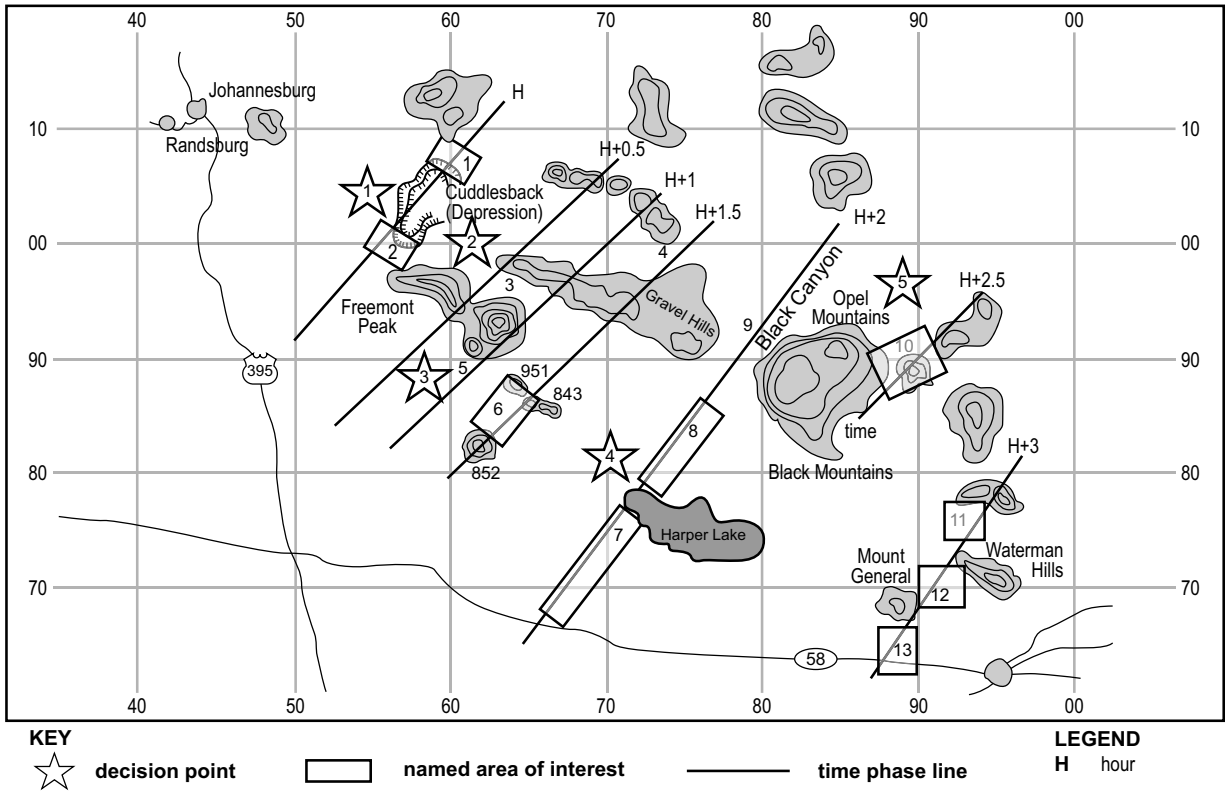


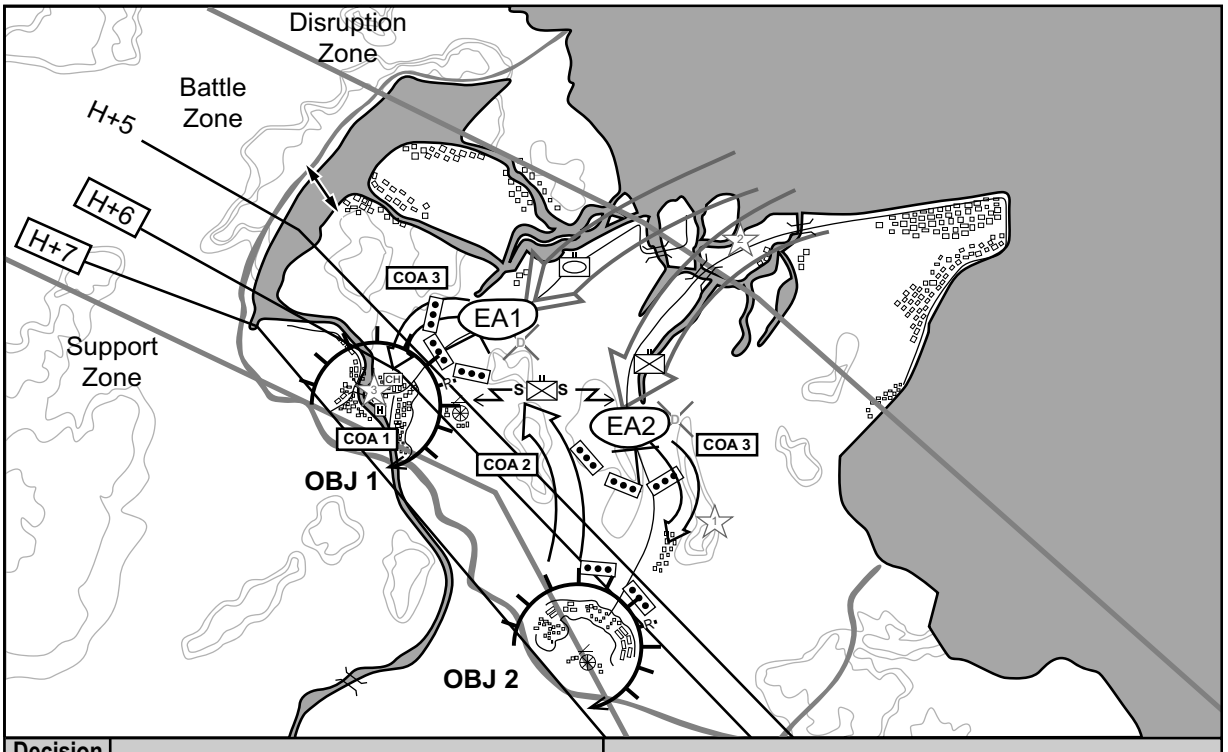
Figure 6-18. Event Template (Regular Threat) Example.

NOTE: When constructing an event template for an adversary or enemy or multiple adversaries conducting irregular warfare operations, it is often challenging to discern the tactical adversary or enemy COG. A way to overcome this is to construct the event template based on conclusions formed from a pattern and link analysis (see MCTP 3-02A).

Decision Support Template and Intelligence Collection Matrix

The completed event template and event matrix form the basis for planning collection strategies, synchronizing intelligence with friendly operations, and developing the DST and matrix (see Figure 6-19) and intelligence collection matrix (see Table 6-5). In some instances, the staff might disseminate the event template as a collection graphic to support intelligence planning and collection by other units.

The DST (Figure 6-19) provides the commander with a structured basis for deploying fires, maneuver, and jamming assets and for reducing the enemy's defensive capability with these assets. It provides commanders with the specific points on the battlespace where they will be required to make decisions regarding the employment of their assets. These decisions can be keyed to phase lines, events on the ground, or to specific enemy actions.



Decision Point	Event	Decision
1	85th Special Purpose Force commits to disrupt occupation force movement along AA1 and AA2.	Use AA3 to conduct attacks on OBJ1 and OBJ2. The RLT 5 remains in the northern consolidation area to ensure 85th Special Purpose Force is unable to conduct counterattacks.
2	85th Special Purpose Force destroys bridges across the northern portion of AA2.	Initiate gap crossing.
3	375th BTG commits SA-18 batteries to OBJ1.	Delay air assault until IADS coverage is degraded to 85%.

KEY

	airport		**engagement area**		**retain**
	block		**friendly unit**		**road**
	bridge		**main attack**	S S	**screen**
	buildings		**minefield**		**supporting attack**
CH	**city hall**		**ferry**	H	**time phase line**
	decision point	H	**hospital**		
	destroy		**international border**		

LEGEND

AA	avenue of approach
BTG	brigade tactical group
EA	engagement area
H	hour
IADS	integrated air defense system
OBJ	objective
RLT	regimental landing team

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 6-19. Decision Support Template and Matrix Example.

Table 6-6. Intelligence Collection Matrix Example.

Priority Intelligence Requirement	Indicators	Specific Information Requirement	NAI	Start	Stop	Assets														Decision Point	Target Area of Interest
						MEB					EAB										
						ACE	GCE	LCE	RRT	HCT	COMINT	ELINT	CH/HUMINT	GEOINT	MASINT	INFORMATION	CYBER	SPACE		
1. Where along AA1 will the 357th BTG initiate shaping operations for an area defense?	1. Special purpose forces in hasty battle positions in vicinity EA1	1.1.1 Report communications coordinating enemy movement	1,2	H-48	H+2	C	C	C	TP	TA	R	R				R			1	1
		1.1.2 Report movement of fighters into defensive position	1,2	H-48	H+2	C	C	C	TA	TA	R	R	R		R	R			1	1
		1.1.3 Report communications of reconnaissance assets	1,2	H-48	H+2	C	C	C	TP	TA	R	R	R						1	1
	2. Blocking obstacles on AA1 and AA2	1.2.1 Report location of engineer assets	1,2,3	H-48	H+2	C	C	C	TA	NT	R	R		R	R			R	1	2
		1.2.2 Report location of deliberate obstacle belts	1,2	H-48	H+2	C	C	C	TA	NT		R		R	R			R	1	2

LEGEND

AA	avenue of approach
BN	battalion
C	capable
CI	counterintelligence
COMINT	communications intelligence
EA	engagement area
GEOINT	geospatial intelligence
H	hour
HCT	human intelligence collection team
HUMINT	human intelligence
LLVI	low-level voice intercept
MASINT	measurement and signature intelligence
NAI	named area of interest
NT	not tasked
R	requested
REG	regiment
TA	tasked as alternate
TP	tasked as primary

CHAPTER 7.
CONSIDERATIONS FOR SPECIFIC OPERATIONS

This chapter discusses specific considerations for IPB to support specific operations. Intelligence analysts must identify areas that favor each type of Fleet Marine Force operation. They tailor their intelligence analysis and products depending on which type of operation they face (see MCWP 5-10 for information on planning for specific types of operations.)

UNIFIED ACTION

Unified action is the "synchronization, coordination, and/or integration of the activities of governmental and nongovernmental entities with military operations to achieve unity of effort" (*DoD Dictionary*). Under unified action, commanders synchronize military actions with activities of other government agencies, NGOs, intergovernmental organizations, and the private sector.

OFFENSIVE OPERATIONS

Offensive operations are "operations conducted to take the initiative from the enemy, gain freedom of action, and generate effects to achieve objectives. The four types of offensive operations are movement to contact, attack, exploitation, and pursuit" (*USMC Dictionary*).

Intelligence requirements generally associated with offensive operations include the following:

- Determine what type of defense the adversary or enemy is employing: area defense, maneuver defense, and retrograde.
- Determine location, disposition, and orientation of adversary or enemy defense:
  - Main battle area.
  - Battle positions.
  - Battle handover lines.
  - Obstacles.
  - Engagement areas.
  - Reserves.
  - Fire support assets.
  - Specialty teams.
  - CAS and other aviation supporting the defense.
  - Other assets supporting the defense.
- Determine the adversary or enemy commander's end state, objectives, DPs, COG, critical event, and win, lose, and tie options.

- Determine adversary or enemy commander's intent for denial and deception operations, information activities, reconnaissance and surveillance, and fires.
- Identify terrain and weather effects that support adversary or enemy defensive tasks:
  - Physical areas that allow the commander to tie in obstacles and battle positions to existing terrain features.
  - Air and ground AAs (CAS, reserve, and counterattack forces).
  - Terrain that canalizes attacking forces.
  - Prevailing winds, temperature inversion, humidity, precipitation, visibility, illumination, and other weather effects.
- Identify terrain and weather effects that support friendly movement and maneuver:
  - Air and ground AAs.
  - Primary and alternate attack routes.
  - Landing zones.
  - Terrain management (command and control, air defense, signal, and reconnaissance).
  - Prevailing winds, temperature inversion, humidity, illumination, and other weather elements.
- Determine the impact of civil considerations and displaced civilians on friendly and adversary or enemy operations:
  - Rural communities.
  - Refugee camps.
  - Refugee movement.
  - Aid organizations located in the AO.

In addition to the intelligence requirements listed above, each of these operations has its own unique requirements (see MCDP 1-0 for additional information on offensive operations).

Movement to Contact

Movement to contact is "a type of offensive that is employed to develop the situation and establish or regain contact with the enemy" (*USMC Dictionary*). It can also include preliminary diversionary actions and preparation fires. The extent and nature of the movement to contact depends on whether adversary or enemy forces were previously in contact. If forces are not in contact, then the central feature of the movement-to-contact operations is gaining or reestablishing contact with the adversary or enemy. Conducting movement to contact relies on assumptions made during IPB, as the relationship of friendly and adversary or enemy forces in time and space is an unknown. The following intelligence requirements must be considered when conducting movement to contact:

- Adversary or enemy location and intent.
- Location and time of potential meeting engagements.
- Location of danger areas (potential defensive locations along routes, engagement areas, observation posts, and obstacles) where friendly forces may encounter adversary or enemy forces.
- Attack routes that protect friendly forces from ground observation or surprise by the adversary or enemy.

- Natural or man-made obstacles along attack routes that can affect friendly advance.
- Location, type, and size of security forces along attack routes.
- Location of adversary or enemy flanks and other weak points in the adversary's or enemy's posture.
- Threats to friendly force flanks and rear.
- Location and extent of CBRN contaminated areas.

Attack

An attack is "an offensive action characterized by coordinated movement, supported by fire, conducted to defeat, destroy, or capture the enemy or seize and/or secure key terrain" (*USMC Dictionary*). Movement supported by fires characterizes the conduct of an attack. An attack differs from a movement to contact because adversary or enemy main body dispositions are at least partially known. The following intelligence requirements must be considered when conducting an attack:

- Location of areas where friendly forces could become disoriented, such as rough or restrictive terrain.
- The most favorable routes to the objective.
- Areas that friendly forces can use to support flanking fire and maneuver, such as support by fire and attack by fire positions.
- Template positions of known adversary or enemy forces and obstacles (combat surveillance and observation posts, observation posts, simple battle positions, tank ditches, minefields).

Exploitation

Exploitation is "an offensive operation, following a successful attack, designed to disorganize the enemy in depth and extend the initial success of the attack by preventing the enemy from disengaging, withdrawing, and reestablishing an effective defense" (*USMC Dictionary*). The objective of exploitation is to complete the adversary's enemy's disintegration. Exploitation takes advantage of previous successes and friendly force continuing activities. The following intelligence requirements must be considered when conducting exploitation:

- Location of adversary or enemy reserves prior to commitment.
- Location of adversary or enemy countermobility assets prior to their employment on routes friendly forces are using to conduct the exploitation.
- Location of adversary or enemy forces attempting to reestablish the defense.
- Location of adversary or enemy logistics or resupply operations.

Pursuit

A pursuit is "an offensive operation designed to catch or cut off a hostile force attempting to escape, with the aim of destroying it" (*USMC Dictionary*). A commander often plans for an adversary or enemy retrograde operation as either a branch or sequel to an operation. When recommending pursuit, the staff must consider possible adversary or enemy deception (whether the adversary or enemy is in retreat or attempting to draw friendly forces into a position where the

adversary or enemy can be destroyed by conventional means or by WMDs). The following intelligence requirements must be considered when conducting a pursuit:

- Possible routes the adversary or enemy might use to conduct retrograde operations.
- Availability and condition of pursuit routes.
- Location and accessibility of blocking points.
- Location of critical terrain features that affect adversary or enemy and friendly movement.
- Location of adversary or enemy uncommitted forces.
- Identity of fire support and air assets that can affect friendly force movement.
- Indications the adversary or enemy can no longer maintain defensive positions nor cohesively execute defensive tasks.
- Indications the adversary or enemy can only conduct limited counterattacks.
- Indications the adversary or enemy is increasing reconnaissance efforts.
- Indications the adversary or enemy is destroying weapons and equipment.
- Decrease of adversary or enemy indirect fire throughout the AO (intensity and effectiveness).
- Increase of adversary or enemy indirect fire in one or more sectors of the front at a time when the amount of overall defensive fires is decreasing.
- Indications of retreating forces.
- Location of adversary or enemy second echelon defensive lines.
- Location, type, strength, and size of bypassed units.
- Presence of new forces on the battlespace.
- Indications of increased resistance.

DEFENSIVE OPERATIONS

Defensive operations are "operations conducted to defeat an enemy attack, gain time, economize forces, and develop conditions favorable to offensive and stability activities. The three types of defensive operations are area, mobile, and retrograde" (*USMC Dictionary*).

Intelligence requirements generally associated with defensive operations include the following tasks:

- Determine, locate, and track the adversary's or enemy's main and supporting efforts.
- Locate and track adversary or enemy reserves.
- Locate and track enemy reconnaissance assets.
- Identify the adversary's enemy's use of special munitions (CBRN, high-yield explosives, artillery, scatterable mines).
- Locate and track adversary or enemy CAS.
- Locate adversary or enemy information capabilities.
- Identify adversary or enemy deception operations.
- Determine the adversary or enemy commander's end state.

- Determine the adversary or enemy commander's objectives.
- Determine the adversary or enemy commander's DPs.
- Determine adversary or enemy COG.
- Determine the adversary's or enemy's critical events.
- Determine the adversary or enemy commander's intent for:
  - Reconnaissance and surveillance.
  - Fires.
  - Denial and deception.
  - Defensible terrain.
  - Battle positions.
  - Engagement areas.
  - Indirect fire assets positions.
  - Counterattack routes for reserves plan.
- Develop TAIs for indirect fire and CAS.
- Determine the effect of civil considerations and displaced civilians on friendly and adversary or enemy operations for:
  - Rural communities.
  - Urban areas.
  - Refugee camps.
  - Refugee movement.
  - Aid organizations located in the AO.
  - Adversary or enemy forces using the civilian populace to cover movement.

In addition to the intelligence requirements listed above, each of these operations has its own unique requirements (see MCDP 1-0 for additional information on defensive operations).

Mobile Defense

A mobile defense is the "defense of an area or position in which maneuver is used with organization of fire and utilization of terrain to seize the initiative from the enemy" (*USMC Dictionary*). The following intelligence requirements must be considered when conducting a mobile defense:

- Methods to deceive the enemy regarding the purpose of the defense.
- Terrain that will hide the striking force.

Area Defense

An area defense is "a type of defense in which the bulk of the defending force is deployed on selected terrain. Principal reliance is placed on the ability of the defending forces to maintain their positions and to control the terrain between them. The reserve is used to add depth, to block, or restore the battle position by counterattack" (*USMC Dictionary*). The focus of the area defensive task is on retaining terrain where the bulk of the defending force positions itself in mutually supporting, prepared positions Units maintain their positions and control the terrain between these

positions. The decisive operation focuses on fires into engagement areas possibly supplemented by a counterattack. The reserve may or may not take part in the decisive operation. Commanders use their reserves to—

- Reinforce fires.
- Add depth, block, or restore the position by counterattack.
- Seize the initiative.
- Destroy enemy forces.

Conducting an area defense includes considering the following intelligence requirements during IPB:

- Location of natural lines of resistance.
- Well-defined AAs.
- Intervisibility lines.
- Other terrain features that support defensive tasks.

Retrograde

Retrograde is "any movement or maneuver of a command to the rear, or away from the enemy" (*USMC Dictionary*). These movements can involve delaying an adversary's or enemy's advance, withdrawal of forces in contact, or the retirement of forces not in direct contact and various combinations thereof. All retrograde operations seek to improve an operational or tactical situation (see MCDP 1-0 for more information on retrograde). These operations—

- Reduce the enemy's offensive capabilities.
- Draw the enemy into an unfavorable situation.
- Enable combat under conditions favorable to friendly forces.
- Gain time.
- Disengage from contact with the enemy.
- Reposition forces for commitment elsewhere.
- Shorten lines of communications.

COUNTERINSURGENCY OPERATIONS

Counterinsurgency is the blend of comprehensive civilian and military efforts designed to simultaneously defeat and contain insurgency and address its root causes" (JP 3-24, *Counterinsurgency*). Counterinsurgency operations are usually conducted simultaneously with stability operations.

The purpose of counterinsurgency operations includes—

- Providing a secure environment (isolate insurgents from the local populace).
- Gaining support for the HN government.
- Meeting the critical needs of the populace.
- Building support for HN governments and institutions.
- Shaping the environment for interagency and HN success.

Intelligence preparation of the battlespace aids commanders in gaining the situational understanding needed to accomplish these tasks by—

- Determining the root causes of the insurgency.
- Identifying external and internal support for the insurgency.
- Describing how insurgents appeal to the population.
- Identifying the targets/audiences on which insurgents focus.
- Identifying groups or populations vulnerable to insurgent influence activities and determine why they are vulnerable.
- Explaining insurgent motivation and depth of commitment.
- Determining insurgent TTP.
- Describing the conditions insurgents want to create to achieve their objectives.
- Identifying and verifying identities and tracking insurgents, criminals, and known or suspected terrorists.
- Identifying demographics for groups supporting, neutral to, or hostile to insurgent organizations and operations.
- Identifying formal and informal means to gain legitimacy among the population and its leaders.
- Accurately assessing the needs and security requirements of the population.
- Providing assessments for all lines of operations.
- Identifying the themes insurgent organizations use.
- Assessing the effects or consequences of friendly operations.

The purpose of IPB in counterinsurgency operations are the same as in offensive and defensive operations. However, the nature of these operations and the intelligence requirements associated with them are unique. The principal difference is the focus and degree of detail of analysis required for the civil aspects of the environment. Unlike major operations, an environment dominated by offensive and defensive operations directed against an adversary or enemy force, counterinsurgency, and stability tasks encompass various military missions, tasks, and activities that are not adversary or enemy centric.

Marine Corps Warfighting Publication 3-02 constitutes the Marine Corps' current doctrine on counterinsurgency and contains the operational discussion that intelligence personnel must understand to conduct effective IPB to support counterinsurgency. The primary intelligence requirements associated with counterinsurgency are associated with the following questions:

- What are the drivers of instability (examples include fraudulent elections, rule-of-law issues, sectarian tensions, political and civil government credibility, completion for resources, lack of essential services, and others)?
- What is the nature or type of the insurgency (who are the insurgents and what do they want)?
- What is the insurgent strategy (how do they intend to achieve what they want)?
- What are the insurgents' motivations (strategic goals)?
- What are the insurgents' objectives (operational objectives)?
- What popular support does the insurgency have (active or passive, tribal, ethnic, other)?
- What are the insurgents' capabilities and vulnerabilities (command and control, maneuver, fire support, intelligence, logistics, other)?

Counterinsurgency operations are conducted to support a HN or interim government or as part of an occupation when no government exists. These operations involve both coercive and constructive actions by the military force. They are designed to establish a safe and secure environment; facilitate reconciliation among local or regional adversaries; establish political, legal, social, and economic institutions; and facilitate the transition to legitimate local governance (see MCDP 1-0 for additional information on stability activities).

Counterinsurgency and stability activities promote and protect US national interests by influencing the adversary or enemy, political, and information aspects of the operational environment through a combination of peacetime developmental, cooperative activities, and coercive actions in response to crises. Regional security is supported by a balanced approach that simultaneously enhances regional stability and economic prosperity. When conducting IPB for stability activities, the same balanced approach should be applied. Commanders and staffs should be wary of becoming too focused on enemy forces and not conducting the necessary analysis on civil considerations. In fact, a greater emphasis might need to be placed on civil considerations than on the adversary or enemy during counterinsurgency operations and stability actions.

During Operations IRAQI FREEDOM and ENDURING FREEDOM, a consistent observation from commands involved is that planning can become too adversary- or enemy-centric and ignore other lines of operations. The lesson learned is that while analysis of the adversary or enemy is required, so is the analysis related to all lines of operations identified by the commander as important. This means that the analysis of civil considerations might have equal or greater importance to the analysis of adversary or enemy forces.

In addition to providing intelligence about these lines of operations, the IPB process provides intelligence about people. United States forces must understand the people of the nations where they operate to accomplish their missions. Commanders and planners require accurate intelligence assessments into the culture, perceptions, values, beliefs, interests, and decision-making processes of the individual and groups that comprise the various social networks of the population.

Establish Civil Security

Establishing civil security is the first responsibility of military forces in counterinsurgency and stability activities and involves providing for the safety of the HN, including protection from active adversary or enemy forces. When dealing with internal and external adversary or enemy forces that pose a direct threat to the HN and its people, there are three basic subtasks associated with civil security that require detailed IPB: protect external borders, combat internal defeat insurgencies, and separate insurgents from the general population. Table 7-1 identifies intelligence requirements that might be associated with each of these subtasks.

Protect External Borders. When conducting stability actions, US forces generally do not have to prepare for an attack by a regional power across an international border. The primary cross-border adversaries US forces encounter are foreign nation special forces, terrorist organizations, regionally based irregular forces, and criminal organizations.

Nation-states may use proxy forces to conduct cross-border operations to subvert friendly operations (see Chapter 5).

Table 7-1. Civil Security Intelligence Requirements (Examples).

Protect External Borders	Combat Internal Threats	Separate Insurgents from the General Population
• Identify all external state and nonstate actors attempting to influence US operations. • Identify the objectives of these groups and individuals. • Identify the tactics, techniques, and procedures these groups and individuals use to accomplish their objectives. • Identify the physical locations these groups and individuals use to transport weapons, equipment, personnel, money, media, and ideas across the border. • Identify the locations, methods, and operations of organizations within the host nation aiding external state and nonstate actors. • Identify good locations for friendly observation posts, checkpoints, engagement areas, and friendly approach and withdrawal routes.	• Identify all regular and irregular forces that pose a military threat to US and HN security forces. • Identify adversary or enemy order of battle for each adversary or enemy group. • Develop templates for each adversary or enemy group. • Develop a situation template overlay for each adversary or enemy group. • Identify high-value targets. • Identify and verify individuals as insurgents, known or suspected terrorists, or criminals. • Identify actors in the population providing support to the adversary or enemy. • Identify external actors providing support to the adversary or enemy. • Identify groups and populations vulnerable to adversary or enemy influence (persuasion, coercion, other).	• Identify the objectives and concerns of stakeholders • Determine methods to protect the population from insurgents. • Locate sectarian fault lines. • Locate sectarian and ethnic enclaves. • Identify conditions that can promote civilian opposition to insurgents.

The primary adversary or enemy activity US forces have to counter include—

- Infiltration of foreign operatives and fighters.
- Movement of weapons, equipment, money, and other resources needed to support an insurgency.
- Criminal smuggling.

Commanders need to know which external forces or individuals are supporting adversary or enemy forces in their AO to develop friendly COAs to counter these forces. Failure by the intelligence staff to provide this information can result in the unchecked reinforcement and resupply of these forces. Although commanders might not be able to act directly against these forces, they can request support from the next higher command. Detailed intelligence on these forces provided by the intelligence staff can assist commanders in gaining this support. Table 7-2 provides methods for evaluating external adversary and enemy organizations and for presenting this information.

Table 7-2. Evaluating External Adversary or Enemy Organizations.

Step	Requirement	Tactics, Techniques, and Procedures
Step 1	Identify all external state and nonstate actors attempting to influence US operations and their objectives, including: • Identity. • Location. • Objectives. • Operations. • Methods. • Defeat mechanisms.	• Identify all organizations and their objectives during problem framing. • Develop organizational charts for each of these groups during problem framing. • Present this information during the /problem framing briefing. • Include this information as part of the intelligence estimate. • Maintain up-to-date data files for each of these organizations.
Step 2	Within the area of operations, identify physical locations these groups or individuals use to transport weapons, equipment, personnel, money, media, and ideas across the border.	• Develop a situation template (digital overlay) that depicts border-crossing points, movement routes, safe houses, cache sites, and high-value targets associated with each organization. • Develop a course of action statement describing the operations of each of these organizations during problem framing. • Present this information during the problem framing briefing. • Include this information as part of the intelligence estimate. • Maintain the situation template as part of the joint common database.
Step 3	Identify TTP these groups or individuals use to accomplish their objectives.	• Identify these methods during problem framing. • Develop special assessments (text and graphics) that describe TTP in detail. • Present this information during the problem framing briefing. • Include this information as part of the intelligence estimate. • Maintain up-to-date data files for each of these TTP.
Step 4	Identify good locations for friendly observation posts, checkpoints, engagement areas, and friendly approach and withdrawal routes.	• Develop a digital terrain overlay (geospatial and imagery intelligence) during problem framing that describes these locations. • Present this information during the problem framing briefing. • Include this information as part of the intelligence estimate. • Maintain digital terrain overlays as part of the joint common database.

Defeat Insurgencies. When engaged in stability activities, US forces can be contested by one or more armed and organized groups that oppose US presence and objectives in the area. These groups can vary in size and capability. Their motivations and objectives may or may not be the same. They can actively oppose each other, or they can work together. The one characteristic these groups share is achieving their goals through violence. Beyond that, these groups can generally be characterized as follows:

- Neither locatable nor easily detected by US intelligence collection assets.
- Often unidentified early in an operation.
- Usually operate under a decentralized chain of command.
- Organized under a cellular, militia, or special-forces structure.
- Operates in complex terrain usually within urban centers or severely restricted natural terrain.
- An adversary or enemy that thinks, adapts, and modifies TTP, as needed, to operate against conventional forces.
- Targets four general groups:
  - HN political and civil authorities.
  - HN military and police forces.

  - General population.
  - US forces, other international military, and civilian agencies.
- Sustains themselves through external or internal support mechanisms.
- Establishes sanctuary in complex terrain or among civilian populations.
- Avoids massing forces.
- Employs—
  - Commercial-off-the-shelf communications technology (telephone, cell phone, internet).
  - Tactical radios.
  - Non-electronic methods of command and control.
  - Civilian transportation (public transportation, privately owned vehicles).
  - Small arms and crew-served weapons.
  - Improvised explosive devices.
  - Mortars.
  - Shoulder-fired antiaircraft weapons.
- Capable of conducting operations directed against US forces, such as—
  - Improvised explosive devices attacks.
  - Mortar attacks.
  - Complex attacks.
  - Sniper attacks.
  - Drive-by shootings.
  - Infiltration.
  - Ambushes.
  - Sabotages.
  - Suicide bombings.
  - Information activities.
  - Information for effect.
  - Misinformation.
  - Disinformation.
  - Propaganda.
  - Reconnaissance and surveillance.
- Capable of conducting operations directed against HN political, civil, and security targets, and the general population. These operations include but are not limited to assassination and murder, kidnapping, coercion, intimidation, and recruitment.

The commander needs detailed intelligence on all insurgent organizations in the AOs to prevent their activity from affecting the command's ability to complete all other assigned stability activities. Failure by the intelligence staff to provide this intelligence can result in a continual escalation of insurgent activity that might prevent the command from accomplishing the mission. When evaluating this type of adversary or enemy, the intelligence staff maintains up-to-date data

files relating to the adversary or enemy order of battle and historical and current reporting to produce the predictive assessments required by the commander to plan operation. Table 7-3 provides TTP for evaluating insurgent operations.

Table 7-3. Evaluating Insurgency Operations.

Step	Requirement	Tactics, Techniques, and Procedures
Step 1	Identify all regular and irregular forces that pose a military threat to US and HN security forces.	• Identify all organizations and their objectives during problem framing. • Develop organizational charts for each of these groups during problem framing. • Present this information during the problem framing briefing. • Include this information as part of the intelligence estimate. • Maintain up-to-date data files for each of these organizations.
Step 2	Within the area of operations, identify physical locations these groups or individuals use to transport weapons, equipment, personnel, money, media, and ideas across the border.	• Develop a situation template (digital overlay) that depicts border-crossing points, movement routes, safe houses, cache sites, and high-value targets associated with each organization. • Develop a course of action statement describing the operations of each of these organizations during problem framing. • Present this information during the problem framing briefing. • Include this information as part of the intelligence estimate. • Maintain the situation template as part of the joint common database.
Step 3	Identify TTP these groups or individuals use to accomplish their objectives.	• Identify these methods during problem framing. • Develop special assessments (text and graphics) that describe TTP in detail. • Present this information during the problem framing briefing. • Include this information as part of the intelligence estimate. • Maintain up-to-date data files for each of these TTP.
Step 4	Identify good locations for friendly observation posts, checkpoints, engagement areas, and friendly approach and withdrawal routes.	• Develop a digital terrain overlay (geospatial and imagery intelligence) during problem framing that describes these locations. • Present this information during the problem framing briefing. • Include this information as part of the intelligence estimate. • Maintain digital terrain overlays as part of the joint common database.

Separate Insurgents from the General Population

Paramilitary elements, terrorists, militias, and other insurgent groups of elements conducting irregular warfare depend on the cooperation of the general population. These groups do not have the capability to sustain operations against armed conventional forces without that support. Denying general-population support to these groups is a critical component of an overall strategy to prevent insurgents from influencing other stability activities. Armed groups involved in insurgent operations directed against the HN government draw their strength from the population. These groups—

- Establish sanctuary locations among segments of the population.
- Use civilian transportation, communications, and financial and general services to sustain operations.
- Receive funding by winning the approval of segments of the population or by extortion.
- Use segments of the population to provide indications of US operations.
- Conduct information activities targeting the population.
- Use the threat of violence or specific actions to coerce the population.

To separate these forces from the population, commanders need to understand how and why the population supports these forces. Many factors, such as the following, can influence a local population's perspective and sway its support:

- Safety from the violence of war and crime.
- Economic viability.
- Religious freedom.
- View toward government.
- View toward US presence.

The intelligence staff continually reevaluates the population's role in the conflict and provides the information commanders need to conduct operations that can influence the population to support their programs. The steps in Table 7-4 provide TTP for presenting this information.

Table 7-4. Evaluating the General Population's Role in a Conflict.

Step	Requirement	Tactics, Techniques, and Procedures
Step 1	Conduct an initial assessment of the population during intelligence preparation of the battlespace.	• Begin this assessment during predeployment since it can be a long and difficult process. • Integrate civil affairs personnel and assessments in the intelligence preparation of the battlespace process. • Consider how successful insurgent groups have conducted population surveys to determine how they view and use the population. • Maintain a civil considerations assessment that accurately describes the civil aspects of the environment, assesses effects of friendly operations on the population, and identifies strategies that can influence the population to assist in combating adversary or enemy forces. • Determine how the adversary or enemy uses the population as part of its operations. • Determine the positive and negative effects of every type of friendly operation. • When determining intelligence gaps, include those related to the population. This assists civil reconnaissance as well as intelligence collection operations.
Step 2	Continually reassess information collected as part of civil and infrastructure reconnaissance.	• Continually reassess information collected as part of civil and infrastructure reconnaissance. • Continually update the civil considerations assessment. • Include the civil considerations assessment in all intelligence briefings. • Include the civil considerations/human terrain assessment in targeting and intelligence collection working groups.

Establish Civil Control

When mission and conditions warrant, US forces might be required to implement populace and resources control measures to achieve civil control and protect the populace. The military activities associated with establishing civil control generally involve developing interim mechanisms for establishing rule of law and restoring the justice system. Generally, the military's role is to—

- Occupy and assert transitional military authority.
- Establish public order and safety.
- Establish military government.

- Transition to other authority.
- Establish interim criminal justice system.
- Support—
  - Law enforcement and policing reform.
  - Judicial reform.
  - Property dispute resolution processes.
  - Corrections reform.
  - War crimes courts and tribunals.
  - Public outreach and community rebuilding programs.
- Work with the following types of groups to accomplish the task:
  - HN political and civil leaders and military and police forces.
  - Leaders of HN religious and ethnic groups.
  - US, HN, and international aid organizations.
  - HN judicial bodies.
  - Local populations.

Establishing civil control occurs in conjunction with establishing civil security and involves developing interim mechanisms for establishing the rule of law. When attempting to establish civil control, the commander has two primary intelligence requirements:

- Identify the appropriate methods necessary to regulate selected behavior and activities of individuals and groups to reduce the overall risk to the general population.
- Determine the reliability, capability, and support requirements of the key individuals and organizations assisting with this task.

During the IPB process, the commander and staff assess the host nation's ability to combat crime, as well as identify—

- All vulnerable elements of the population and assess their needs.
- Methods to communicate with the public to promote reconciliation.
- Security requirements for humanitarian aid organizations and indigenous security forces.
- What civilian police functions need to be performed by US military forces.
- Major crime issues.
- Critical infrastructure related to criminal justice and security institutions that require protection.

The G-3/S-3, military police, staff judge advocate office, and other information sources—including local nationals, local government officials, NGOs, and intergovernmental organizations—can provide Department of State information on establishing civil control for—

- Public order and safety.
- Criminal justice system reform.
- Law enforcement reform.

- Judicial system reform.
- Corrections system reform.
- War crimes courts and tribunals.
- Conflict resolution.
- Public outreach and community rebuilding.

  NOTE: The G-3/S-3 is responsible for civil affairs unless the Marine force commander establishes a G-9.

Restore Essential Service

The military activities associated with restoring essential services generally involve supporting indigenous populations and institutions as well as civilian relief agency operations addressing the effects of humanitarian crises, such as famine, dislocated civilians, displaced persons, and human trafficking. Generally, the military's role is to provide—

- An initial response that provides for immediate humanitarian needs (food, water, shelter, and medical support).
- A transformational response from which military forces build on the unified action partner capacity to operate and maintain essential civil services.

During IPB, the commander and staff should determine the nature and scope of the humanitarian crisis as well as the following for essential services:

- Displaced person relief programs:
  - Identify the size and location of dislocated civilian populations.
  - Identify food, water, shelter, and medical needs.
  - Assess the capability of local physical transport, distribution, and storage to deliver relief supplies (including government and relief agencies).
  - Determine the command's capability to provide services or augment the efforts of other organizations.
  - Identify other threats to the affected population (human rights abuses, minefields, other).
- Famine relief programs:
  - Assess the effects of conflict on food and availability.
  - Determine food and water security requirements.
  - Estimate total food and water needs.
  - Assess the capability of the local physical transport, distribution, and storage to deliver food and water (including government and relief agencies).
  - Identify most vulnerable populations.
  - Identify security requirements for relief distribution networks.
  - Identify other threats to the affected population (human rights abuses, minefields, hostile forces, other).
- Nonfood relief programs:
  - Identify security requirements for relief distribution networks.
  - Identify areas that need emergency nonfood items.

- Humanitarian demining:
  - Identify mined areas.
  - Identify populations and individuals injured by mines.
  - Determine medical support required to treat injuries.
  - Determine how best to educate the population to recognize and avoid mines.
- Human rights initiatives:
  - Identify previous human rights violations.
  - Identify vulnerable populations.
  - Determine how to secure vulnerable populations.
  - Determine how best to support NGOs and intergovernmental organizations.
- Public health and education programs:
  - Identify public health hazards (malnutrition, water contamination, sewage).
  - Identify deficiencies in the existing medical infrastructure.
  - Assess the need for additional medical personnel and facilities.
  - Identify requirements to open schools.
  - Identify nongovernment relief organizations in the area and their current progress.

The G-3/S-3, military police, staff judge advocate office, and other sources of information—including local nationals, local government officials, NGOs, and intergovernmental organizations—can provide Department of State information about programs and initiatives.

Support Governance

When a legitimate and functional HN government is present, military forces operating to support a state have a limited role. However, if the HN government cannot adequately perform its basic civil functions, some degree of military support to governance may be necessary. Supporting governance is the fourth stability task/operation requiring possible analysis during IPB.

During IPB, the commander and staff assess whether the indigenous government is performing its basic civil functions adequately; otherwise, the commander and staff will—

- Identify founding documents that establish the nature of the HN government (for example, United Nations mandate, declaration of independence, constitution, or bylaws).
- Implement representative facets to government (councils, elections).
- Support civil administration and unified action partners by assisting in the development of an internal defense and development plan.
- Identify critical essential public infrastructure and services that must be restored and maintained.
- Establish public information and education programs that support the authority and legitimacy of the HN.
- Promote public health and welfare through foreign humanitarian assistance (FHA) and humanitarian civil assistance programs to support the internal defense and development plan.

The G-3/S-3 and other sources of information, including local nationals and government officials, NGOs, and intergovernmental organizations, can provide Department of State information on support to governance for transitional administrations, local governments, anticorruption initiatives, and elections.

Support Economic and Infrastructure Development

The most effective long-term measure of conflict prevention and resolution is the sustainment of a viable government that is actively engaged in meeting the needs, including economic development, of its citizens. A nation's economy affects its ability to govern and provide security for its people. The status of a nation's infrastructure affects the sustainment and growth of its economy. Understanding the economy and the state of infrastructure in the AO are critical to a commander's ability to plan and conduct operations that improve economic conditions.

Support economic and infrastructure development is the fifth and last stabilization activity that might require analysis during IPB. The intelligence staff conducts an analysis of the economic and infrastructure conditions within a targeting area during initial IPB to focus the commander and staff on these problem sets during the remainder of planning. This analysis is briefed during the intelligence portion of the problem framing briefing and included as part of the intelligence estimate issued with the OPLAN or OPORD. Additionally, to support continued operations, this analysis is continually updated to ensure planning teams and assessment working groups have the most current data.

Economic Development. When assessing economic conditions, the commander and staff consider the following questions:

- What is the ability of legal border-crossing sites and other ports of entry to assist the legal flow of commerce?
- What are the positive and negative effects of cross-border smuggling of commercial goods?
- What are the positive and negative effects of any existing underground economy?
- What are the statuses of financial services provided by the private sector within the AO?
- What are the threats to critical financial institutions, infrastructure, personnel, and transactions?
- Is there corruption within existing financial institutions?
- How do the various groups of a local population earn their living (agriculture, trade, industry)?
- Where do the most important items come from that the population consumes?
- How does weather or terrain effect the availability of commodities?
- How has conflict affected the availability and movement of commerce?
- What measures has the population taken to adapt to a disrupted economy?
- What is the current and projected level of job growth without intervention?
- Is there an existence of ongoing HN or international economic recovery programs?
- What is the economic effect of criminal organizations, insurgent groups, and corrupt political and civil elements on the HN government, assistance providers, and US military forces?

- What is the availability and distribution of currency?
- What is the best use of the commander's emergency response program?
- What is the status of dislocated civilian population and ongoing relief efforts?
- What measures of effectiveness can be used for assistance programs and civic action programs?

The answers to these questions can help the commander avoid actions that might disrupt economic recovery and target efforts that improve local economic conditions through infrastructure development. Table 7-5 provides the intelligence staff with information sources for answering these questions. Additional sources include local nationals and government officials, NGOs, and intergovernmental organizations.

Table 7-5. Information Sources for Supporting Economic Developments.

Economic Category	Staff Proponent	Information Sources
• Economic generation and enterprise creation • Monetary programs • National treasury operation	G-3/S-3	Department of Treasury
• Natural resource protection	G-3/S-3	Department of Interior
• Agricultural development	G-3/S-3	Department of Agriculture
• Public sector investment programs • Private sector development • Transportation infrastructure programs • Telecommunications infrastructure programs • General infrastructure programs	G-3/S-3	Department of Commerce
The G-3/S-3 is responsible for civil affairs unless the Marine air-ground task force commander establishes a G-9.		

Infrastructure Development. When assessing infrastructure conditions, the intelligence staff considers the following:

- The condition of existing infrastructure and whether rehabilitation or new infrastructure development is needed.
- The organizations and individuals responsible for maintaining infrastructure and providing services.
- The capability of responsible organizations and individuals to meet the requirements of the population.
- Corruption and favoritism in the delivery of services.
- The expectations and perceptions of local communities regarding the provision of services made possible by functional infrastructure.

These considerations can assist the commander in prioritizing infrastructure development projects, maximizing existing resources, and potentially leveraging external resources. Data collected during infrastructure reconnaissance can assist with these considerations. Infrastructure reconnaissance is a multidisciplinary reconnaissance focused on gathering technical information on the condition and capacity of existing public systems, municipal services, and facilities within

an assigned area of operations (see MCRP 3-34.3). Infrastructure reconnaissance results assist in developing situational understanding of the local capability to support the infrastructure requirements of the local populace within a specific area.

Table 7-6 provides the intelligence staff with information sources for supporting infrastructure development. The supporting infrastructure categories include sewage, water, electricity, academics, trash, medical, safety, and as well as other considerations. Additional sources of information include local nationals and government officials, NGOs, and intergovernmental organizations. For determining the overall status for each infrastructure category, color-coding is a common status indicator. Table 7-7 provides guidance for the status color coding of each infrastructure category.

Table 7-6. Information Sources for Supporting Infrastructure Development.

Infrastructure Category	Staff Proponent	Information Sources
Sewage	Engineer	Engineer reconnaissance teams, infrastructure survey teams, scouts, and combat patrols
Water	Engineer	Same as sewage
Electricity		
Academics	G-3/S-3	G-3/S-3
Trash	Engineer	Same as sewage
Medical	Medical services	G-3/S-3
Safety	Military police	Scouts, combat patrols, CHD, military police checkpoints
Other:		
• Roads and railroads • Bridges and waterways • Airports • Housing • Communications • Hazardous materials	Engineer	Same as sewage
• Food supply	G-3/S-3	G-3/S-3
• Population concerns related to all above	G-3/S-3	Civil affairs teams and CHD/regional affairs officers, international affairs officers, and other cultural enablers
Note. The G-3/S-3 is responsible for civil affairs unless the Marine air-ground task force commander establishes a G-9.		

Table 7-7. Status Color Coding of Infrastructure Categories .

Category	Green	Amber	Red	Black
Sewage	Sewage system works consistently.	Sewage system works, but treatment status is undetermined.	No treatment observed, but treatment plant exists.	Sewage treatment system is destroyed.
	No sewage is observed, and there is no odor.	No sewage is observed, but there is odor present, or the system is damaged.	Sewage is observed, and odor is present.	Presence of raw sewage is a public health issue.
	Sewage system is operational in 100% of public facilities.	Sewage system is operational in 50% or more of public facilities.	Operational in less than 50% of public facilities.	No operational sewage in public facilities.
Water	Water distribution works at 100% capacity.	Water distribution works at 50% or more of capacity or there are some leaks.	Water distribution does not work.	Water is tested as non-potable, appears contaminated, or has a bad odor.
	Water tested as clean or local populace is consuming.	Water appears clean, with no smell and the local populace states that it is clean.	Water does not appear clean and local populace states that it is not clean.	No running water in public facilities.
	Running water is in 100% of public facilities.	Running water is in 50% or more of public facilities.	Running water is in less than 50% of public facilities.	Power distribution system is destroyed.
Electricity	Power distribution system works; blackouts are planned.	Power distribution system works; blackouts are unplanned.	Power distribution system is unreliable; there are frequent blackouts.	Power distribution system is destroyed.
	Electric lines are 100%; there is no damage or power loss.	Electric lines are 50%; there is minor damage or an undetermined amount of power loss.	Electric lines are less than 50%; there is major damage or noticeable power loss.	Electric lines are all down; hot wires exposed; significant power loss.
	Power grid station intact and secure.	Power grid station is operational, but it is not secure.	Power grid station is nonoperational; unable to secure.	Power grid station is stripped or destroyed.
Academics	Building is serviceable; all utilities operational and secure.	Building is adequate; utilities operate over 50% but are not secure.	Building is usable; utilities operate less than 50%; not secure.	Building is not usable; utilities are nonfunctional.
	Academic resources are available to all students.	Academic resources are available to 50% or more.	Academic resources are available to less than 50%.	Extremely limited academic resources.
Trash	Formal trash collection system is operational.	Formal trash collection system exists, but it is limited.	No formal trash collection system.	No trash collection.
	Trash collection is in a central area that does not present a health hazard.	No known central trash collection area.	Central trash collection area presents a possible health hazard.	Trash is consolidated in an area that presents a health hazard.
	No trash buildup in public facilities.	Limited trash in public facilities; relatively clean.	Public facilities have no means to remove trash.	Public facilities have excess trash.

Table 7-7. Status Color Coding of Infrastructure Categories (Continued).

Category	Green	Amber	Red	Black
Medical	Medical facilities are functional and secure; there is backup power and minimal equipment issues.	Medical facilities are usable but not secure; there is no backup power and some equipment shortages.	Medical facilities are unsanitary; there are significant equipment and supply shortages.	Medical facilities are not usable due to damage, unsanitary conditions, or looting.
	Emergency services are available, including multiple ambulatory services.	Emergency services exist (ground transport only).	Emergency services are unavailable; ground transport does not have medically trained personnel.	Emergency services are not available.
	Veterinary services are available; an animal holding area is available.	Limited veterinary services are available; holding area is inadequate.	On-call veterinary services, but no holding area.	Veterinary services are not available.
Public Safety	Police department is functional; the building is secure; equipment is available and operational.	Police department is functional a minimum of 50%; building is securable; equipment is available and operational more than 50%.	Police department is functional less than 50%; unable to secure the building; limited equipment is available.	Police department is nonfunctional; building is not usable; equipment is unavailable.
	Fire department is functional; building is secure; equipment is available and operational.	Fire department is functional a minimum of 50%; building is securable; equipment is available and operational more than 50%.	Fire department is functional less than 50%; unable to secure the building; limited equipment is available.	Fire department is nonfunctional; building is not usable; equipment is unavailable.
Other considerations: roads and railroads	Road is class C at a minimum that can be upgraded, and it has no visible damage.	Road is class D at a minimum; damage and upgrade requirements will affect traffic flow.	Road is class E at a minimum; upgrade requirements are significant, and materials are not readily available.	Railroad is not trafficable.
	Railroad system is operational.	Railroad is damaged, but resources to repair are available; jacks are available.	Railroad damage is extensive; resources to repair are not readily available.	Railroad system did exist, but it now has extensive damage to the track and the trains.
Other considerations: bridges and waterways	Bridges are trafficable, with no visible damage.	Bridges are trafficable; supports are intact, but there is damage to spans.	Bridges are not trafficable for the military and risky for civilians; there is damage to spans and supports.	Bridges are not trafficable, and they are impassable.
	The military load classification is verified through the engineer research and development center or Naval Facilities Engineering Command.	The military load classification is calculated but not verified due to damage.	The military load classification is ineffective due to damage.	Construction repair is required before the military load classification can be determined.
	Inspection and evaluation shows original strength assessment is valid.	Inspection and evaluation determines strength support issues.	Inspection and evaluation determines minimal supportable strength.	Inspection and evaluation determines that the bridge cannot support weight.

Table 7-7. Status Color Coding of Infrastructure Categories (Continued).

Category	Green	Amber	Red	Black
Other considerations: airports	Airport is capable of supporting military and civilian traffic concurrently; there is no visible damage.	Airport can support limited military traffic; there is no visible damage.	Airport is damaged; utilities and structures are not reliable or safe	Airport is not working or unavailable.
	Runway, taxiway, and parking aprons are serviceable; working and parking maximum aircraft on the ground is greater than or equal to two (military).	Runway is serviceable, but taxiway and parking is limited (C130/C17 only).	Runway is not serviceable; but can be repaired with available resources.	Runway is not serviceable; dimensions will not support military aircraft; major repair and upgrades are required.
Other considerations: housing	Residences are structurally sound and offer protection from the environment.	Residences are damaged and need structural evaluation; they offer limited protection from the environment.	Residences are damaged and structurally unsafe; no protection from the environment.	Residences are destroyed.
	Utilities are working and reliable.	Utilities are working over 50% but they are not reliable.	Utilities work less than 50% and require significant repairs.	Utilities are nonoperational.
Other considerations: communications	Telephone system is operational and reliable in public facilities.	Telephone hookups are available; some equipment is available and somewhat reliable.	Limited telephone hookups and equipment are available but not reliable.	Telephone hookups or equipment is not available.
	Postal system is operational and reliable.	Postal system is slow; over 50% of the mail is delivered.	Postal system exists; extremely slow; less than 50% of the mail is delivered.	Postal system is not available.
	Media (television, internet, radio, newspaper) is operational, available, and reliable.	One form of media exists, is operational, available, and reliable.	One form of media exists, but it has limited availability and reliability.	Media is not available.

Table 7-7. Status Color Coding of Infrastructure Categories (Continued).

Category	Green	Amber	Red	Black
Other considerations: hazardous materials	Hazardous materials and hazardous waste are properly segregated, stored, and labeled.	Some hazardous materials or hazardous waste is not properly segregated, stored, or labeled.	Hazardous materials or hazardous waste is not properly segregated, stored, or labeled.	Hazardous materials or hazardous waste is not segregated, stored, or labeled.
	Containers are adequate for the material.	Containers are not adequate, but there is limited corrosion or damage.	Containers are inadequate, corroded, and leaking.	Containers are inadequate, corroded, and leaking.
	Safety measures and secondary containment is in place.	Safety measures and secondary containment are inadequate.	No safety measures or secondary containment.	Safety measures or secondary containment is not available.
	Hazards communications system is in place.	Hazards communications system is limited.	Hazards communications system is not available.	Hazards communications system is not available.
	No leaks or spills.	Potential for leaks and spills.	Some leaks and spills are present; contaminants may enter air, soil, groundwater, or watercourses.	Gross contamination is present; contaminants have entered air, soil, ground water, and watercourses.
	Spill prevention and cleanup measures is in place and available.	Limited spill prevention and cleanup measures are available.	No ability to prevent or cleanups spills.	No ability to prevent or cleanup spills.
Other considerations: attitude	Community leaders are not hostile; religious centers are intact; and the community is supportive of general engineering effort.	Community leaders are neutral; religious center is damaged but securable.	Community leaders are negative; religious centers are damaged and not securable; and community is skeptical of general engineering support.	Community leaders are hostile; religious centers are destroyed; and community does not want general engineering assistance.
	Ethnic tension is not present.	Distinct ethnic groups exist within the area of operations; they are supportive of general engineering effort if equal among groups.	Distinct ethnic groups exist within the area of operations; one group is dominant; general engineering tasks cannot be accomplished for all groups.	Ethnic violence occurs; one group is extremely dominant; general engineering effort would increase ethnic tension.
	Unemployment is less than 50%.	Unemployment is greater than 50%; population is willing and able to work to support general engineering effort.	Unemployment is greater than 50%; population is unable to support general engineering work effort.	Unemployment is a serious issue; population is unwilling to support general engineering work effort.
	A formal paramilitary threat, adversary, or enemy is not present.	Paramilitary adversary or enemy is briefed at the regimental combat team level.	Paramilitary adversary or enemy is a concern at the regimental combat team level.	Paramilitary adversary or enemy is a concern at the echelons above regimental combat team level.

Understanding the Population

Counterinsurgency operations and stability activities are conducted in and around populations, which can aid or hinder friendly operations. Therefore, understanding the populations can aid all aspects of counterinsurgency and stability planning and operations. When conducting counterinsurgency operations and stability activities, people generally represent the COG and the key terrain for both adversary or enemy and friendly forces.

Intelligence preparation of the battlespace aids the understanding of populations through the analysis of civil considerations (ASCOPE). Understanding the population aids the commander in developing a plan that can separate the population from the insurgents and gain the support of the population for the HN government and its security forces, including US forces. Intelligence requirements associated with understanding the population include—

- Identifying and defining the dominant and secondary cultures within the HN society.
- Determining how the society—groups, institutions, organizations, and networks—functions (social network analysis).
- Identifying language:
  - Identifying the languages spoken by the HN society, insurgents, and multinational security forces.
  - Identifying social manners, behaviors, and nonverbal cues that can aid in communicating with the population through interpreters.
- Identifying power and authority:
  - Determining how formal and informal power and authority are apportioned within the society:
    - Formal power and authority: central government, local government, and government agencies.
    - Informal power and authority: political parties; political interest groups; unions; and religious, tribal, and ethnic groups.
  - Determining how each formal and informal power holder acquires, maintains, and uses power to attract and maintain followers by—
    - Using coercive force.
    - Expending social capital (reciprocity and exchange, patron-client relationships).
    - Applying economic power.
  - Considering the state of the formal economic system (weak or strong, supplanted or supported by an informal economic system).
  - Considering the state of any informal economic systems (smuggling, black market, barter, and exchange, tribal or clan networks).
  - Determining how the primary and secondary cultures in the society perceive their interests.
- Determining security:
  - Do these cultures believe they are safe from harm?
  - Do these cultures have faith in the police, the military, and the judiciary?

- Identifying basic necessities: Are these groups satisfied with the availability of food, water, clothing, shelter, and medical treatment?
- Identifying economic well-being: Are these groups optimistic about long-term economic viability for themselves and their children?
- Identifying political participation: Do these groups believe they are part of, and can affect change, within the political process?

CHAPTER 8.
CONSIDERATIONS FOR UNIQUE ACTIVITIES AND TASKS

FORCE PROTECTION

Force protection is the "actions or efforts used to safeguard own centers of gravity while protecting, concealing, reducing, or eliminating friendly critical vulnerabilities. Force protection is one of the seven warfighting functions" (*USMC Dictionary*).

Preserving the force includes protecting personnel (combatants and noncombatants), physical assets, and information of the United States and multinational military and civilian partners. The force protection warfighting function facilitates the commander's ability to maintain the force's integrity and combat power.

Intelligence personnel can support command force protection programs by identifying, collecting, reporting, analyzing, and disseminating intelligence regarding foreign threats to the force. Inside the United States, however, intelligence personnel must limit collection to foreign intelligence and international terrorism adversary or enemy data. Criminal and domestic terrorism adversary or enemy information is restricted to law enforcement agencies.

Force protection determines the degree to which potential adversaries can disrupt operations and counters or mitigates those adversaries. Emphasis on force protection increases during preparation and continues throughout execution, including in-transit (port-to-port), redeployment, and home-station operations. Force protection is a continuing activity; it integrates all force protection capabilities to safeguard bases, secure routes, and protect forces. The following supporting tasks routinely require IPB support:

- Apply antiterrorism measures.
- Implement operations security.
- Implement information security.
- Conduct operational area security.
- Coordinate air and missile defense.
- Conduct tactical recovery of aircraft and personnel.
- Conduct force health protection operations.

Apply Antiterrorism Measures

Terrorism is "the unlawful use of violence or threat of violence, often motivated by religious, political, or other ideological beliefs, to instill fear and coerce governments or societies in the pursuit of terrorist goals" (*DoD Dictionary*). Title 22, United States Code, Section 2656f, defines terrorism as premeditated politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agents. The Marine Corps adds to this definition by recognizing that terrorist groups will target US forces as well as noncombatants.

Antiterrorism is the "defensive measures used to reduce the vulnerability of individuals and property to terrorist acts, to include rapid containment by local military and civilian forces" (*DoD Dictionary*). It is an element of protection and a consideration during planning and operations. During IPB, the staff identifies potential terrorist threats and other adversary or enemy activities. Based on this analysis, the staff recommends actions to reduce vulnerabilities associated with terrorist acts and attacks. Additionally, the staff develops antiterrorism plans and orders based on the analysis of terrorist organizations and capabilities conducted during IPB. Intelligence requirements generally associated with antiterrorism include the following:

- Identify the individual components (organizations) of terrorist networks operating in the AO and AOI: direct action cells, support cells, intelligence cells, C2 cells, financiers, and others.
- Determine the goals and objectives associated with each network.
- Determine the strengths and vulnerabilities within each network.
- Identify the HVTs and individuals associated with each network.
- Determine the location of each component of the network.
- Identify the targets each network will attack.
- Identify the TTP the networks will employ to conduct their operations.
- Determine the friendly resources and activities that need protection from terrorist attack to accomplish the mission.
- Determine what types of actions the force can take to mitigate terrorist attacks on noncombatants.

Implement Operations Security

Operations security is "a capability that identifies and controls critical information, indicators of friendly force actions attendant to military operations, and incorporates countermeasures to reduce the risk of an adversary exploiting vulnerabilities" (*DoD Dictionary*). Counterintelligence and HUMINT specialists contribute to IPB support to operations security by providing assessments of friendly vulnerabilities; briefings on enemy threats of espionage, sabotage, subversion, and terrorism; and assistance in establishing safeguards against those security threats (MCRP 2-10A.2). This information should be included into an adversary or enemy vulnerability assessment. Intelligence requirements associated with operations security include the following:

- Identify essential elements of friendly information:
  - Locations of headquarters elements.
  - Location and activities of assets critical to operational success.
  - Intelligence collection.
  - Fires.

  - Engineer.
  - Sustainment.
  - Information related to friendly force operations.
  - Information related to friendly strengths and vulnerabilities.
  - Other information as required based on mission.
- Identify indicators associated with the conduct of friendly operations. The same type of indicators associated with adversary or enemy operations apply to friendly operations (for indicators associated with offensive, defensive, and stability activities, see Chapter 7).
- Identify threats to critical resources, information, and personnel:
  - Identify adversary or enemy intelligence collection assets.
  - Determine the adversary's or enemy's capability to detect and attack friendly critical resources, assets, and personnel.

Implement Information Security

Information security are those active or passive measures used to safeguard and defend friendly information and information systems. Information security comprises—

- Information assurance.
- Defensive cyberspace operations.
- Electromagnetic protection.
- Signature management.

Information Assurance. Information assurance consists of actions that protect and defend information systems by ensuring availability, integrity, authentication, confidentiality, and nonrepudiation. Intelligence requirements associated with information assurance include the following:

- Identify the structure of the friendly communications network.
- Identify potential threats to the network.
- Identify vulnerabilities within the network.

Defensive Cyberspace Operations. Defensive cyberspace operations are "missions to preserve the ability to utilize and protect blue cyberspace capabilities and data by defeating on-going or imminent malicious cyberspace activity" (*DoD Dictionary*). Computer network defense uses defensive cyberspace operations to protect against unauthorized activity. This includes monitoring, detection, analysis, response, and restoration activities. Intelligence requirements associated with computer network defense include the following:

- Identify adversary or enemy organization capabilities to disable, corrupt, or compromise friendly information systems.
- Identify internal insurgencies that can disable, corrupt, or compromise friendly information systems.

Electromagnetic Protection. *Electromagnetic protection* is "a division of electromagnetic warfare involving actions taken to protect personnel, facilities, and equipment from any effects of friendly or adversary use of the electromagnetic spectrum that degrade, neutralize, or destroy friendly combat capability" (*DoD Dictionary*). Intelligence requirements associated with electromagnetic protection include the following:

- Identify adversary or enemy electromagnetic surveillance capabilities.
- Identify adversary or enemy electromagnetic attack capabilities.

Signature Management. Signature management (SIGMAN) is a logical, integrated process of tailoring the way the force appears to the adversary from a multi-domain (space, air, maritime, land, and cyber) perspective, including the electromagnetic spectrum (EMS) and information environment (IE), by countering their intelligence, surveillance, reconnaissance and targeting (ISR-T) capabilities or misleading their decision-makers in order to increase survivability and give the commander an advantage throughout the spectrum of conflict.

Signature management is accomplished by understanding own-force signatures (physical, technical, administrative); analyzing adversary ISR-T capabilities and limitations; determining friendly vulnerabilities and opportunities; developing and implementing offensive and defensive countermeasures; and developing an assessment plan to monitor and control the SIGMAN plan.

Signature management incorporates the capabilities of intelligence; counterintelligence (CI); operations security (OPSEC); DoD deception activities; camouflage, cover and concealment; and fires and is closely aligned with survivability operations while supporting DMO, EABO and LOCE. Signature Management has become a favored term in the Marine Corps and is at risk of being over-used and misunderstood. To be clear, "signature" only constitutes one of five indicator categories commanders must manage. An indicator can be derived from friendly or adversary detectable actions and open-source information that an adversary can interpret and piece together to reach conclusions or estimates of friendly intentions, capabilities, or activities. Each indicator category is briefly described below.

- *Signature*. A characteristic of an indicator that makes it identifiable or causes it to stand out.
- *Association*. The relationship of an indicator to other information or activities.
- *Profile*. The sum of these signatures and associations.
- *Contrast*. Differences that are observed between an activity's standard profile and its most recent or current actions.
- *Exposure*. When and for how long an indicator is observed.

Conduct Tactical Recovery of Aircraft and Personnel

The Marine Corps participates or supports combat search and rescue. It conducts tactical recovery of aircraft and personnel, which includes rescue or extraction, by surface or air, of downed aircraft or personnel and equipment; aircraft sanitation; and advanced trauma life support in a benign or hostile environment (see MCDP 1-0 for more on tactical recovery of aircraft and personnel).

Intelligence requirements associated with personnel recovery are the same as those for any operations—determining the effects of enemy, terrain, weather, and civil consideration in the area friendly forces are conducting personnel recovery operations. Intelligence requirements also include information on isolated, missing, detained, or captured personnel needing recovery similar to the requirements in a noncombatant evacuation operation and includes—

- Identifying the location, disposition, capabilities, and possible COAs for all enemy forces.
- Anticipating the number of isolated, missing, detained, or captured personnel (total number by area) categorized by medical status.

Conduct Force Health Protection Operations

Throughout history, the number of casualties sustained from disease and non-battle injuries have far outweighed the number of combat casualties, thereby reducing the operational effectiveness of military forces. Disease and non-battle injuries may be the result of endemic and epidemic diseases. Table 8-1 lists examples of non-combat-related injuries.

Table 8-1. Types of Non-Combat-related Injuries.

Disease	Arthropod, waste, waterborne
Health threats	Occupational, environmental, extreme heat, extreme cold, altitude, toxic industrial materials, radiation: ionizing and nonionizing, hazardous noise
Stressors	Psychological, physiological (from traumatic and continuous operations)
Plants	Poison ivy, poison oak
Animals	Insects, venomous snakes, spiders
Accidents	Self-inflicted wounds, injuries from accidents, injuries from recreational activities

Intelligence requirements associated with force health protection include the following:

- Location of facilities that use or manufacture toxic industrial materials (research laboratories, gas stations, refineries, or chemical plants).
- Location and operational status of sanitation facilities and services (waste disposal facilities and water treatment plants and services, such as trash pickup and landfills).
- Types and locations of medical facilities (clinics, hospitals, medical training facilities, research facilities).
- Types of transportation available to move patients from the point of injury, incident site, or between hospital facilities (dedicated evacuation platforms versus vehicles of opportunity).
- Leading causes of death, birth rates, nutrition status, and accessibility to medical care for the local population.
- Displaced person camps, including camp leaders, sanitation facilities, and nutrition status.

ESTABLISHING GENUINE PARTNERSHIPS

Operations might require inter-organizational efforts to build the capacity of partners to secure populations, protect infrastructure, and strengthen institutions as a means of protecting common security interests. The intelligence requirements associated with building partnership capacity are typically the same as those associated with stabilization activities.

When establishing genuine partnerships, partnering is an arrangement between US and HN forces in which they operate together to achieve mission success while building capability and capacity. Partnering requires mutual respect despite differences in size, skill, training, capability, or culture. Considerations must also be given to HN that have established genuine partnerships with other nations that might not be aligned to US forces or government or vis-versa (see MCDP 1-0 for more information on establishing genuine partnerships).

Small-Scale Joint Operations

Small-scale joint operations are executed to achieve an end state that is clearly defined and limited in scope. They are typically conducted by joint task forces. Examples of small-scale joint operations in which Marine Corps forces might participate include noncombatant evacuations, raids, show of force, FHA, sanction enforcement, and elimination of WMD.

There is always a threat of terrorist attacks, as well as attacks from the general population. During these types of operations, the commander is primarily concerned with protection, operations security, and targeting operations. Adversary or enemy resolution is typically not clear. It usually consists of terrorist, guerrilla, paramilitary, political, or religious groups opposing an established government that is being supported by the US Government. These groups are usually not well-defined at the tactical level and have probably not been located. High-level unit intelligence organizations and host-nation agencies generally do not provide the resolution required to satisfy the CCIRs, but they can provide enough information initially to focus intelligence collection operations.

Peace Operations

Peace operations is a broad term that encompasses "multiagency and multinational crisis response and limited contingency operations involving all instruments of national power with military missions to contain conflict, redress the peace, and shape the environment to support reconciliation and rebuilding and facilitate the transition to legitimate governance" (JP 3-07.3, *Peace Operations*). A peace operation's primary purpose is to create a safe and secure environment, deter adversaries from overt actions against each other, and provide time for civilian agencies to generate a self-sustaining peace. Peace operations—

- Include peacekeeping and peacemaking, peace building and peace enforcement, and conflict prevention.
- Typically occur in complex environments.
- Are characterized by—
  - Irregular forces.
  - A failing government.
  - Absence of the rule of law.

- Terrorism.
- Human rights abuses.
- Collapse of civil infrastructure.
- The presence of dislocated civilians.

Attacks by insurgent and terrorist groups are likely, and US forces can conduct limited offensive operations in accordance with rules of engagement against these groups to support stability activities. Adversary or enemy forces might try to mitigate US intelligence collection capability by adopting command and control, maneuver, fires, intelligence, and logistics TTP that reduce their signature and vulnerability to US collection systems. When conducting IPB and developing a collection plan, the commander considers the adversary's or enemy's ability to develop low-cost, low-technology counterintelligence collection solutions.

Irregular Warfare

Irregular warfare is a "struggle among state and non-state actors to influence populations and affect legitimacy" (*DoD Dictionary*). It differs from conventional operations in two aspects:

- First, it is warfare among and within the people.
- Second, it emphasizes an indirect approach.

Irregular warfare avoids direct military confrontation. Instead, it combines irregular forces and indirect unconventional methods to exhaust the opponent. To counter irregular warfare, units can be employed in the following types of operations: foreign internal defense, support to insurgency, counterinsurgency, combating terrorism, and irregular warfare.

Traditionally, these missions are conducted by special forces. However, if special forces and HN forces cannot defeat irregular adversaries, conventional friendly forces can assume the lead role, as US Forces did in Operation Iraqi Freedom and Operation Enduring Freedom.

As in limited interventions and peace operations, US forces are generally opposed by an undefined and un-located adversary or enemy that operates within complex terrain. The tactics and operational activities employed by these forces vary from conflict to conflict as might the structure of the adversaries themselves. Current intelligence doctrine does not provide all the tools required by the unit to counter these adversaries; commanders might have to modify doctrine and develop methods that work for their situation.

The Marine Corps also participates in other operations. Examples include multinational training exercises, security assistance, joint combined exchange training, recovery operations, arms control, and counterdrug operations. Combat is not likely to occur during these operations, but terrorist attacks are always possible; therefore, force protection and operations security are two of the commander's primary intelligence concerns. The US national and theater intelligence agencies provide the initial analysis and intelligence collection support to units preparing for these missions. Additionally, these units might receive limited support from HN agencies. The commander and staff should consider both sources of information when planning for operations.

CHAPTER 9.
CONSIDERATIONS FOR DOMAINS OF THE OPERATIONAL ENVIRONMENT

AIR DOMAIN

The air domain is "the atmosphere, beginning at the Earth's surface, extending to the altitude where its effects upon operations become negligible" (*USMC Dictionary*). The air domain is the operating medium for fixed-wing and rotary-wing aircraft; air defense systems; UASs; cruise missiles; and some ballistic and antiballistic missile systems. Air AAs are different from maritime and ground AAs. Analysis of the air domain is critical in identifying air AAs, which are also associated with terrain restrictions of the land domain (see JP 2-0).

As with IPB conducted for land-based operations, IPB preformed for air-based operations focuses on determining air domain characteristics that influence friendly, adversary, and enemy operations. The IPB process is the same across the various domains; it is the unique characteristics of domain that are determined and incorporated into the overall IPB products.

To determine the relevant aspects of the air domain, it may be useful to—

- View it as a medium for using capabilities. For example, how does or will the air domain affect the use of civilian and military aircraft, civilian and military UASs and drones, weather monitoring systems, air corridors, fly over rights, and broadcasting rights?
- Think about relationships. For example, what is the air domain's relationship to weather, the EMS and communications, and effects on performance (considering altitude, barometric pressure, and humidity)?

The air domain has potentially relevant effects on maneuver units, signal units, psychological operations units, and artillery units just as it has on rotary-wing aircraft units.

LAND DOMAIN

The land domain is "the area of the Earth's surface ending at the high-water mark and overlapping with the maritime domain in the landward segment of the littorals" (*DoD Dictionary*). These areas also include subsurface and supersurface areas. Analyzing the military aspects of terrain (KOCOA) of the land domain's natural and man-made features assists in determining the domain's effects on friendly and threat operations. In turn, this analysis assists in determining how terrain supports friendly and threat COAs.

Analysis of the operational environment's land domain concentrates on terrain features such as transportation systems (road and bridge information), surface materials, ground water, natural obstacles such as large bodies of water and mountains, the types and distribution of vegetation, and the configuration of surface drainage. Understanding the relevant aspects of the land domain is essential in all steps of the IPB process.

MARITIME DOMAIN

The maritime domain is a vast maneuver space that allows for tactical maneuver in the air, on the surface, and beneath the surface of the water.

The maritime domain facilitates most of the world's trade and is essential in maintaining a global economy. The interdependence of global economics and maritime security requires continuous monitoring of the maritime domain and the regions bordering its waters. Figure 9-1 shows various maritime domain operations.

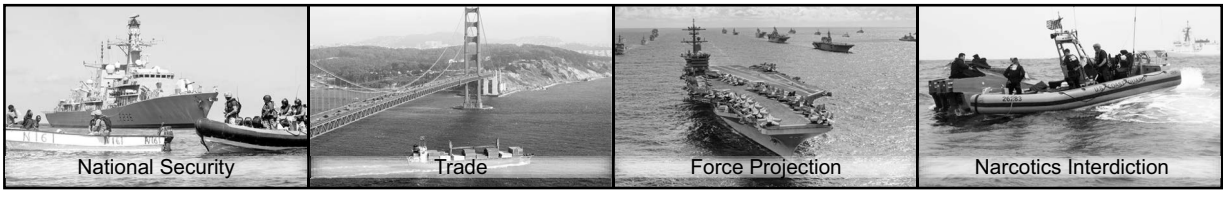


Figure 9-1. Maritime Domain Activities.

Relevant Aspects of the Maritime Domain

Due to the United States' and its allies' increasing reliance on the maritime domain for national security and trade, Marine operations in this domain will likely continue to increase. The missions conducted by Fleet Marine Forces in the maritime domain include but are not limited to joint forcible entry, multinational exercises, intelligence collection, aviation sea basing, protection, humanitarian assistance, and noncombatant evacuation.

Because many operations occur in the land domain, intelligence staffs must ensure to maintain situational awareness of possible contingencies for which the maritime domain may become relevant to mission success. When researching significant aspects of the maritime domain, include the following considerations:

- Airports/airfields, airfields of debarkation that are co-located or near sea lines of communications (commonly referred to as SLOCs) or sea points of debarkations (commonly referred to as SPODs). For example, many countries in the Pacific theater have SPODs and air points of debarkation (APODs) that are used simultaneously to conduct operations in the Maritime domain. Offensive, defensive, and ISR assets operate out of airfields to support such actions.
- Sea lines of communications and seaports of debarkation, including:
  - Chokepoints (straights, shipping lanes and canals).
  - Naval bases.
  - Coastal defenses (A2 and AD, coastal mines, and coastal long-range fires).

- Adversary or enemy vessels, including but not limited to:
  - Civilian: Pirate, narcotics, and human-trafficking vessels.
  - Military: Destroyers, cruisers, carriers, frigates, and submarines.
  - Paramilitary: Coast Guard/Maritime Militia.
- Natural harbors and anchorages.
- Infrastructure, including ports, shipping yards, and dry-docks.
- Friendly forces, including HN forces and other US Services that might be able to provide operational environment information.
- Adversary or enemy forces in the operational environment.
- Surface and subsurface effects.
- Weather effects.
- Tidal and current impacts.
- Transportation networks.

When generating intelligence knowledge, intelligence staffs should reach out to outside organizations and agencies as well as other US services to increase their knowledge base on the maritime domain. Many missions using this domain, particularly missions in the littorals, are conducted with joint forces.

Trade

Approximately 80 percent of global trade is conducted using the maritime domain. This domain is significant to the global economy primarily because of the low cost of shipping via water as compared to air. Items such as finished products, raw materials as well as components to finish products are shipped via the maritime domain. When considering global trade agreements and the effects they have on billions of people, it is understandable why adversary or enemy groups see maritime routes as potential avenues to leverage power and control.

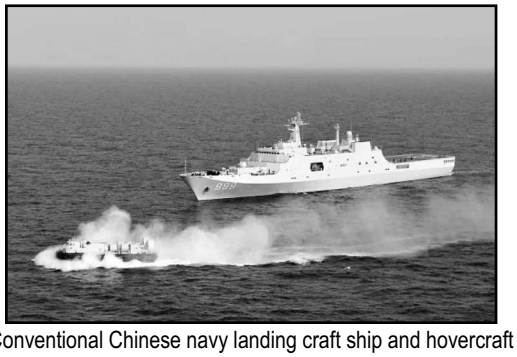
Not all maritime trade is legal. Items, such as narcotics, weapons, money, people, and black-market and counterfeit goods, are trafficked using the maritime domain. In many operational environments, illicit trade conducted using the maritime domain can be linked to the adversary or enemy groups that intelligence staffs evaluate.

Adversary and Enemy Forces

Adversary and enemy forces in the maritime domain range from conventional naval forces conducting missions in open seas to criminal groups, including pirates, operating in the littorals. Based on the mission, intelligence staffs determine which adversary or enemy groups have the capability to affect operations. Often, the operational environment determines what type of adversary or enemy forces are present. Intelligence staffs must view the operational environment holistically to determine why adversaries are present. For example, isolated, and poorly patrolled littoral waters along the coasts of Colombia, Central America, and Mexico offer drug trafficking organizations an adequate environment to smuggle narcotics in semisubmersible watercrafts. Another example is the isolated coast of Somalia, which offers pirates a good environment for using small, relatively fast watercraft to target international shipping lanes. Their presence could be rooted in many objectives such as the control of waterways for financial gain or the

enforcement of legitimate or illegitimate coastal borders. Figure 9-2 depicts examples of possible maritime domain adversaries that can affect friendly forces. The full range of maritime domain adversary or enemy forces varies by location and adversary or enemy objectives.

Naval personnel apprehending pirates on the Somali coast



Conventional Chinese navy landing craft ship and hovercraft

North Korean miniature submarine used to infiltrate special operations forces

Figure 9-2. Examples of Possible Maritime Domain Adversaries.

SPACE DOMAIN

Space is considered as the region around the Earth with little atmosphere, where satellites are placed in orbit. Space systems consist of satellites in orbit, ground stations, launch bases, and communications links and capabilities. Increased global use of the cyberspace domain and information environment, both of which rely on the space domain to disseminate information, demonstrates the importance of analyzing relevant aspects of the space domain to determine possible effects on friendly, adversary, enemy, and neutral forces.

The US military, including all warfighting functions, as well as civil and commercial sectors, rely on the space domain for daily operations. Use of the space domain facilitates military communications, navigation, environmental monitoring, intelligence collection, and warning intelligence. Space-based resources provide freedom of action, global reach, responsiveness, and insights into an operational environment. They are not constrained by the geographic borders of otherwise geographically denied regions.

Whether for commercial or military use, all countries have access to the space domain and its satellite capabilities. State and non-state actors use these capabilities to shape the operational environment. Although US forces have freedom of action in the space domain, their reliance on

the domain has made adversary or enemy forces aware that they must contest the US presence in the space domain to achieve relative advantages in other domains (see JP 3-14 for more on space domain capabilities).

Military, civil, and commercial sectors of the United States and its allies increasingly rely on space capabilities to create a new target of opportunity, which is viewed by adversaries as a potential vulnerability. The United States' increasing reliance on space capabilities has created a valuable target for enemies to exploit and attack. United States space-related COGs are potential targets, especially ground space assets, including the supporting infrastructure of systems. This ground segment is probably the most vulnerable portion of the space apparatus. To the adversary or enemy, this vulnerability translates into an HVT. Conversely, a potential adversary or enemy who relies, even minimally, on space systems will have space COGs as potential, lucrative HPTs for friendly forces to engage.

The G-2/S-2 and commander must consider space capabilities and vulnerabilities during IPB, ultimately leading to COAs that will synchronize space aspects into the operation. Using space systems significantly affects operations involving communications, navigation, weather support, and surveillance. This protects force capabilities and intelligence information gathered across the battlespace Space effects on military operations (from predeployment to mission completion) are ongoing assets that the commander must plan for, can influence, and will rely on for the MCPP. The G-2/S-2 and space staff officer must ensure an effective space IPB effort is conducted and incorporated into the overall IPB staff effort.

Intelligence staff coordination with the space support element (located at MEF command elements, MEF information groups, and other organizations with emerging requirements) is critical to understanding what space domain systems may influence an AO. The intelligence staff applies the IPB process to determine how those space domain systems will impact the operation from an adversary or enemy and friendly perspective.

Relevant Aspects of the Space Domain

Relevant aspects of the space domain within the IPB process include the—

- Space environment.
- Space weather.
- Space weather threats.

Space Environment. *Space environment* is "the environment corresponding to the space domain, where electromagnetic radiation, charged particles, and electric and magnetic fields are the dominant physical influences, and that encompasses the earth's ionosphere and magnetosphere, interplanetary space, and the solar atmosphere" (JP 3-59). Within the space environment, the disturbance of ions, atoms, and electrons as they move through space accounts for either the degradation or improvement of radio wave propagation in the space domain. Environmental factors, such as cosmic rays, solar storms, temperature fluctuations, and radiation commonly affect wave propagation. The layers of the Earth's atmosphere, through which radio waves travel, also affect propagation.

To understand how the space domain can be affected during operations, intelligence officers must understand three of the various layers of the Earth's atmosphere (see Figure 9-3) that can affect the EMS and space-based capabilities:

- *Troposphere*. The troposphere's effects can vary depending on conditions such as the temperature and moist content. It extends from the surface of the Earth to an elevation of approximately 10 to 15 kilometers. Due to its constant changing conditions, the troposphere significantly impacts wave propagation through the EMS.
- *Stratosphere*. The stratosphere is an isothermal region and is one of three layers (the other two being the mesosphere and lower thermosphere), collectively referred to as the middle atmosphere. It is located between the troposphere and the ionosphere about 15 to 50 kilometers above the Earth's surface. The temperature of the stratosphere is almost constant and has little to no effect on the EMS.
- *Ionosphere*. The ionosphere is a region of numerous positive and negative ions and unattached electrons, thus serving a crucial role in long-range radio communications. It extends from 50 to 600 kilometers above the Earth's surface and consists of three distinct regions—the F, E, and D layers. Table 9-1 describes the effects the ionosphere layers have on radio frequencies.

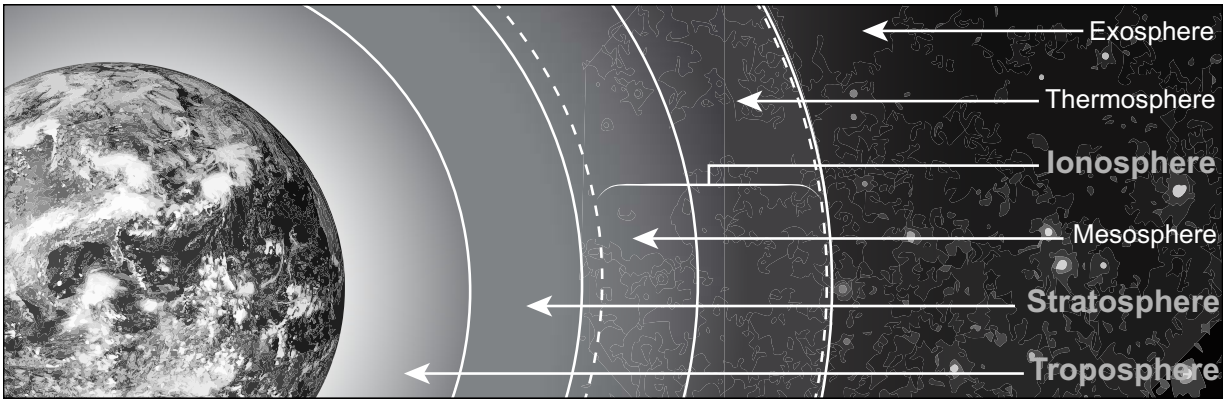


Figure 9-3. Layers of the Earth's Atmosphere.

Table 9-1. Ionosphere Layers and Effects on Radio Waves.

Ionosphere Layer	Elevation in Kilometers	Features	Effects on Radio Frequencies
F	145-400 (F2: 145-200) (F1: 240-400)	• Very positively ionized with large amounts of free electrons • During the day, separates into the F1 and F2 layers • At night, F layer decreases in ionization and increases in altitude	• Primary means of refracting medium frequency and high frequency signals in sky-wave propagation • At night, slightly erratic behavior, but much greater communications distances
E	100-200	• Positively ionized with varying amounts of free electrons • Condition changes with temperature, angle of the Sun, magnetic fields, and time of day	• Erratic behavior • Sometimes refracts radio waves in the medium frequency, high frequency, and very high frequency bands
D	50-100	• Layer closest to the Earth • Negatively ionized with relatively little free electrons • Exists only during the day	• Primarily acts to absorb HF radio waves • Layer may refract low frequency and very low frequency, but unpredictable

Space Weather. Space weather is "the conditions and phenomena in space and specifically in the near-Earth environment that may affect space assets or space operations" (*DoD Dictionary*). Space weather is the variation in the space environment primarily driven by changes in the solar emissions of the sun. As the Nation's understanding of space weather has increased, military considerations for space weather conditions and the implications on operations have increased as well. Intelligence officers must understand the possible or probable effects of space weather in each timeframe to identify when mitigation strategies are needed. This becomes more evident when analyzing the interdependence of domains and how space-based capabilities support operations across multiple domains. Although space support teams might not reside at all echelons, it is important to consider relevant information they must provide during IPB.

Space weather intelligence should be integrated into the planning process to enable commanders to anticipate space weather effects to friendly and adversary or enemy systems and to exploit this information to optimize current and future operations.

Space Weather Threats. Sources of space weather threats include but are not limited to—

- Solar flares (x-rays): Electromagnetic radiation eruptions and high-speed streams—affects high-frequency communications (see Table 9-2).
- Ionospheric scintillation: Change in radio wave frequency caused by radiation in the ionosphere—affects radar systems, ultrahigh frequency satellite communications (see Table 9-2), and the Global Positioning System.
- Solar radio bursts: Radio waves produced during solar flares—affects radar systems and ultrahigh frequency satellite communications (see Table 9-2).

Table 9-2. Radio Wave Bands and Frequencies.

Radio Wave Band	Frequency	Wavelength	Example Uses
Extremely low frequency (ELF)	3-30 Hz	100,000-10,000 km	Communications with submarines
Super low frequency (SLF)	30–300 Hz	10,000–1000 km	Communications with submarines
Ultra-low frequency (ULF)	300–3000 Hz	1000–100 km	Communications within mines
Very low frequency (VLF)	3-30 kHz	100-10 km	Submarine communications, avalanche beacons, wireless heart rate monitors
Low frequency (LF)	30-300 kHz	10-1 km	Navigation, time signals, AM longwave broadcasting
Medium frequency (MF)	300 kHz – 3 MHz	1 km-100 m	AM (medium-wave) broadcasts
High frequency (HF)	3-30 MHz	100-10 m	Shortwave broadcasts and amateur radio
Very high frequency (VHF)	30-300 MHz	10-1 m	FM and television broadcasts, enciphered voice, civil aviation, military aviation, frequency hoppers
Ultrahigh frequency (UHF)	300 MHz – 3 GHz	1 m-100 mm	Television broadcasts, trunked mobile radio, pagers, mobile phones, wireless LAN, ground- to-air and air-to-air communications, military TDM, INMARSAT, microwave LOS signals
Super high frequency (SHF)	3-30 GHz	100-10 mm	Microwave devices, mobile phones (WCDMA), wireless LAN, most modern radar, SATCOM
Extremely high frequency (EHF)	30-300 GHz	10-1 mm	Radio astronomy, high-speed microwave, radio delay
Tremendously high frequency	300 GHz – 3 THz	1-0.1 mm	Research

LEGEND

AM	amplitude modulation	LOS	line of sight
FM	frequency modulation	m	meter
GHz	gigahertz	mm	millimeter
Hz	Hertz	SATCOM	satellite communications
INMARSAT	international maritime satellite	TDM	time-division multiplexing
kHz	kilohertz	THz	terahertz
km	kilometer	WCDMA	wideband code division multiple access
LAN	local area network		

In addition to the emission of electromagnetic radiation, the space environment also consists of a continuous outflow of energetic charged particles (electrons and protons) from the sun called solar wind. Solar wind is ionized gas composed of ions, electrons, and charged particles that continuously erupt from the solar corona at more than 400 kilometers per second. Several types of solar activity can cause energetic particle streams to enhance typical or background levels of solar wind. These enhancements and discontinuities in solar wind speed or density can cause solar storms, which affects the EMS.

These disturbances or space weather threats can significantly degrade or effectively eliminate—for relatively short periods of time (several minutes to a few hours)—military space-based capabilities, including the Global Positioning System, high-frequency and satellite communications, and overhead surveillance systems.

Determining Relevant Aspects of the Space Domain

During Step 1 of IPB, intelligence staffs determine if there are relevant aspects of the space domain—ranging from environmental impacts on space platforms needed to provide intelligence collection capabilities, to adversary or enemy capabilities directed against friendly space systems—that must be considered for the mission. To determine relevant aspects that can affect capabilities provided through the space domain, intelligence staffs must understand the following space domain-related terms:

- Orbital mechanics.
- Propagation.
- Orbital density and debris.
- Solar and geomagnetic activity.
- Electromagnetic spectrum dependency.

Orbital Mechanics. Orbital mechanics describes the orbit a satellite moves in space. Different capabilities reside on different satellites depending on their orbits and their altitudes above the Earth. Figure 9-4 illustrates the four types of satellite orbital patterns. Orbital patterns are developed to ensure satellites have adequate dwell times over areas needing coverage or access.

Figure 9-4. Satellite Orbital Patterns.

Propagation. Propagation is the spread of radio signals through the EMS to and from the Earth to orbiting satellites. Propagation can be affected by atmospheric conditions such as solar radiation and other environmental conditions such as space debris, which can deflect and degrade a radio signal's path to and from the Earth or satellite.

Orbit Density and Debris. Orbit density and debris pertain to the number of satellites and amount of space debris in the same orbital path. When orbital paths become overly populated with satellites and space debris, radio wave propagation can be affected.

Solar and Magnetic Activity. Solar and geomagnetic activity pertains to atmospheric activity that can affect radio wave propagation. The addition of radiation into the ionosphere from phenomena, such as solar flares or ionospheric storms, increases radio wave absorption. Heating, thermal cycling, material damage, and sensor noise all affect satellite hardware.

The sun emanates electromagnetic radiation that produces noise in a communications link. During geomagnetic storms, the number and energy of electrons and ions increase. When a satellite traverses through this energized environment, the charged particles striking the satellite cause different sections of the satellite to become differentially charged. Eventually, electrical discharges can arc across internal satellite components, causing tremendous damage. Fast charged particles from solar weather events can yield radiation damage, internal charging, single-event upsets, and arcing within components.

Electromagnetic Spectrum Dependency. Electromagnetic spectrum dependency describes radio wave frequency and amplitude as it moves through space and the characteristics that determine radio wave propagation. For example, a radio operator must know how much bandwidth is needed to transmit radio signals over certain distance and which frequencies should be used to transmit them (see Chapter 11 for more information about the EMS).

CYBERSPACE DOMAIN

The IPB process remains unchanged in its framework when analyzing any of the domains of the operational environment. However, there are unique aspects that should be considered when analyzing the cyberspace domain (for considerations unique to the cyberspace domain, see JP 3-12).

CHAPTER 10.
CONSIDERATIONS FOR UNIQUE ENVIRONMENTS

URBAN ENVIRONMENT

An urban environment is the physical urban area, as well as the complex and dynamic interaction among its key components—the terrain (natural and man-made), the population, and the supporting infrastructure—as an overlapping and interdependent system of systems (see MCTP 12-10B, *Urban Operations*). Figure 10-1 depicts the interdependent nature of the urban environment's key components.

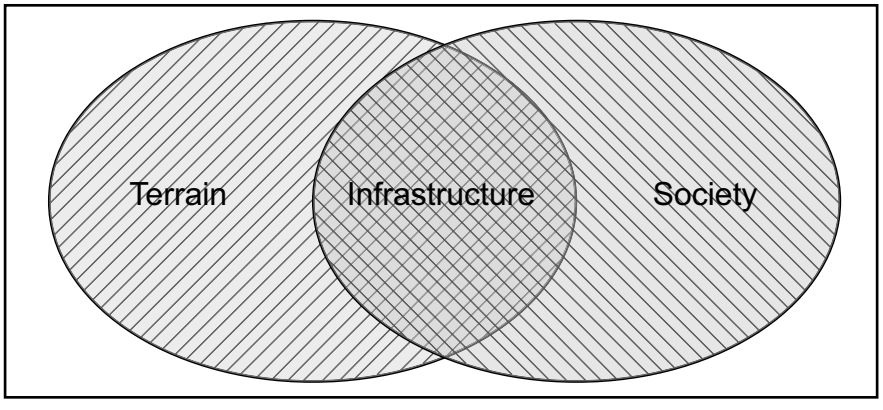


Figure 10-1. Interaction Among Key Components of the Urban Environment.

Urban environments vary in size—from small villages with as little as 500 inhabitants living in one story homes, to mega-cities with well over 10 million inhabitants—consisting of buildings ranging from high-rise apartment complexes to single-story homes and commercial areas. Currently, there are more than 20 mega-cities in the world. This number is expected to increase to 40 by 2035. The sheer number of urban areas worldwide make urban operations across the continuum of military conflict highly likely, even in areas where governance or infrastructure are not the underlying causes of conflict (see MCTP 12-10B for more information on urban environments).

Critical elements of the infrastructure located within an urban environment can be located beyond the physical confines of the urban area. For example, power stations and communication hubs might be located outside the physical urban area in rural or neighboring urban areas. This is important to understanding the totality and scope of urban dynamics and the various locations that affect urban environments.

An urban area is a topographical complex where man-made construction or high population density is the dominant feature. Evaluation of urban areas during the IPB process is focused on the physical aspects of the area and their effects on operations. This approach is effective when population density is not a factor in the operation. When population density is a factor, there are

several considerations when conducting the IPB process, including the area's homogeneity and social divisions (physical, ideological, economical). Treating an urban population as a completely homogenous entity leads to false assumptions, cultural misunderstandings, and poor situational understanding (see MCTP 12-10B).

Chapters 3 and 4 discuss terrain analysis conducted for natural and urban terrain. The primary terrain effect when operating in an urban environment is the multidimensional nature of the environment. Urban terrain is a blend of horizontal, vertical, interior, exterior, and subterranean structures superimposed on the natural relief, drainage, and vegetation. Special considerations for urban operations go beyond the uniqueness of urban terrain. The characteristics of the urban environment affect friendly, adversary, or enemy forces based on their doctrine and tactics. Intelligence preparation of the battlespace in urban operations evaluates the effect of those characteristics on both.

Urban Operations

An *urban operation* is "a military operation conducted where man-made construction and high population density are the dominant features" (*USMC Dictionary*). This section discusses IPB considerations typically associated with planning requirements for urban operations.

Military forces operate in urban areas for several reasons:

- The urban environment offers defensive advantages.
- The urban area harbors adversaries that can attack friendly forces at other locations.
- The urban environment's people (their allegiance and support), infrastructure, capabilities, or other resources have operational or strategic value.
- The urban area has significant symbolic importance.
- The urban area's geographical location dominates a region or AA.

Adversary or enemy forces seek to achieve several key objectives in urban areas:

- Use the population to their advantage.
- Win the information war.
- Manipulate key facilities.
- Use all dimensions.
- Employ urban-oriented weapons.
- Engage the entire adversary or enemy force.
- Focus attacks on support areas, isolated groups, and individuals.

Intelligence preparation of the battlespace for military operations in urban environments is often intensive due to the amount of information needed to accomplish missions that are often complex. Military operations in urban environments are—

- Often high in risk.
- Often part of a larger campaign.
- Force tailored to include a larger infantry component.
- More likely to have casualties than in operations in other environments.
- Often intensive in resources.

Urban operations significantly increase the demands of the IPB process. Large-scale urban environments present more data points for the IPB process to identify, analyze, and monitor, while the complexity of the physical and societal aspects requires more specifically focused intelligence resources than other environments. Urban operations require intelligence with greater targeting precision and combatant/noncombatant discrimination than operations in other environments. Commanders and staffs broaden their awareness in this environment to extend beyond adversary or enemy forces and effects of terrain, including how the environment is affected by adversary, enemy, and friendly operations. The volume of information collected in an urban environment can overwhelm the analyst's ability to operationalize it all. Urban offensive doctrine implies an increased troop density; likewise, a commander should consider additional capacity for IPB of urban environments to meet the increased demands.

Offensive and defensive operations and stability activities are the three types of activities conducted in urban environments. Intelligence preparation of the battlespace considerations for stability activities include a more detailed focus on the population as the center of gravity for operations.

Traditional IPB for major operations and stability activities limits the AOI to geographical areas from which the adversary or enemy can jeopardize mission accomplishment. AOIs for urban operations should also include nodes that are noncontiguous to the AO, from which information and intelligence are required to plan and execute urban operations.

For more information on urban operations considerations in IPB, see MCTP 12-10B. Joint Publication 3-06, *Joint Urban Operations*, also provides an extensive discussion and appendix on joint intelligence preparation of the operational environment in urban areas. Intelligence preparation of the battlespace for urban operations includes specific products that can be useful to commanders and staffs. See JP 3-06 for urban intelligence tools and products that may be employed in addition to traditional IPB products to assess the urban environment. Developing the necessary intelligence products should be a cross-functional effort driven by the intelligence staff while including the expertise of the other staff and supporting elements such as civil affairs, engineers, and military information support.

Unique Characteristics of an Urban Environment

Successful IPB of urban areas depends on sufficient intelligence knowledge generated during pre-combat phases. Staffs require access to data files and intelligence products generated during phase 0 and phase 1 to aid in the planning and execution of combat operations. Table 10-1 depicts one method of identifying relevant aspects of urban terrain (see MCRP 12-10B.1, *Military Operations on Urbanized Terrain [MOUT]* for more information on urban environments).

Table 10-1. Example Framework for Identifying Relevant Aspects of Urban Environments.

Step	Relevant aspects of the urban environment
Step 1	**Key terrain**: Critical element of KOCOA factors
Step 2	**General urban description**: Megacity, large or small city, town, village, strip area
Step 3	**Population**: Composition, size, and density; location and proximity; beliefs; needs; agendas; leadership; and organizations
Step 4	**Functional areas**: Core, outlying high-rise, military, commercial-ribbon, industrial, residential
Step 5	**Infrastructure categories**: Economic and commerce, administration, and human services; energy, cultural, communications, and information
Step 6	**Lines of communication**: Roads, rivers/canals, railways, subway, lines of sight, rubble effects
Step 7	**Urban patterns**: Hub, satellite pattern, network pattern, linear pattern, segments/pie slice
Step 8	**Street patterns**: Grid, radial, irregular
Step 9	**Pattern effects**: Blocking effect, funnel-fan effect, funnel effect
step 10	**Structural types**: Type of building
Step 11	**Mobility corridors**: Air, building, intra-building street, subterranean, maritime
Step 12	**Remaining KOCOA factors**
Step 13	**Other significant characteristics**: Issues, history, demographics, political, religion
Step 14	**Adversary or enemy**: Snipers, molotov cocktails, squad-size engagements, use of subterranean features, co-opt of terrain for military purposes (roofs, subway tunnels, sewers)
LEGEND KOCOA key terrain, observation and fields of fire, cover and concealment, obstacles, and avenues of approach	

The Marine Corps' expeditionary nature and ability to project forces quickly often requires it to gain access to and maintain sea and aerial ports of debarkation located near urban areas. Adversaries will attempt to capitalize on friendly vulnerabilities during the projection of force operations. For example, adversary or enemy forces can conduct raids and ambushes from bases of operations near friendly seaports of debarkation to delay friendly follow-on operations.

In urban areas, tactical-level detail often has operational or strategic significance. Therefore, IPB must provide a higher level of detail than would be required of operations over a broader, less complex operational area. Effective IPB of an urban environment must include the integration of information from nontraditional intelligence sources. Staffs heavily rely on the voluminous data produced by large urban environments, much of which can be accessed through open sources. During planning, commanders and staff should consider translation capabilities and the integration of unclassified sources with classified sources of information to build the common operational picture. Open-source intelligence can provide critical information needed to gain situational understanding or an urban environment (see MCRP 2-10A.3, *Open-Source Intelligence*, for more information).

In addition to the general intelligence requirements associated with IPB and the urban environment information in the below sections, the urban environment in IPB emphasizes the effects of the following:

- Adversary or enemy forces will seek to achieve several key objectives.
- Adversary or enemy forces can operate in a multitude of domains using the depth, breadth, and height of the operational environment.
- Adversaries or enemies will have the means to counter technological overmatch, mitigate numerical deficiencies, and forestall fighting on open terrain.
- During the conduct of urban operations, adversary or enemy forces can gain time and space in other locations to facilitate a larger campaign plan or decisive battle.
- Urban areas often harbor critical resources or features such as air and port facilities.

Evaluating Military Aspects of the Terrain in an Urban Environment

Evaluating the effects of terrain in an urban environment differs from evaluating the effects of open terrain. Analyzing the five military aspects of terrain, expressed as KOCOA analysis, still applies. However, this analysis must be in the context of urban battlespace characteristics. Chapter 4 discusses the evaluation of terrain effects on operations (see MCTP 12-10B for more detailed urban terrain considerations.)

When developing a MCOO for urban environments, analysts should take a holistic approach. Urban environment airspace and surface, subsurface, supersurface, maritime, internal, and external areas are all considerations, important to either the success or failure of a mission as well as to contingencies that might arise. A MCOO should include all relevant aspects for the commander's situational awareness and should also assist the staff in further planning and the warfighter in better understanding the terrain associated with a given mission.

A standard MCOO developed from a military map is not very useful to leaders at the company level and below. Standard military maps do not have the detail required for a thorough analysis of urban terrain. Many standard military maps are old and do not reflect the more recent buildings, streets, and significant urban growth. Additionally, standard maps do not show the subsurface aspects of the urban environment: sewers, subways, and underground water systems. While these military maps show key public buildings and areas, such as hospitals, clinics, stadiums, and parks, they do not identify water facilities, communications facilities, fuel supply, storage facilities, and temporary conditions (for example, construction sites) clearly. Having and providing the most recent information available reduces uncertainty. Figure 10-2 depicts an example of an urban-terrain-based MCOO.

An urban terrain-based MCOO can also depict the six categories of urban infrastructure:

- Economics and commerce.
- Administration and human services.
- Energy.
- Cultural.
- Communications and information.
- Transportation and distribution.

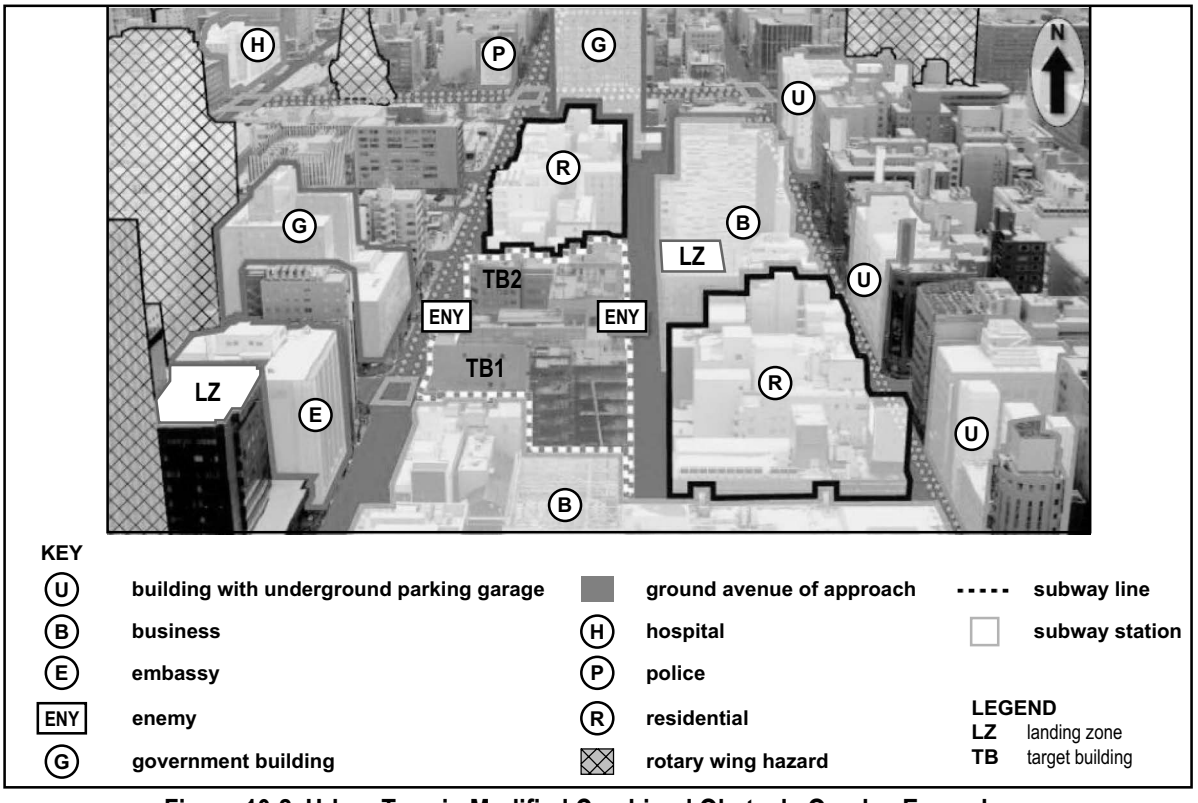


Figure 10-2. Urban Terrain Modified Combined Obstacle Overlay Example.

This assists the staff in planning and the commander in decision making. For example, annotating the communications and information sectors on the MCOO assists the staff in determining where to focus efforts to degrade an adversary's enemy's ability to communicate with the local population.

Gridded reference graphics offer one method of using the most recent imagery to provide situational awareness to the warfighter in an urban environment. Analysts can use these graphics to annotate the location of hazards, obstacles, and other information pertinent to forces conducting operations. Staffs can use them during operations to ensure staff members, including commanders, have the latest information on unit locations and areas where contingencies might occur. Figure 10-3 depicts an example of a gridded reference graphic.

The multidimensional nature of urban environments requires an understanding of the various aspects that make-up these environments. Intelligence staffs must analyze natural and man-made features, as well as how society interacts within the terrain. There are a multitude of ways these factors can come together to affect friendly and adversary or enemy forces. Building the requisite knowledge of urban operations assists in determining which aspects of the environment intelligence staffs must focus on while conducting IPB.

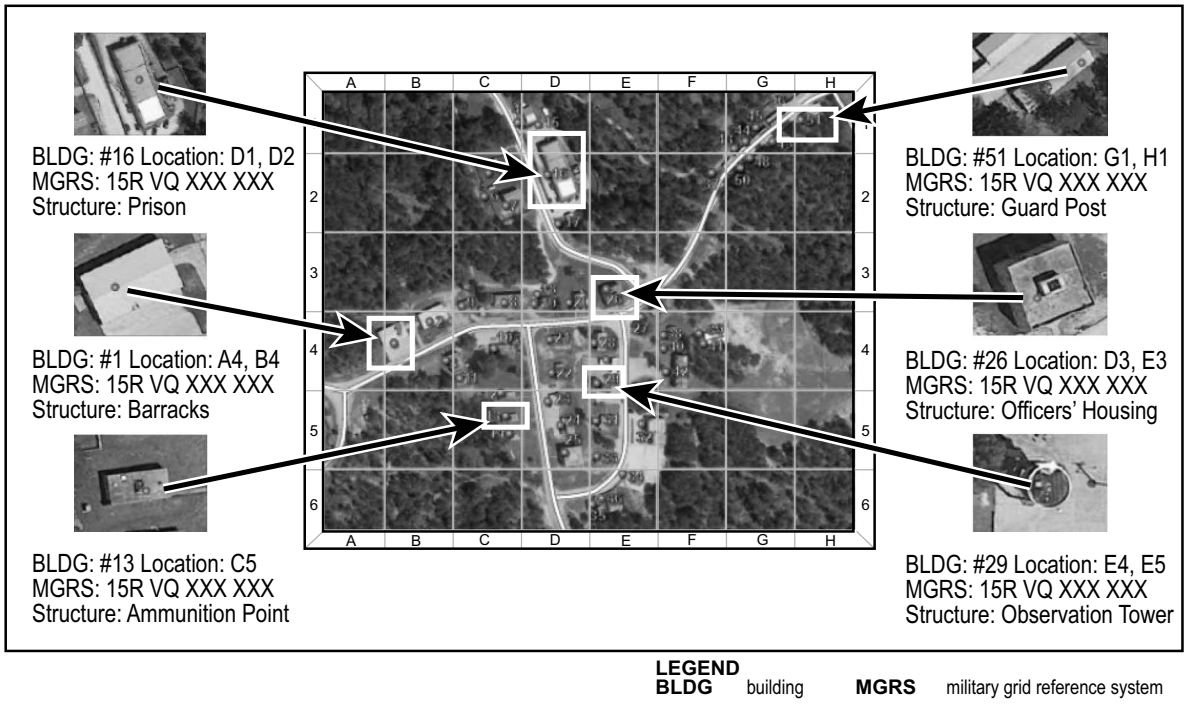


Figure 10-3. Gridded Reference Graphic Example.

Staff elements conducting urban terrain analysis must broaden their scope, looking not only at the air and ground but also at adversaries that might appear from an urban structure's top, interior, exterior, maritime, and subsurface areas. Subsurface features and interior structures present unique challenges to map and monitor adversary or enemy forces. Open-source intelligence and information can assist the intelligence staff in mapping and monitoring adversaries in these areas.

Horizontal, vertical, exterior, interior, and subsurface areas of urban environments (see Figure 10-4) offer adversary or enemy forces multiple vantages to conduct operations. The combination of these spaces is often equal to or larger in size than undeveloped terrain or bare ground. As shown in Figure 10-4, a multilevel parking garage, might comprise the same surface area as a soccer field, but each level may contain an equal area as the ground on which it sits. Although the soccer field and parking garage share the same topical size dimensions, the layers of the parking garage account for five times as much surface area as the soccer field. Analysts must consider these types of aspects when determining adversary or enemy uses of urban terrain and how they can affect friendly and adversary or enemy TTP and capabilities. Figure 10-5 depicts internal and external spaces of urban environments.

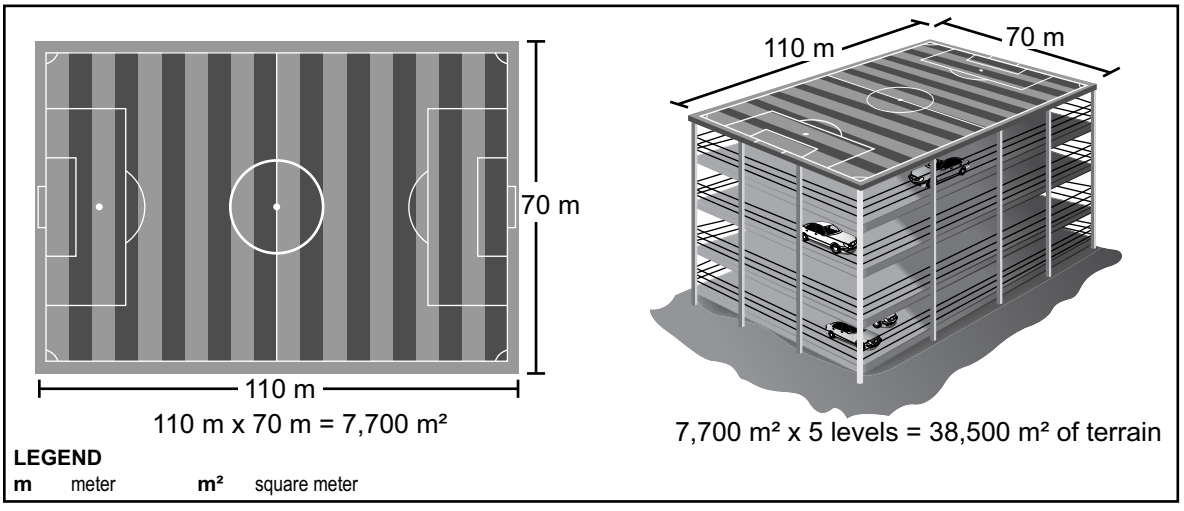


Figure 10-4. Urban Terrain Surface Area Example.

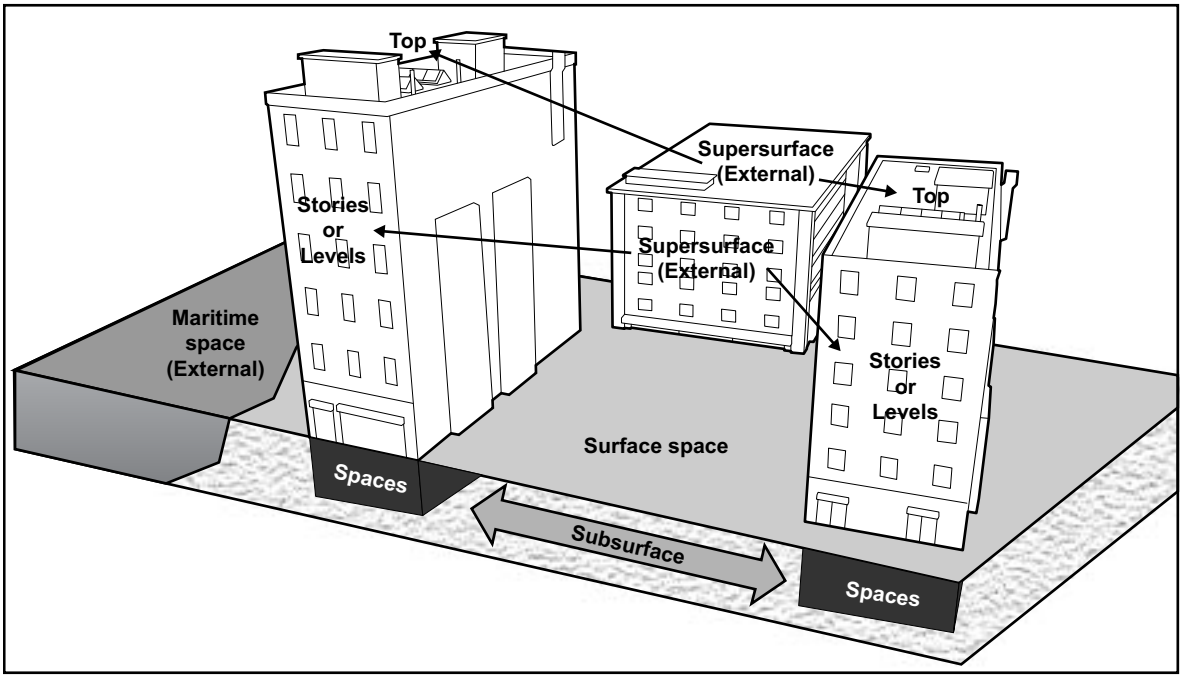


Figure 10-5. Urban Environment Internal and External Spaces.

Analysts perform terrain analysis on maps or other imagery. Although conducting terrain analysis for an entire city might be effective for planning at upper echelons, it lacks the necessary detail for the types of operations and requirements of small units (squads, platoons, and companies). Small units can request detailed terrain analysis at smaller scales to support operations such as raids and ambushes. The Marine Corps Center for Lessons Learned has documented more than 10 years of terrain analysis techniques based on products developed from multiple urban operations campaigns such as Operations IRAQI FREEDOM, ENDURING FREEDOM, and HORN OF AFRICA, and in the Philippines, as well as from hurricane responses. (See MCRP 3-34.3 for more information on geospatial engineering and urban considerations, such as infrastructure considerations [e.g., sewage, water, electricity].)

Another aspect of urban areas that might require extensive analysis is the presence of microclimates. Dust, smog, wind channeling, night illumination, and sun reflection from buildings are atmospheric effects unique to urban terrain. Before Marines or personnel deploy to an urban area, particularly those with urban centers composed of mostly large structures, staff planners must have a good understanding of the unique weather effects in the urban environment (Chapter 4 discusses weather effects on operations).

Observation and Fields of Fire. Limitations on observation and fields of fire in urban terrain are less subtle than in natural terrain where the landscape often varies predictably. The man-made terrain of urban environments presents multiple complex issues to maneuver forces. Due to the built-up nature of urban environments, the best observation and clear lines of sight are often from the air, on the streets or roads, or from roofs or supersurfaces.

Although roofs and supersurfaces enhance observation and fields of fire, they are limited by the angle at which an observer can see to the ground. This is important when considering the placement of observation posts and weapon systems because, unless friendly forces cover ground entrances, an opposing force might have the capability to move undetected within the look-down angle (see Figure 10-6).

The physical aspects of the urban environment, such as the heights and concentration of buildings, can cause significant masking and dead space:

- Masking in an urban environment refers to using the terrain (or buildings) to avoid radar detection. Tall buildings can mask several blocks of area along the gun-target line.
- Dead space is an area that artillery fires cannot directly hit.

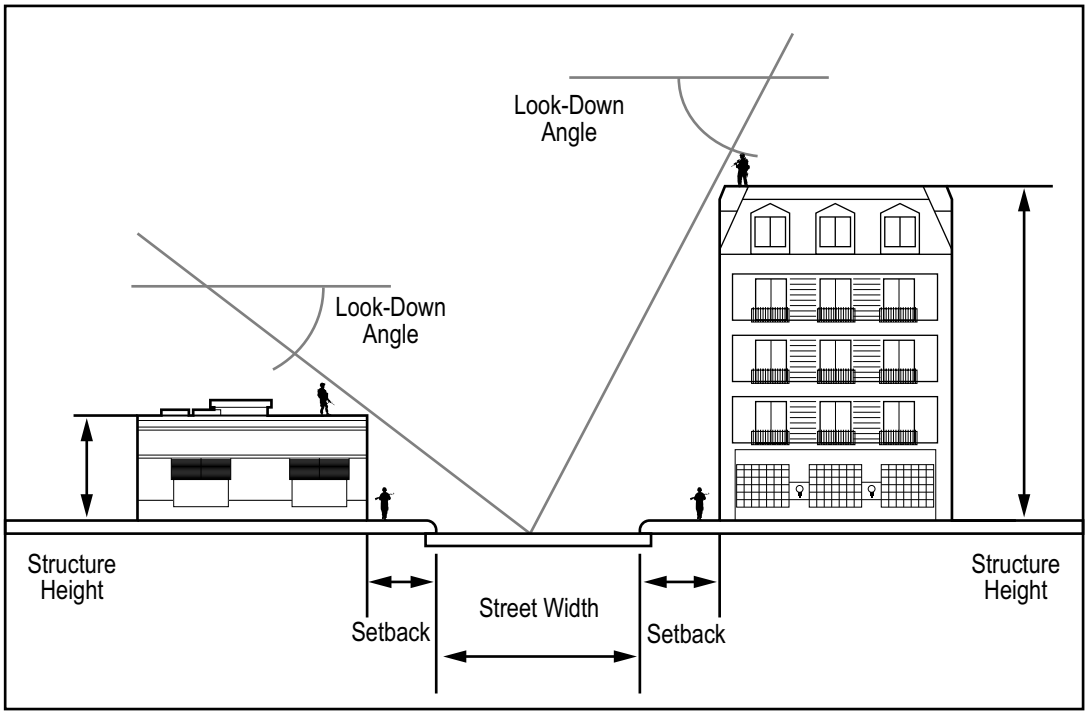


Figure 10-6. Urban Look-Down Angle Example.

Intervening buildings that stand three or more stories tall hinder close indirect fire support. Target-attack dead space behind a building is about five times the height of the building for low-angle fire; the trajectory of high-angle fire reduces the dead space to about half the height of the building (see MCRP 12-10B.1).

Avenues of Approach. . Available AAs in urban terrain is essential to accomplishing a maneuver elements' mission. Staff integration and collaboration when identifying AAs in urban terrain are essential as they assist in—

- Determining vehicle size limitations on road and bridge networks.
- Determining weapon limitations (traverse and elevation, LOS, cover and concealment) on roads bounded by man-made structures.
- Identifying air AAs to facilitate ground maneuver.
- Identifying subterranean networks that can be used for counterattacks and to disrupt friendly advance.
- Identifying areas where signal communications will be masked, intermittent, or experience interference due to natural and man-made structures.
- Identifying observation dead space caused by natural and man-made features.

During mission planning, it might be determined that road networks with heavy civilian traffic will not support the movement of military vehicles, or the roads are heavily defended and covered by adversary or enemy fires. Air and maritime AAs (Figure 10-7) might be options that lend both surprise and speed depending on the mission.

Figure 10-7. Urban Environment Air and Maritime Avenues of Approach.

Understanding how streets are arrayed in an urban environment provides direct support to KOCOA. Most of the world's largest cities were founded as river or ocean port cities. As the cities grew, their streets were hardened, broadened, or lengthened. Additionally, streets were adjusted based on natural features such as swamps, lakes, and hills. However, not all such modifications were associated with natural constraints. Some cities were designed to foster defense while others were designed to foster trade.

Pattern effects are a simple form of obstacle and trafficability analysis. Pattern effects analysis of an urban area in an AO and AOI is based on a particular type of urban or street pattern. However, when the entire AO is an urban area, AA analysis has more relevance than pattern effect analysis.

Pattern effects analysis is more applicable when the AO has many urban areas because they can affect mobility corridors throughout the urban areas. Types of pattern effects include—

- *Blocking*. Often the shape and density of the hub, as well as the width of major streets and proximity of side streets, almost completely block an operation.
- *Funnel*. The concentration and canalization of forces can occur without immediate fanning. This occurs most frequently when a linear pattern is encountered. It limits the number of maneuver units that can be applied against a series of hubs that must be confronted in succession and forces a greater reliance on long-range and indirect fire weapons.
- *Funnel fan*. The effect typically occurs when the hub is located between terrain features unsuitable for mounted operations. Unit movement into the area results in the concentration of forces, loss of offensive momentum, and canalization. Beyond the hub, forces are required to spread or fan out before full combat power can be developed. This favors the defense because it creates an accordion effect in units moving through the hub, reducing command and control and operating effectiveness.

Urban patterns (see Figure 10-8) influence the conduct of operations in urban environments. During Step 2 of the IPB process, analysts should consider how urban patterns shape the operational environment, including but not limited to how they—

- Affect AAs and mobility corridors.
- Create obstacles (how the layout of buildings and other man-made structures impede movement).
- Can assist in determining key terrain locations (principal urban areas and hubs).
- Facilitate or impede cover and concealment.

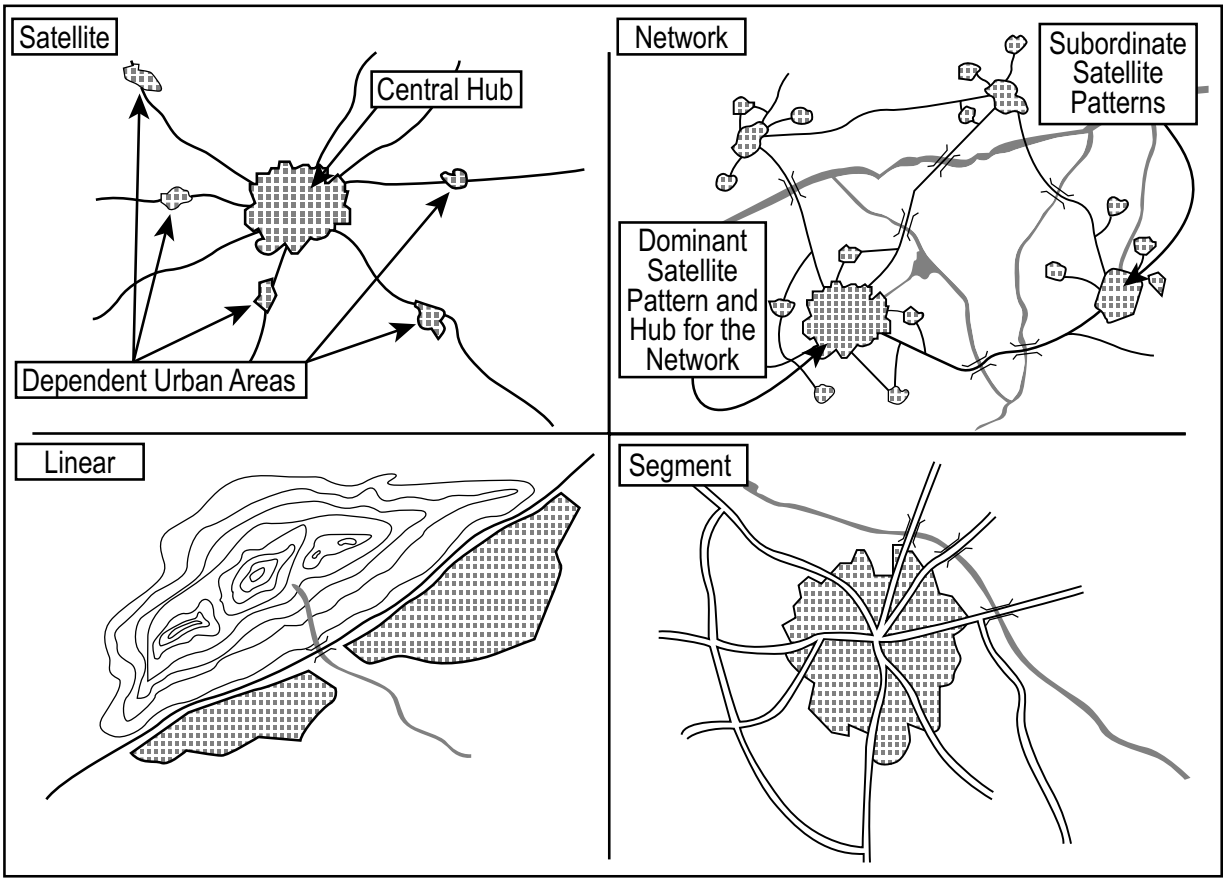


Figure 10-8. Urban Pattern Examples.

Street patterns and urban layouts (see Figure 10-9) are designed for ease of mobility. During military operations, both friendly and adversary or enemy forces use inherent mobility aspects such as streets, bridges, tunnels, and rail systems. Analyzing these mobility aspects assist in determining optimal approaches to and in cities and where opposing forces are likely to observe and attack friendly forces.

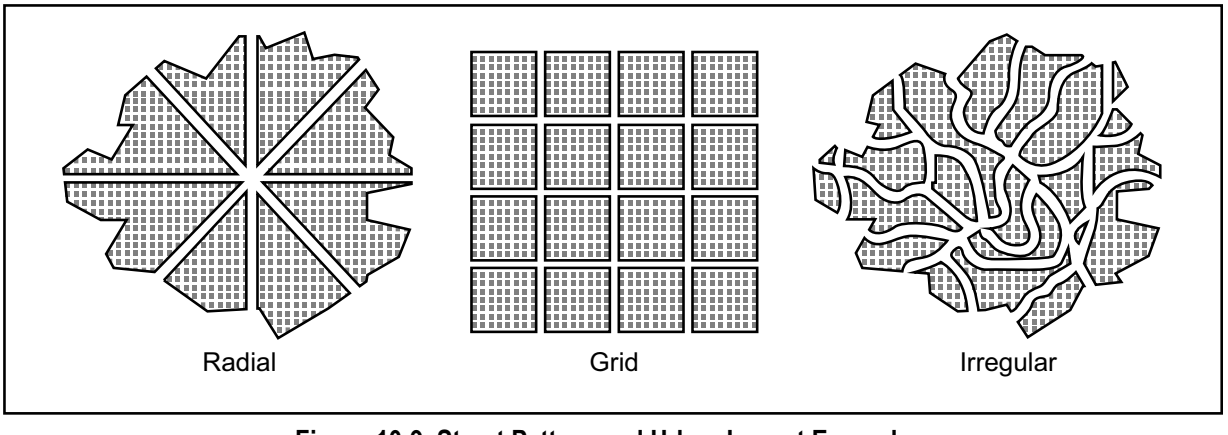


Figure 10-9. Street Pattern and Urban Layout Examples.

For urban underground systems, AA or mobility corridor overlays should be prepared when appropriate. This is required where the underground systems (sewer, water, subway, gas, steam, or telephone) have pipes, tunnels, or culverts large enough through which an individual can crawl. The overlay should show the size of the tunnels, pipes, and culverts and their approximate orientation. Color coding assists in distinguishing systems of various types and sizes. When possible, subsurface AAs or mobility corridors should be prioritized based on the likelihood of their use.

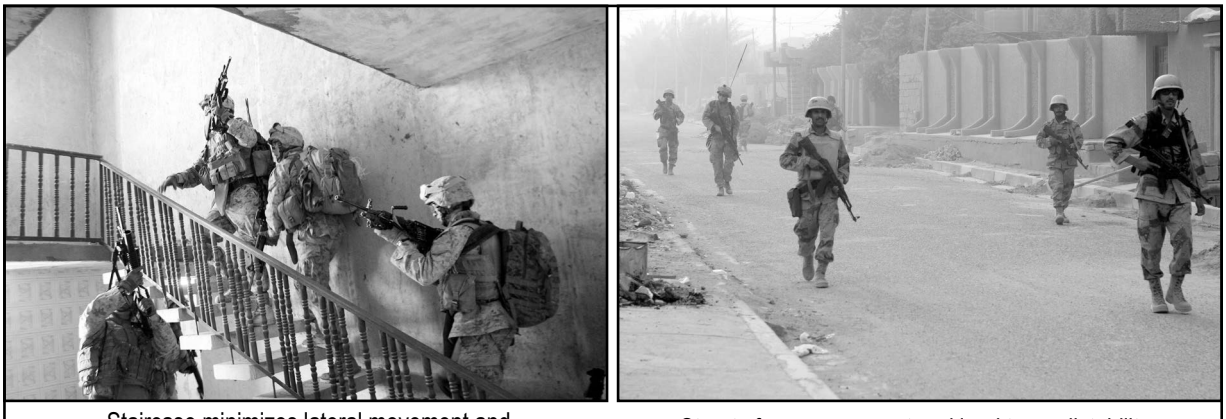
Key Terrain. Key terrain varies based on the urban area composition and the adversary's or enemy's nature of the. For example, if an opposing force prefers indirect fires using observation posts, tall buildings could be considered key terrain.

Terrain that offers a marked advantage to either force in urban environments varies by intended use. An urban environment's man-made and natural terrain, municipal sites, and population centers can all have significant bearing on a unit's mission. It is important to analyze the mission and determine which aspects of the urban terrain can affect accomplishing the friendly and adversary or enemy mission.

Key terrain includes but is not limited to bridges, communications networks, government buildings, intersections, media (television, internet, radio), public utilities, transportation nodes, and subterranean networks.

Obstacles. Based on a unit's mission, the urban terrain could be considered an obstacle. During the MCPP, the potential for collateral damage, civilians on the battlespace, and canalizing terrain can deter commands from using urban terrain. An urban environment's built-up terrain can be used as obstacles to achieve various effects (blocking, disrupting, turning, etc.) on air and ground mobility.

Urban environments' interior and exterior spaces can present challenges to ground forces (see Figure 10-10). These obstacles are often canalizing, making direction of movement predictable to opposing forces. Mobility considerations are accounted for when designing city layouts, street patters, and buildings. These considerations direct movement and can make the direction of travel predictable during conflicts.



Staircase minimizes lateral movement and optimizes fields of fire for forces in the defense.

Streets focus movement and lend to predictability.

Figure 10-10. Urban Environment Obstacles to Ground Mobility.

Urban environments encompass many obstacles to air and ground mobility including but not limited to areas of civilian concentration, barriers, bridges and overpasses, buildings and streets, built-up areas masked to fires, doorways and hallways, stairways and staircases, subterranean features, towers, walls, windows, and wires.

Cover and Concealment. Depending on their composition and structure, buildings in urban environments can provide cover. During generate intelligence knowledge, analysts must seek relevant information pertaining to the composition of buildings to assist in determining—

- Friendly, adversary, or enemy weapon effectiveness.
- Possible collateral damage.
- Locations for establishing friendly bases of operations.

Buildings provide concealment from opposing force ground and air observations. An urban environment's complex nature and the multitude of surface and subsurface terrain present an array of concealment opportunities, including but not limited to:

- Barriers.
- Buildings.
- Canal systems and aqueducts.
- Internal and external walls.
- Stadiums.
- Pockets of natural terrain (parks, greenways, forests, hedgerows).
- Subterranean infrastructure (sewers, subway tunnels, parking garages, utility tunnels).
- Vehicles.

Additionally, adversary or enemy groups might use civilian crowds as concealment or even as cover in the form of hostages—a technique often referred to as using a human shield. Adversaries may compromise rules of engagement for cover and concealment, using areas they perceive friendly forces might not violate. Figure 10-11 depicts cover and concealment use in urban environments.

Figure 10-11. Urban Environment Cover and Concealment Examples.

Evaluating Aspects of the Adversary or Enemy in an Urban Environment

Adversaries in urban environments can be difficult to identify. Friendly forces encounter various potential adversaries, including but not limited to conventional military forces, paramilitary forces, insurgents or guerrillas, terrorists, common criminals, drug traffickers, warlords, and street gangs.

Intelligence personnel must provide adequate information that enables leaders to distinguish adversary threats from nonthreats and combatants from noncombatants. This legal requirement of distinction is the initial obligation of decision makers that rely primarily on the intelligence they are provided. The ability to distinguish adversary threats from nonthreats often requires extensive cultural and regional expertise. This can be complicated by the multiplicity of indigenous and international demographic factions. Chapter 4 discusses the adversary or enemy effects on operations.

In urban terrain, adversaries use the terrain's three-dimensional character to their advantage—operating from all four sides, above, and below. Adversaries also have ubiquitous access to the cyberspace domain and an urban environment's infrastructure to achieve tactical and strategic objectives.

Evaluating Aspects of the Adversary or Enemy on Civilians in an Urban Environment

While urban terrain describes the physical nature of the environment, perhaps the most important mission variable to consider is the civilians within cities and their surroundings. Urban operations often require Marines to operate in proximity to a high density of civilians. Even evacuated areas can have a stay-behind population measured in the tens of thousands. This population's presence, attitudes, actions, communications with the media, and needs can affect the conduct of operations. Homogeneity drastically decreases as the size of the urban area increases.

Compared to other types of operations, civil considerations have a disproportionately large influence on urban operations. The COG for operations in urban environments is often human. To effectively operate amid an urban population, it is important to develop a thorough understanding of the society and its culture, including values, needs, history, religion, customs, and social structure. Chapter 4 discusses the civil considerations effects on operations.

Civilian populations pose a special challenge to commanders conducting urban operations. Civilians react to, interact with, and influence Marines throughout an urban area. Commanders must know and account for the potential influence these populations have on their operations. The intelligence analyst monitors and predicts the reactions of the civil population. Accurate predictive analysis of a large population requires extensive cultural and regional expertise not typically resident in smaller Marine Corps units.

Analyzing civil considerations is further complicated by the presence of nonmilitary government departments and agencies, other specialized entities, religious or social influencers, and cultural norms or expectations. Alternative governance structures can emerge in sectors where a population is disenfranchised or beyond the reach of a central government's control. Figure 10-12 depicts the various competing power structures within an urban environment.

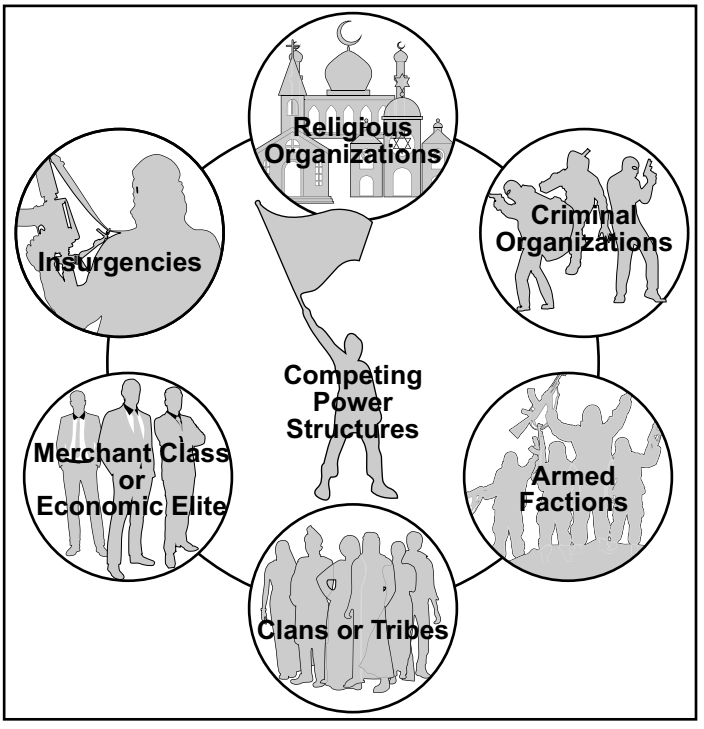


Figure 10-12. Competing Power Structures in Urban Environment.

Evaluating Aspects of the Infrastructure in an Urban Environment

Urban infrastructure consists of six categories: economics and commerce, administration and human services, energy, cultural, communications and information, and transportation and distribution within which hundreds of systems can exist. Each system has a critical role in the smooth functioning of the urban area. Determining the interdependence of these systems assists in decision making and mitigates risk when determining how best to affect the operational environment. For example, to prevent unintentional harm to an AO's population, the staff maps out all systems linked to a country's hydroelectric dam. By doing this, the staff can avoid damaging periphery infrastructure that might affect the dam's ability to provide electricity. (see MCTP 2-10B for additional information).

Each infrastructure category consists of both a physical component (terrain) and human component. For example, within the energy infrastructure the physical component of the electrical segment consists of power stations, substations, a distribution network of lines and wires, and necessary vehicles, repair supplies, and equipment. The electrical segment's human component consists of the supervisors, engineers, linemen, electricians, and others who operate the system, as well as the end users who rely on it. Commanders must understand and recognize both physical and human components in their assessments.

The key elements that allow an urban area to function are also significant to operations, particularly stability activities. The force that controls the water, electricity, telecommunications, natural gas, food production and distribution, and medical facilities virtually controls the urban area. Chapter 4 discusses infrastructure effects on operations.

Urban infrastructure is often saturated with sensors for commercial and security purposes such as traffic cameras and smart meters in buildings. Accessing the data feeds from these sensors enables staffs to monitor specific locations within an urban environment in real time.

The ability to control elements of an urban environment's physical infrastructure can have tactical advantages. The ability to regulate the flow of power and water into sections under adversary or enemy control can degrade combat effectiveness and present dilemmas to their ability to operate in the region.

Additional Considerations for an Urban Environment

Additional considerations for an urban environment include but are not limited to surface, supersurface, subsurface, airspace, maritime, infrastructure analysis, adversary or enemy forces, adversary or enemy COAs.

Surface Considerations. Surface areas consist of ground-level areas, including but not limited to streets, sidewalks, fields, and plazas. These are the primary movement routes or AAs when considering ground movement. Often in urban environments, ground movement becomes canalized due to the amount of man-made terrain (such as traffic patterns formed by street arrays, bridges, and tunnels). Adversary or enemy forces might attempt to mitigate the canalization of ground movement by bypassing or modifying man-made terrain. For example, as depicted in Figure 10-13, adversary or enemy forces modified urban terrain to create spaces for mobility. Insurgents placed holes in the walls of a building to permit lateral movement and the use of surprise on unsuspecting forces.

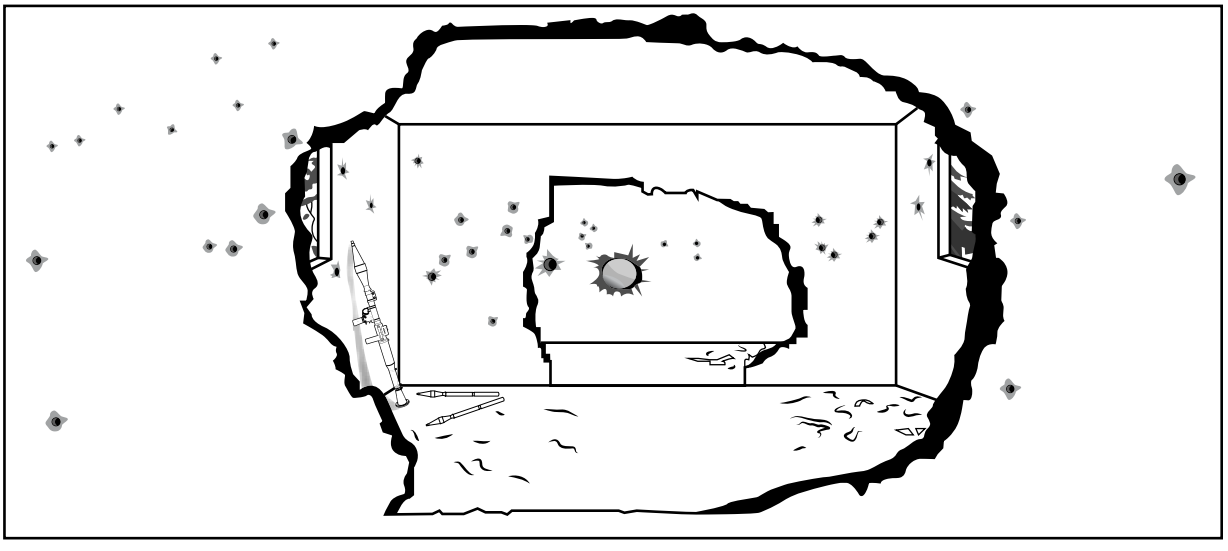


Figure 10-13. Modification of Urban Terrain to Permit Ground Mobility.

Supersurface Considerations. Supersurface areas include the internal floors or levels (intrasurface areas) and external roofs or tops of buildings, stadiums, towers, or other vertical structures. These areas provide cover and concealment; limit or enhance observation and fields of fire; and restrict, canalize, or block movement. Figure 10-14 shows examples of how supersurfaces can be used in urban environments. The forces depicted use the clear lines of sight and fields of fire provided by the supersurface. (See MCTP 12-10B for more information on supersurface areas.)

Figure 10-14. Use of Supersurfaces for Weapons Employment.

Subsurface Considerations. Subsurface areas consist of areas below the surface area. Commanders must mitigate the risks and challenges these areas present to fires, control, and protection. Currently (and in the past) populations use natural and man-made subsurface terrain for various reasons including movement of people and materials, storage, water preservation, and living quarters. In modern operational environments, subsurface areas provide a means of protecting forces, supplies, and capabilities where they would likely be observed at surface levels. Subsurface areas include but are not limited to—

- Tunnels.
- Subway and drainage systems.
- Sewers.
- Basements.
- Civil defense shelters.
- Mines.
- Cellars.
- Wells.
- Underground irrigation systems.
- Other underground dwellings or utility systems.

Underground routes are a primary concern when considering how effective they can be as AAs and LOCs. Sewers, subways, tunnels, and basements provide mobility, cover, concealment, and storage sites for adversary or enemy forces.

During Step 1 of the IPB process, analysts must determine if subsurface areas are present in the AO, how they have been used in the past, and what capabilities they facilitate. This determination is key to analyzing subsurface areas and understanding their effects on friendly and adversary or enemy operations Both attacker and defender use subsurface areas to gain surprise and maneuver or conduct ambushes against the rear and flanks of the opposing force as these areas are the most restrictive and easiest to defend or block.

Airspace Considerations. Airspace is vital to Marine Corps aviation operations such as aerial observation and information collection, air delivery of munitions, aerial attack, and transporting forces and materials. In urban environments, airspace considerations mostly pertain to aircraft mobility and the effects the terrain has on observation and fields of fire.

Analysts must consider obstacles, such as buildings, power lines, towers, and bridges, and their effect on friendly and adversary or enemy air operations. Analysts must also consider obstacles to flight and the trajectory of many air-launched munitions because they can limit friendly reactions to adversary or enemy COAs and the adversary or enemy ability to conduct a particular COA.

Maritime Considerations. Many cities are bounded by the maritime domain including, but not limited to, Lagos, Nigeria; Incheon, South Korea; and Aden, Yemen. The maritime domains of these large urban cites and others are as critical to urban areas as roads, bridges, and airports. Not only do they support a country's or region's economy, but they are often woven into the cultural fabric. Understanding the interdependence the maritime domain has with other portions of the urban environment assists in conducting analysis of friendly, neutral, and adversary or enemy forces' potential effects within a given operational environment. For example, understanding the importance the Niger Delta has on transportation and Nigeria's economy, intelligence analysts might be able to determine how adversary or enemy forces will attempt to leverage their capabilities in the maritime domain to influence their information campaign.

Infrastructure Analysis. Analyzing an urban area's infrastructure is important in understanding urban terrain and the society. An urban environment's infrastructure consists of the basic resources, communications, and industries on which the population depends. These key elements that allow an urban area to function are also among the most important from a military sense. The force that controls the water, electricity, telecommunications, natural gas, food production and process, and medical facilities might control the urban area. These facilities might not be located within the city's boundaries; however, they are usually close by. The infrastructure that the urban area depends on can also provide human services and cultural and political structure beyond that urban area, perhaps the entire nation.

A city's infrastructure is its foundation. It includes buildings, bridges, roads, airfields, ports, subways, sewers, power plants, industrial sectors, and other similar physical structures. Electrical, sewage, and water elements should be identified as critical infrastructure. Other important infrastructure elements such as media outlets, financial institutions, and the location of government entities (police, fire, seats of government) should also be identified.

Infrastructure varies from city to city. In developed countries, the infrastructure and service sectors are highly sophisticated and well-integrated. In developing cities, often even the basic infrastructure is lacking. To understand how the infrastructure of a city supports the population, it needs to be viewed as a system of systems—each component affects the population, the typical operation of the city, and the potential long-term success of military operations conducted there.

Military planners must understand the functions and interrelationships of these components to assess how infrastructure disruption affects the population and ultimately the mission. By determining the critical nodes and vulnerabilities of a city, allied forces can delineate locations where adversary or enemy forces might attack vulnerable elements within the city infrastructure to disrupt or complicate the urban mission. A city's infrastructure can also support the mission. Local airfields or ports are vital for sustained operations. Additionally, HN medical facilities become vital when allied casualties exceed organic medical capabilities and in maintaining good will with the local population.

Analysis of the Adversary or Enemy. The decision for adversary or enemy forces to attack an urban area might be based on tactical, operational, or political considerations. Reasons for adversaries to attack or occupy an urban environment include the following:

- Destroy defending forces within a built-up area.
- Achieve political, strategic, economic, logistics, or military goals.
- Gain time to achieve objectives at other locations.
- Occupy urban terrain, which is significant to the adversary or enemy information campaign.
- Prolong a battle or campaign.

Adversary or Enemy Courses of Action. When developing situation templates for adversaries conducting operations in an urban environment, consider that adversaries might simultaneously conduct multiple operations within a given area. Some of these operations might be diversionary, designed to detract attention away from primary objectives.

Event templates for urban operations mainly focus on terrain, since focusing NAIs to events has limited utility in a slow-moving urban battle. In urban terrain, NAIs can be individual buildings and there might be several NAIs located closely as opposed to nonurban terrain, where NAIs are generally larger, spread-out areas. However, both NAIs can help analysts confirm or deny adversarial COAs and serve as the basis for directing the information collection effort. However, they perform the same functions of confirming or denying adversary or enemy COAs and serve as the basis for directing the information collection effort.

Decision support templates for urban operations must directly result from wargaming. As with situation and event templates, DSTs typically cover areas less than 1,000 square meters and apply to exceptionally slow-paced operations—rarely relying on time phase lines for key decisions. However, cross streets that run perpendicular to the axis of advance can replace time phase lines. Street intersections, open areas, or individual buildings can also serve as DPs, particularly when street patterns are not rectangular. The DPs must consider the slower pace of urban operations, and not be placed too far in advance or too close to the TAI to which they are keyed.

It is critical to prepare adversary or enemy DSTs for urban operations. Urban terrain's restrictive nature limits freedom of action to such an extent that the commander must be able to determine adversary or enemy options at a glance. When possible, the adversary or enemy DST should be developed on, or as an overlay to, the friendly DST. It is also possible to develop a combined friendly and adversary or enemy DST and operating factors matrix with decisions or counter-decisions keyed to points, events, or time phase lines. Since emphasis is placed on night operations for achieving surprise in urban warfare, analysts should consider developing separate DSTs for day and night operations. Consideration factors for developing night DSTs include but are not limited to—

- Infiltration.
- Increased reconnaissance.
- A more rapid pace of operations.
- A reliance on stealth and illumination.

LITTORAL ENVIRONMENT

A littoral comprises two segments of operational environment: 1. Seaward: the area from the open ocean to the shore, which must be controlled to support operations ashore. 2. Landward: the area inland from the shore that can be supported and defended directly from the sea (JP 3-0). Due to globalization, and subsequently to world trade and access to global markets (including those that use them), the importance of littoral zones to friendly and adversary or enemy forces has increased. Securing littorals from adversary or enemy forces, as well as using the littorals as positions to project forces further inland, can increase opportunities for adversaries to impact regions worldwide.

Unique Characteristics of a Littoral Environment

Work performed by the staff during generating intelligence knowledge is critical to understanding littoral areas and zones in the operational environment. Integrating the staff into the IPB process and using outside resources—such as the Coast Guard, Navy, NGA, and other organizations that can operate in, or maintain databases on, these areas more frequently—can be useful to formulate assessments.

As with IPB products for other environments, littoral products should address the relevant aspects that can affect friendly and opposition operations. Characteristics to consider include but are not limited to—

- Coastal terrain and composition.
- Commerce and trade.
- Infrastructure development.
- Navigable bodies of water (rivers, lakes, bays, estuaries).
- Population density.
- Opposition groups.
- Tidal and current information.
- Transportation networks.

Intelligence preparation of the battlespace products for littoral operations stem from identifying relevant characteristics of the operational environment and determining how to best portray those characteristics. For example, adding tidal and current data to the MCOO and describing how tides and currents can affect friendly and adversarial operations. Intelligence staffs must also consider using additional tools, such as riverine and coastal navigational charts that might offer more detail than standard military maps. Table 10-2 depicts one method of determining relevant aspects of littoral environments.

Table 10-2. Framework for Determining Relevant Aspects of Littoral Environments.

Step	Relevant aspects of the littoral environment
Step 1	Hydrography: Tidal flow rate and current direction, high and low tide (times), gradient and slope of beach, water depth, surf and wind effects
Step 2	Beach type: Shape, delta, cliffs, levies
Step 3	Soil consistency: Trafficability concerns
Step 4	Beach landing site criteria: Size of force involved
Step 5	Mobility corridors and avenues of approach
Step 6	Lines of communication: Roads, rivers/canals, railways, subways, lines of sight, rubble effects, beach exits
Step 7	Obstacle types: Sandbars and shoals, rocks, mud flats, dunes, man-made obstacles such as mines and abatises
Step 8	KOCOA factors: Imagery overlays, navigation charts, riverine charts
Step 9	Adversary or enemy: Coastal defense batteries (antiship and air), minefields, adversary or enemy shipping trenches, bunkers, piracy, criminal networks, antiaccess and antiarea defense systems, trafficking (narcotics, human, black-market goods), antiaccess threats (submarines, fast surface craft, mines)

Determining the type of littoral terrain where friendly and adversary or enemy operations can occur assists in identifying relevant aspects to mission accomplishment. Each littoral environment has different characteristics that might affect those operations. Factors to consider include but are not limited to—

- Status of treaties and other agreements among regional territories that can potentially create conflict.
- Boundaries of international and territorial waters.
- Contested waterways and their proximity to land.
- Status of and access to waterways.
- Types of commercial and military watercraft in the area and their ranges.
- Regional trade patterns, including legal and illicit trade.

When identifying littoral areas, it is important to determine if the areas are encompassed by either enclosed or semi-enclosed seas, archipelagos, or open or marginal seas (see Figure 10-15):

- *Enclosed and semi-enclosed seas* are bodies of water surrounded by a land mass and connected to either an ocean or another enclosed sea by a connecting body of water such as a strait.
- *Archipelagos* are groups of islands.
- *Open seas* are unenclosed oceans or seas usually outside of territorial waters.
- *Marginal seas* are parts of open seas or oceans that bound land masses such as peninsulas, archipelagos, and islands.

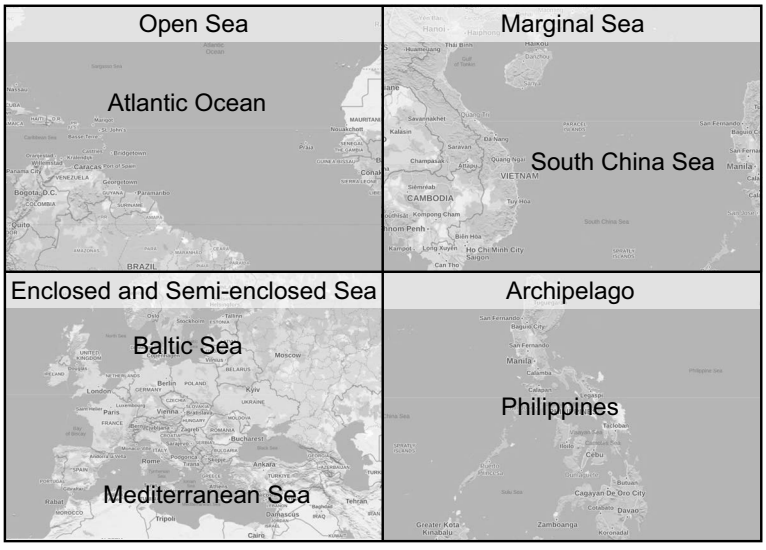


Figure 10-15. Types of Seas and Land Masses Encompassing Littoral Areas.

Evaluating Military Aspects of Terrain in a Littoral Environment

The KOCOA considerations also applies to the littorals. Terrain variances in littoral environments are—

- Very diverse due to season, weather, and intended use.
- Often abrupt, ranging from coastal regions with large populations to inland marshes and swamps with smaller populations.

Analysis of the relationships between varying littoral environments is necessary to understand how these environments can affect different phases of an operation. For example, phase 2 operations might focus on seaport of debarkation establishment on the coast, while phase 4 operations might focus on humanitarian assistance inland. Figure 10-16 shows the various littoral terrain in Lagos, Nigeria, an example of disparate characteristics. Analysts must be able to determine the effects of varying terrain on friendly and adversary or enemy forces over time and distance.

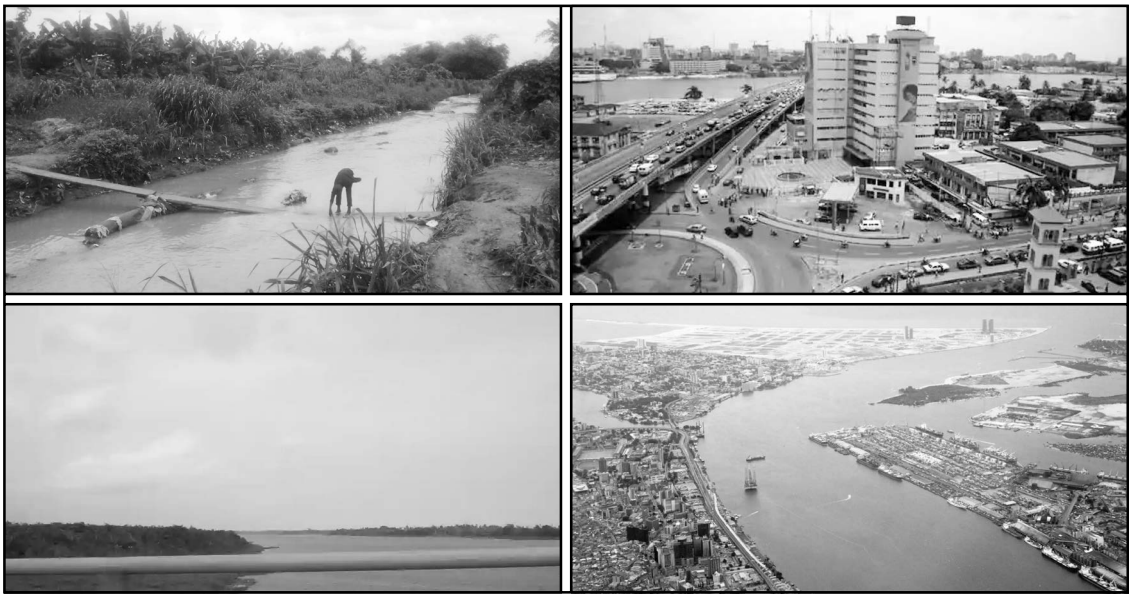


Figure 10-16. Littoral Areas in Lagos, Nigeria.

Key Terrain. Littoral regions are generally important parts of a country's or region's economic infrastructure. Often, they include key financial and trade hubs and are used by military forces to project power and secure borders. Thus, littorals often contain key terrain essential to the success of the friendly mission. When considering the aspects of key terrain in relation to littorals, analysts should consider the following aspects:

- Ports, harbors, and anchorages.
- Military infrastructure, including coastal defenses and A2 and AD systems.
- Canalizing terrain.
- Terrain supporting weapon and radar emplacements.
- Shipping lanes.

Observation and Fields of Fire. Littorals are one of the most diverse environments worldwide. This diversity often creates significant changes in observation and fields of fire over short distances. For example, many littoral areas in Central and South America contain large urban areas, but they also contain dense jungle environments. In littoral operations, analyst must ensure the MCOOs accurately describe the littoral's unique effects, including but not limited to—

- Areas where vegetation hinders observation.
- Coastal weather phenomena such as sea fog that can affect observation.
- Terrain transitions (jungle to urban) that can impact fields of fire.

Cover and Concealment. Cover and concealment vary by location. Littoral environments range from built-up urban areas that provide substantial cover and concealment to rural areas where cover and concealment can be limited.

Obstacles. Obstacles in littoral terrain are often used to prevent an opposing force from encroaching closer to shores and inland terrain. Obstacles vary from offshore mines and abatises to waterways bordering population centers. Coastal terrain, wave and tidal surges, reefs, shoals, levies, are other obstacle considerations.

Avenues of Approach. The seaward and landward portions of littoral areas provide different accessibility for operations:

- Seaward portions are generally more accessible to large vessels and typically offer unimpeded travel to ports.
- Landward portions are typically more canalizing with chokepoints as they move inland into rivers and estuaries.

Littorals are often centers for trade and have the requisite networks to facilitate movement by land and waterways. Avenues of approach vary by location and consist of, but are not limited to, open seas leading to ports and harbors; shipping lanes; river, marsh, estuary, and delta networks; road and rail networks; and highways leading from coastal areas inland, facilitating trade and transportation.

Evaluating Aspects of the Adversary or Enemy in a Littoral Environment

Littorals are often complex and multilayered environments. The ability to understand a holistic littoral operational environment, including adversaries, can be difficult. Friendly forces operating in littoral areas might encounter a multitude of adversary or enemy forces across multiple domains.

The opposition can use a multitude of COAs to counter friendly operations in littoral zones. It is important to leverage all Service intelligence organizations to determine what forces are present within the operational environment. Depending on a unit's mission and location, adversarial forces in littoral zones can range from conventional military forces, paramilitary forces, insurgents or guerrillas, terrorists, common criminals, drug traffickers, and street gangs. These forces can work together or separately (see Figure 9-2).

AIR OPERATIONS

Traditionally, the width and depth of the battlespace have been considered during operations and emphasized in the IPB process. However, growing adversary or enemy IADS, airborne, and air assault capabilities, together with the increased friendly force reliance on air support and mobility, have dictated that the battlespace be viewed as a separate domain—airspace. Historians have always viewed the air battlespace as the most difficult area to analyze because of the transitory nature of airspace events. Before the rise of aviation, battlespaces had been viewed in terms of square kilometers. Since the addition of the airplane and helicopter, the battlespace must now be viewed in terms of cubic kilometers.

Airspace itself has no reference points to guide analysts, and all evidence of air activity is erased seconds after the activity occurs. Airspace analysis must therefore tie air events to time and to the ground; therefore, it is often difficult to establish NAIs, TAIs, and air operations DPs. It is therefore critical that aircraft maximum service ceilings, minimum operating altitudes for both fixed-wing and rotary-wing aircraft, and the maximum effective ranges of air defense weapon systems be integrated into airspace analysis. Although terrain and weather will dictate available air AAs to some extent, a detailed knowledge of fixed-wing and rotary-wing attack profiles is basic to air-associated IPB.

The AAs for attack helicopters employing a LO-LO-HI attack profile differ significantly from AAs of a high-speed fighter-bomber flying a similar profile. The same AAs will differ even more significantly if the fighter-bomber shifts to a HI-HI-LO profile (See MCTP 3-01B, *Air Assault Operations*, for more information regarding attack profiles). Therefore, the intelligence staff and the commander must be acutely aware that as aircraft flight plan have been developed, terrain has been considered. Attack profiles have been developed that provide the aircraft with a substantial advantage. As commanders consider all aspects of aviation operations, they must be aware of friendly and adversary or enemy airlift, airborne, air assault, air insertion, and air defense capabilities and limitations. They receive support in this area from air defense officers at all echelons and levels. Serving as the air-associated IPB coordinator at all levels, the G-2/S-2 must

heavily rely on air defense and aviation officers to supplement the knowledge of air defense unit deployment and aviation capabilities. Therefore, it is critical that—

- Air defense and aviation officers have at least the same level of IPB knowledge as the G-2/S-2 for their functional areas.
- Air defense and intelligence personnel have the same level of knowledge of the air threat.
- Aviation and intelligence personnel have the same level of knowledge of the air defense threat.
- Air defense and aviation officers participate in the IPB staff integration process, as well as assist in refining the airspace analysis and air operations process.

Intelligence preparation of the battlespace for air defense, CAS, and other aviation-related operations is not significantly different from IPB for other types of operations—provided the effort is based on a thorough understanding of the third battlespace dimension. Although the basic process remains the same, its focus must shift to cover the airspace involved and the air domain's extreme fluidity. Intelligence preparation of the battlespace of the air domain is but one part of the total IPB picture. Air domain considerations for IPB cannot be treated as a separate product from ground IPB. The enemy uses air assets to complement ground force operations. As such, air and ground IPB complement each other and must be integrated (see MCTP 3-01B for more information on IPB considerations for air operations).

Air Domain Evaluation

Air domain evaluation is conducted from a different perspective than ground IPB evaluation. Terrain and weather have entirely different effects on aviation operations. This is particularly true regarding weather effects. The opposition forces that must be evaluated in relation to the weather, terrain, and friendly mission include aircraft (fixed-wing and rotary-wing), air defense weapon systems, air-to-surface and cruise missile systems, airborne and air assault units, and special purpose forces.

The commander and intelligence staff should also consider the capabilities of adversary or enemy tactical surface-to-surface missile systems when conducting airspace analysis, as these systems are affected by many of the same operational constraints as aircraft and GBAD systems. Although commanders must be concerned with the entire spectrum of air threat, they will be most concerned with the tactical air and air-associated assets organic to adversary or enemy corps, divisions, and brigades.

The air domain of the battlespace includes the air AO and the air AOI. The air AO, like the ground AO, is the area where the commander is assigned responsibility and authority for military operations. It is identical to the ground AO when considering the placement of ground-based systems but is limited only by maximum and minimum aircraft operating altitudes and the maximum effective ranges and altitudes of air defense weapons when considering actual airspace.

The air AOI includes airspace adjacent to the air AO and extends into the adversary or enemy airspace. The air AOI is typically much larger than the ground AOI due to the great distance aircraft can rapidly cover. The air AOI extends upward to the maximum service ceiling of adversary or enemy aircraft and the maximum effective altitude of adversary or enemy air defense weapon systems. The air AOI can also extend as far as adversary or enemy airfields and to the maximum range of adversary or enemy surface-to-surface missile systems.

Terrain Analysis. Terrain analysis for air defense, counter-air, and other air-associated operations is significantly different from terrain analysis for ground operations. The analyst is dealing with a medium that extends several thousand meters above ground level, and with forces whose mobility is limited only by their ability to operate within this medium. The nature of airspace does not eliminate the need for terrain analysis because aircraft and air defense elements will still attempt to use the terrain to their best advantage. Air domain analysis (airspace) relies as much on terrain analysis as does the ground IPB effort.

Typically, standard military topographic maps are not considered suitable for other than the most basic airspace analysis. Standard 1:50,000 scale topographic maps are most useful when analyzing the ability of an aircraft to approach, acquire, and engage a target. This analysis produces an aircraft's approach to target.

Terrain analysis for air operations focuses KOCOA considerations. However, analyzing these aspects is first directed at their effects on airspace operations, and then on their resultant effects on the overall operation.

Key Terrain. Key terrain in airspace analysis is any terrain feature that allows air defense weapons to engage canalized or constrained air or airborne forces. Areas that limit aircraft lateral movement, restrict air maneuver, or have elevations higher than maximum aircraft service ceilings should also be considered key terrain. Other areas that should be considered key terrain include but are not limited to:

- Airfields.
- LZs and DZs.
- Fixed or surveyed air defense weapons and radar sites.
- FARPs.

Observation and Fields of Fire. As with ground operations, observation involves the effects of the terrain on reconnaissance and surveillance and target acquisition. Fields of fire involves the effects of terrain on weapons' effectiveness. In air defense, both counter-air and other air operations are closely related to LOSs. Ground operations are primarily concerned with horizontal LOSs while air and air-associated operations are primarily concerned with air and ground oblique and vertical LOSs (see Figure 10-17).

Air defense target acquisition and weapon systems require LOSs from their positions to the air target's primary AA. Aircraft require electronic or visual LOSs to acquire and attack their targets. Aircraft carrying airborne and air assault forces require LOSs to ground reference points and to their DZs or LZs to safely and accurately deliver these forces.

Observation serves a key role in the selection of air assault LZs, airborne DZs, and FARPs. LZs and DZs require adequate air LOS access for the accurate placement of forces. However, although the zones themselves are open and provide excellent fields of fire, commanders should select areas obscured from observation and from the effects of direct fire weapons—either by terrain features, smoke and obscurants, vertical obstacles such as vegetation, or by built-up areas. This is critical if a specific time is required for consolidation on the LZ or DZ before the force moves against its objective.

Forward arming and refueling points for fixed-wing and rotary-wing aircraft present a similar problem. They must be large enough to support FARP operations, have good LOS access to allow aircraft to rapidly enter and leave the area, and be situated to provide protection for aircraft during approaches and while on the ground. Finally, FARPs should be situated to provide as much protection as possible from detection by reconnaissance and surveillance assets and from engagement by indirect fire.

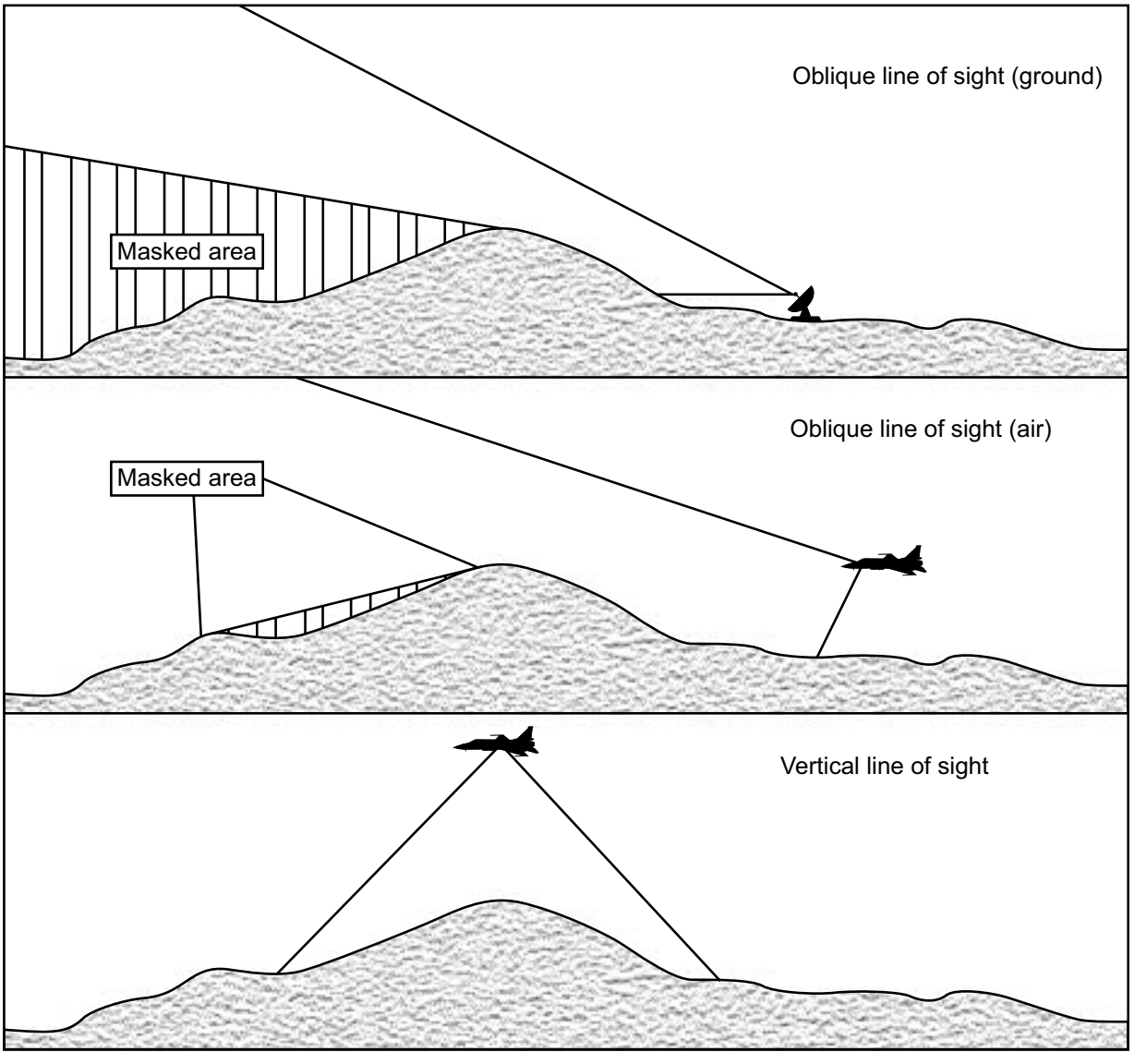


Figure 10-17. Air and Ground Oblique and Vertical Lines of Sight.

Both attack aircraft and air defense assets require as much protection as possible from adversary or enemy observation, and both require direct LOS to the target. Therefore, it is necessary to analyze battlespace airspace regarding the routes that provide the best protection for aircraft entering the target area and those that provide the best fields of fire for the aircraft once it reaches the target area. Similarly, the analysis must consider where air defense assets can best be hidden from observation and retain good fields of fire against the primary air AAs and mobility corridors.

Cover and Concealment. Many of the air-related aspects of cover and concealment have been discussed under observation and fields of fire. Friendly force operations require cover from aerial direct fires, particularly antitank fires, and concealment from aerial reconnaissance and surveillance. Similarly, adversaries will attempt to use terrain to provide cover from direct fires and to conceal their operations from friendly reconnaissance and surveillance.

Rotary-wing (and some fixed-wing) attack aircraft will attempt to use the terrain for cover from direct fire, and to conceal their presence by loitering on the reverse slopes of hills and employing pop-up tactics to acquire and engage targets. Rotary-wing aircraft will also attempt to use vegetation as a backdrop to enhance aircraft camouflage. Fixed-wing attack aircraft will attempt to fly as low as possible to maximize the effects of aircraft camouflage, to best use their great speeds to negate opposing air defense target acquisition and to become lost in the ground clutter of "look down-shoot down" radar systems. All aircraft will attempt to use masked areas to prevent detection by visual observation, target acquisition systems, and air defense weapons. When feasible, aircraft will attempt to blind observers by attacking with the sun directly behind the aircraft. This tactic is most often used by high-performance counter-air aircraft.

While not considered as either cover or concealment in the strictest sense, a NOE flight enhances fixed-wing and rotary-wing aircraft survivability. A NOE flight makes the optimum use of available terrain for cover and concealment and hinders quick countering responses by ground forces and air defense assets.

Air LZs and DZs, particularly small unit LZs or DZs, require concealment from observation and at least some measure of cover from the effects of indirect fires. Airborne and air assault forces require adequate concealment to hide movement away from the LZ and DZ, and sufficient cover to protect them from indirect and direct fires during movement to their objectives.

Forward arming and refueling points require adequate concealment to prevent their detection by reconnaissance and surveillance assets, and adequate cover from indirect fires. The latter is particularly critical due to the extreme vulnerability of aircraft while grounded and the open storage of aircraft fuels and ammunition at the FARP. Concealment is also critical when evaluating ground approaches or LOCs to a FARP. Forward arming and refueling points cannot be placed in terrain where reconnaissance or maneuver assets can approach undetected, nor in terrain so open that logistics activities that support the FARP become readily apparent. Forward arming and refueling points should not be placed where they will negate effective air defense coverage.

Weather Analysis. Aviation operations are particularly susceptible to the effects of weather. Therefore, intelligence analysts must recognize the significance of weather during airspace analysis. Weather analysis for airspace operations considers the same factors of visibility, wind speed and direction, precipitation, cloud cover, and temperature and humidity as does weather analysis for ground operations.

Visibility. Visibility has a significant effect on aviation operations and visual air defense target acquisition. Visibility usually decreases as cloud cover increases, which frequently creates situations that further decrease visibility aloft. Close air support operations typically require a minimum cloud ceiling of at least 1,000 feet for rotary-wing aircraft and 2,500 feet for fixed-wing aircraft. Television-guided or infrared precision-guided munitions require cloud-free LOSs to the target without falling precipitation or fog.

Factors such as fog, blowing snow or rain, heavy blowing dust, or smoke and obscurants restrict or prohibit operations by aircraft that do not have full instrument flight rule capabilities. Even aircraft with such capabilities are typically unable to conduct low-level approaches, CAS missions, or NOE flights during periods of reduced visibility.

Rotary-wing aircraft are particularly restricted during periods of darkness and reduced visibility due to their lack of sophisticated terrain avoidance and target acquisition radar. This is also true of adversary or enemy helicopters that have less sophisticated night vision and infrared target acquisition devices. Most rotary-wing operations become hazardous during times of reduced visibility.

Darkness does not typically place restrictions on radar-assisted or infrared-guided air defense weapons systems. However, periods of reduced visibility will restrict the employment of air defense systems that rely on visual target acquisition and tracking. Reduced visibility in the target area will limit the effectiveness of visual bombing, visual target acquisition, and the accuracy of airborne personnel or material drops.

Wind Speed and Direction. Depending on the mission and situation, wind effects on airborne operations can be significant. High winds and associated air turbulence near the ground can hinder CAS and aircraft target engagement. Rotary-wing aircraft are particularly susceptible to severe buffeting by high winds. Under severe wind conditions, rotary-wing aircraft require more time to acquire and engage targets. During engagement, accuracy suffers and first-round hit probability lowers. These effects are most pronounced when wind speeds exceed 17 knots.

Wind speed and direction significantly affect airborne chemical delivery operations. Air delivery of chemical sprays or munitions is severely restricted or precluded entirely by high winds. Since air-delivered chemical agents are designed to cover vastly wide areas, their employment under adverse wind conditions significantly increases the chances of these agents being blown into civilian areas or friendly forces.

High winds near the ground might prevent aircraft maneuver, particularly in tight mobility corridors. These corridors often canalize winds, creating excessive air turbulence near the ground. (See Figure 10-18.) High winds aloft affect aircraft fuel consumption and payload. Aircraft that encounter severe head winds at operating attitudes face increased fuel consumption, reduced range, and lowered payloads. Aircraft assisted by high tail winds consume less fuel and have increased range and payloads. High winds and air currents, particularly those associated with thunderstorms, create severe turbulence that can tear an aircraft apart. Aircraft with ceilings that do not allow them to climb above such turbulence face severe hazards under such conditions.

High ground winds can cause severe damage to unsecured parked aircraft control surfaces. Exceptionally high winds can destroy or severely damage even well-secured aircraft that are directly exposed.

Wind-generated blowing sand, dust, rain, snow, or drizzle can reduce the effectiveness of early warning and aircraft ground controlled-approach radar. In some parts of the world, blowing sand creates conditions that severely disrupt both air and ground amplitude and frequency modulation communications. During cold weather, wind-chill reduces aircraft sortie generation rates and aircraft refueling or rearming times by forcing ground crew members to work in protective clothing. This also creates a requirement for heated aircraft shelters as major aircraft repairs and maintenance cannot be performed in exposed areas.

Wind speed and direction affect the air defense weapon's accuracy to varying degrees. Wind is also of concern to air defense personnel because of its effect on nuclear, biological, and chemical operations. High winds reduce visibility and together with rain, snow, drizzle, or dust create conditions that reduce the effectiveness of visual air defense target acquisition and tracking. During cold weather, wind-chill effects on air defense personnel and operations are a primary concern.

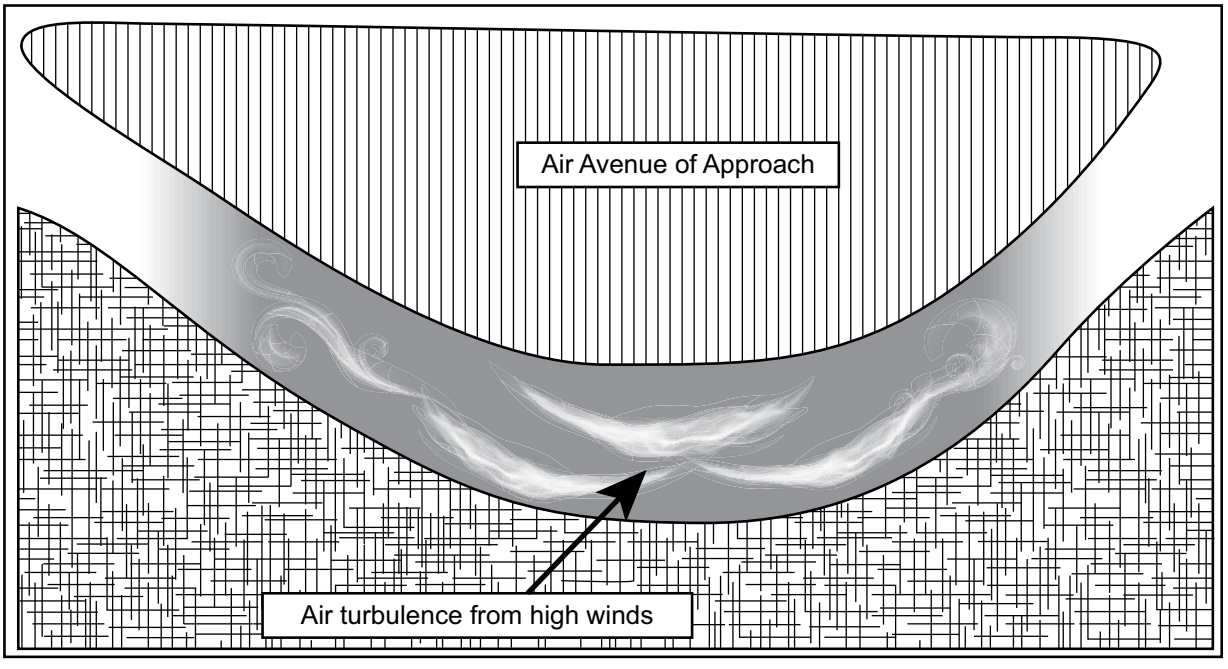


Figure 10-18. Wind Effects on Air Avenues of Approach.

High winds and associated turbulence adversely affect the accuracy of airborne and air resupply operations. A ground wind speed of 13 knots is typically considered the maximum allowable speed to safely drop personnel. High or variable winds aloft often result in airborne drops being dispersed over too large an area. Turbulence and associated aircraft buffeting decrease the efficiency of airlifted personnel due to airsickness.

Precipitation. Precipitation often affects aircraft performance, as well as reduces visibility and radar effectiveness. Both rain and snow are often accompanied by icing conditions at aircraft operating altitudes. Icing exists in all clouds in which the temperature is between 0 and -22 degrees Celsius. Icing forces aircraft to operate at lower altitudes, or limits operations to aircraft that have an in-flight de-icing capability. Parked or grounded aircraft must have snow removed and be thoroughly de-iced before operations. Rain, snow, and ice on runways increases the incidence of damage to aircraft on takeoff or landing and decreases the effectiveness of aircraft braking during landings. Rotary wing and tilt rotor aircraft typically cannot fly in any kind of icing conditions.

Rain and snow on airfields hinder aircraft refueling, rearming, and maintenance. Sortie generation rates are reduced during periods of heavy rain and snow due to refueling and rearming crews' increased cautiousness, personnel discomfort, and the requirement to move aircraft under cover for even routine maintenance.

Rain and snow affect cross-country movement by air defense units, and often make low-lying deployment sites unusable. Heavy precipitation can restrict off-road access entirely, or swell rivers and streams beyond their banks. This affects unit mobility and the ability to effectively position air defense assets to support river-crossing operations. Rain and snow reduce the effectiveness of air defense visual and radar target acquisition and tracking systems and the accuracy of air defense weapons to varying degrees.

Heavy, moist air during rainstorms affects airborne operations, causing parachutists and air-dropped equipment to remain airborne longer and to descend slower. Although heavy air drops can result in fewer personnel injuries and less equipment damage, personnel are exposed to adversary or enemy fire for longer periods.

Cloud Cover. Cloud cover and ceiling impose severe restrictions on aircraft operations. The existing cloud cover limits or enhances aerial visibility, and concealment restricts CAS and airborne or air resupply operations and establishes the maximum altitude of air AAs for non-all-weather capable aircraft. Aviators avoid thunderstorms and snow clouds because of their potential to generate winds and turbulence beyond aircraft stress limits, as well as hail and icing conditions. Certain types of cloud cover are associated with violent updrafts and downdrafts that radically affect aircraft altitude and air defense weapon accuracy. Clouds trap heat from the Earth and sun, raising temperatures near the ground and causing a reduction in aircraft lift rates and rotary-wing hover capabilities.

Heavy cloud cover often canalizes aircraft within air AAs (see Figure 10-19), which can decrease the effectiveness of aircraft camouflage during the final approach to the target. Knowledge of such canalization assists analysts in determining where to emplace friendly and adversary or enemy air defense weapons and radar systems. Certain cloud types, particularly those associated with thunderstorms, reduce the effectiveness of air defense radar systems. Power surges associated with thunderstorms can damage unprotected air defense and aircraft electrical and communications systems. Partial cloud cover can create conditions of extreme glare, making visual target acquisition difficult. High-performance aircraft often attempt to use broken clouds and the associated glare to avoid detection before entering their attack profile.

Temperature and Humidity. Temperature and humidity have severe effects on aircraft operations when encountered in extremes. Both affect air density, decreasing aircraft propulsion system efficiency, increasing fuel consumption, and ultimately reducing aircraft payloads. These effects are particularly pronounced when aircraft are forced to operate from fields over 5,280 feet (1 mile or 1,608 meters) above sea level.

Temperature and humidity extremes make maintaining aircraft and air defense systems difficult. Extremes increase the potential for temperature-related personnel injuries (heat or cold) and equipment failure (high temperatures and humidity promote corrosion) and can impose special supply or logistics problems.

Temperature and humidity affect observation and fields of fire. High temperatures and humidity in the tropics contribute to the growth of dense vegetation that restricts air and ground observation and limits air defense fields of fire. Conversely, the high temperatures and low humidity common in desert areas result in sparse vegetation, which permits extensive observation, provides little concealment, and amplifies air defense and aircraft fields of fire. The sparse vegetation creates the

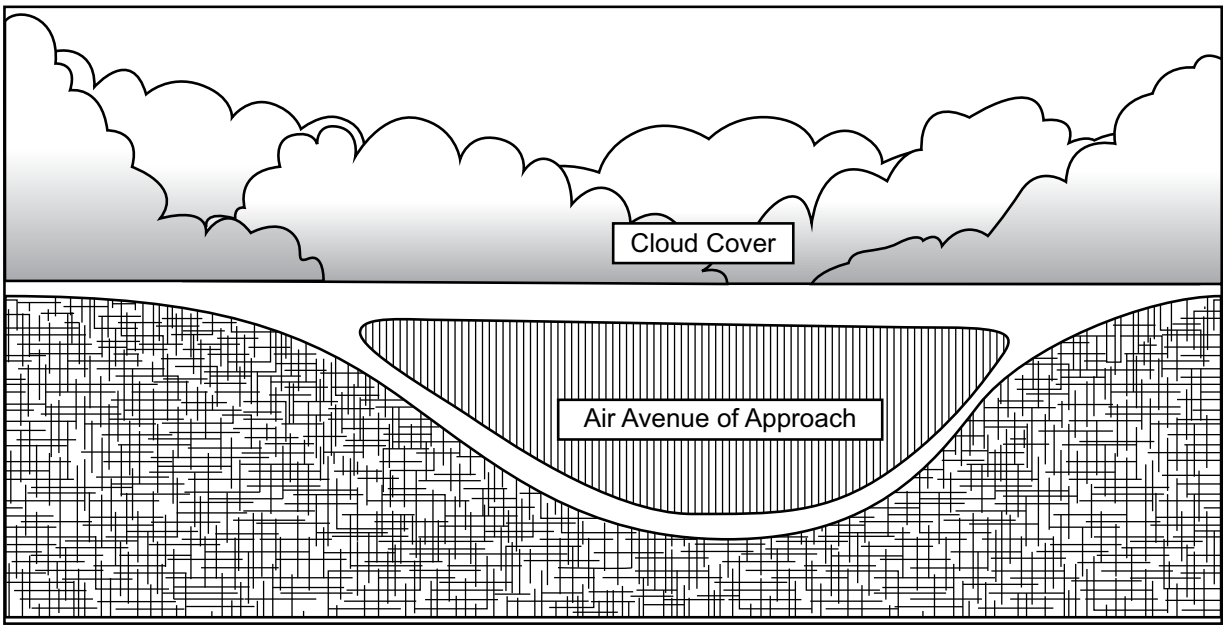


Figure 10-19. Cloud Cover Effects on Air Avenues of Approach.

need for additional synthetic camouflage for air defense and aircraft operating in desert terrain. High desert temperatures decrease aircraft lift potential and increase aircraft and air defense system maintenance requirements. In certain cases, desert conditions could mandate special aircraft or air defense operating schedules, reducing the available support or air defense coverage; desert operations also mandate special aircraft lubrication oils and filters.

Avenues of Approach. Airspace AAs are evaluated by the same criteria as ground AAs. A good AA permits maneuver while providing terrain masking from air defense weapons systems. Additional variables considered in analyzing air AAs include but are not limited to:

- Type of aircraft.
- Maximum service ceiling of the aircraft.
- Attack profile being employed.
- Weapon system or expected ordnance.
- Type of target to be attacked.

Weather aspects (particularly temperature, humidity, and cloud cover) also have significant effects on an aircraft's ability to use a particular AA.

Obstacles. Typically, three types of obstacles are considered during airspace analysis:

- Obstacles to the effective employment of air defense target acquisition or weapon systems.
- Obstacles that restrict NOE flight.
- Obstacles that force aircraft to employ a particular profile or attack route or to gain excessive altitude.

Obstacles that hinder effective employment of air defense target acquisition or weapon systems include terrain that masks LOSs, built-up areas (particularly areas with tall buildings), and vegetation. Another major obstacle to the effective air defense system employment is the maximum effective range of the system itself. Therefore, during airspace analysis, analysts must consider that air defense systems require LOSs to the target and overlapping coverage of the target area.

Obstacles that restrict a NOE flight include tall trees, radio, television and microwave relay towers, power transmission lines, support towers, smoke and obscurants, and tall buildings. The capabilities of aircraft terrain-avoidance radar systems restrict high-performance aircraft and cruise missile NOE flights. Although not physical obstacles, the aircraft terrain-avoidance radar systems dictate the minimum attack altitude and the maximum aircraft attack speed.

A low-level obstacle that promotes a NOE flight is the electronic ground clutter created when an aircraft flies near the ground. Although not a physical obstacle, ground clutter can effectively conceal aircraft from air defense systems and from other aircraft not equipped with sophisticated look-down-shoot-down radar. Typically, ground clutter is most noticeable in heavily forested areas.

Obstacles that force aircraft to employ a particular profile or attack route or gain excessive altitude include mountains, large hill masses, built-up areas, and excessively tall trees. Of particular interest are obstacles that restrict lateral movement within the air AA or mobility corridor. These obstacles have the same effect on aircraft as ground obstacles—canalizing movement and restricting evasive action. They often become key terrain for the employment of air defense weapon systems. A key obstacle to aircraft movement is the service ceiling of the aircraft itself, particularly of rotary-wing aircraft, which have low service ceilings. Major terrain features often force rotary-wing aircraft to use valleys for its approach to the target, canalizing movement and restricting maneuver. A final obstacle to aircraft movement is certain types of ordnance require a minimum release altitude or attack profile.

Obstacles that should be considered during airborne and air assault operations include flooded areas, areas with second-growth timber, and areas where the adversary or enemy has placed synthetic anti-landing obstacles such as posts, and shallow crisscross ditches. Jungle clearings often appear to be ideal LZs or DZs. However, these areas often have exceptionally tall grass, which deceives the observer as to the actual ground height. This situation creates an unexpected drop of 8 to 12 feet for troops descending by parachute or exiting an aircraft.

An obstacle that must be considered when conducting airspace analysis is the soil composition of the ground environment. Excessive amounts of blowing dust and sand can severely damage aircraft engines, as can small stones drawn into engine intakes. Therefore, the soil in an area can impose special maintenance, logistics, and operational constraints on aviation operations.

Adversary or Enemy Forces

During the adversary or enemy evaluation phase, analysts conduct a detailed study of adversary or enemy aircraft, cruise missile systems, air-to-surface missiles, long-range missiles, air defense weapon systems, and airborne, air assault, and small-unit air insertion aircraft and techniques. This phase includes a detailed examination of adversary or enemy air forces, air defense units, airborne and air assault units, and special purpose forces (e.g., Spetsnaz force organization).

The capability of these elements to operate within the battlespace environment is thoroughly evaluated. Regarding adversary or enemy aircraft, air defense, and cruise missile systems, the evaluation includes an assessment of adversary or enemy capabilities relative to friendly systems. The following represent some of the areas that must be examined when evaluating adversary or enemy aircraft performance:

- Organization of opposition fixed-wing and rotary-wing aviation units.
- Capabilities of fixed-wing and rotary-wing aircraft in terms of:
  - Performance (speed, ceilings, airfield restrictions).
  - Ordnance load (maximum weight and types).
  - Navigation capability.
  - Weapon delivery systems.
  - Combat radius.
- Ordnance performance characteristics that include range, release altitudes, ordnance release lines, warhead types, and guidance nodes such as:
  - Guns.
  - Rockets.
  - Tactical air-to-surface missiles.
  - Cluster bomb units.
  - Precision-guided munitions.
- Tactical flight doctrine, including:
  - Raid sizes or composition.
  - Entry or exit altitudes and speeds.
  - Ordnance delivery profiles.
  - Use of electronic or infrared countermeasures.
- Priorities for air attack.
- C2 procedures, including:
  - Ground control system.
  - Air control system.
  - Air strike location.
  - C2 nodes.
  - Maintenance and sortie generation capability.

Adversary or enemy evaluation also includes an examination of friendly, adversary, and enemy HVTs and critical nodes. This is often difficult because aircraft, air support and logistics facilities (airfields and depots), air defense nodes, and air LZs and airborne DZs can all be considered HVTs to both friendly and adversarial forces. To avoid categorizing everything as HVTs, analysts must select only those targets that have an immediate effect on operations.

Currently, doctrinal movement rates for aircraft do not exist. Therefore, analysts evaluate aircraft movement in terms of maximum effective range, at optimum speed (not maximum speed), with an optimal weapon load and for a specific attack profile. Air transport operations are typically

evaluated in terms of maximum range, at best cruising speed with the highest possible payload. Doctrinal movement rates for air defense units are computed exactly like those for other ground force units.

Opposition overlays for most airspace operations are not prepared. Time permitting, templates showing the most direct air routes into an objective should be prepared with the understanding that considerable deviation is possible. However, when there is limited time available, analysts should concentrate on the doctrinal attack profiles employed by adversary or enemy aircraft types (see Figure 10-20).

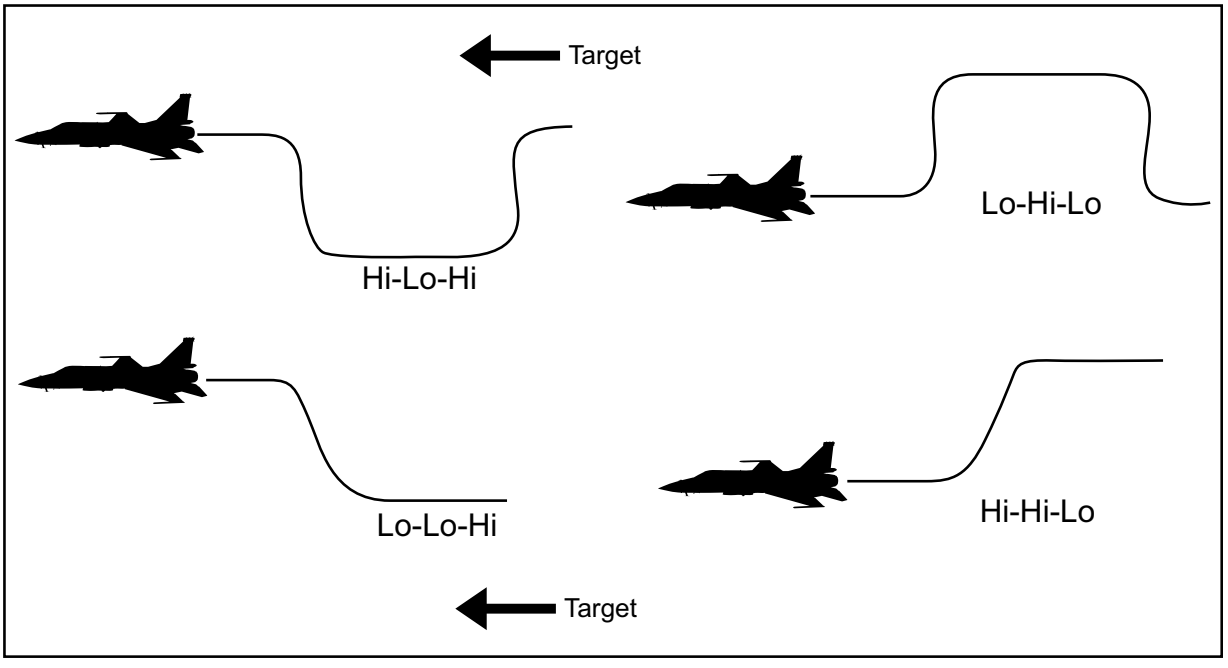


Figure 10-20. Common Fixed-Wing Aircraft Attack Profiles.

Adversary and enemy overlays for air defense units and elements are developed in the same manner as for other ground force elements. Creating an adversary or enemy overlay can be general, depicting unit locations, or specific, depicting individual radar systems, launchers, or weapons.

Adversary and enemy overlays for airborne and air assault operations of company size or larger are developed using the following considerations:

- Surprise and speed are the principal advantages during airborne and air assault operations.
- Extensive security measures are employed to screen LZ and DZ locations and the force's approach.
- Landings may or may not be in undefended areas, or in areas where the defenses have been neutralized.
- There must be effective air cover, and air defenses must be suppressed an approach route.
- Landing zones and DZs should be located as close to the objective as security permits.

- When circumstances permit, particularly for assaults that support water crossings, the LZ and DZ should be on the objective.
- The doctrinal size of an LZ and DZ is approximately 3 by 4 kilometers. Typically, an airborne regiment is allocated one or two of these zones for operations, and an air assault battalion is allocated only one LZ per operation.
- Airborne operations can be conducted to the maximum range of air strikes, missile strikes, and the artillery of advancing ground forces.
- Air assault operations are typically limited to 50 kilometers beyond the forward edge of the battle area.
- Air assault operations are critical in supporting river crossings to seize advantageous terrain as a forward detachment of advancing forces during pursuit and mountain operations.
- During air assault operations, helicopters fly as low as 50 meters and use terrain to mask their approach.

Once the airborne or air assault forces are on the LZ and DZ, adversary or enemy overlay development is similar to that for light infantry operations. This development must consider that doctrine calls for a one-hour consolidation period on the LZ or DZ before beginning movement to the objective. Developing templates must also consider that although some heavy equipment might be landed or dropped with the forces, units will still lack tank, long-range artillery, heavy engineer, and heavy antitank support.

Airborne and air assault operations are not conducted without supporting forces attempting to move towards the same objective. Without relief, airborne forces are soon overwhelmed and destroyed. Therefore, it is necessary to relieve these forces with regular units as soon as possible.

Adversary or Enemy Courses of Action

Like IPB for other areas and battlespace functions, airspace analysis relates the adversary's enemy's air, air defense, counter-air, and airborne or air assault doctrine on terrain and weather effects to assist in determining how the adversary or enemy will employ its air-associated assets, as well as how the terrain, weather, and adversary or enemy air and air defense forces can affect friendly air-associated operations. As with other battlespace functions, airspace adversary or enemy integration is accomplished by developing situation templates, event templates, and DSTs.

Although adversary and enemy overlays are not prepared for most air-associated operations, it is relatively easy to develop situation templates that integrate aircraft attack profiles with terrain constraints. The integration process focuses on specific air AAs and mobility corridors to determine which are the most capable of supporting specific attack techniques and profiles.

Situation templates for air defense operations are basically ground forces templates and developed as such. In addition to terrain effects on mobility and doctrinal dispositions, analyst focus on specific air AAs and mobility corridors and assist in determining where aircraft can best use the terrain to mask air defense target acquisition radar and weapons (oblique LOSs). Situation templates for friendly, adversary, and enemy air defense operations are developed in the same

manner—showing ranges, overlapping coverage areas, and masked areas for all air defense weapon systems. Notes in template legends should list the maximum and minimum effective altitudes of the weapons.

Situation templates for the air phase of airborne and air assault operations focus on the most direct routes to the LZ and DZ. These routes must provide the approaching airborne force with security and at least some concealment and cover. Templates for the ground phase are prepared based on the ground employment doctrine for airborne forces.

Attack profiles serve a key role in situation templating, as all airspace analysis is basically situational. Employment of a certain attack profile depends on the AA, the terrain, the adversary or enemy air defense posture and capabilities, the fuel and ordnance load requirements, the distance to the target, and the aircraft mission.

Event templates for air-associated operation areas are based on situation templates. Event templates for air defense operations are developed like other event templates. However, the NAIs are based on the terrain constraints on aircraft approach routes to potential targets, and on an analysis of the adversary's or enemy's attack profiles. In areas where few terrain constraints exist, route and area NAIs are extensively employed to assist in determining the best locations for long-range surveillance and target acquisition radar.

Named area of interest placement for other air-associated operations is based on terrain masking of radar and weapon terrain, the most direct route to the potential target, the degree of operational security required, and the requirement for early acquisition of the target by the aircraft. Event templates for deployed airborne and air assault forces are prepared in the same manner as for other ground operations.

Decision support templates for air-associated operations are based on event templates. Separate DSTs are typically constructed for friendly air defense and airborne or air assault operations. Separate DSTs can also be constructed for friendly CAS and battlespace air interdiction operations, time and situation permitting. All air-associated DSTs should show air AAs and mobility corridors, the ranges of friendly and adversary or enemy air defense systems, TAIs, and DPs. Due to its transitory nature, the current air situation is not shown. However, the number of available sorties is shown for friendly operations.

The TAIs and DPs are determined in much the same way as for ground operations; however, due to high aircraft speeds, they must be placed significantly farther in advance of the TAIs. When employing friendly aviation assets, these DPs must be placed far enough in advance of the target to allow sufficient time for the aircraft to be placed on strip alert and to arrive on target, and for associated jamming and fire support programs to be placed into effect. When supporting air defense operations, they must be placed to confirm the adversary or enemy plan of attack and to allow sufficient target acquisition and firing time. When determining the effects of the adversary's enemy's air defense effort, DPs are placed where adversary or enemy commanders would most likely be forced by weather, terrain, and friendly aircraft corridors and profiles to decide to employ their air defense assets to their greatest benefit.

COLD WEATHER OR MOUNTAIN ENVIRONMENT

In addition to the general requirements associated with IPB, cold weather or mountain environments in IPB emphasizes the effects of cold on personnel and materiel, the effects of the winter environment on friendly and adversary or enemy operations and planning considerations unique to the winter battlespace and cold regions. Time is the primary consideration when planning military operations in this type of environment is time. In addition to the increased amount of time consumed in actual movement, allowance must be made for other time-consuming tasks that are not present in temperate zone operations. These include, among others, erecting and striking tents, performing maintenance, constructing roads, starting, and warming engines, moving supplies, and numerous other small tasks that must be performed while wearing bulky cold weather clothing.

> *NOTE:* Although not typically considered when conducting IPB, time allowances need to be emphasized in cold weather operations.

Mountain terrain is characterized by steep slopes, great variations in relief, natural obstacles, and a lack of accessible routes—all of which can restrict mobility, increase movement times, limit the effectiveness of some weapons and equipment, and complicate sustainment operations. This physically challenging terrain is the primary terrain effect in cold weather or mountain operations and affects operations in greater detail than it does in temperate or desert environments. Like other regions of the world, mountainous terrain has native inhabitants that can be hostile if not treated properly. To prevent conflict, these inhabitants should be treated as friends and have their customs, taboos, privacy, and property respected.

Unique Characteristics of a Cold Weather or Mountain Environment

Offensive and defensive operations are the two operation types conducted by US forces in mountain environments. Chapter 7 discusses IPB offensive and defensive operations (see MCTP 12-10A, *Mountain Warfare Operations*, for a detailed discussion on mountain operations). In addition to the general intelligence requirements associated with IPB, a mountain environment in IPB emphasizes the effects the following characteristics have on operations:

- Cold.
- Altitude.
- Slope.
- Relief.
- Natural obstacles.
- Movement routes.
- Blowing snow and fog.

Cold. Temperature is a key terrain effect in cold weather or mountain operations and can affect operations to a greater detail than it does in temperate or desert environments. In a cold weather environment, the effects of weather are directly tied to clothing. The use of cold weather clothing

is affected by two types of weather conditions: wet and dry. These conditions are amplified by humidity, coupled with temperature and wind velocity; high humidity (wet conditions); and low humidity (dry conditions).

Cold-dry conditions occur when average temperatures are lower than 14 degrees Fahrenheit. The ground is usually frozen, and snow is usually dry in the form of fine crystals. Strong winds cause low temperatures to seem colder and increase the need for protection of the entire body (wind chill). During these periods, troops should have available additional insulating layers of clothing. This is particularly true when entering static situations from a period of strenuous exercise. Cold-wet conditions also occur when temperatures are near freezing and variations in day and night temperatures cause alternate freezing and thawing. This freezing and thawing is often accompanied by rain and wet snow, causing the ground to become muddy and slushy. During these periods troops should wear clothing that consists of a water-repellent, wind-resistant outer layer and inner layers with sufficient insulation to provide ample protection in moderately cold weather (above 14 degrees Fahrenheit) (See MCTP 12-10A for a detailed discussion on cold conditions in this unique environment).

Altitude. Mountainous terrain's primary effect on personnel is exhaustion caused by altitude. The lack of oxygen at high altitudes negatively affects both the mind and the body. This effect is compounded by the rigorous physical activity necessary to move through the terrain. Additionally, factors such as age, fatigue-level, physical conditioning, previous injury, illness, diet, and use of medications can magnify the effect mountainous terrain can have. As personnel ascend in altitude, the proportion of oxygen in the air decreases. Without proper acclimatization, this decrease in oxygen saturation can cause altitude sickness and reduced physical and mental performance.

Marines cannot maintain the same physical performance at high altitude that they can at low altitude, regardless of their fitness level. Exposure to altitudes over 3,000 meters can cause changes in senses, moods, and personality. Altitude also affects the lift capability of certain types of aircraft, reducing the load they can carry and, in some cases, preventing their use altogether. Additionally, decreased molecular density in high elevations results in an increase in fuel consumption necessary to gain and maintain lift.

Slope. In terrain analysis, slope indicates the steepness, incline, or grade. Mountain slopes generally vary between 15 and 45 degrees. Cliffs and other rocky precipices can be near vertical, or even overhanging. Aside from obvious rock formations and other local vegetation characteristics, actual slope surfaces are usually relatively firm earth or grass. Grassy slopes can include grassy clumps known as tussocks, short alpine grasses, or tundra (the latter is more common at higher elevations and latitudes).

Many slopes will be scattered with rocky debris deposited from the higher peaks and ridges. Extensive rock or boulder fields are known as talus. Slopes covered with smaller rocks, usually fist-sized or smaller, are called scree fields. Slopes covered in talus often prove to be a relatively easy ascent route. On the other hand, climbing a scree slope can be extremely difficult, as the small rocks tend to loosen easily and give way. However, this characteristic often makes scree fields excellent descent routes. Before attempting to descend scree slopes, commanders should carefully analyze the potential for creating dangerous rockfalls and take necessary avoidance measures.

In winter, and at higher elevations throughout the year, snow can blanket slopes, creating an environment with its own distinct effects. Some snow conditions can aid travel by covering rough terrain with a consistent surface. Deep snow, however, greatly impedes movement and requires Marines be well-trained in using snowshoes, skis, and over-snow vehicles.

Steep snow-covered terrain presents the risk of snow avalanches as well. Snow can pose a serious threat to Marines not properly trained and equipped for movement under such conditions. Avalanches claim more lives of Marines engaged in mountain warfare than all other terrain hazards combined. Another hazard is becoming snow blind due to the snow's high reflectivity value, or albedo. This condition results when solar radiation reflects off the snow and into the eyes of personnel in a snow-covered area. The effect is identical to a sunburn, and all exposed body parts are susceptible to this hazard.

Commanders operating in arctic and subarctic mountain regions, as well as the upper elevations of the world's high mountains, can be confronted with vast areas of glaciation. Valleys in these areas are frequently buried under massive glaciers and present additional hazards, such as hidden crevices and ice and snow avalanches. The mountain slopes of these peaks are often glaciated, and their surfaces generally comprise varying combinations of rock, snow, and ice. Although glaciers have their own peculiar hazards requiring special training and equipment, movement over valley glaciers is often the safest route through these areas (MCTP 12-10A contains more information on avalanches and glaciers and their effects on operations).

Relief. Relief is the vertical and horizontal dimension of land surface. Mountains are generally classified according to relief. Mountains are commonly classified as low or high, depending on their local relief and, to some extent, elevation. Low mountains have a local relief of 300 to 900 meters (1,000 to 3,000 feet) with summits usually below the timberline. High mountains have a local relief usually exceeding 900 meters (3,000 feet) and are characterized by barren alpine zones above the timberline.

Natural Obstacles. Natural obstacles associated with mountain terrain include deep defiles, cliffs, rivers, landslides, avalanches, crevices, scree slopes, and areas of dense vegetation or deadfalls, as well as the physical terrain of the mountain itself.

Movement Routes. Movement routes associated with mountain terrain include man-made and animal trails, streambeds, and the bottom and top of ravines, as well as exiting LOCs.

Blowing Snow and Fog. Because of the potential of blowing snow and fog, defensive positions are located on high ground, thus forcing the opposition to attack uphill in deep snow. Each weapon is assigned a field of fire oriented at man-height level on the oppositions likely approach. This increases the likelihood of effective fire during periods of restricted visibility caused by blowing snow and fog. Ice or vapor fogs are common in extreme low temperatures. Fog is primarily the result of natural phenomena, but also result from many other causes such as vehicle exhausts, cooking, breathing, and weapons firing. Fogs can be clear markers of a position.

The observed fire of automatic and direct fire weapons is handicapped considerably by the fog, smoke, and whirling snow caused by muzzle blast. Placing observers away from weapon positions might be necessary to control the fire. Placing tarpaulins under the guns, or packing or icing the snow, assists in reducing muzzle blast effects. Pauses in firing or position changes can be necessary to obtain better fire effects.

Evaluating Military Aspects of the Terrain in a Mountain Environment

The following sections describe how terrain affects operations in a jungle based on KOCOA considerations.

Key Terrain. Key terrain generally increases in importance as elevation increases and accessibility decreases. In the mountains, however, terrain that is higher than that held by the adversary or enemy force is often key, but only if the force can fight there. A well-prepared force that can maneuver in rugged terrain can gain an even greater advantage over an ill-prepared opposition at higher elevation levels.

Most operations in the mountains require the commander designate decisive terrain in the concept of operations to communicate its importance to the staff and subordinate commanders. In operations over mountainous terrain, analyzing key and decisive terrain is based on the identification of these features at each of the three operational terrain levels. There are few truly impassable areas in the mountains. Commanders recognize that what might be key terrain to one force might be an obstacle to another force. They also recognize that properly trained combatants can use high obstructing terrain to achieve decisive victories with comparatively small-sized combat elements.

Observation and Fields of Fire. Although mountainous terrain generally permits excellent long-range observation and fields of fire, steep slopes and rugged terrain affect a Marine's ability to accurately estimate range and cause large areas to be hidden from observation. Sharp relief and dead space facilitate unobserved approaches, making surveillance difficult despite long-range observation. Four factors that influence what can be seen and hidden in mountainous terrain include the ability to—

- Observe and identify targets in conditions of bright sunlight.
- Estimate range in clear air.
- Apply wind corrections.
- Shoot accurately up and down vertical slopes.

Cover and Concealment. Identifying and properly using cover and concealment provided by mountainous terrain is fundamental to all aspects of mountain operations. The ridge systems found in mountainous terrain can provide unobserved approaches through many areas that are hidden from observation by the vegetation and relief. The difficulties a force encounters in finding available cover and concealment along ridges are fewer than those on the peaks, particularly above the timberline. Uncovered portions of an approach leave a force exposed to observation and fire for long periods. A defending force can easily detect movement in this region, leaving an attacking force with three primary options to improve cover and concealment:

- Identify and exploit AAs the defender would consider unlikely because of the difficulty of ascent and descent.

- Conduct movement during periods of restricted visibility.
- Employ overwhelming route security.

Obstacles. Obstacles associated with mountain terrain include deep defiles, cliffs, rivers, landslides, avalanches, crevices, scree slopes, and areas of dense vegetation or fallen trees, as well as the physical terrain of the mountain itself. Obstacles vary in their effect on different forces. Obstacle evaluation considers the degree to which obstacles restrict operations, and the ability of friendly and enemy forces to exploit the tactical opportunities that exist when obstacles are employed. Man-made obstacles used in conjunction with restrictive terrain are extremely effective in the mountains; however, their construction is costly in terms of time, materiel, transportation assets, and labor. Commanders need to know the location, extent, and strength of natural obstacles so they can be incorporated into their scheme of maneuver.

Avenues of Approach. In mountainous terrain, there are few easily accessible AAs, and they usually run along valleys, defiles, or the crests and spurs of ridges. This type of geography allows the defender to economize in difficult terrain and to concentrate on dangerous AAs. A typical offensive tactic is conducting a coordinated assault with the main effort along accessible AAs and supporting efforts by one or more maneuver elements on difficult and unexpected AAs.

Typically, high rates of advance and heavy concentration of forces are difficult or impossible to achieve along mountainous AAs. Relief features can create large areas of dead space that facilitate covert movement. Units might use difficult and unlikely AAs to achieve surprise; however, these are extremely high-risk operations and are prone to failure unless forces are well trained and experienced in mountaineering techniques. In mountainous terrain, the analysis of AAs are based on a thorough reconnaissance and evaluated in terms of the following factors:

- Ability to achieve surprise.
- Vulnerability of attack from surrounding heights.
- Ability to provide mutual support to forces attacking on other AAs.
- Effect on rates of march.
- Increase in the number of litter patients and requirements for litter bearers.
- Effect on command and control.
- Ability to support sustainment operations.
- Access to secure rest and halt sites.
- Potential to fix adversary or enemy forces and reduce the possibility of retreat.

JUNGLE ENVIRONMENT

Marine Corps Tactical Publication 12-10C, *Jungle Operations*, describes a jungle environment as an area where all seasons are nearly alike. Jungle environments are divided into two zones:

- *Areas close to the equator*. Rains occur throughout the year.
- *Areas away from the equator*. Jungles have distinct wet and dry seasons.

Both zones have high temperatures (averaging 78 to 95+ degrees Fahrenheit), heavy rainfall (400+ inches annually), and high humidity (90 percent) throughout the year.

Jungle environments comprise densely forested areas, grasslands, cultivated areas, and swamps. The vegetation in the jungle diminishes the ability to see. The jungle canopy compounds this issue by preventing ambient light from penetrating. As a result, night observation devices are mostly ineffective under the canopy. Dense vegetation also limits the ability to hear by trapping noise. The potential lack of road networks and areas that are impassable to vehicles seriously degrades mounted operations. Casualties who would be ambulatory in other types of terrain will become litter patients in the jungle as they are unable to navigate difficult terrain. This significantly increases evacuation times and necessitates diverting some troops to become litter bearers.

High incidences of rust, corrosion, and fungal infestation caused by high humidity and moisture force strict daily maintenance on weapons and equipment. The jungle climate, relief, and foliage combine to reduce the effective range of radio communication and electronic surveillance. Civil considerations are generally not a major factor when planning and conducting jungle operations, although the existence of noncombatants in the area must be considered, consistent with planning offensive and defensive operations. Like other regions of the world, the jungle has native inhabitants that can be hostile if not treated properly. To prevent conflict, these inhabitants should be treated as friends and have their customs, taboos, privacy, and property respected.

Unique Characteristics of a Jungle Environment

Offensive and defensive operations are the two types of operations conducted by US forces in jungle environments. Chapter 7 discusses IPB for offensive and defensive operations. Considerations for the IPB process in a jungle environment include the general intelligence requirements and the effects of the following characteristics:

- Mosquitoes, sandflies, and other insects.
- Leeches.
- Poisonous snakes.
- Crocodiles and caymans.
- Wild animals.
- Poisonous vegetation.
- Waterborne diseases.
- Fungal diseases.

Evaluating Military Aspects of the Terrain in a Jungle Environment

The following sections describe how terrain affects operations in a jungle based on KOCOA considerations.

Key Terrain. The aspects of jungle terrain result in fewer set-piece battles. Rather than conventional attacks conducted against conventional defenses, jungle battles are often ambushes, raids, and meeting engagements. Battles are not fought for high ground as frequently as conventional battles.

Orientation is on the enemy rather than on the terrain. Hills in the jungle are often too thickly vegetated to permit observation and fire and, therefore, do not always qualify as key terrain. In the jungle, roads, rivers and streams, fording sites, and LZs are more likely to be key terrain features.

Observation and Field of Fire. Observation and fields of fire in the jungle are limited because of dense vegetation. Often, observation and fields of fire must be created or improved upon. When this is necessary, Marines clear away only what is necessary to retain as much natural concealment as possible. When in properly constructed fighting or observation positions, the Marine's eyes and weapon will be at ground level. This ensures the Marine is concealed and is protected by cover but still can detect anyone approaching. If a small tree is in a Marine's field of fire, only the branches that deny observation should be removed. The cuttings on the tree are darkened with mud. Overly cleared areas or fresh, improperly concealed cuttings are easy to spot. Additionally, restricted lines of sight can prevent visual contact between units, interlocking fires, and the use of tube-launched optically tracked munitions. Adjustment of indirect fire support is difficult due to limited visibility and might have to be accomplished by sound.

Cover and Concealment. A jungle's dense vegetation generally provides concealment from both air and ground observation. Natural cover (trees, rocks, logs) provides adequate cover from small arms fire but provides only minimal protection from grenades and indirect fire if not improved upon. When constructing fighting positions, ample natural resources are available to build cover that blends in with the surroundings. Lowland and swamp areas provide good concealment but poor cover because they are generally too wet to permit the digging of fighting positions. Tree limbs can block or deflect mortars, grenades, and small arms fire.

Obstacles. Rivers and other large bodies of water as well as cliffs are the predominant natural obstacles in a jungle environment. Depending on the operation, swamps and heavily forested areas can become obstacles as well.

Avenues of Approach. Moving over jungle terrain is difficult a jungle lacks clear AAs or routes. There might not be adequate topography survey or map data to identify AAs during planning because of the isolation of jungle environments, the rugged ground, and the presence of a canopy and dense forest. When using aerial photography to identify AAs, the photographs should be less than four months old, as vegetation on the trails and other clearings can rapidly change in a short period of time. In many cases, AAs may need to be created. Collaborating or coordinating with indigenous people (military and civilian) to identify existing AAs and movement routes is an effective way to quickly identify these terrain features. Avenues of approach in the jungle include rivers, streams, valley floors, ridgelines, animal trails, and trails made by man. Because sound in the jungle does not travel far, movement heard along AAs is generally closer than believed.

DESERT ENVIRONMENT

Marine Corps Tactical Publication 12-10D, *Desert Operations*, describes a desert environment as an "arid, barren region incapable of supporting normal life due to lack of water." Temperatures vary according to latitude and season, from over 136 degrees Fahrenheit in the deserts of Mexico and Libya to the bitter cold of winter in the Gobi (East Asia). In some deserts, day-to-night temperature fluctuation exceeds 70 degrees Fahrenheit. Desert terrain also varies considerably

from place to place, the sole common denominator being lack of water with its consequent environmental effects, such as sparse, if any, vegetation.

The basic landforms are similar to those in other parts of the world, but the topsoil has been eroded due to a combination of lack of water, heat, and wind to give deserts their characteristic barren appearance. The bedrock might be covered by a flat layer of sand or gravel or might have been exposed by erosion. Other common features are sand dunes, escarpments, wadis, and depressions. Although civil considerations are generally not a major factor when planning and conducting desert operations, analysts still must consider the effects of noncombatants in the area, consistent with planning offensive and defensive tasks.

Unique Desert Environment Characteristics

Offensive and defensive operations are the two types of operations conducted by US forces in desert environments. Chapter 7 discusses IPB for offensive and defensive operations. Considerations for the IPB process in desert environment include the general intelligence requirements along with the effects of the following characteristics:

- Water.
- Terrain.
- Heat and cold.
- Wind.
- Dust and sand.
- Humidity.
- Temperature variations.
- Thermal crossover.
- Optical path bending.
- Static electricity.
- Solar radiation.

Water. Although water can be found in the desert, and the location of known and possible water sources is identified during IPB, carrying enough water to accomplish the mission is a primary planning consideration when operating in the desert. Even though water is there it might be impossible to find or reach it. Additionally, even if water is accessible, it might not be potable. Dependency on local water sources can also make movement predictable and expose the force to an attack. When planning how much water to carry, consider the following uses:

- Personnel (drinking only).
- Personnel (uses other than drinking).
- Medical treatment.
- Vehicle and equipment cooling systems.
- Decontamination.
- Food preparation.
- Construction.
- Laundry.

Terrain. Terrain varies from nearly flat with high trafficability, to lava beds and salt marshes with little or no trafficability. Tracked vehicles are well suited for desert operations. Wheeled vehicles might be acceptable as they can go many places that tracked vehicles can go; however, their lower speed in poor terrain might be unacceptable during some operations. Vehicles should be equipped with extra fan belts, tires (and other items apt to malfunction), tow ropes (if not equipped with a winch), extra water cans, and desert camouflage nets. Air-recognition panels, signal mirrors, and a tarpaulin for crew sun protection are also useful.

Heat and Cold. Heat affects personnel as well as weapons and equipment. The desert's extreme heat can cause heat exhaustion and heatstroke and puts troops at risk of degraded performance. For optimum mental and physical performance, body temperatures must be maintained within narrow limits. Therefore, it is important that the body loses the heat it gains during work. The amount of heat accumulation in the human body depends upon the amount of physical activity, level of hydration, and the state of personal heat acclimatization. Unit leaders must monitor their troops carefully for signs of heat distress and adjust schedules, work rates, rest, and water consumption according to conditions.

The desert can be dangerously cold, particularly at night. The dry air, wind, and clear sky can combine to produce bone-chilling discomfort and even injury. The body's ability to maintain body temperature within a narrow range is as important in the cold as in the heat. Loss of body heat to the environment can lead to cold injury; a general lowering of the body temperature can result in hypothermia; and local freezing of body tissues can lead to frostbite. This effect would be mitigated during periods of extensive cloud cover; METOC forecasters will factor this into the planning in a desert environment during bivouac operations.

Wind. Desert winds, by their velocity alone, can be very destructive to large and relatively light materiel, such as aircraft, tents, and antenna systems. To minimize wind damage, materiel should placed where it will benefit from wind protection and be firmly picketed to the ground. Desert winds also move dust and sand from the desert floor into sensitive areas of weapons and equipment, thus causing malfunction and damage.

Dust and Sand. Dust and sand are the greatest threats to the efficient functioning of weapons and equipment in the desert. It is almost impossible to avoid particles settling on moving parts and acting as an abrasive. Sand mixed with oil forms an abrasive paste that destroys the working of fine parts. The existence of dust and sand requires additional time and resources for maintenance in accordance with applicable maintenance manuals.

Humidity. Some deserts are humid. Humidity plus heat causes rust on bare metal and mold in enclosed spaces such as optics. Bare metal surfaces on equipment not required for immediate use must be kept clean and lightly lubricated. Items such as optics should be stored in dry conditions; those in use are kept where air can circulate around them and should be purged at frequent intervals. Aircraft are washed daily, particularly if there is salt in the air, using low-pressure sprays.

Temperature Variations. Temperature variation is the change in ambient temperature between daytime and nighttime hours. In deserts with relatively high dew levels and high humidity, overnight condensation can occur wherever surfaces (such as metal exposed to air) are cooler than the air temperature. Condensation can affect such items as optics, fuel lines, and air tanks.

Draining fuel lines both at night and in the morning (whenever necessary) and cleaning optics and weapons frequently can mitigate the effect of temperature variation.

Thermal Crossover. Small arms can be affected by thermal crossover (see Chapter 4 for the definition of thermal crossover). Marines should modify direct fire control procedures, as needed. Modern US tanks are designed to compensate for thermal crossover. Adversary or enemy tanks may not have this capability.

Optical Path Bending. Optical path bending, also called refraction, occurs when light passes through one medium to another. This condition can exist when the air is warmer above the desert floor. Heat shimmer is an indication that refraction exists. Refraction can occur during daytime conditions with a clear sky over flat terrain with winds less than 10 miles per hour. Refraction can also occur during nighttime conditions with a clear sky over flat terrain with winds less than 4 miles per hour. Refraction can affect the ability of direct fire weapon systems to engage targets beyond 1,500 meters.

Static Electricity. Static electricity is the buildup of an electric charge on the surface of objects that remains until the charge is bleed off to a ground or neutralized by discharge. Static electricity is prevalent and poses a danger in the desert. It is caused by atmospheric conditions, coupled with an inability to ground out, due to dryness of the terrain. It is particularly prevalent with aircraft or vehicles having no conductor contact with the soil. The difference of electrical potential between separate materials can cause an electrical discharge between them when contact is made; if flammable gases are present, they can explode and cause a fire.

Solar Radiation. Solar radiation is generated by the sun's rays. Solar radiation can be detrimental to some plastics, lubricants, pressurized gases, chemicals, and infrared tracking and guidance systems. These materials must be kept out of constant direct sunlight to avoid damage. Over exposure to solar radiation can cause sunburn and damage eyesight. Marines need to implement personal protective measures such as applying sunscreen and using sunglasses to avoid injury.

Evaluating Military Aspects of the Terrain in a Desert Environment

The following sections describe how terrain affects operations in a jungle based on KOCOA considerations.

Key Terrain. Key terrain in the desert can be man-made features, mountain passes, high ground, and valleys. Staff sections provide key terrain recommendations so that these are analyzed for their benefit to friendly and adversarial forces. For example, for the S-6, the only piece of high ground in the AO might be key due to the limitations of frequency modulation communications that require retransmission. Some deserts provide high ground that is crucial for observation. In an open or arid environment, a draw or wadi could be viewed as key terrain. The relative flatness and great distances of some deserts make even large sand dunes dominant features. Flat areas in otherwise rough terrain are vital for airborne operations and aerial resupply. Key terrain in the desert can also include villages or facilities that could provide water.

Observations and Fields of Fire. Observation and fields of fire are generally excellent in most desert areas. The atmosphere is stable and dry, allowing unrestricted view over vast distances. Flat desert terrain permits direct-fire weapons to be used to their maximum range. Generally, open terrain and a predominantly clear atmosphere offer excellent long-range visibility; however, at

certain times of the day visibility can be limited or distorted by heat. Additionally, the desert is not flat, so weapons are sited to provide mutual support. Dead space can also be a problem. Even though the landscape appears flat, upon close inspection it can be undulating with relatively deep wadis and depressions creating intervisibility lines. These areas should be covered by indirect fire.

Cover and Concealment. Areas in the desert can be wide and provide limited cover and concealment. Flat sandy terrain provides little, if any, natural cover or concealment, particularly from aerial attack or reconnaissance. Ground concealment and protection from fire can be found behind dunes or in wadis. Some arid regions have vegetation that can provide limited concealment from ground observation. In rocky, mountainous deserts, cover and concealment are best found behind boulders and in crevices. Daytime vehicular movement will likely be visible and eliminate the possibility of surprise, as dust trails created by the traffic can be spotted for miles. At night noise and light discipline is critical, as both sound and light travel great distances because of the unobstructed flatness of the terrain and atmospheric stability. Camouflage can be effectively employed to improve on natural cover and concealment.

Obstacles. Natural obstacles in the dessert such as wadis and steep slopes of escarpments, mountains, hills, and dunes hinder cross-country movement. Sand dunes can stretch for miles and prevent direct movement across their length. Sand dunes are often more than 100 feet in elevation and consist of loose sand with high, steep downwind faces that make vehicular traversing near impossible. Aerial reconnaissance immediately before any large movement is advisable as sand dunes migrate with shifting winds, and they might not be where maps or even photographs show them. Additionally, dry lake beds and salt marshes can have a crust on the top that can deceive a vehicle driver. A top crust forms on the surface, but below the crust the soil is moist, similar to marsh conditions. The surface might appear to have good trafficability, but the crust will collapse under the vehicle weight and the vehicle becomes mired. Sandy deserts are ideal for employing minefields. Although windstorms can reveal previously buried mines, these mines can still channel movement and deny access to certain areas.

Avenues of Approach. The AAs are not clearly defined in desert environments. Avenues of approach can be wider than in other environments and of greater availability, permitting maneuver from virtually any direction, making wide envelopments possible. Modern sensor technology, limited natural concealment, and improved observation make the element of surprise a challenge.

In mountainous and canyon topography avenues are more limited, and the wadis and valleys are likely to be the only possible access routes. Any roads that do exist are typically in valleys.

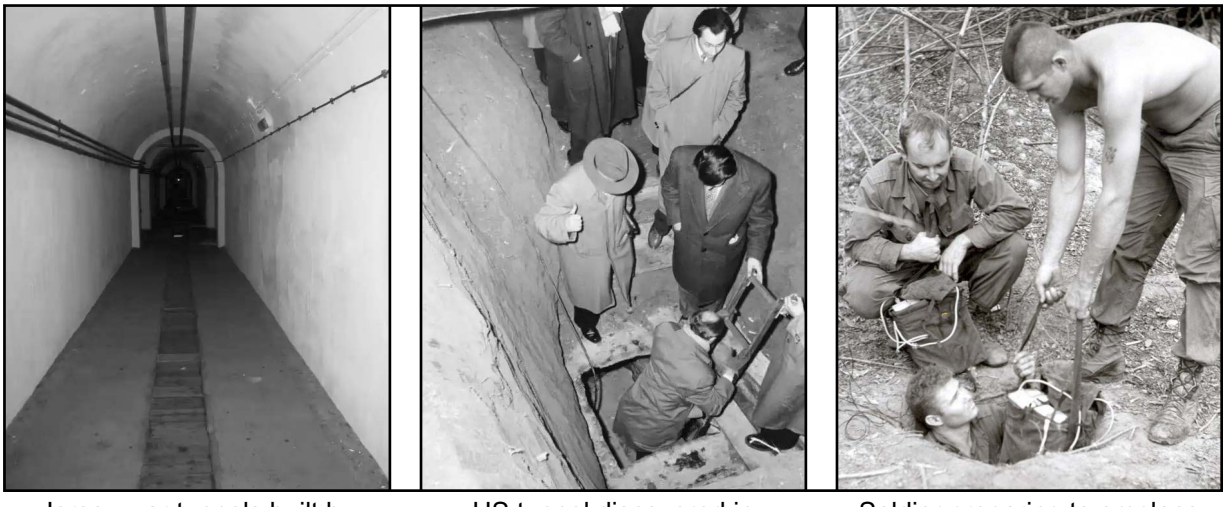
SUBTERRANEAN ENVIRONMENTS

Using subterranean systems (any space or structure located below ground) is a means to covertly maintain the initiative against a more powerful military opponent. Such spaces and structures can be used for command and control, defensive networks, operations, storage, production, or protection. Continued improvements in the construction of subterranean environments have increased their usefulness and proliferation (See MCRP 12.10B.1).

Though not a new tactic, using subterranean systems allow for the surreptitious use of terrain to gain advantages that are often applied above ground. Adversarial forces lacking either troop

strength or technical or tactical advantages use these systems to gain freedom of action at a time and place of their choosing.

Subterranean systems can be used in offensive and defensive operations. Throughout history, forces have noted the tactical value provided by subterranean systems. Not only do they mask movement across an operational environment, but they are also essential to logistics operations, as witnessed by the Hamas' use of tunnels in the Gaza Strip. Figure 10-21 provides examples of subterranean terrain used during various conflicts; Tables 10-3 and 10-4 depict subterranean environmental categories and features of subterranean environments, respectively.



Jersey war tunnels built by Germany in the Channel Islands during World War II

US tunnel discovered in East Germany by the Soviet Union during the Cold War

Soldier preparing to emplace explosives in a Vietcong tunnel during the Vietnam Conflict

Figure 10-21. Use of Subterranean Terrain During Conflicts.

Table 10-3. Subterranean Environmental Categories.

Categories	Category 1: Tunnels, natural cavities, and caves		Category 2: Urban subsurface systems		Category 3: Underground facilities (military-purposed)	
Subcategories	Rudimentary: Lack of shoring	Sophisticated: Shoring, basic amenities	Substructure: Basements, parking garages	Civil works: Subways, sewers, aqueducts	Shallow: Silos, bunkers (<20 meters)	Deep: Military bases (>20 meters)
Functions	Civil: Commercial operations, transportation, storage Enemy: Command and control, operations, storage, production, protection				Command and control, operations, storage, production, protection	
Supporting amenities/ infrastructure	Power cords, small generators, lights, ventilation shafts, small pumps		Electrical power, transportation corridors, life support systems, environmental controls, communications lines *Note.* Internal redundancies might exist allowing the facility to operate for extended periods, independent from external support			
Common threats	Personnel, improvised explosive devices, traps, direct fire methods				Military offensive and defensive measures	
Common hazards	Environmental (poor air quality, dangerous gases, wildlife), materiel (munitions, fuels), structural integrity					

Table 10-4. Features of Subterranean Terrain.

Term	Definition
Adit	An entrance to an underground mine which is horizontal or nearly horizontal; or an opening into a mountain with only one entrance.
Alcove	A limited and localized enlargement of a tunnel to accommodate equipment.
Barrier	Refers to doors, gates, hatches, and framing, as well as the presence of any reinforcement to hinges, locking mechanisms, or the barrier itself to control entry and exit.
Blast door	A door designed to withstand blast effects sometimes up to the nuclear detonation level.
Blast berm	A wall or mound of earth directly in front of a portal used to deny or minimize lethal weapon effects.
Blast valve	A valve normally open to facilitate ventilation which closes automatically when exposed to high blast pressures. May be closed manually for chemical, biological, radiological, and nuclear (CBRN) protection.
Bomb trap	A space designed to contain or divert blast effects.
Confined space	An enclosed or narrow space not meant for continuous human inhabitance.
Deep	A facility with more than 20 meters overburden.
Fall	A mass of roof rock or coal which has fallen in any part of a mine.
Footprint	The surface area that incorporates all the components of a subterranean system.
Gallery	A large horizontal or a nearly horizontal underground passage, either natural or artificial.
Hard structure	Structures resistant to lethal weapons effects. Highways, railroad tunnels, some bridges and airfields may be considered hard because of their normal design.
Hardened structure	A structure intentionally strengthened to provide protection from lethal weapon effects.
Mission space	The space where the facility functions occur. Also known as the functional area.
Overburden	The amount of earthen material above the ceiling of the subterranean system.
Portal	The structure surrounding the immediate entrance to a mine; the mouth of a cave or tunnel.
Shallow	A facility with 20 meters or less overburden.
Silo	A vertical, cylindrical structure extending from the surface into the ground used to protect a missile.
Shaft	An opening from a subterranean space used for ventilation, drainage, or hoisting of personnel or materials. Connects the surface with underground workings.
Tunnel	A horizontal, or near-horizontal, underground passage, that is open to the surface at both ends.
Umbilicals	Supporting Infrastructure that allows a system to function.

Unique Characteristics of a Subterranean Environment

Knowing the types of natural (category 1) and man-made (category 2) subterranean environments (see Figure 10-22) within an operational environment offers a significant advantage when conducting IPB and subsequent planning. Identifying subterranean environments assists

intelligence staffs in developing adversary or enemy COAs that can affect friendly operations and lessen the adversary's or enemy's use of surprise to gain relative positions of advantage. Advantages that must be addressed when conducting IPB include but are not limited to—

- Providing a concealed method of infiltrating forces.
- Allowing for the disruption of defenses.
- Providing covered and concealed routes to move reinforcements or to launch counterattacks.
- Using LOCs for the movement of supplies and evacuation of casualties.
- Providing space to cache supplies and equipment.
- Providing concealed locations to conduct C2 operations.
- Providing protection from forces with technical advantages.

Category 1 Subterranean Environment: Caves, Natural Cavities, and Tunnels. Caves and natural cavities are primarily formed by the erosion or dissolving of limestone over time. Examples include the Carlsbad Caverns in New Mexico or the Lascaux Cave in France. Tunnels are typically natural, linear caves, but they can also be man-made structures, such as railway tunnels or the Channel Tunnel that links the United Kingdom to France.

Depending on their intended use, category 1 subterranean environments can be—

- *Rudimentary*. Rudimentary systems have no means of support, for example, wooden bracing.
- *Sophisticated*. Sophisticated systems usually contain some form of bracing material, for example, wood or concrete.

Category 2 Subterranean Environment: Urban Subsurface Systems. Urban subsurface systems include civil works and substructures. Civil works include aqueducts, sewers, subways, transportation, and utility tunnels. Substructures include basements, shelters, and parking garages, which can appear similar to sophisticated tunnels or can be more robust with complex supporting infrastructure.

Urban subsurface systems are key aspects when considering dense urban area operations. Adversaries or enemies can repurpose these systems due to the advantages they might provide against an opposing force. For example, subway systems can be used to protect civilian populations, military forces, and equipment from airstrikes, as witnessed in the German Blitzkrieg of London during WWII. These systems have also been used to shelter military forces and permit surreptitious movement, as witnessed during the conflict in Grozny, Chechnya, during the First Chechen War (1994-1996). Other reasons for repurposing urban subsurface systems include but are not limited to:

- Lack of secure above-ground terrain to maneuver.
- Lack of above-ground protection from air strikes.
- Providing a method of communications.
- Providing a method to evacuate casualties.
- Protection and sanctuary C2 nodes.

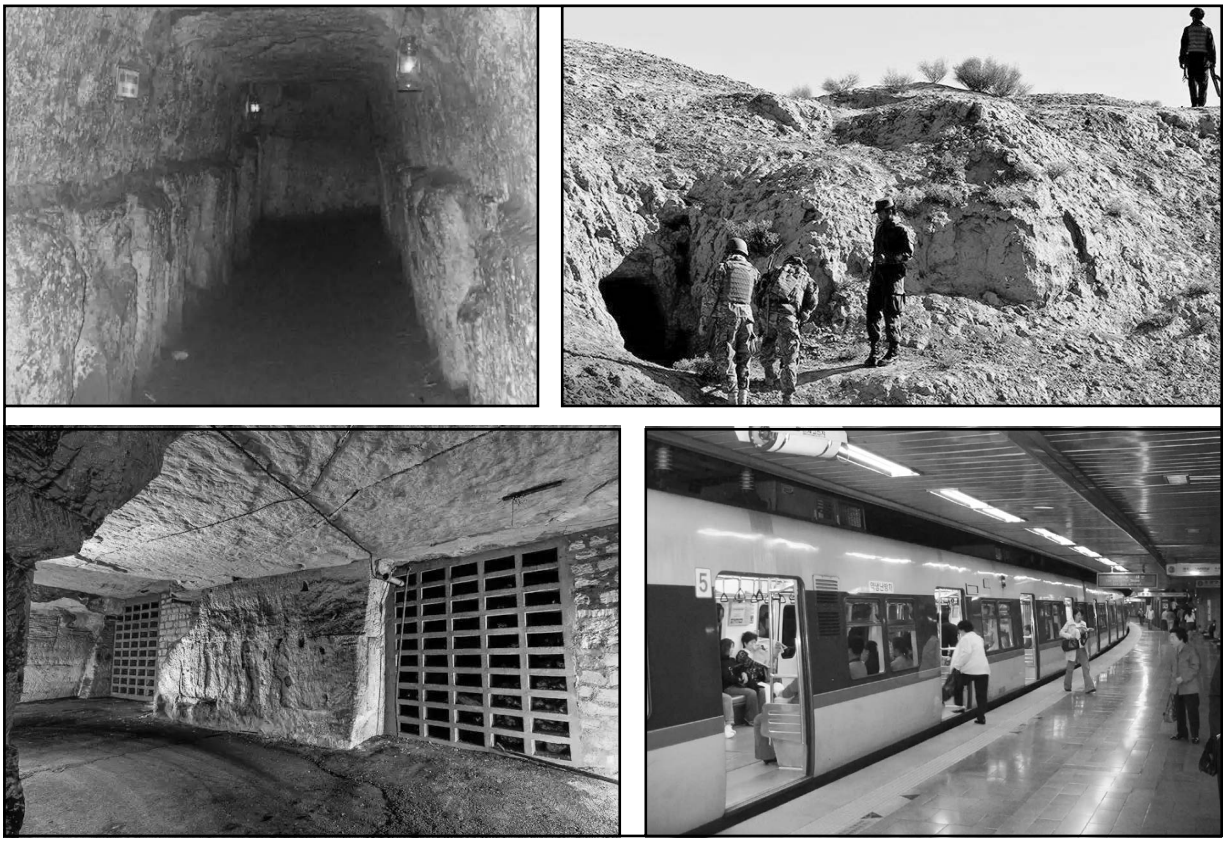


Figure 10-22. Figure 1022. Categories 1 and 2 Subterranean Environment Examples.

The Maginot Line

One of the most extensive uses of man-made subterranean terrain is the French-built Maginot Line (see Figure 10-23). This series of fortifications was built to deter German aggression along the France-German border post World War I. This fortified line consisted of fortresses, bunkers, outposts, and tunnels used in the defense but was unable to support counterattacks. The subterranean portions of the line, some of which included railway tracks, allowed French forces to move undetected, store and provide logistics to support combat operations, and conduct reconnaissance operations. Although the Maginot Line did not prevent Germany from conducting operations in France, it was tantamount in recognizing the importance subterranean terrain can have on the scope of combat operations.

Evaluating Military Aspects of the Terrain of a Subterranean Environment

The sophistication of man-made subterranean terrain varies. Depending on the location and resources available, subterranean terrain can be rudimentary—such as tunnels with minimal lighting and shoring made of brick, wood, concrete, or other materials—or sophisticated, such as the Maginot Line (Figure 10-23).

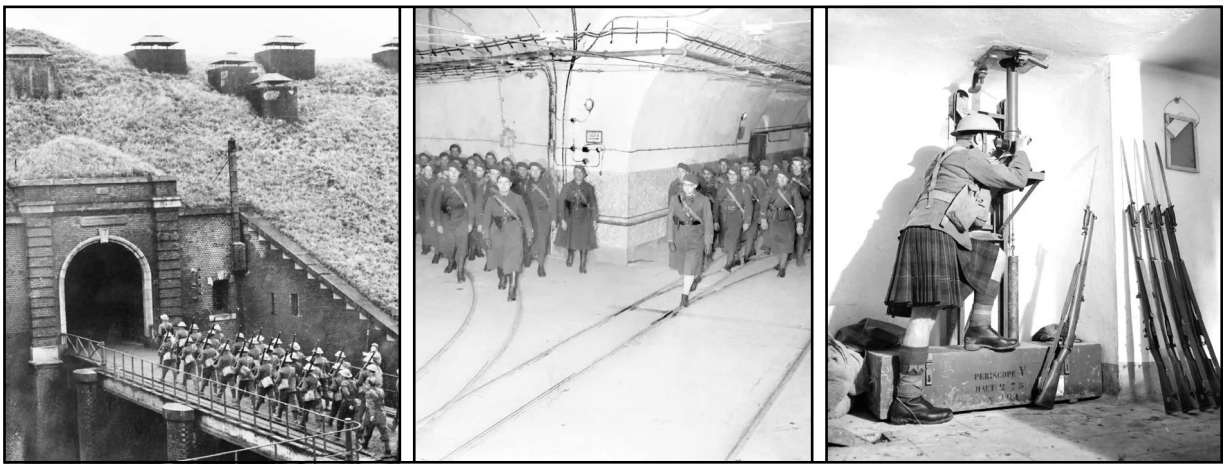


Figure 10-23. Maginot Line Subterranean Terrain.

Using subterranean environments expands the physical battlespace and cover and concealment along routes of movement. Historically, enemy forces have used subterranean terrain to counter overwhelming friendly manpower, technology, and firepower.

When taking a holistic approach to the operational environment, the use of subterranean terrain provides the ability to exploit time and space. Determining whether or not subterranean environments are relative to a unit's mission is critical to understanding the full scope of available friendly, adversary, and enemy COAs. Regardless of the type of environment operations conducted, opportunities to use subterranean terrain must not be overlooked. The following sections describe how terrain affects operations in a jungle based on KOCOA considerations.

Key Terrain. When analyzing subterranean terrain and possible key terrain, it is important to note the relationship between surface terrain and subterranean terrain because exploiting subterranean terrain assists in gaining advantages on surface terrain. Possible key terrain in subterranean environments include but are not limited to—

- Access points to surface terrain and subterranean terrain (surface subway and sewer entrances).
- Subsurfaces.
- Bunkers tied to terrain that provides a tactical advantage.
- Tunnels providing maneuver advantage.

Observation and Fields of Fire. Observation in subterranean terrain varies based on the type of terrain. In urban subterranean environments such as subway tunnels, visibility might be enhanced however, in other subterranean environments such as sewer systems, observation might be limited due to lack of light. Since subterranean terrain is typically more confining than above-ground terrain, observation can also be limited to short distances. Fields of fire are limited due to confined spaces and favor forces in the defense.

Cover and Concealment. The lack of cover and concealment in subterranean terrain favors forces in the defense, depending on the type of structure, its composition, and purpose:

- *Tunnels*. A tunnel provides minimal to no cover and concealment. Depending on the complexity, structure, and composition of the tunnel, internal structures, such as walls, barriers, and stairwells can be used for cover and concealment. Though darkness can be used is some tunnels, other more complex tunnels with internal and sometimes rudimentary lighting limit concealment.
- *Bunkers*. A barrier's structure varies depending on its purpose. Bunkers used for command and control are often very complex with much of the same infrastructure as above-ground structures. Bunkers can offer cover and concealment through internal walls, barriers, stairwells, and elevators. Other, less complex bunkers can only offer cover and concealment for forces using them in the defense.
- *Subways*. Subways and their associated infrastructure—subsurface stations and tunnels—offer cover and concealment in a various form, including but not limited to internal walls, stairwells, escalators, and security barriers.
- *Caves and caverns*. These natural forms of subterranean terrain mainly provide cover and concealment for forces in the defense. The natural walls of caves and caverns provide significant cover as they are often used as bunkers to avoid aerial and indirect fire attacks. Darkness is the main form of concealment in caves and caverns, though rudimentary lighting systems can be used within.
- *Sewers*. Although sewers provide substantial cover and concealment from surface fires and observation, inside they offer minimal cover and concealment to forces in the offense or defense. Like surface streets, sewers are not straight. The angles they create as they follow surface infrastructure permit their use for cover and concealment.

Obstacles. Subterranean environments affect friendly, adversary, and enemy COAs and must be accounted for during planning. Depending on the mission and mission location, subterranean terrain can be the most significant obstacle in the operational environment. The importance of subterranean terrain to adversarial forces often requires additional focus by friendly forces and added resources such as engineers for clearing operations.

Subterranean terrain is often classified as an obstacle to friendly forces because it can impede operations. Obstacles at intersections in tunnels and other subterranean terrain set up excellent ambush sites and turn subterranean passages into deadly mazes. Subterranean terrain can also be used to ambush forces. Booby traps or IEDs are easily hidden inside tunnels and culverts and can be effective methods to either prevent or impede adversary or enemy movement. The images in Figure 10-24 depict the clearing of culverts in Iraq and Afghanistan to prevent IED attacks.

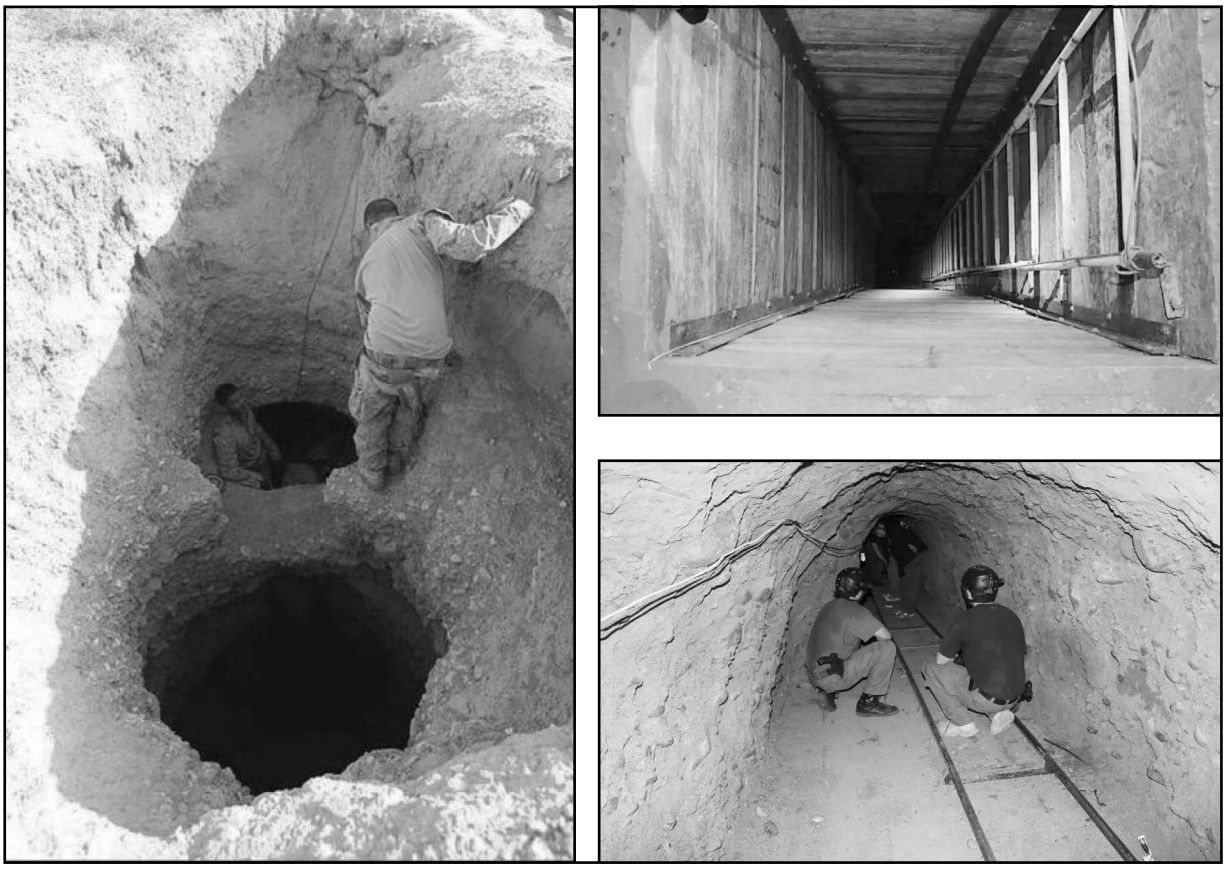


Figure 10-24. Clearing Subterranean Terrain of Potential Obstacles.

Avenues of Approach. Maneuverability a critical factor for using subterranean terrain. Forces using subterranean terrain as AAs have an advantage because their movement might go undetected. This increases the forces' possible COAs.

Conducting counterattacks from subterranean terrain must be considered when developing adversary and enemy COAs. Subterranean terrain can potentially extend the battlespace. When layering surface terrain on top of subterranean terrain in overlays, analysts can see how forces using subterranean terrain can maneuver against surface forces effectively. The images in Figure 10-25 depict surface terrain versus subterranean terrain use during conflicts.

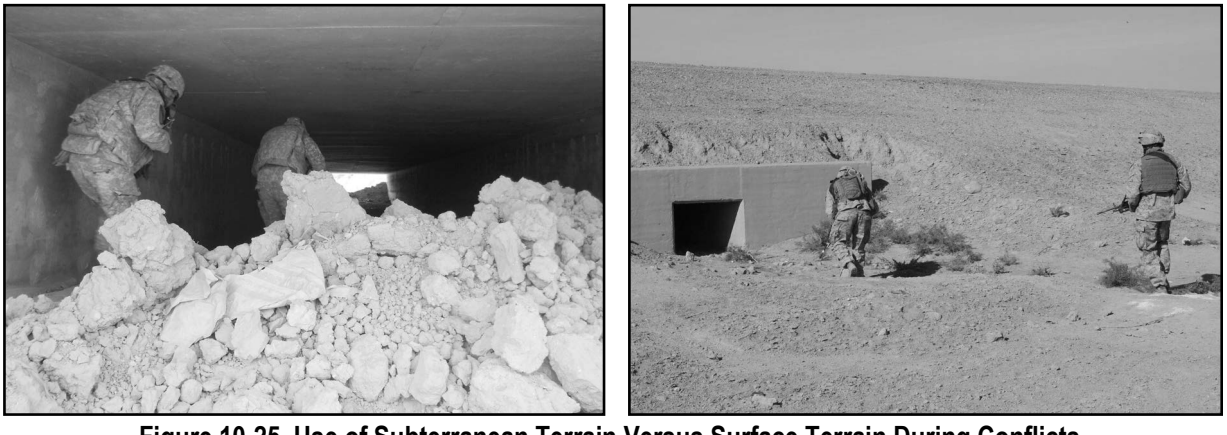


Figure 10-25. Use of Subterranean Terrain Versus Surface Terrain During Conflicts.

CHAPTER 11.
CONSIDERATIONS FOR UNIQUE MISSIONS

Unique missions are those operations not routinely conducted by the Marine Corps. Intelligence preparation of the battlespace, with modification, supports the planning for these operations. This chapter discusses IPB tactics and procedures for counterdrug, counter-improvised explosive device, site exploitation, peace operations, and humanitarian, disaster relief, and NEO.

COUNTERDRUG ACTIVITIES

The Marine Corps provides support to counterdrug activities to assist law enforcement agencies in the identification and interdiction of suspected drug trafficking within and along the approaches to the continental United States. Planning for a counterdrug support mission requires the same IPB process as any other military operation. To the greatest extent possible, estimates are coordinated with supported law enforcement agencies.

When conducting intelligence activities inside the United States, or targeted at US persons or groups, additional restrictions and requirements apply.

Joint Publication 3-07.4, *Counterdrug Operations*, constitutes the current doctrine the Marine Corps uses to conduct counterdrug activities. To conduct IPB specifically for counterdrug activities, commanders and staffs must understand the nature of counterdrug activities and the intelligence requirements associated with them.

Counterdrug activities are "those measures taken to detect, interdict, disrupt, or curtail any activity that is reasonably related to illicit drug trafficking" (JP 3-07.4). Counterdrug activities conducted by the Marine Corps are typically conducted as part of a joint force. Planning for counterdrug activities below the strategic level is conducted using the joint planning process (JPP). Intelligence preparation of the battlespace begins during Step 2, mission analysis, and continues throughout the JPP.

Terrain Analysis

Terrain analysis performed in support of counterdrug activities is conducted as part of the IPB process and follows the KOCOA considerations. Terrain analysis focuses on the effects terrain can have on the operations of friendly forces and on drug traffickers. The standard terrain products and work aids used during traditional IPB can be used as part of IPB support to counterdrug activities without modification, specifically the MCOO and terrain effects matrix (refer to Chapter 4 for additional details on these products).

Weather Analysis

Weather analysis conducted in support of counterdrug activities is conducted as part of the traditional IPB process. Weather analysis focuses on the effects weather can have on the operations of friendly forces and on drug traffickers. The standard weather products and work aids used during the traditional IPB process can be used as part of IPB support to counterdrug activities without modification. These products include—

- Weather forecast and conditions charts.
- METOC operational effects charts.
- Lunar illumination data.

Adversary or Enemy Evaluation

During Step 3 of IPB, intelligence personnel that perform IPB support to counterdrug activities conduct a functional analysis of drug trafficking networks to develop a database that includes data on organizational structure, locations (AOs), disposition, TTP, C2 structure, intelligence-gathering capabilities, counterintelligence capabilities, logistics operations, funding and finance, personal data on known smugglers, and capabilities and limitations.

Adversary or enemy evaluation is critical to adversary or enemy integration. Without a complete and accurate evaluation of drug trafficking networks, adversary or enemy integration efforts will be flawed and will result in inaccurate intelligence estimates being used to plan operations.

In Step 4 of IPB, intelligence personnel conduct analysis based on what is known about the drug traffickers' modes of operation. Intelligence personnel integrate that analysis with the analysis conducted in the operational area evaluation and terrain and weather analysis to make a judgment on when, how, and where drug traffickers will move. The following products are developed during adversary or enemy integration:

- Drug trafficking situation overlay that depicts—
  - Primary and alternate drug smuggling routes.
  - Escape routes.
  - Crossing sites (includes official entry points and obstacles that must be navigated, such as rivers).
  - Locations of drug cultivation, manufacture, and storage.
  - Locations and identity of groups or individuals directing drug trafficking operations, funding drug trafficking operations, providing logistics support to drug trafficking operations, providing intelligence and security support to drug trafficking operations, and transporting drugs.
- Drug trafficking situation statements that describe the battlespace geometry and activities depicted on the drug trafficking situation template overlay.
- HVT lists identifying the individuals, organizations, and systems associated with the drug trafficking situation template overlay.
- A list describing all TTP associated with the drug-smuggling operation.
- Indicator list describing the indicators associated with specific types of drug activity.
- Drug trafficking event template that identifies the locations where potential activities can occur relating to drug trafficking.

Developing these products is critical to developing the DST, intelligence collection overlay, and the overall development of a successful interdiction strategy. The format and construct of these products are similar to the threat-related products constructed as part of traditional IPB. Table 11-1 shows this comparison.

Table 11-1. Products that Support Counterdrug Activities.

IPB Products for Counterdrug Activities	Traditional IPB Products
Drug trafficking situation template overlay	Adversary or enemy situation template overlay
Drug trafficking situation statement	Adversary or enemy course of action statement
High-value target list	High-value target list
Drug trafficker tactics, techniques, and procedures list	Adversary or enemy tactics, techniques, and procedures list
Indicator list	Indicator list
Drug trafficking event template	Event template

COUNTERPROLIFERATION

Weapons of mass destruction proliferation is the transfer of weapons of mass destruction or related materials, technology, and expertise from suppliers or non-state actors. Counterproliferation are "those actions taken to reduce the risks posed by extant weapons of mass destruction to the United States, allies, and partners" (*DoD Dictionary*).

The enemy's proliferation of WMDs adds an even more deadly complication to the environments where US forces potentially operate and can create additional mission requirements. The friendly force's mission to counter the enemy's WMD proliferation includes but is not limited to defeating ballistic missiles, interceding to prevent WMD proliferation, and ensuring the security of weapons easily smuggled in small quantities. It extends to addressing advanced weapons programs, such as nuclear, chemical, and biological munitions, which can be protected by a host of defensive and deception techniques. US forces deny adversary or enemy sanctuaries, destroy critical enemy capabilities, recover personnel or sensitive equipment, safeguard or seize WMDs or associated materials, and cause the adversary or enemy to disperse forces.

Potential proliferation of WMD materials, weapons, delivery means, and technology could quickly become a global crisis posing a physical threat. Prevention and countering the adversary or enemy is a high priority for US forces. Protection and detection are key elements of countering WMD proliferation.

COUNTER-IMPROVISED EXPLOSIVE DEVICE OPERATIONS

An IED attack is the result of a planned tactical operation with several key elements that work in a coordinated and synchronized manner to attain a desired result. Successful counter-improvised explosive device (C-IED) operations begin with a thorough understanding of the enemy and the common activities associated with an IED attack. Activities include leadership, planning,

financing, materiel procurement, bomb making, target selection, recruiting, and attack execution. A holistic approach to understanding the requirements of an IED attack assists commanders and planners in identifying vulnerabilities.

Counter-improvised explosive device operations are unit activities that are planned, prepared for, executed, and assessed to identify, deter, and mitigate the effects of an IED attack. As part of the broader mission of the unit, these activities are conducted to predict, detect, prevent, avoid, neutralize, and protect the force from IED attack. Counter-improvised explosive device operations are not a staff- or function-specific responsibility; C-IED operations cut across the warfighting functions and requires the entire staff to consider all options to eliminate the IED threat. The goal is to identify and defeat enemy leaders, suppliers, trainers, enablers, and executors responsible for the employment of IEDs, while protecting the force from the effects of an IED attack.

Counter-improvised explosive device operations are the organization, integration, and synchronization of capabilities that enable offensive, defensive, stability, and support operations across all phases of operations or campaigns to defeat improvised explosive devices as operational and strategic weapons of influence (JP 3-42, *Explosive Ordnance Disposal*). Counter-improvised explosive device operations represent those actions taken by a command to prevent IED attacks on US forces; multinational partners; HN governmental, civil, military, law enforcement agencies; and HN civilian populations (for more information on operations, see MCTP 10-10C, *MAGTF Counter-Improvised Explosive Device Operations*, and JP 3-42).

The primary components of C-IED operations include the following:

- *Attack the network* aims to find and eliminate bomb makers and their sources of supply. It—
  - Identifies and locates sources of bomb-making materials.
  - Identifies and locates bomb-making facilities.
  - Determines supply routes used to transport bomb-making materials.
  - Determines methods of transport for bomb-making materials.
  - Identifies and locates bomb makers.
  - Identifies and locates entities financing IED operations.
  - Locates and identifies enemy forces using IEDs as part of their operations.
  - Identifies enemy current TTP and changes to TTP associated with IEDs.
- *Defeat the device* aims to identify or detonate the IED at the point of attack prior to its being used successfully by the enemy. It—
  - Identifies what types of IEDs are being used.
  - Identifies where IEDs are being used.
  - Identifies the TTP associated with the employment of each IED.
  - Identifies the locations where the enemy will employ IEDs.
- *Train the force* aims to educate units and personnel on the types of devices being used to attack them. It—
  - Identifies the TTP the enemy is employing.
  - Determines the TTP friendly forces can use to recognize and protect themselves from IEDs.
  - Incorporates the elements C-IED into IED training.

SITE EXPLOITATION AND EXPLOITATION OF SENSITIVE SITES

During operations in Iraq and Afghanistan, the Marine Corps routinely conducted site exploitation and exploitation of sensitive sites against strategically important sites of significant intelligence value. Site exploitation is applicable during both regular warfare (e.g., during a raid or after occupying a site previously held by the adversary or enemy) and irregular warfare.

Exploitation of these types of sites can involve exploiting personnel, documents, electronic files, biometrics, forensics, and other foreign materiel captured at the site for intelligence value, while neutralizing the adversary or enemy posed by the site or any of its contents.

Site Exploitation

Site exploitation is a "series of activities to recognize, collect, process, preserve, and analyze information, personnel, and materiel found during the conduct of operations" (JP 3-31). A commander conducts site exploitation to—

- Answer information requirements (usually the CCIRs).
- Gather intelligence for future operations (already planned or not yet anticipated).
- Gather evidence to support engagement.

Site exploitation is typically an implied task associated with other missions, and planning for site exploitation usually occurs during the planning of those missions. Intelligence requirements generally associated with site exploitation include identifying the following:

- Characteristics and limits of the AO (search area).
- Terrain analysis of military characteristics of the terrain leading to and including the search area (analysis of surface, subsurface, and information areas).
- Location, type, size, and interior schematics (floor plan) of buildings in the search area.
- Location, size, and capabilities of security forces in and around the search area.
- Location and identity of high-value individuals within the search area.
- Enemy TTP for concealing information, materials, or persons, for example:
  - Creating false walls in buildings.
  - Burying containers.
  - Using women and children as couriers.
- Enemy TTP for reacting to the presence of US forces, for example:
  - Using security forces to delay, disrupt, or destroy.
  - Using reconnaissance assets.
  - Using fire support (mortars).
  - Using booby traps and IEDs.
  - Using obstacles.
  - Destroying material or information media.
  - Evacuating information media, material, or persons.
  - Using escape routes.

- The presence and attitude of noncombatants in and around the search area.
- Location of indigenous security forces (military and law enforcement).
- Presence of cultural sites and natural resources in the search area.
- Presence of critical infrastructure.
- Environmental hazards in and around the search area.
- Constraints, such as rules of engagement, search restrictions, or use of force.
- Status and availability of—
  - Counterintelligence and HUMINT specialists.
  - Weapons technical intelligence collectors.
  - Forensic collection kits.
  - Document and media exploitation assets.
  - Linguists and their associated classifications.
  - Forensic laboratories and facilities.
  - Equipment, such as the biometric identity management tool, remote detection assets, and voice language translation tools.
  - Theater assets that can assist with or conduct exploitation of sensitive sites.

Exploitation of Sensitive Sites

A *sensitive site* is "a geographically limited area that contains, but is not limited to, biometric remains (or residue) adversary information systems, war crimes sites, critical government facilities, and areas suspected of containing high value targets such as WMD or WMD program elements" (JP 3-31). Exploitation of sensitive sites differs from site exploitation in that the sensitive site contains information, materials, or persons that could cause embarrassment, compromise, or threat to US security or national interests. Sensitive sites can also be more dangerous, or present different types of danger to Marine Corps personnel than non-sensitive sites. This is particularly true of research and development facilities where the presence and concentration of CBRN material can cause immediate and long-term harm to personnel. Additionally, tactical units might have the capability to exploit these sensitive sites.

Some sensitive sites will also be protected sites under international law. Intelligence personnel must take extra care not to cause damage or degradation to a protected site. If exploitation is likely to result in damage, consult the servicing judge advocate for further guidance. Intelligence requirements for site exploitation include those for non-sensitive sites as well as identifying—

- Possible presence of CBRN.
- Possible CBRN facility.
- Locations containing evidence of war crimes.
- Terrorist training camps.
- Enemy prisoner of war locations.
- Research and production facilities involving breakthrough technologies.
- Government buildings and infrastructure of strategic value.
- Official government residences.
- Sites suspected of harboring high-value individuals or other enemy leaders.

PEACE OPERATIONS

Peace operations is "a broad term that encompasses multiagency and multinational crisis response and limited contingency operations involving all instruments of national power with military missions to contain conflict, redress the peace, and shape the environment to support reconciliation and rebuilding and facilitate the transition to legitimate governance" (JP 3-07.3, *Peace Operations*). Peace operations include—

- Peacekeeping.
- Peace enforcement.
- Peace building.
- Peacemaking.
- Conflict prevention.

> *NOTE:* Only the IPB considerations for peacekeeping and peace enforcement are discussed below. See ATP 3-07/MCTP 3-03B/Air Force Tactics, Techniques, and Procedures (AFTTP) 3-2.40, *Multi-Service Tactics, Techniques, and Procedures for Peace Operations*, and JP 3-07.3 for multi-Service and joint TTP on peace operations.

Peacekeeping

Peacekeeping is "a military operations undertaken with the consent of all major parties to a dispute, designed to monitor and facilitate implementation of an agreement (cease fire, truce, or other such agreement) and support diplomatic efforts to reach a long-term political settlement" (*DoD Dictionary*).

The objectives of peace operations include keeping violence from spreading, containing violence that has occurred, and reducing tensions among factions. Accomplishing these objectives creates an environment in which other instruments of national power are used to reduce the level of violence. Peace operations are usually interagency efforts. They require a balance of military and diplomatic resources.

Define the Operational Environment

To define the operational environment, consider the following:

- Identify and locate all outside influences such as political groups, media, and any third-nation support.
- Identify significant sociocultural and economic issues. These might include living conditions, religious beliefs, cultural distinctions, allocation of wealth, and political grievances.
- Identify the legal mandates, geographical boundaries, rules of engagement, and other limitations that may affect parties involved.
- Identify the organization and structure of all actors in the AO and AOI.
- Review the history of the AO and AOI pertinent to the current situation.
- Be aware of the media and its influence on the population of both the AO and AOI.

Describe the Effects on Operations

To describe the effects on operations, consider the following:

- Sociocultural information (for example, root cause of conflict, desire for conflict resolution).
- Weather and terrain:
  - Analyze the effects of weather on visibility among all parties, as well such as demonstrations and on mobility and operations.
  - Identify terrain that allows all adversarial forces access to the peacekeeper and assess its effect on mobility and the separation of the various factions.
  - Analyze the terrain to identify likely current disposition of adversarial forces.
- Legal (for example, legal COAs available to all involved parties, the likelihood of belligerents to obey laws and treaty provisions, legal limits on use of force). This is particularly critical to peace enforcement operations, as the focus is to get the parties to comply with agreed-to resolutions or sanctions.
- Food distribution warehouses or food sources.
- Boat docks to unload relief supplies.
- Civilian relief agencies.
- Nomadic campsites.
- Sources of water.
- Sites of religious, political, or cultural significance.
- Communication structure and capabilities of the parties within the AO.

Evaluate the Adversary or Enemy. Use the following IPB considerations to evaluate the adversary and enemy:

- Identify all adversary and enemy groups. Determine which factions or groups are likely to violate the peace or resolutions.
- Determine any relationships among the groups or factions.
- Identify political organizations and their objectives.
- Identify political and religious beliefs that directly affect or influence their conduct. Determine whether these beliefs are contrary to the goals of the peace enforcement operation.
- Determine whether the parties can defeat efforts to enforce the peace.
- Determine the tactics a group might use to affect the peace enforcer's will.
- Identify adversary and enemy military capabilities and key personnel.
- Identify local support to all adversary and enemy parties.
- Identify adversary and enemy tactics for the offense and defense.

Determine Adversary or Enemy Courses of Action. Use the following IPB considerations to determine adversary and enemy COAs:

- Create a template of adversary and enemy actions, including major operations, support functions, terrorist acts, and any other actions that would violate the peace.
- Create a template of adversary and enemy responses to violations of the peace.

- Create a template of responses from the adversary and enemy, the HN or foreign-nation government, and local indigenous populations and institutions to friendly force peacekeeping operations.
- Create a template or analyze faction activity as it relates to past events to analyze potential trends.
- Wargame adversary and enemy actions and other activities where belligerents could reasonably avoid being held accountable.

HUMANITARIAN ASSISTANCE AND DISASTER RELIEF OPERATIONS

Humanitarian, disaster relief, and other operations (such as NEOs) assist governments and security organizations in easing human sufferance caused by man-made or natural disasters. Humanitarian and disaster relief provided by US forces is limited in scope and duration. The relief provided is designed to supplement or complement the efforts of the HN civil authorities or agencies that might have the primary responsibility for providing relief.

Foreign humanitarian assistance is defined as "Department of Defense activities conducted outside the United States and its territories to directly relieve or reduce human suffering, disease, hunger, or privation" (*DoD Dictionary*). Foreign disaster relief operations are defined as "assistance that can be used immediately to alleviate the suffering of foreign disaster victims that normally includes services and commodities, as well as the rescue and evacuation of victims; the provision and transportation of food, water, clothing, medicines, beds, bedding, and temporary shelter; the furnishing of medical equipment and medical and technical personnel; and making repairs to essential services" (*DoD Dictionary*). Foreign disaster relief and FHA operations often occur concurrently.

Define the Operational Environment

In defining the operational environment to support relief, the staff—

- Identifies areas or activities that might generate displaced civilian movement.
- Considers threats to the AO, such as severe weather, gangs, criminal organizations, or religious, ethnic, and racial factions.
- Identifies all military, paramilitary, HN, international, intergovernmental, and NGOs; indigenous populations and institutions; and transnational corporations.
- Determines the status of any hostile military or paramilitary forces in the area and identifies the key civilian leaders, community elders, tribal leaders, and their respective supporters.
- Assesses HN infrastructure.
- Determines the condition of LOCs, utilities, transportation systems, and government services.
- Determines the status of sanitation conditions within the AO.
- Identifies storage facilities and requirements.
- Determines the effects of rules of engagement and other force protection measures on adversary and enemy operations.
- Determines the type and location of all land minefields.
- Determines the geography within the AO and its effect on the mission.

Describe the Effects on Operations

In describing the effects on operations to support the FHA, the staff—

- Considers the effects of terrain on locations of land minefields.
- Determines if weather has influenced minefield location. For example, has the thawing and freezing of the ground affected known or suspected minefields?
- Determines the effect weather and terrain will have on displaced civilian movement, military operations, civil affairs or military information support operations, mass actions, food supplies, and general mobility.
- Identifies the population sectors. The staff looks at urban or rural areas where enemies or potential adversaries can blend into the population or gain influence over the population.
- Focuses on demographics. For example, the staff considers the effects of—
  - Urban and rural population patterns.
  - Ethnic, religious, and racial divisions.
  - Language divisions.
  - Tribe, clan, and subclan loyalties.
  - Health hazards.
  - Political sympathies.
- Considers the effects of the infrastructure on—
  - Location, activity, and capacity of care distribution points (food, health care).
  - Sources of food and water.
  - Housing availability.
  - Hospital capabilities.
  - Utility services.
  - Law enforcement agencies and emergency services and their respective capabilities.
- Determines the LOCs that can be used by friendly forces, adversaries, and enemies to affect movement of FHA.
- Locates agricultural areas and other sources of subsistence.
- Determines the present and potential effects of severe weather on executing the FHA mission and displaced civilian movement.
- Determines if the environment is permissive or hostile to the introduction of friendly forces.
- Identifies key targets and facilities. The staff should consider that the targets and facilities can also be key terrain. obstacle

Evaluate Adversary or Enemy Courses of Action

In evaluating the adversary and enemy COAs that might impede FHA operations, the staff—

- Considers weather and the environment as potential hinderances to operations. Weather affects the conduct of relief operations. For example, if the target of a relief effort is a village isolated by mudslides, inclement weather might limit or curtail air operations to the site.
- Considers that the environment might pose threats to the health of both friendly forces and HN personnel in the forms of waterborne diseases, spoiled or contaminated foodstuffs, and other environmental hazards.

- Identifies and evaluates the threat posed by any groups that might oppose friendly force operations.
- Considers groups that might clandestinely oppose the operation although they publicly pledge support.
- Considers civilians and local populace (for example, NGOs, indigenous populations, and institutions) that might become hostile as the operation progresses.
- Evaluates the threat posed by gangs, paramilitaries, terrorist groups or individuals, insurgents, guerrilla forces, or other organized forces.
- Identifies and evaluates potential trouble spots and contentious issues and looks for riots or other similar public disturbances.

Determine Adversary and Enemy Courses of Action

In determining adversary and enemy COAs that might impede FHA operations, the staff—

- Identifies adversary and enemy COAs that seek to embarrass friendly forces during the FHA mission. For example, will the adversary or enemy exploit relief workers to embarrass friendly forces?
- Identifies the possibility of adversary or enemy military action against civilians (relief workers and HN personnel).
- Evaluates the adversary or enemy actions created when HN law enforcement capabilities degrade.
- Evaluates the possibility of unknown or new minefields and other obstacles in the AO.
- Assesses the adversary and enemy propaganda capability.

NONCOMBATANT EVACUATION OPERATIONS

A *NEO* is "the withdrawal of civilians and noncombatants from a threatened area abroad that is carried out with the assistance of the Department of Defense" (*DoD Dictionary*). Although typically considered in connection with hostile action, evacuation can also be conducted in anticipation of, or in response to, any natural or man-made disaster (see JP 3-68, *Joint Noncombatant Evacuation Operations* for more information on NEOs).

Ordered departure is "an evacuation procedure to reduce the number of US Government employees, their eligible family members, or both, at a foreign service post." It is a mandatory departure of some or all categories of personnel and dependents to designated havens as directed by the Department of State, with the implementation of the theater evacuation plan (JP 3-68). It is not uncommon for ordered departures to devolve into NEOs. For this publication, the term ordered departure will be incorporated under NEO.

Today's world is characterized by the occurrence of numerous insurgencies or hostilities toward US citizens living and working abroad. The US Government has taken steps to protect US citizens and interests. Noncombatant evacuation operations are planned in those situations where it is beyond the capabilities of the HN to protect US citizens.

Noncombatant Evacuation Operations Support

Noncombatant evacuation operations relocate threatened civilian noncombatants from locations in a foreign nation to secure areas. Typically, NEOs are joint operations and are conducted when situations in an area deteriorate due to a political crisis, military operation, or natural disaster. These operations usually involve US citizens but can include HN citizens and third-country nationals. Removing noncombatant US citizens, and others, shields them from being taken hostage or assassinated and provides a humanitarian service. Removing these persons from becoming targets expands options available to diplomatic and military authorities.

Noncombatant evacuations can occur in a permissive, uncertain, or hostile environment with the threat of violent opposition. The specific situation determines the type of evacuation required. The US Ambassador is the overall authority for NEOs in a country. Therefore, the evacuation force commander might not have the authority to preempt hostile actions by military measures but must be prepared to protect both the evacuation effort and the force. Noncombatant evacuation operations can be conducted as a prelude to combat actions as part of deterrent actions; because of natural disasters, such as earthquakes or volcanic eruptions; or as part of peace operations.

The key factor in NEO planning is correctly appraising the political-military environment in which the force will operate. The intelligence staff must provide the commander with a clear understanding of the root causes of the situation that necessitated the NEO and an assessment of the likely outcome. Through predictive analysis, the intelligence staff can then anticipate possible follow-on missions such as peace operations and humanitarian assistance.

Noncombatant evacuation operations also require intelligence to determine the threat, identify key facilities and available logistics, and recommend security missions. The NGA produces NEO packets to support designated NEOs. The Department of State determines priorities for NEO packets and identifies them in the OPLANs and contingency plans for the Army, Marines, Air Force, and Navy. The NEO packets comprise all available information for an area and are posted on the NGA NEO website on the SIPRNET.

Intelligence Mission

Joint task force commanders drive the intelligence effort to support NEOs by clearly designating their PIRs, mission requirements, and evacuation priorities. The intelligence mission is to provide commanders with all required intelligence before and during the mission. In garrison, intelligence officers perform IPB regarding the threats and challenges to the NEO posed by the operational environment and hostile or disruptive elements. Intelligence preparation of the battlespace must address adversary and enemy COAs during movement to the initial staging base and at the NEO location.

In maintaining intelligence readiness for their contingency areas, intelligence staffs can perform IPB for NEOs using a general concept of operations for an NEO force:

- Occupy the initial staging base.
- Enter the NEO location.
- Contact the embassy or post.
- Establish the evacuation control center.
- Secure assembly areas.

- Send units to contact US civilians in outlying areas and move them to assembly areas and subsequently to the evacuation site.
- Move the evacuees to safety.
- Withdraw from the evacuation site.

Each embassy must have an evacuation plan that is not a tactical plan in the military sense, but a reference that supports formulation of an OPORD. The G-2/S-2 should obtain specific references, including, but not limited to:

- The Embassy Emergency Planning Handbook, which provides common military questions for the embassy to complete.
- JP 3-68, which includes a sample emergency action plan checklist.

By obtaining these documents and developing the initial IPB, and by identifying information requirements and targeting requirements, the G-2/S-2 is prepared to act upon receipt of mission.

Each embassy has an interdepartmental country team that works directly with the HN government. Because of the team's knowledge of developments within the HN and its ability to identify potential sources of conflicts and threats to US interests, the country team is a valuable source of current information when planning an evacuation.

By participating in and being briefed on IPB early, the commander and staff are better prepared—

- To tactically tailor their force, decide which key intelligence personnel and equipment to deploy to the mission area, and when, and if, to phase-in the remaining military intelligence assets.
- For the predeployment coordination to plan ISR intelligence collection, design their split-based support requirements, and determine national intelligence support team and other intelligence support augmentation.

Intelligence Preparation of the Battlespace Considerations

The following discusses the IPB steps as they apply to NEOs. They are not all-inclusive and do not replace the need for intelligence staffs to apply their skills when using these doctrinal tools.

Define the Operational Environment. The intelligence staff determines the AOI. The AOI includes ingress and egress routes in addition to any likely threats to the mission in the NEO location. Within a nation where noncombatants might be evacuated, the intelligence staff must—

- Identify the locations of groups that might influence operations.
- Identify possible extraction sites, airfields, and ports.
- Determine which countries could be used as initial staging bases or havens to shelter evacuees.
- Determine which countries might assist or hinder the operation.
- Identify whether the evacuation environment is expected to be permissive, uncertain, or hostile.
- Identify the operational time sensitivity. Based on the situation driving the NEO, timing the NEO to correspond, precede, or follow events can be crucial to the success of the operation.
- Identify the scope of the demographic situation that has prompted the evacuation, including religious, economic, ethnic, political, environmental, and legal factors.
- Give increased emphasis to the structure, disposition, and effectiveness of the HN government and military, as well as those groups that might try to disrupt the NEO.

Describe the Effects on Operations. In this step, the intelligence staff identifies potential threats to the NEO (location, including the initial staging base, and ingress and egress routes), as well as threats to the NEO force, evacuees, and the population. Effects also include all legal issues and rules of engagement issues that could affect the evacuation. For these effects, the intelligence staff confers with the legal advisor to the joint task force commander. The intelligence staff also conducts a thorough terrain and weather analysis of the AO. Considerations for this step that apply to the NEO can include the following products:

- Population status overlay encompassing—
  - All areas included in the evacuation.
  - The population divided by political affiliation or regional majority sentiment, such as pro-government, pro-insurgent, anti-American, or neutral.
- Logistics sustainability overlay for the AO identifying—
  - Available food sources and potable water.
  - Consolidation points that are defensible and equipped with power, water, heat, and restrooms (e.g., sports stadiums, gymnasiums, auditoriums, large halls, and recreation centers).
- LOCs overlay that identifies all routes into and out of the evacuation area, including major streets, highways, railways, subways, waterways, and airfields.
- Key facilities and target overlay depicting all mission-essential facilities to the operation and potential targets for possible hostile groups.
- Standard terrain analysis using the military aspects of terrain, routes, and areas that offer good observation for friendly security forces, potential obstacles, choke points, and ambush sites. Identification of—
  - Probable locations for ambushes. Within urban areas, look at major thoroughfares and public transportation.
  - Infiltration routes and assembly areas for attacks on evacuee consolidation points.
  - Places suited for anti-US demonstrations and their relative position to NEO sites and US installations.
- Standard weather analysis for the AO, considering effects of weather on hostile groups, trafficability, air operations, seaborne operations, communications, and evacuation facility choices. Examples include but are not limited to:
  - Threats. Dedicated insurgents prefer inclement weather while casual demonstrators do not.
  - Evacuation operations. Will sudden rain, cold, or extreme heat require changing evacuation facilities or evacuation transportation?

Evaluate the Adversary and Enemy. The intelligence staff identifies all HN groups involved in the current volatile political situation and focuses on those groups with the potential for hostile action or whose nonviolent activities, such as demonstrations or marches, could disrupt or delay evacuation operations. The intelligence officer should develop the following:

- An activities matrix to connect individuals or groups with specific events or types of activity. Intelligence offers should use activities and association matrixes to identify which key individuals are actively interfering with evacuation.
- Coordinates register to record activities in the vicinity of key facilities such as embassies and consolidation and embarkation points. Detail varies, but one-square kilometer grid areas are typically used.

- A situation map to depict all relatively permanent information dealing with adversary and enemy groups, such as headquarters and training bases.
- An incident map to provide historical, cumulative information on trends and patterns of adversary and enemy activity.
- Lines of communications, key facility, and target overlays to determine where interference might occur.
- Journals, and adversary and enemy workbooks files tailored to the NEO mission to record and maintain data pertaining to adversary and enemy organizations.
- Analysis on adversarial forces:
  - Identify goals and objectives as well as their position towards the evacuation operation. Focus on the methods of resistance and techniques employed to achieve these objectives. How would they interfere with the evacuation?
  - Use a population status overlay to identify the area's most likely to harbor people who could interfere with evacuation operations.
  - Use a coordinate register to record activities around key routes and consolidation points.
  - Use an intelligence workbook and adversary or enemy files to record information about potentially hostile and adverse groups:
    - *Disposition*. Where do hostile groups live and gather in relation to evacuation.
    - *Objectives*. Focus on neighborhoods near embassies US citizen population centers, and US businesses.
    - *Composition and strength*. How are these groups organized? What kind of weapons do they possess?
    - *Tactics*. What resistance methods and techniques can these groups employ against the evacuation? Consider attacks, raids, ambushes, sniping, bombings, hijacking, hostage taking, kidnapping, and demonstrations.

Determine Adversary and Enemy Courses of Action. The intelligence officer combines knowledge of the operational environment to develop COA models for possible situations on the ground. The COA models for a NEO can include but are not limited to—

- A permissive or uncertain NEO in which the HN is either actively supporting or neutral toward the evacuation.
- An uncertain or hostile NEO with intentional interference by hostile groups. The intelligence officer considers areas where interference is likely, such as checkpoints, consolidation and embarkation points, and choke points. Additionally, the intelligence officer analyzes types and tactics of probable interference such as ambushes, car bombings, or riots. The staff develops alternate routes and COAs for these interference points and tactics.
- Any type of NEO where adversary or enemy groups maintain control or influence over HN support personnel or activities such as police, dock or airport workers, transportation personnel, telephone or radio employees, and food or water suppliers.
- Any type of NEO where unintentional interference by indigenous personnel or NGOs (such as United Nations or Cooperative for American Relief for Everywhere relief convoys, news media, and refugees) could affect the evacuation.

The intelligence staff must complete the initial IPB so results are available for problem framing. During the MCPP, the intelligence staff conducts wargaming, for all developed COA models, concentrating on those most probable and most dangerous. The intelligence staff uses other NEO staff participants to portray hostile groups, HN government and military NGOs, and indigenous personnel. The staff develops alternative friendly COAs to counter any anticipated delays or interference. During wargaming, the G-2/S-2 should portray both intentionally and unintentionally hostile groups.

INFORMATION ENVIRONMENT

Information environment is "the aggregate of social, cultural, linguistic, psychological, technical, and physical factors that affect how humans and automated systems derive meaning from, act upon, and are impacted by information, including the individuals, organizations, and systems that collect, process, disseminate, or use information" (DoD Dictionary). Information operations are conducted as a fully coordinated effort to ensure the complementary, asymmetric, and reinforcing effects used to attack enemy forces influence others and protect friendly forces. Relevant information assures that the right person has the right information at the right time for decision making and execution.

The information environment is where any advantages will become most apparent. Marines should expect competitors to aggressively target critical information-dependent systems and functions, including command and control networks and systems; intelligence, surveillance, and reconnaissance systems; logistics systems; and weapons systems. Information is fundamental to all other warfighting functions and is particularly important for intelligence personnel to consider during the IPB process. Marine Corps Doctrinal Publication 2, *Intelligence*, describes information as "unevaluated material of any kind… [used as] raw material from which intelligence is derived." However, intelligence practitioners must take a more expansive view of the role of information in enabling effective warfighting during peace, crisis, and future conflict.

Gaining the information advantage requires intelligence efforts to identify and describe information systems to the staff. Through the IPB process, intelligence staffs enable friendly forces' ability to disrupt the enemy's systems' ability to function as designed. The intelligence staffs must work together with information warfare practitioners to achieve a complete understanding of the adversary systems to design effective collection plans. This alignment supports the commander's ability to target the threat using a wide variety of lethal and non-lethal options against HPTs in peace, crisis, and conflict.

Information, as a warfighting function, creates effects in and throughout the information environment; optimizes the information element of combat power; and supports and enhances all other elements to gain an operational advantage over adversarial forces. The information environment is interdependent and integral to the operational environment. It is where humans and automated systems observe, orient, decide, and act upon information. Therefore, the information environment is the principal environment of decision making; it consists of three interrelated dimensions—physical, informational, and cognitive (see Figure 11-1). Although it is considered distinct, the information environment resides within each of the five domains.

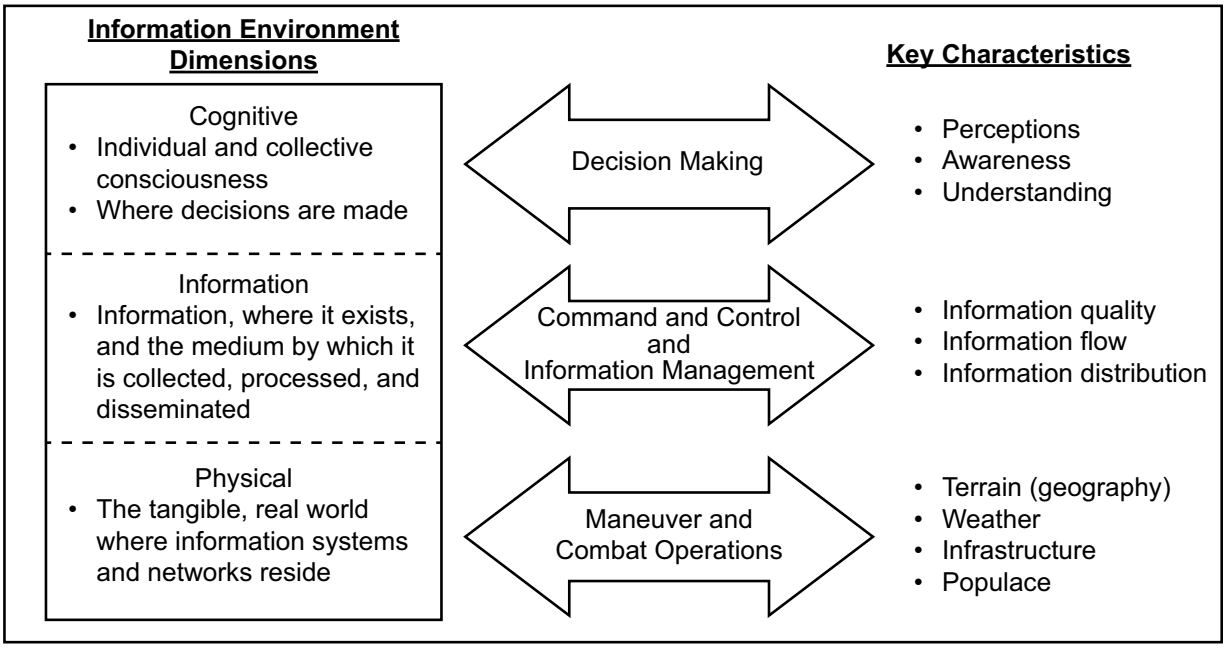


Figure 11-1. Information Environment Dimensions and Key Characteristics.

During the planning and execution of information operations, the G-3/S-3 information staff ensures that IPB addresses the information environment and supports the planning and execution of operations in that environment.

To support information effects, IPB is initialized with an area study that emphasizes the information environment and its dimensions. The G-3/S-3 information staff uses the area study to gain a fundamental understanding of the mission area. The area study does not replace the requirement for IPB; rather, it creates a foundation for a specific analysis of the information environment. Intelligence preparation of the battlespace—

- Enhances the commander's ability to collect, process, store, display, and disseminate information among organizations.
- Is designed to support the enabling operation focus of information effects, thereby contributing as an efficient and effective force multiplier.
- Is designed to promote situational understanding based on involvement of other components, for example, a division G-3 working closely with public affairs and civil-military operations personnel to determine critical information requirements pertaining to the commander's AO.

Intelligence preparation of the battlespace support to information activities differs from the traditional IPB in—

- *Purpose*. The purpose is to gain an understanding of the information environment and determine how the adversary or enemy might operate in that environment.
- *Focus*. The focus is on analyzing the threat's information systems and the use of those systems to gain information superiority.
- *End state*. The end state is the identification of the adversary and enemy vulnerabilities that friendly forces can exploit with information activities and adversary and enemy information capabilities against which friendly forces must defend.

Table 11-2 depicts the integration of information into each step of the IPB process.

Table 11-2. Integration of Information.

IPB Process	Information Focus	Analysis Product
Step 1—Define the operational environment	**Step 1**—Define the information environment	**Combined information overlay**: • Significant characteristics of the information environment • Effects on operations
Step 2—Describe effects on operations	**Step 2**—Describe information environment's effects	
Step 3—Evaluate the adversary and enemy	**Step 3**—Evaluate the adversary and enemy's information system	**Adversary template**: • Decision makers • Nodes, links, and systems used by the adversary or enemy • How information assets are employed
Step 4—Determine adversary and enemy courses of action	**Step 4**—Determine adversary and enemy actions in the information environment	**Information situation template**: When, where, and why the adversary or enemy seeks to gain information superiority

Step 1. Define the Information Environment

Defining the information environment is accomplished by examining the AO to—

- Identify significant characteristics of the environment.
- Identify the limits of the command's AO.
- Establish the limits of the area of influence and AOI.
- Evaluate existing databases and identify information environment-related intelligence gaps.
- Initiate information collection required to complete IPB.

Identify Significant Characteristics of the Environment. The information staff maps the information environment by examining the AO to determine its significant characteristics. Generally, significant characteristics are those that have a direct effect on military operations. Information environment characteristics that should be considered include but are not limited to—

- *Terrain*. Canalization and compartmentalization.
- *Population demographics*. Distribution, language, religion, ethnicity, education.
- *Societal structures and organizations*. Political, government, religious, paramilitary, criminal.
- *Civilian information infrastructure*. Key links, systems, and nodes.
- *Media*. Radio, television, print, internet, including audiences and users.
- *Third-party organizations*. Nongovernment and private.
- *Information*. Key ideologies, perceptions, and beliefs that might cause specific friendly, threat, or third-party behavior.

While identifying the significant characteristics of the AO, it can also be necessary to define the adversary and enemy. Although the adversary or enemy might be obvious to the command's mission in a conventional conflict, they might be ambiguous in stability activities, particularly in the information environment.

The information staff defines the adversary or enemy in terms of the information environment and the threat posed to friendly information and information systems by identifying—

- Those persons, groups, or organizations that possess the capabilities, forces, and systems to disrupt or prevent friendly critical information functions and processes.
- Those persons, groups, or organizations that possess the capabilities, forces, and systems to assure or defend threat-critical information functions and processes.

This results in a list of numerous potential and specific adversaries, which is then pared down to only those who can significantly affect the command's mission. The adversaries identified in this step are later analyzed in-depth during Step 3.

Identify the Limits of the Command's Area of Operations. The AO is a geographical area, including the airspace above, usually defined by lateral, forward, and rear boundaries assigned to a commander. The AO commander has responsibility and authority to conduct military operations. Parameters defining the limits of the AO are the same for all operational environments, including the information environment.

For information function, the AO is the volume of space in which friendly forces can influence the information environment. Additionally, the information environment effects activities that can extend well beyond the geographic area where the events occur. For this reason, legal limitations might be placed on information. Thus, all military activities in the information environment should assume to be subject to the law of armed conflict. To determine the legality of information tasks, they must be reviewed by the appropriate staff judge advocate and approved by appropriate staff levels of the chain of command.

Establish the Limits of the Area of Influence and Area of Interest. The G-2/S-2 establishes the limits of the AOI. The AOI also includes portions of the information environment that can affect operations within the AO. The information environment potentially expands the command's AOI, as the effects of information elements, like military information support operations, civil affairs, public affairs, can extend well beyond the range of conventional weapon systems. See Chapter 3 for a detailed explanation of area of influence and AOI.

Evaluate Existing Databases and Identify Information Environment-Related Intelligence Gaps. The G-2/S-2 and the G-3/S-3 staff evaluates available intelligence data to determine if the necessary information is available to conduct the remainder of the IPB process. Intelligence gaps should not halt the analysis effort; if necessary, the information staff formulates reasonable assumptions based on historical or current facts. The information staff generates and monitors responses to RFIs to confirm or deny these assumptions. These assumptions are then periodically revalidated based on current intelligence.

As information and intelligence gaps are identified, the information staff submits information requests to the command's RFI manager. The analysis process starts to take shape in Step 1 as information is collected, organized, databased, and product development begins. Basic METT-T, overlays, written products, graphics, and detailed data compiled for use in templating during Step 2 are all Step 1 potential IPB products.

Initiate Collection of Information . The G-3/S-3 staff initiates actions to satisfy information gaps that must be answered during IPB. These actions can be in the form of an RFI or as a collection task.

Step 2. Describe the Information Environment's Effects

Step 2 evaluates those aspects of the environment with which both friendly, adversary, and enemy forces must contend, including terrain and weather and any infrastructure and demographics in the AO. This step's main goal is describing the effects of the information environment on military operations.

Analyze the Dimensions of the Information Environment. The G-2/S-2 evaluates the terrain in terms of KOCOA, the weather's direct and indirect effects on military operations, and any other characteristics of the operational environment not already incorporated into the terrain and weather analysis.

In parallel with the G-2's analysis, the G-3/S-3 staff determines how the information environment relates to the operational environment and to battlespace effects (for example, terrain and weather) on the information environment and the overall effects on friendly and enemy operations.

Both battlespace (air, land, sea, space, cyberspace) and information dimensions are analyzed. The analysis of the information environment includes the military and civil considerations for the information environment's three analytical aspects. The detail required varies depending on the mission, capabilities of friendly, adversary, and enemy forces, and the relative significance of the information environment to the specific military operation being planned. This effort should result in multiple templates depicting detailed significant characteristics of the information environment dimensions.

Describe the Battlespace's Effects on Adversary, Enemy, and Friendly Capabilities and Broad Courses of Action. The description of the operational environment's effects results in the development of a single product that describes all aspects of the operational environment on COAs available to friendly and adversary or enemy forces. The product is designed to support the G-3's development and evaluation of friendly COAs. To create the product, analysts use templates to plot analysis and create a combined information overlay, which depicts where and how the information environment's potential effects can affect military operations. Analysts should consider the following:

- Can the AO be divided into distinct subsets of the information environment?
- How does information flow in the AO?
- Is there key terrain in the information environment?

In addition to the appropriate IPB products in Step 2, the result of Step 2 should be the combined information overlay, which depicts combined, detailed significant characteristics of the information environment dimensions, as shown in Figure 11-2.

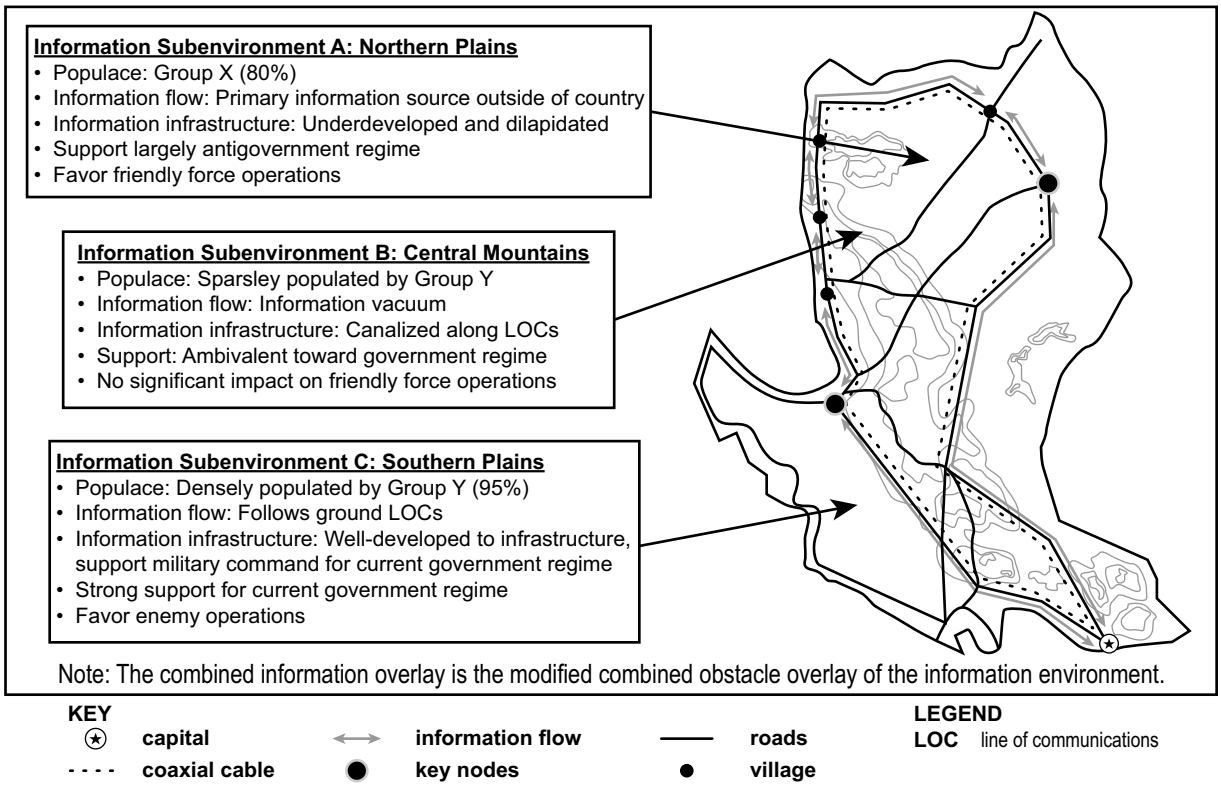


Figure 11-2. Combined Information Overlay Example.

In the context of the information environment, the G-2/S-2 and the G-3/S-3 information staff evaluates how to canalize the adversary and enemy's information system by identifying those assets and functions (for example, decision makers, information infrastructure, and decision-making processes) the adversary and enemy requires to operate effectively. The staff also develops a description of how the adversary or enemy will attack friendly forces' information systems and defend its own information systems. The G-3/S-3 information staff, in conjunction with the G-2/S-2, evaluates the adversary and enemy information capabilities by—

- Performing COG analysis.
- Updating or creating adversary and enemy models.
- Identifying adversary and enemy information capabilities.

Perform Center of Gravity Analysis. Center of gravity analysis is conducted after an understanding of the broad operational environment has been obtained and before a detailed study of the adversary or enemy occurs. The staff analyzes adversary and enemy leadership, fielded forces, resources, infrastructure, population, LOCs, and internal and external relationships to determine which elements are key to the adversary and enemy's ability to conduct military operations. The purpose of COG analysis is finding critical vulnerabilities that can be exploited by friendly force capabilities. These vulnerabilities are used during COA development to determine what should be attacked. During COG analysis, it is important to keep the number of identified critical factors manageable; otherwise, the analysis can lose focus and not identify the true critical vulnerabilities.

The following steps should be used during COG analysis to ensure all relevant COG information is collected:

- Identify potential COGs.
- Identify critical capabilities.
- Identify critical requirements.
- Identify critical vulnerabilities.

Update or Create Analysis Models. Based on the adversary and enemy's typical or doctrinal organization, equipment, doctrine, and TTP, the G-2/S-2 creates adversary and enemy models to depict how the adversarial forces prefer to conduct information operations under ideal conditions (see Chapter 5 for detailed information about adversary and enemy models). These models include—

- Adversary templates:
  - Typically a scaled graphic depiction of adversary or enemy dispositions for a specific information operation.
  - Should include adversary or enemy operations portrayed in the information environment.
- Written description of the adversary's or enemy's preferred (or habitual) tactics and options. This means examining how the adversary or enemy supports its operations with its information system and assets.
- Identified HVTs:
  - As the adversary template is developed, those assets the group typically uses for its operation are organized into HVT categories for identification of adversary or enemy information operational HVTs.
  - HVT categories are prioritized according to their relative value to the adversary's or enemy's operation.

For those information environment aspects not included in the templates produced by the G-2/S-2, the G-3/S-3 information staff develops models for the adversary and enemy by creating three different templates: decision making, information infrastructure (Figure 11-3), and information tactics. These templates portray the doctrinal composition and organization of the adversary and enemy's information system with emphasis on command and control and offensive and defensive information capabilities. The result identifies adversary and enemy information system strengths, vulnerabilities, and susceptibilities, and serves as the G-3/S-3 information staff's input to the intelligence staff's overall IPB.

Identify Information Environment Adversary and Enemy Capabilities. The G-2/S-2 identifies adversary and enemy capabilities in terms of broad COAs and supporting operations that the adversary or enemy can take to influence accomplishment of the friendly mission. Supporting operations include activities in the information environment such as intelligence collection, command and control, EW, propaganda, communications security, and deception. Combining these adversary and enemy activities into a single product describes the adversary and enemy's overall capability to influence the information environment. Products resulting from Step 3 include all IPB products described in this manual, as well as the adversary or enemy model or information environment templates. The format for evaluating an adversarial force varies; the fidelity and detail of the information is most important for developing products in Step 4.

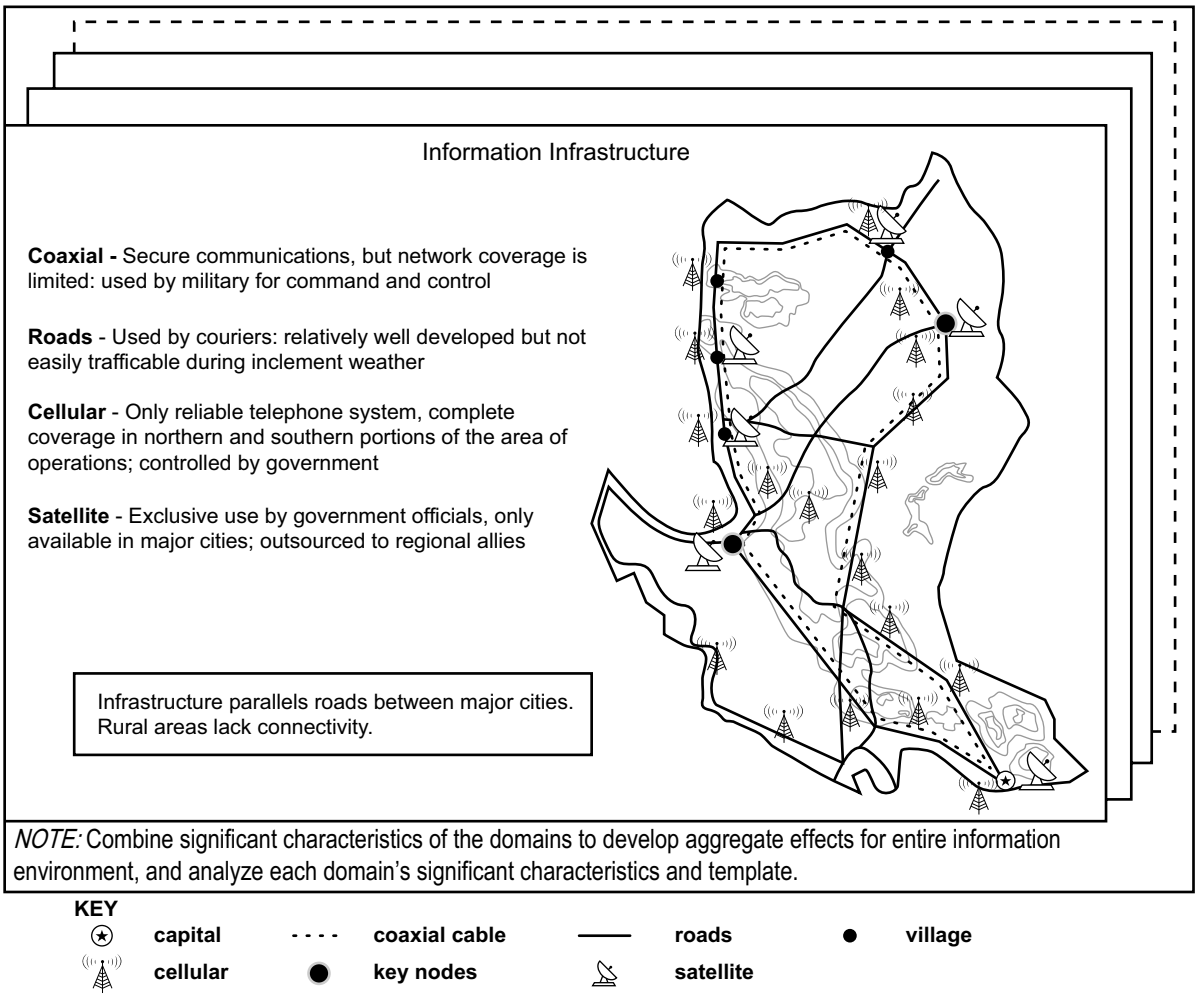


Figure 11-3. Information Infrastructure Template Example.

Step 3. Evaluate the Enemy and Adversary.

See Chapter 5 for information regarding the evaluation step.

Step 4. Determine Adversary or Enemy Actions in the Information Environment

Using the results of Steps 1 through 3 and the effects of the specific environment in which the enemy operates, the G-2/S-2 determines the adversary and enemy's possible COAs and arranges them in probable order of adoption. During Step 4, analysis of the information environment is integrated with the COA.

Identify the Adversary's or Enemy's Likely Objectives and Desired End State. The G-2/S-2 analyzes the adversary and enemy's current situation and capabilities to identify likely objectives and desired end states. If sufficient information is lacking to state objectives and the end state as facts, then the objectives and end state are developed as assumptions.

In parallel to the G-2's efforts, the G-3/S-3 information staff identifies adversary and enemy objectives in the information environment and what constitutes information superiority for the adversary and enemy.

Identify the Full Courses of Action Available to the Adversary or Enemy. The G-2/S-2 constructs a list of potential adversary and enemy COAs likely in the current situation and objectives that could significantly influence the friendly mission, as well as any COAs indicated by recent adversary or enemy activity. The G-3/S-3 information staff develops an overall concept and supporting objectives for adversary and enemy information activities for each COA developed by the G-2/S-2. This analysis is integrated into the G-2/S-2's products.

When conducting its analysis, the information staff considers the adversary and enemy's doctrine for operating in the information environment. This includes information activities that could significantly influence the friendly mission and recent information activities and events, including those pertaining to perceived neutral areas, such as the civilian infrastructure and NGOs.

Evaluate and Prioritize Each Course of Action. The G-2/S-2 evaluates and ranks adversary and enemy COAs according to likely order of adoption. The purpose of prioritizing the COAs is to provide the staff with a starting point for developing a plan that addresses a potential COA.

Although G-3/S-3 information staff input to this analysis is usually minimal, when a COA is selected, G-3/S-3 has the potential to be a significant participant in subsequent military operations.

Develop Each Course of Action in the Amount of Detail Time Allows. Based on the time available, the G-2/S-2 develops each COA with as much detail as possible. In some instances, the G-2/S-2 only develops the most likely and most dangerous COAs.

When determining adversary and enemy COAs, the G-3/S-3 information staff postulates how, when, where, and why (to what purpose) the adversary or enemy might use its information systems to support its likely objectives and achieve its desired end state. To be valid, this analysis must be developed together with, and integrated into, the intelligence staff's products.

Develop and Integrate Information Environment-Related Information into G-2/S-2 Products. During COA development, the G-2/S-2 produces several important products in which information environment-related information should be included in the:

- *HVT list*. Adversary and enemy information assets should be included in the HVT list, even those not being attacked by lethal means. Typical information target sets are decision makers, information system assets, and populace groups.
- *Event template and matrix*. An event template and supporting event matrix identify specific areas and adversary and enemy activities that predict which COA the adversary and enemy will choose. Intelligence preparation of the battlespace input to the event template and matrix assists in developing intelligence collection requirements for information effects.
- *Situation template*. The G-2/S-2 typically integrates information environment-related data into the situation template. However, for IPB with its information effects focus, the G-3/S-3 staff should use a situation template that depicts how the adversary or enemy might offensively and defensively employ information assets to achieve an operational advantage. An information situation template depicts when, where, and why the adversary or enemy might employ its information systems to achieve a relative information advantage.

The situation template is developed by analyzing and applying adversary and enemy critical information assets, capabilities, and vulnerabilities (taken from templates developed in Step 3 of

IPB) relative to the effects of the operational environment and information environment, and to the predicted scheme of maneuver. The result is an overall concept and supporting objectives for the adversary and enemy's information activities.

The template identifies the probable location of information assets; roles for each asset or specific group of assets' (for example, signals intelligence systems, tactical communications jammer) are defined by assigning a possible task and purpose. The template should also predict when in the operation the adversary or enemy will employ its information systems and assets. This is possible by using time phase lines associated with the scheme of maneuver depicted on the event template.

In addition to developing the products, Marines should create the information situation template during Step 4 (see Figure 11-4). This information is integrated into the G-2/S-2 situation template as well. In conjunction with the G-2, it is also necessary to determine adversary and enemy DPs and probable decisions at those DPs. When planning the friendly scheme of maneuver, the staff uses these DPs to determine when and where in the operational environment the friendly forces must focus information effects to achieve information superiority.

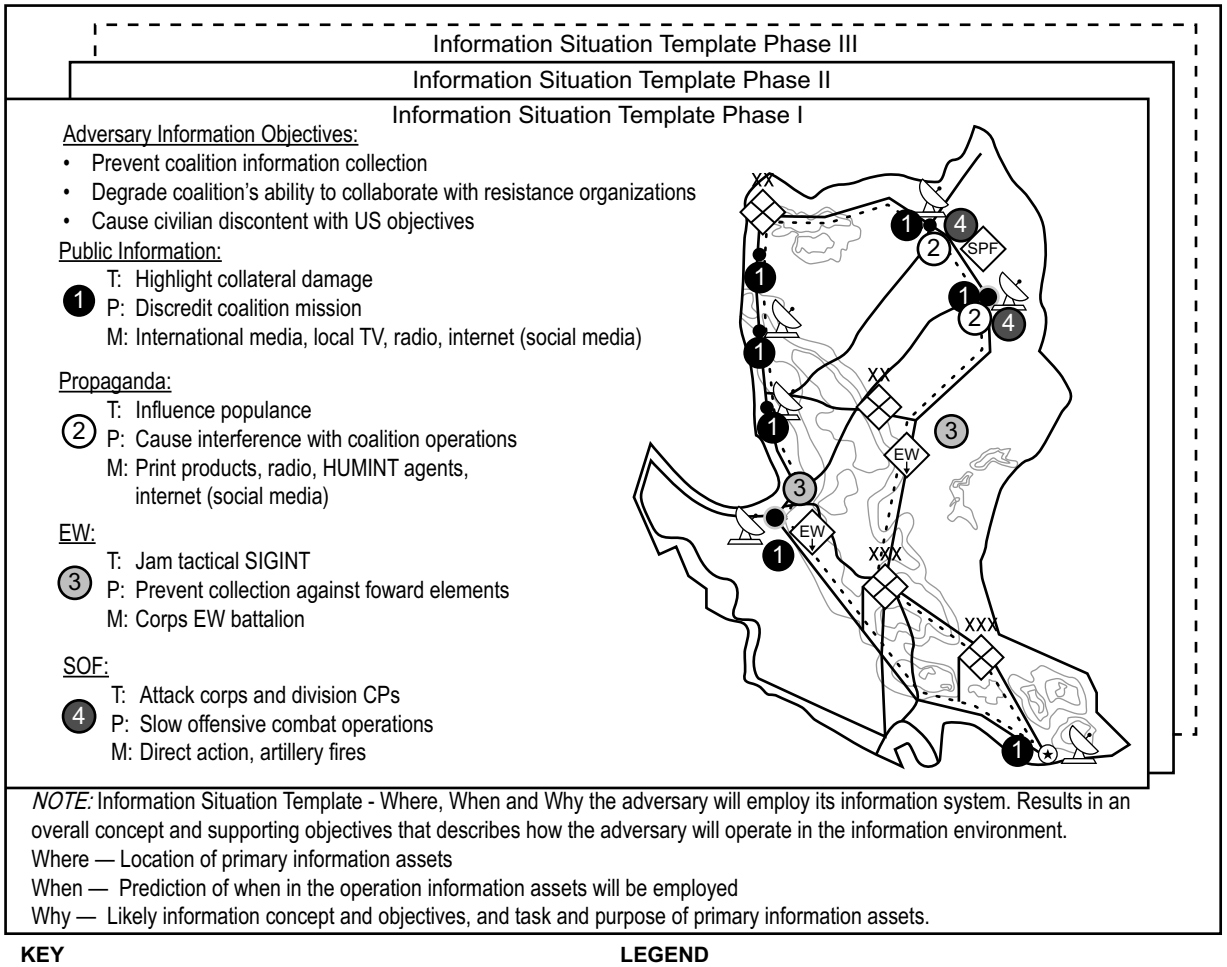


Figure 11-4. Examples of Information Situation Templates.

SPACE-BASED OPERATIONS

The purpose of IPB space analysis is to systematically consider the space domain of the operational environment. This section outlines a specific application of the IPB methodology for space analysis as a tool to determine how space potentially influences the battle. Intelligence preparation of the battlespace space analysis presents the supported commander and staff with information about the space situation that pertains to accomplishing a unit's mission.

Because of the increasing reliance on space capabilities as enablers of joint warfare and the potential exploitation of space by adversaries, the Marine Corps needs a space-component IPB analysis. The increasing reliance on space enablers by US and friendly military forces created numerous HVTs for the enemy to exploit and attack. Although the United States does not yet have a clear peer competitor in space, potential adversaries that rely even minimally on space systems have space vulnerabilities that can be exploited by friendly forces. Additionally, space contribution to IPB is critical in examining the effect commercial space systems have on friendly, adversary, and enemy use of space to affect the operational environment.

Intelligence preparation of the battlespace support to space operations follows the doctrinal principles and four-step IPB process described in this publication but differs from other applications of IPB in its focus. The four IPB steps as they apply to space are—

- Define the operational environment.
- Describe the effects on operations.
- Evaluate the adversary or enemy.
- Determine the space related COAs (adversary or enemy, commercial, friendly).

Define the Operational Environment

Defining the operational environment begins with identification of the supported unit's AO. Once the AO is identified, the AOI coordination is conducted with the G-2/S-2. Based on a clear understanding of the operational commander's AO, the G-2/S-2-specified AOI, and the supported unit mission, the space operations officer determines a separate and distinct space AOI. The space-specific AOI supports and complements the total G-2/S-2 and G-3/G-3 effort and is designed to depict the relevance of space to the maneuver commander's battle. The space AOI includes the region above and adjacent to the ground AO.

The space AOI starts at ground level, continues through low earth orbit, and ends with the geosynchronous Earth orbit. Satellites moving through the identified space AOI, space and atmospheric weather, and key terrestrial space-related location are considered in the space IPB analysis. (Basic orbitology is conducted during Steps 3 and 4 to determine how specific satellites passing through the space AOI will affect Marine Corps operations.)

Space-related activity occurring anywhere outside the designated space AOI must be considered in the space analysis effort only if it directly affects the operational mission. The space support element begins with examining available intelligence and information gaps, which must be

addressed once the space AOI is identified. During the initial examination, the following factors can assist in determining intelligence and information gaps:

- Adversary and enemy space capabilities database development.
- Commercial organizations space capabilities database development.
- Friendly space systems available to support operations.
- Effect of solar and terrestrial weather on operations.

Describe the Effects on Operations

> *NOTE:* Care is taken during this step to limit the focus to the weather and terrain effects on space operations. Otherwise, there is duplication with the G-2's effort.

The initial phase of Step 2 is examining the effect of solar weather on space operations. The fundamental drivers of space weather activity include solar flares, coronal mass ejections, and high-speed streams (proton events). The potential for space weather to disrupt friendly, civil, commercial, adversary, and enemy space systems must be integrated at the beginning of Step 2. (See Figure 11-5 for a space weather example).

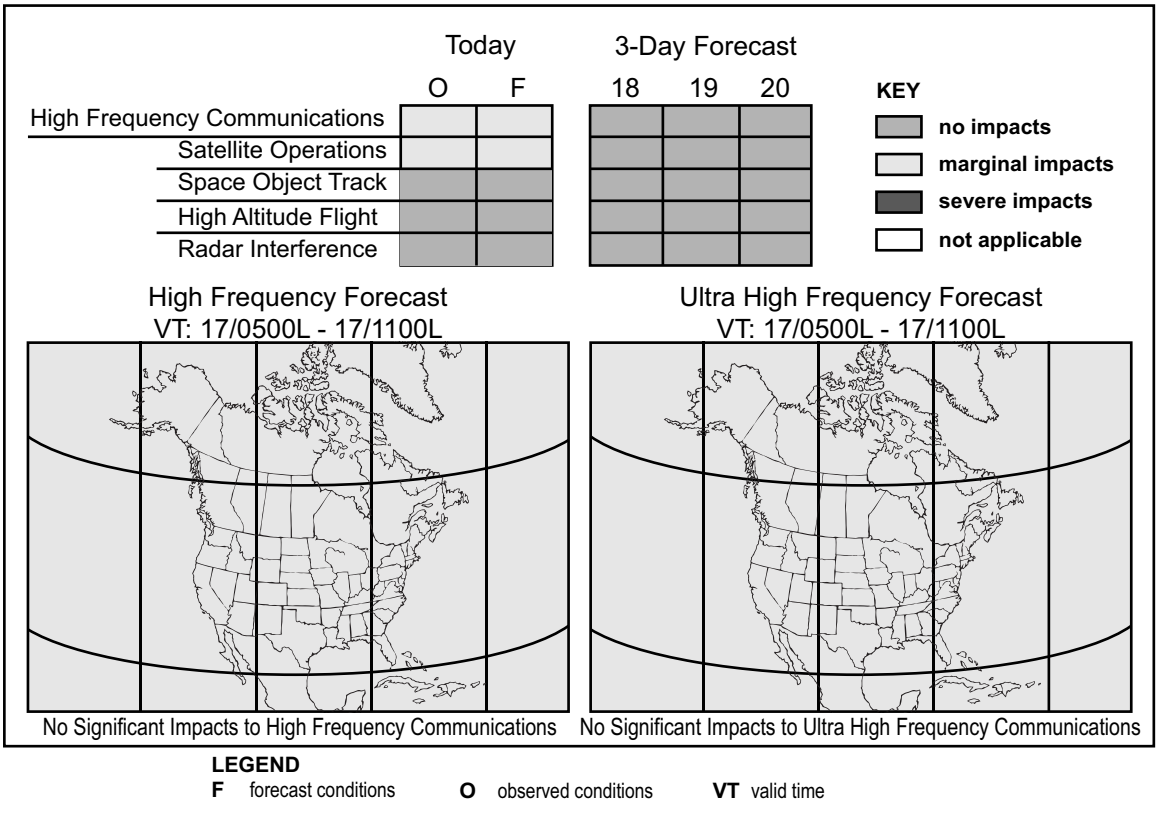


Figure 11-5. Space Weather Example.

The second phase of Step 2 is determining the effect terrestrial weather might have on space operations. The Air Force weather specialty team has a database of terrestrial weather information on the AO. The space operations officer tailors terrestrial weather products to the space analysis effort.

Terrestrial weather has a tremendous effect on the tactical Marine Corps commander's battle, but the specific effect on space support is between negligible to significant. The key factor for the space operations officer is determining the relevant link between the Marine Corps mission, the terrestrial weather forecast, and the planned concept for space support. The space operations officer must have a thorough understanding of the mission to effectively determine the terrestrial weather and space link. The following factors regard terrestrial and space weather analysis:

- Terrestrial weather factors (such as heavy precipitation) that affect access to satellites as well as weather interference with friendly, adversary, or enemy satellite communications use.
- Cloud cover that affects collection of electro-optical imagery and data.
- Degradation of space-based infrared sensors due to cloud cover. For example, the space operations officer must determine if cloud cover inhibits the detection and reporting on potential enemy missile launches.

The third phase of Step 2 is focusing on the relation between terrain and space support. KOCOA factors are analyzed as they apply to space support:

- *Key terrain*. This includes both terrestrial locations and key places in space that are critical to support the operation. For example, space-related key terrain is a particular location in a specific orbit that provides an important advantage when occupied by a friendly, adversary, or enemy satellite. Terrestrial key terrain includes optimum ground locations for the establishment and operation of satellite ground stations.
- *Observation and fields of fire*. Terrain masking affects friendly, adversary, and enemy forces' LOS to satellites.
- *Cover and concealment*. The most important factor is how the adversary or enemy might use cover and along with deception to deceive friendly space ISR systems. The space support element during IPB space analysis can conduct war-games to show how the adversary or enemy could use cover and concealment with ground stations, technology, and production capabilities. Conversely, the space support element can provide guidance concerning friendly use of cover and concealment to deceive adversary and enemy space-based systems.
- *Obstacles*. The obstacle analysis focuses on LOS access of space systems inhibited by terrain features on the ground and weather elements that are obstacles to space support.
- *Avenues of Approach*. The space officer examines the AAs that have been developed and ensures space assets are optimized to support collection operations. Additionally, the space officer examines AAs to ensure space-related terrestrial assets are not positioned in vulnerable areas. Low earth orbit and highly elliptical orbit satellites entering and exiting the space AOI are considered as moving along space AAs.

Evaluate the Adversary and Enemy

Step 3 transitions from an environment orientation to a detailed focus on adversary and enemy capabilities. The desired end effect includes:

- Knowledge of adversary and enemy space assets.
- Doctrinal principles that indicate how these space assets are employed.
- Recommended space HVTs.
- An initial assessment of adversary or enemy space COAs.

Step 3 includes examining key adversary and enemy space capabilities available to support the adversary or enemy. Important factors include but are not limited to:

- A detailed review of the space adversary and enemy order of battle and the potential commercial space adversary and enemy order of battle available to support the operation.
- An identification of space capabilities that can be employed by the adversary and enemy in the specific operation that the space support element is analyzing. These space capabilities can include organic space systems, third-party countries providing space support, adversary and enemy access to space via consortiums, and direct use of commercial space assets.
- An analysis of the following factors regarding adversarial forces:
  - Intelligence, Surveillance, Reconnaissance:
    - What is the space-based information collection systems available to support military operations?
    - Does the adversary or enemy use space ISR for strategic or tactical operations?
    - What is the adversary's or enemy's tasking, processing, exploitation, and dissemination (TPED) capabilities for space based ISR?
    - Does the adversary or enemy have the ability to receive and disseminate information in a timely manner to support the targeting process?
  - Missile warning. Many potential adversaries have no missile-warning capability. However, the space support element should consider what adversary or enemy theater-ballistic and cruise missiles are available, and the capability of friendly space-based warning systems to collect and accurately identify potential adversary or enemy missile systems. The space operations officer does not need to analyze adversary or enemy missile targeting strategies nor attempt to duplicate the air defense role in warning and dissemination.
  - Environmental monitoring. What space-based weather and remote sensing assets are available to support the threat? Determine the doctrinal employment of these systems.
  - Positioning, navigation, and timing:
    - To what degree do they rely on space-based navigation?
    - What are the key capabilities that rely on positioning, navigation, and timing?
    - How is it incorporated into critical operations?
  - Satellite communications:
    - What key military and commercial satellite communications systems do they employ?
    - How much do they rely on satellite communications to perform command and control effectively?
- The adversary's or enemy's space control capabilities. Consider the following:
  - The sea of jammers, ground-based EW, direct ascent weapons, or directed energy capabilities that might be directed against friendly space assets.
  - Friendly force capabilities that might be targeted as part of their space control strategy.
  - Analysis of potential space-related vulnerabilities. Examples include the reliance on a single ground station, single satellite for weather support, poor resolution, or slow TPED for space intelligence collection.
- A recommendation of space related HVTs. These HVTs could be—
  - A direct result of the vulnerabilities uncovered by analysis.
  - Support to a specific friendly force mission objective.

  - Developed by the space support element to provide recommendations as part of the targeting process.
- An analysis of general space related COAs based on adversary or enemy doctrine:
  - Can they adopt an aggressive space strategy for this campaign?
  - Will they adopt a defensive strategy to conserve assets?
  - Will they focus on cover and concealment and deception to aid in survivability?
- A space-related PIR that can be included in the overall list developed by the G-2/S-2. If no space issue warrants a PIR, a specific information requirement can be developed and included as a component of one of the approved PIRs.

When evaluating the space adversary and enemy, analysts examine in detail their capability to use and control space-based assets to support the operation, and their ability to deny friendly use and control of space assets. When evaluating the adversary and enemy, analysts should consider the following:

- Identify adversary and enemy capabilities, including organic space systems, other countries providing dedicated space support, access to space via consortiums, or use of commercial space.
- Do they have access to, the use of, or a dependency on space systems?
- What vulnerabilities do they have regarding the use of space assets and potential HVTs?
- How does they use space support assets (for example, economic, military, political)? How do they employ space-based intelligence collection assets to support military operations and at what level are they used (for example, strategic, national, or tactical)?
- What are the TPED capabilities for space-based products? Can they receive and disseminate timely information to support the targeting process?
- What other countries with space capabilities are supporting them?
- What is the complete picture of their space capabilities?
- What are the research and development efforts and sensors do they have access to?
- What are possible locations of launch sites and ground station sites?
- Can they deny friendly use of space-based assets?

Determine Adversary and Enemy Courses of Action

Intelligence staffs must be able to provide the commander with a COA that the adversary and enemy could use. When determining their space-based capabilities, the intelligence staff must show how the adversary or enemy might use space capabilities to support the mission and how the adversary or enemy can deny the use of friendly space-based capabilities. The intelligence staff should consider the following when developing adversary and enemy COAs:

- Describe the capabilities and how they will be used.
- Describe space-based capabilities' value.
- Estimate the effect of the space capabilities on friendly operations and friendly space assets.
- Describe how to detect their space activities.
- Identify their space weaknesses and vulnerabilities.
- Identify potential use of commercial space-based systems.

Step 4 of the IPB space analysis incorporates efforts from Steps 1 through 3 and combines them into an assessment. The key tool, and most important product, of Step 4 is the production of the space situation template. The space situation template is a depiction of the space estimate discussing the who, what, when, and why of space campaigns.

The situation template depicts how the space operations officer believes space effects the supported command operations. It must be clearly briefed because it includes a detailed adversary and enemy analysis. The space situation template is coordinated with the staff being briefed or disseminated to the commander and staff. This template is an excellent tool to graphically depict the adversary and enemy's most probable COA.

The space situation template is considered the culminating piece of the space IPB developed to support the problem framing step of MCPP. It is tailored based on how adversary, enemy, civil, and commercial space systems effect the operational mission. The space situation template—

- Is a snapshot in time that relates directly to a critical phase of the operation.
- Focuses on the space AOI to show the direct relation of the space AOI to the ground maneuver AO.
- Depicts the general disposition of friendly, adversary, and enemy maneuver forces to show the relevance of space to the land component battle and space supporting operations.
- Graphically depicts solar, terrestrial, weather, and terrain effects (such as cloud cover, which inhibits satellite electro-optical sensor collection) relevant to the maneuver commander.
- Reflects implications of the adversary and enemy's use of space (such as what satellite reconnaissance advanced notice or retasking and redirecting capability the adversary or enemy possesses).

The template can also depict friendly satellite systems that might be targeted during a certain time to deceive friendly satellite information collection. As part of this process, the space operations officer provides an assessment, such as when and where an adversarial force will use cover or concealment and deception to protect its space assets from friendly ISR collection. The space operations officer also assesses when and where the enemy might conduct EW to degrade friendly satellite communications effectiveness—the adversary and enemy understands the reliance the United States places on satellite communications to support extended range operations.

The space situation template reflects an assessment of how the adversary and enemy employs space systems and how civil and commercial satellites affect the operational environment. The following should be included in this assessment:

- Most-probable adversary or enemy COAs for use of organic, third-party, civil, and commercial space assets.
- Probable targets for enemy collection, by what means (electro-optical, radar), and the TPED process to get data to the adversary or enemy commander.
- Critical space and associated terrestrial nodes to recommend as HPTs for friendly targeting.
- Assessment of commercial imagery available to the press and its effect on friendly force protection, deception, and maneuver operations.

Upon completion of Step 4, the desired end state is for the supported commander and staff to thoroughly understand how space influences the current operation and proactiveness.

Other Space Domain Products and Staff Planning Tools

Products that can be used textually or graphically to portray the information derived from IPB space analysis are discussed below. The following products are more effective for the G-2/S-2 due to time constraints and the amount of information depicted—

- Space intelligence estimate.
- Situation template with space support to the adversary and enemy considerations.
- Event template and event matrix.
- Satellite operational status chart.
- Decision support template.
- Synchronization matrix.

Figure 11-6 illustrates the availability of adversary and enemy imagery satellites in a 24-hour period. It graphically displays what the adversary and enemy has available and how the they could employ the satellites to support its operation. This information assists in influencing friendly COAs and developing the intelligence collection plan. Space support teams use modeling tools to predict when space-based systems can influence the commander's AO.

Because satellites can be nonoperational or partially operational for numerous reasons, intelligence staffs should be aware of which friendly, adversary, enemy space capabilities are available at a given time and place. This information assists in developing the DST. Reasons for nonoperational or partially operational satellites include:

- Ground station control updating communications software or installing upgrades to systems.
- Satellite sensor malfunction.
- Satellite maintenance, maneuvering, or repositioning.
- Space environment effects.
- Active at another tasked location but unable to respond to a collection mission until a specific time.

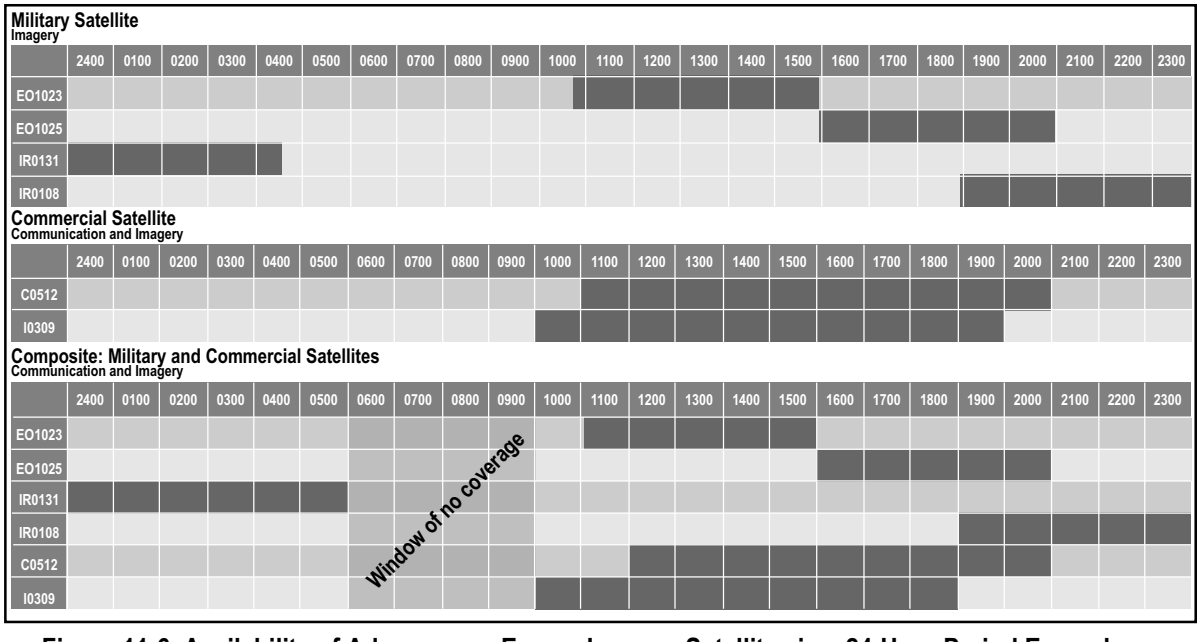
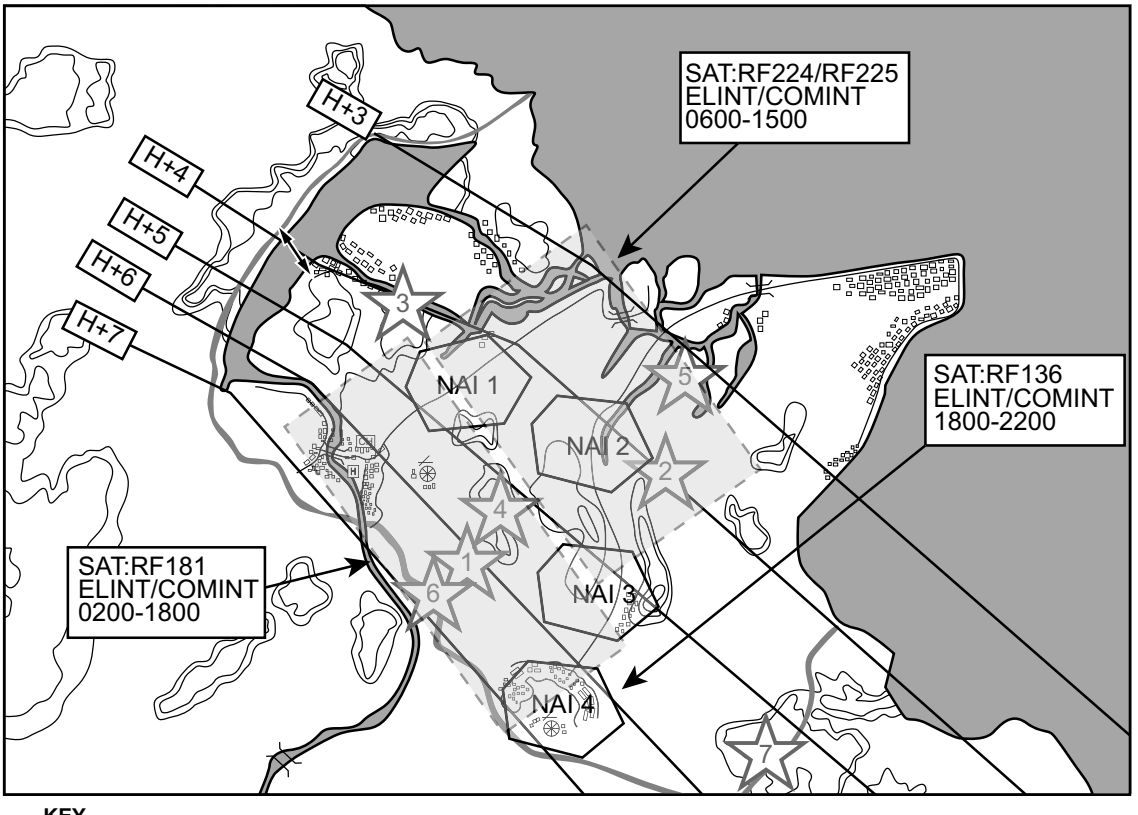


Figure 11-6. Availability of Adversary or Enemy Imagery Satellites in a 24-Hour Period Example.

Using the DST to assist in portraying the effects and support that space assets and coverage times can provide information to the battlespace is an effective tool to support MCPP. Overlaying the DST with specific pieces of space coverage on a NAI to support the commander's PIR provides a visual when time constraints are at a minimum. This allows the space support element and G-2/S-2 to coordinate and synchronize space capabilities into the operation. Figure 11-7 illustrates a DST with space considerations. The synchronization collection matrix, as shown in Figure 11-8, represents a broader scope of space asset, time, and capabilities integration to assist the staff in ensuring the entire operation has employed all of its assets. This synergizes the planning and execution of those dynamics involved in any military operation.



KEY

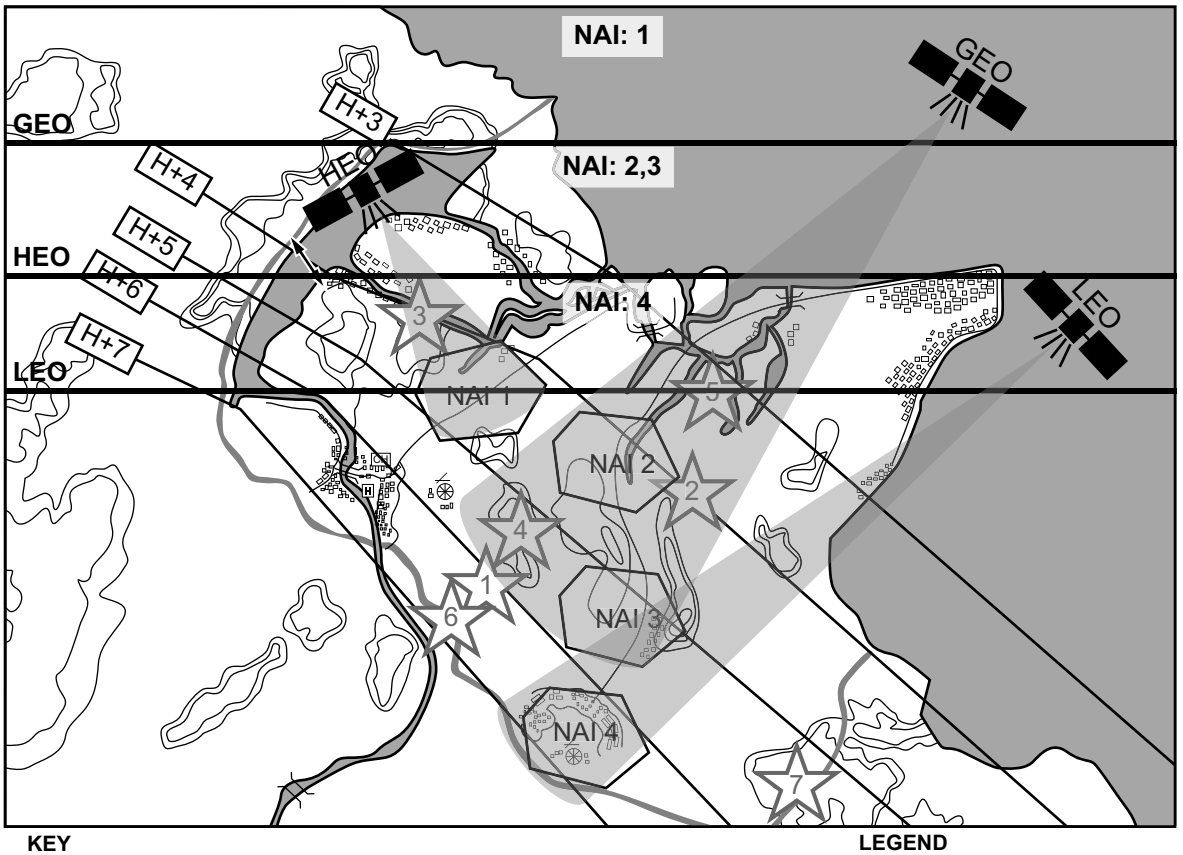
	airport	H	**hospital**
	bridge		**international border**
	buildings		**named area of interest**
CH	**city hall**		**road**
	decision point	H	**time phase line**
	ferry		

LEGEND

COMINT	communications intelligence
ELINT	electronic intelligence
H	hour
NAI	named area of interest
RF	radio frequency
SAT	satellite

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 11-7. Decision Support Template with Space Considerations Example.



KEY

	airport		**international border**
	bridge		**named area of interest**
	buildings		**reconnaissance satellite**
CH	**city hall**		**road**
	decision point		**satellite coverage**
	ferry	H	**time phase line**
H	**hospital**		

LEGEND

GEO	geosynchronous Earth orbit
H	hour
HEO	highly elliptical orbit
LEO	low Earth orbit
NAI	named area of interest

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure 11-8. Integration of Space-Based Assets, Time, and Capabilities Example.

APPENDIX A.
MARINE CORPS PLANNING PROCESS TOOLS

Commanders and their staffs use MCPP tools to record, track, and analyze critical planning information. These tools assist commanders and staffs in better understanding the environment, facilitating commanders' decision making, assisting in the preparation of plans and orders, and increasing tempo. The MCPP tools must serve commanders' needs and situation requirements. Commanders and staffs can tailor these tools to meet their needs and use other tools available that are appropriate for their unique situation.

Table A-1 identifies commonly used overlays, templates, matrices, worksheets, graphics, and narratives on how each tool supports MCPP. The examples in this appendix (shown in figures or tables) are at the MEF level, but these tools can be employed at any level of command. The formats and uses of these tools can be modified as required (see MCWP 5-10 for more information on MCPP).

Table A-1. Marine Corps Planning Process Tools.

Tool	Problem Framing	COA Development	COA Wargaming	Comparison and Decision	Orders Development	Transition
MCOO	X	X	X			
Adversary or enemy template	X	X	X			
Situation template	X	X	X			
Event template	X	X	X			
Event matrix	X	X	X			
Decision support template		X	X	X	X	X
Decision support matrix		X	X	X	X	X
COA graphic and narrative		X	X	X	X	
Synchronization matrix		X	X	X	X	X
COA war-game worksheet			X	X	X	
Comparison and decision matrix with comments				X		

INTELLIGENCE PREPARATION OF THE BATTLESPACE PRODUCTS

The IPB process is a systematic process of analyzing and visualizing the portions of the mission variables of the adversary or enemy, terrain and weather, and, when appropriate, civil considerations in a specific AOI and for a specific mission. By applying IPB, commanders gain the information necessary to selectively apply and maximize operational effectiveness at critical

points in time and space. A continuous planning activity undertaken by the entire staff, IPB builds an extensive database for each potential area in which a unit might be required to operate. The IPB process describes the environment in which the command is operating and the effects of that environment on the command's operations. Battlespace and weather evaluations assist in identifying obstacles, mobility corridors, and AAs; predicting weather effects for numerous mobility options; and estimating sea conditions. The IPB process consists of the following steps:

- Define the operational environment.
- Describe the effects on operations.
- Evaluate the adversary or enemy.
- Determine the adversary's enemy's COAs.

In conventional military operations, determining adversary or enemy COAs will typically include templating with an adversary or enemy assessment. Templating continues from planning to execution, both to assess current operations and to support planning for future operations. In irregular warfare, developing adversary or enemy templates will focus on pattern analysis, which involves tracking, analyzing, and identifying specific trends, such as IEDs or population support, over time.

The IPB products graphically display the results of the IPB process. Table A-2 identifies the major IPB products and shows their integration with the planning process. Note that both the G-2/S-2 and the G-3/S-3 are responsible for specific products. Although IPB starts as an intelligence effort, it expands to an operational process and has logistic and communications applications that are not shown in the table. The following sections provide a short description of each product.

Table A-2. IPB Integration Throughout the Marine Corps Planning Process.

Product	Problem Framing	COA Development	COA Wargaming	Comparison and Decision	Orders Development	Transition
Modified combined obstacle overlay	G-2/S-2					
Adversary/ enemy template	G-2/S-2					Continuous[1]
Situation template	G-2/S-2					Continuous[1]
Pertinent adversary/ enemy COAs	G-2/S-2					Continuous[1]
Refined and prioritized adversary or enemy COAs and event templates and matrices	G-2/S-2					Continuous[1]
Initial decision support template		G-2/S-2/OPT				Continuous[1]
Decision support template matrix		G-2/S-2/OPT				Continuous[1]

[1]Templates are updated throughout the operation.

LEGEND
OPT operational planning team

MODIFIED COMBINED OBSTACLE OVERLAY

The MCOO (Figure A-1) depicts battlespace effects on military operations. It is typically based on a product depicting all obstacles to mobility and it is modified as necessary. Modifications can include cross-country mobility classifications, objectives, AAs and mobility corridors, likely obstacles, defensible battlespace, likely engagement areas, key terrain, cultural factors, built-up areas, and civil infrastructure.

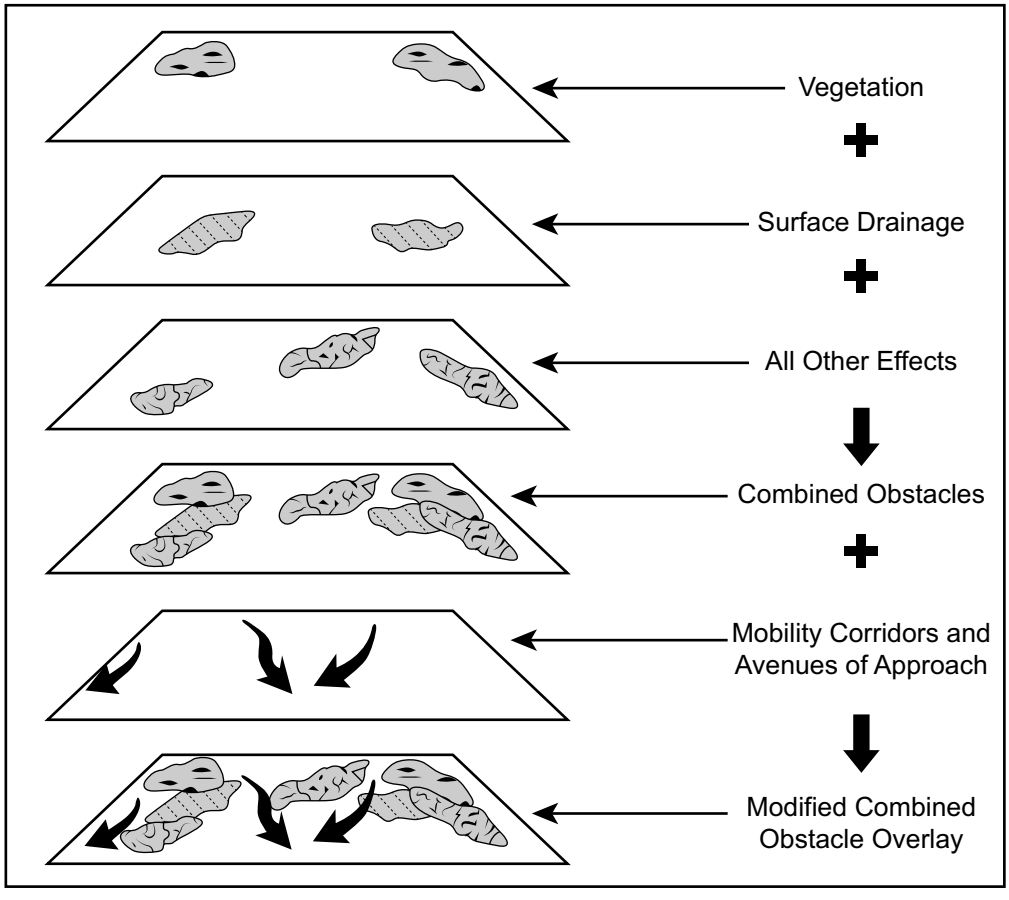
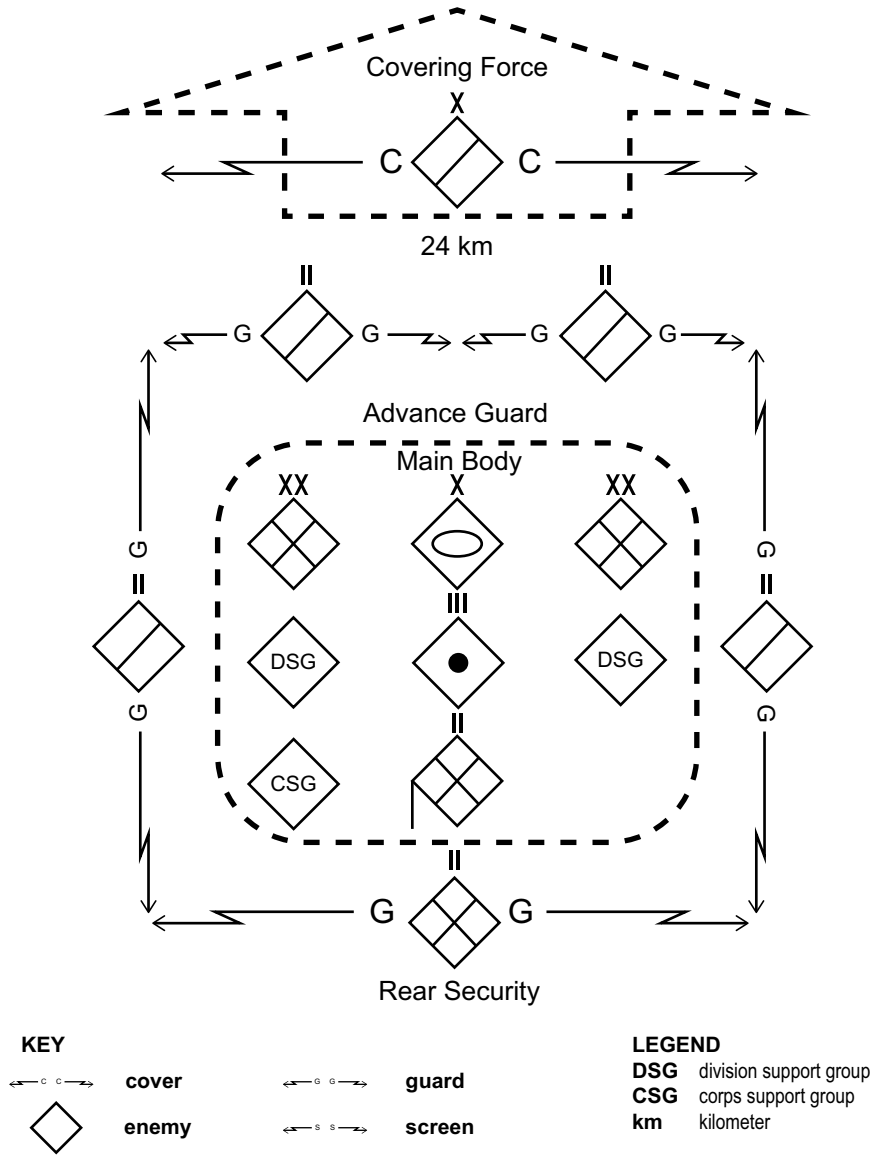


Figure A-1. Modified Combined Obstacle Overlay Example.

Adversary or enemy doctrinal templates (see Figure A-2) are models based on postulated adversary or enemy doctrine. They illustrate the disposition and activity of adversary or enemy forces conducting a particular operation arrayed on ideal terrain. Adversary or enemy templates depict the adversary's enemy's nominal organization, frontages, depths, boundaries, and control measures for combat. They are usually scaled for use with a map background and are one part of an adversary or enemy model. In irregular warfare, adversary or enemy templates will focus on pattern analysis, which involves tracking, analyzing, and identifying specific trends, such as IEDs or population support, over time.



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure A-2. Doctrinal Template Example.

Situation Template

A situation template (see Figure A-3) is an adversary or enemy template that has been modified to depict adversary or enemy dispositions based on the effects of the battlespace and the pursuit of a particular COA. This template accounts for the adversary's or enemy's current situation with respect to the terrain, training and experience levels, logistic status, losses, and dispositions. Typically, the situation template depicts adversary or enemy units, two levels down, and critical points in the COA. Situation templates are one part of an adversary or enemy COA model. Models can contain more than one situation template to depict locations and formations at various times.

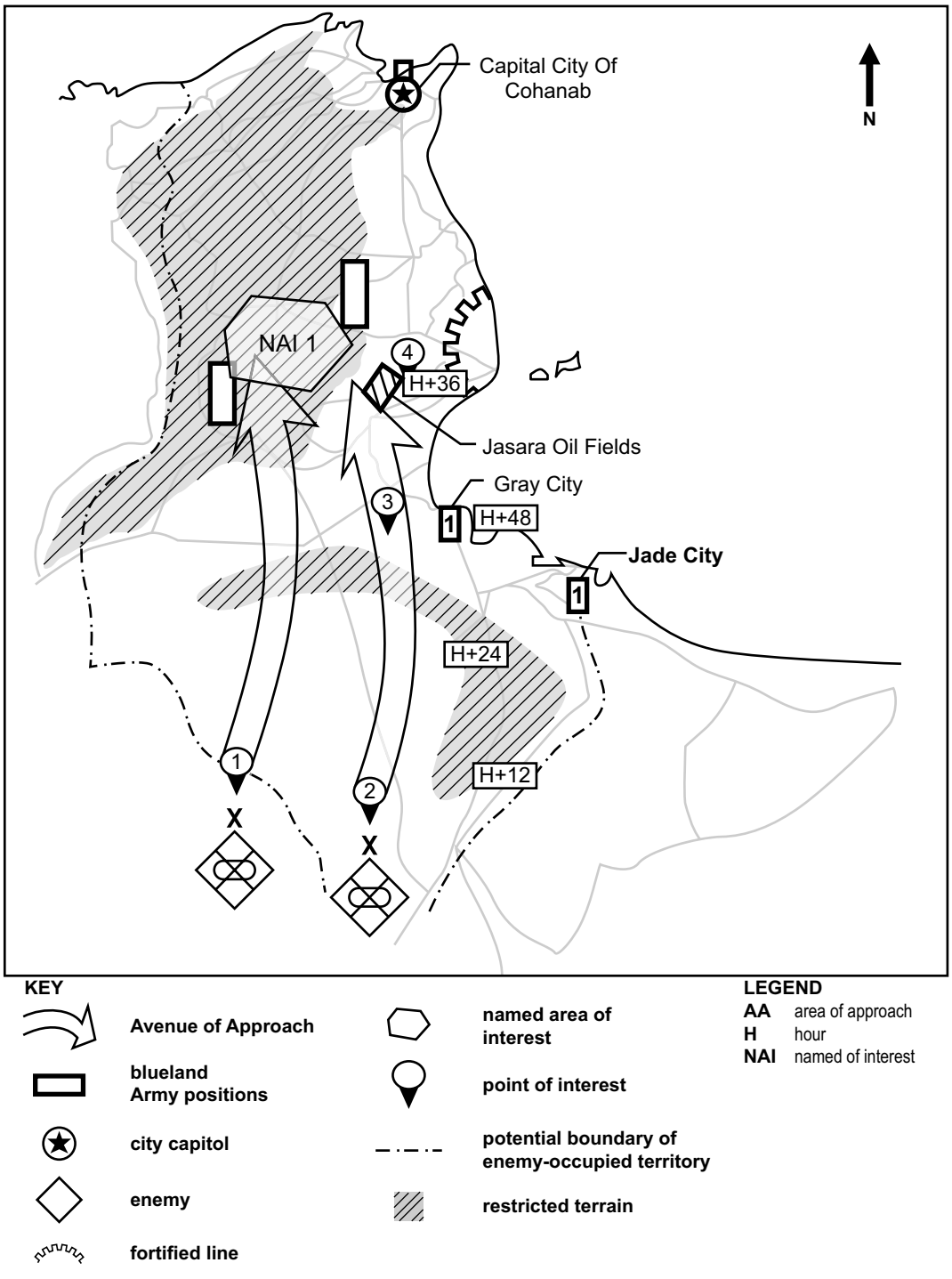


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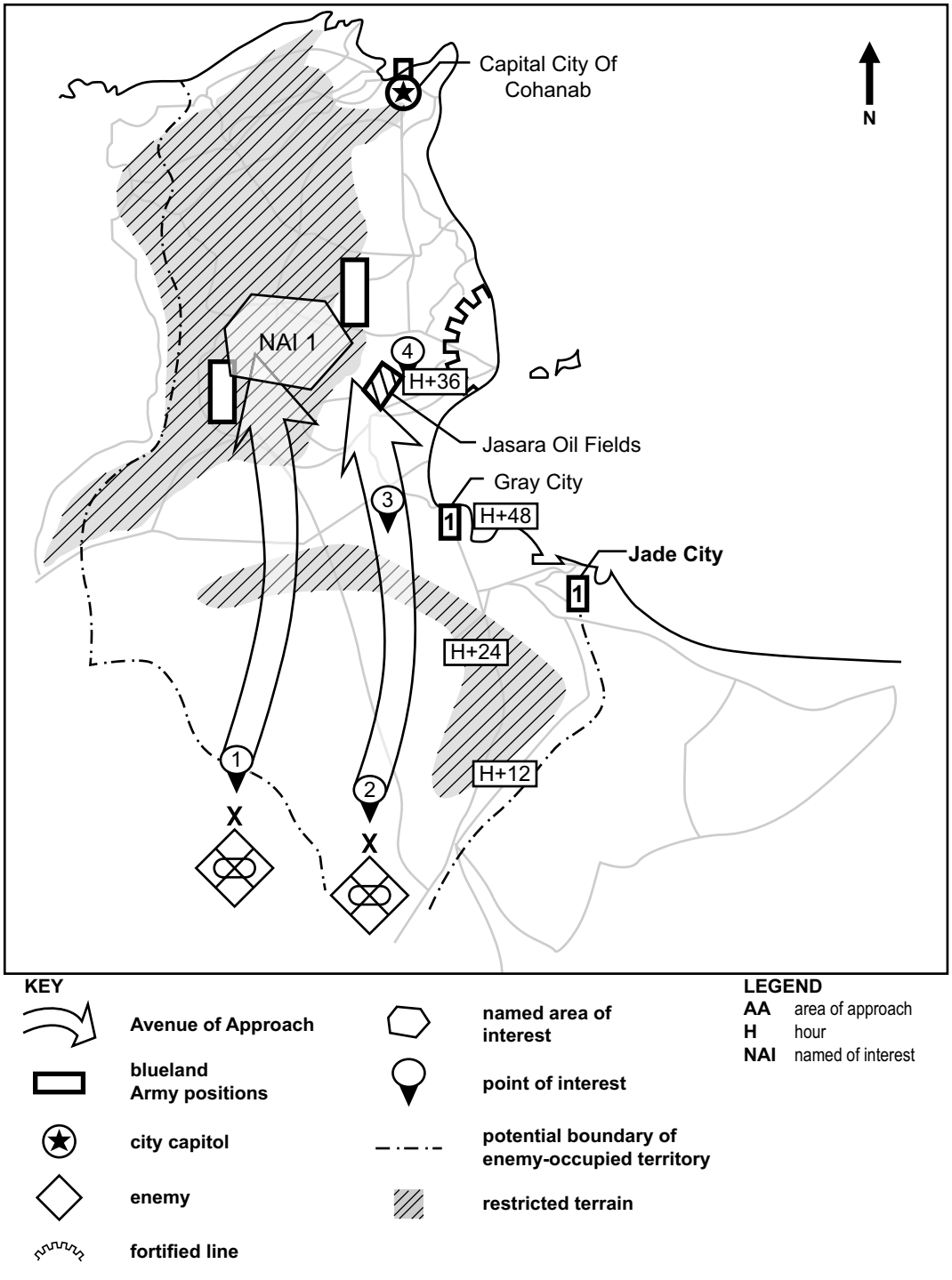
Figure A-3. Situation Template Example.

Event Template and Matrix

The event template is derived from the situation template and depicts the NAIs, areas where activity-or lack of activity-will indicate which COA the adversary or enemy has adopted. Event templates contain time-phase lines that depict movement of forces and the expected flow of the

operation. Movement rates depend on the terrain (MCOO) and the adversary or enemy COA (DRAW-D). The event template is the IPB starting point for COA wargaming. The event matrix depicts types of activity expected in each NAI, when the NAI is expected to be active, and any additional information to aid in collection planning (see Figure A-4 and Table A-3).



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure A-4. Event Template Example.

Table A-3. Event Matrix Example.

NAI	No earlier than	No later than	Event or indicator
1	H+6	H+12	Brigade-sized forces moving north
2	H+6	H+12	Brigade-sized forces moving north
3	H+12	H+24	• Orangeland forces enter Blueland • Northern operational group driving on Jasara oil fields
4	H+14	H+24	• Orangeland forces seize junction of highways 7 and 8 • Northern operational group turns northwest toward Jasara
5	H+18	H+24	• Orangeland forces enter Tealton • Northern operational group driving on Jasara
LEGEND H hour			

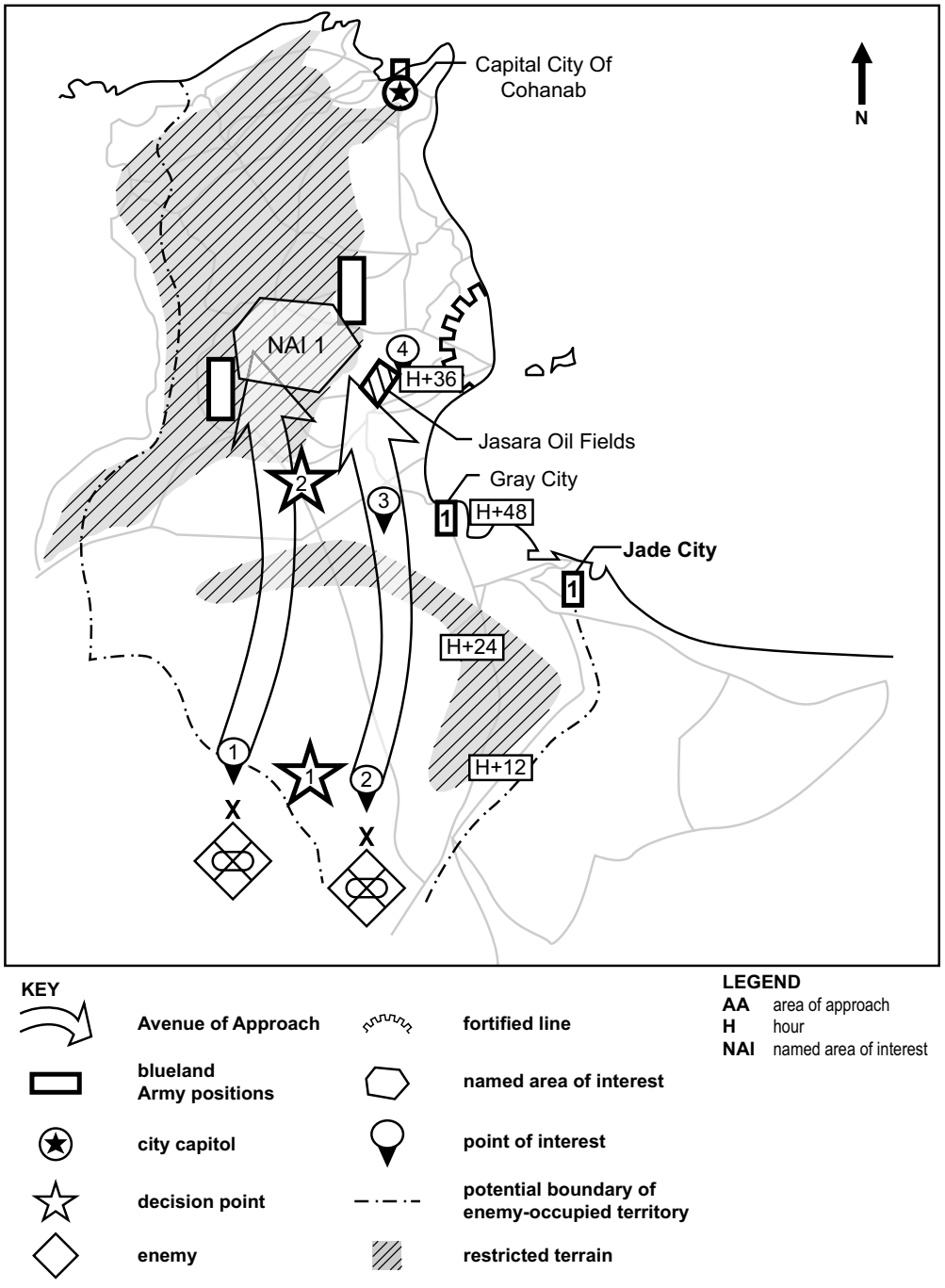
Decision Support Template and Matrix

The DST is typically developed during COA wargaming. It is derived from adversary or enemy, situational, and event templates. The DST depicts DPs, time-phase lines associated with movement of adversary or enemy and friendly forces, the flow of the operation, and other information required to execute a specific friendly COA.

The DST is a key planning tool for use during transition and execution. The decision support matrix provides a recap of expected events, DPs, and planned friendly actions in a narrative form. It shows where and when a decision must be made if a specific action is to take place. It ties DPs to NAIs, TAIs, CCIRs, collection assets, and potential friendly response options. The DST and matrix can be refined as planning progresses after the wargaming (See Figure A-5 and Table A-4).

Table A-4. Decision Support Matrix Example.

Event Number	Event	No Earlier Than/ no Later Than	NAI	TAI	Friendly Action
1	• Orangeland forces enter Blueland • Northern operational group division driving on Tealton.	H+14/H+24		A, B	Covering force withdraws; Marine aircraft wing conducts interdiction west of phase line Teal.
2	• Orangeland forces seize junction of Highways 7 and 8. • Northern operational group turns northwest on Jasara.	H+18/H+24	3, 4	C	1st and 3d Marine divisions execute branch plan Hawk.
LEGEND H hour					



NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

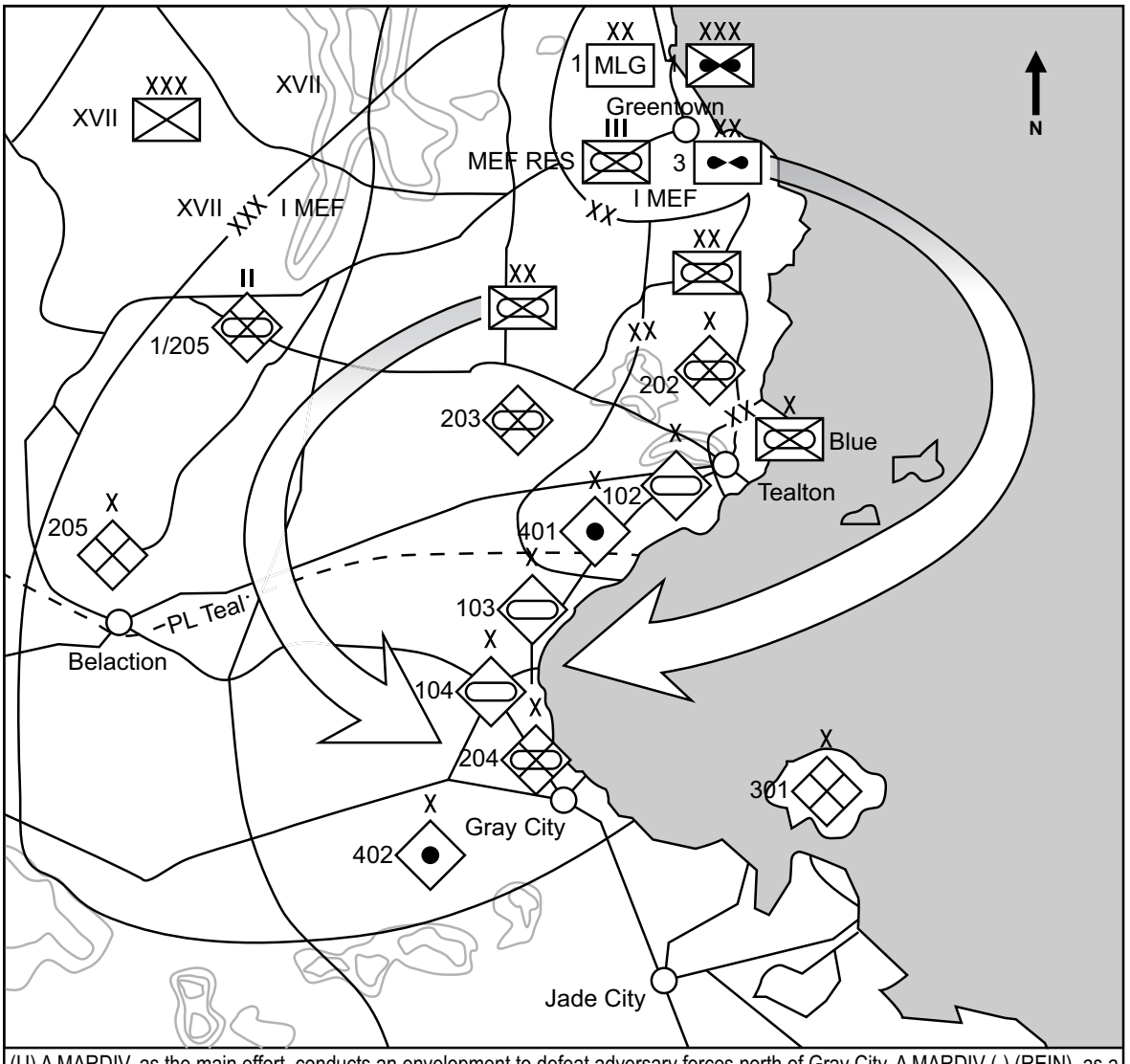
Figure A-5. Decision Support Template Example.

PLANNING SUPPORT TOOLS

Planning support tools support the commander's and staff's planning effort by recording and displaying critical planning information on the COAs and the commander's decisions and guidance. They assist the commander in decision making by displaying critical information in a useful format. Planning support tools include the COA graphic and narrative, synchronization matrix, COA war-game worksheets, and the comparison and decision matrix.

Course of Action Graphic and Narrative

The COA graphic and narrative (see Figure A-6) is a visual depiction and written description of a COA. It portrays how the organization will accomplish the mission, identifying the who (notional task organization), what (tasks), when, where, how, and why (intent). It should include the tasks and purpose of the main effort, supporting efforts, and reserve. It also includes maneuver control measures, such as boundaries. The COA narrative and graphic, when approved by the commander, forms the basis for the concept of operations and operations overlay in the OPLAN or OPORD.



(U) A MARDIV, as the main effort, conducts an envelopment to defeat adversary forces north of Gray City. A MARDIV (-) (REIN), as a supporting effort, attacks in zone to fix and defeat adversary forces west of Tealton and conducts a link up with Blueland forces in Tealton. The MAW, as a supporting effort, isolates the MEF battlespace from enemy reinforcements from the south, while focusing efforts against the 102d and 103d Armored Bridges and the 401st and 402d Artillery Regiments. The supporting MARDIV (-) (REIN) designates on infantry regiment as the MEF reserve and one battalion as the MEF tactical combat force. This phase concludes with enemy forces defeated north of Gray City.

KEY

- **Avenue of Approach**
- **boundary lines**
- **city locator**
- **enemy**
- **friendly**
- **phase lines**

LEGEND

MARDIV	Marine division	**REIN**	reinforced
MAW	Marine aircraft wing	**RES**	reserve
MEF	Marine expeditionary force		
MLG	Marine logistics group		
PL	phase line		

NOTE: This publication uses the most current approved military symbology found in Military Standard (MIL-STD)-2525, Joint Military Symbology.

Figure A-6. Course of Action Graphic and Narrative.

Synchronization Matrix

A synchronization matrix (see Table A-5) is a planning support tool designed to integrate the efforts of the force. It can be organized across the warfighting functions, lines of operations, or other activities based on the situation. It can also record the results of the COA wargaming. It depicts, over time, the diverse actions of the entire force necessary to execute the COA. When completed, it provides the basis for an execution matrix or Annex X (Execution Checklist) of the OPLAN or OPORD.

Table A-5. Synchronization Matrix Example.

Time	Event	Pre-D-day	D-day – D+2	D+3 – D+4	D+5 – D+6
Adversary/ enemy action					
Decision points		MEF conducts recon in zone		1	2
Intelligence	NAI		1, 2	3, 4	5
Force protection	Survivability	Establish combat air patrol over MEF area of operations			
	CBRN		Priority of support to ACE		
Maneuver	Deep		MAW attacks northern operational group armor and artillery, C2, and CSS facilities	MAW attacks 102, 103, 401, and 402	
	Security		Covering forces conduct security operations		
	Close		1st and 3d MARDIVs complete rupture of adversary or enemy defenses	• 1st MARDIV attack adversary or enemy forces south of Phase Line Teal • The 2d MARDIV conducts linkup with Blueland forces	
	Reserve	3d MARDIV – one regiment to MEF reserve			
	Rear	3d MARDIV – one battalion to tactical combat zone			
	Mobility	Priority of main supply route development in main effort zone			
	Countermobility			Complete execution of barrier plan south	

LEGEND

ACE	Aviation combat element	MARDIV	Marine division
C2	command and control	MAW	Marine aircraft wing
CBRN	chemical, biological, radiological, and nuclear	MEF	Marine expeditionary force
CSS	combat service support	recon	reconnaissance
D	day		

Course of Action Wargaming Worksheet

The COA wargaming worksheet (see Table A-6) is used during the wargaming to record friendly action, adversary or enemy reaction, and friendly counteraction involved in each COA. It is also used to capture critical information that may be identified during the wargaming, such as potential CCIRs, DPs, and NAIs.

Table A-6. Course of Action Wargaming Worksheet.

Action	Reaction	Counteraction	Assets	Time	DP	CCIR	Remarks
Marine division envelops Orangeland forces north of Gray City	The 102d and 103d Armored Brigades counter-attack	• MAW interdicts moving adversary or enemy forces • Marine division engages and destroys adversary or enemy armor at long range	Surge MAW attack assets to interdict adversary or enemy armor	D+3	3	Will the 102d and 103d Armored Brigades move west to counter attack	Marine division has priority of close air support

LEGEND

CCIR	commander's critical information requirement	DP	decision point
D	day	MAW	Marine aircraft wing

Course of Action Comparison and Decision Matrix

The COA comparison and decision matrix is a planning support tool designed to assist the commander and staff in recording the advantages and disadvantages of each COA as it is compared against the commander's evaluation criteria. It also provides a venue for further discussion. It can reflect various techniques for weighing the COA against commanders' evaluation criteria (see Table A-7). Commanders can use the COA comparison and decision matrix to assist in the decision-making process during the selection of a COA for execution. Commanders and staffs should guard against relying on numerical "rankings" or other simplistic methods that can fail to underscore the complexity involved in the decision-making process.

Table A-7. Comparison and Decision Matrix with Comments.

Commander's Evaluation Criteria	Course of Action 1	Course of Action 2	Course of Action 3
Force protection	Moderate casualties	• High casualties • Increased chemical, biological, radiological, and nuclear threat	Light casualties
Tempo surprise		Achieving surprise unlikely	High chance of achieving surprise
Shapes the battlespace	ACE interdiction of adversary or enemy LOCs limits adversary's or enemy's ability to reinforce		Deception likely to be effective
Asymmetrical operations	ACE operates against second echelon armor forces • GCE mechanized forces attack adversary or enemy dismounted	Marine expeditionary force mechanized forces against adversary or enemy mechanized forces	
Maneuver	Frontal attack followed by penetration	Frontal attack	Turning movement
Decisive actions	ACE disrupts deployment of second echelon forces through interdiction		• Isolate first echelon forces • Disrupt LOCs, logistics facilities, and assembly areas
Simplicity		Simplest	Demanding command and coordination requirements

LEGEND
ACE aviation combat element
GCE ground combat element

CIVIL PREPARATION OF THE BATTLESPACE

Civil Preparation of the Battlespace (CPB) is used to examine civil considerations to support problem framing and the IPB process. According to MCWP 3-03, Stability Operations, CPB is conducted through the METT-T framework to focus on civil considerations as they relate to the operational environment and mission accomplishment. Civil Preparation of the Battlespace analyzes the various aspects of civil information and assesses the civil impact of friendly, adversary or enemy, and external actors, as well as the local populace, on Fleet Marine Forces operations and the achievement of force objectives. Civil Preparation of the Battlespace is an evolution from previous techniques used to analyze, conceptualize, and model the civil environment, including the legacy civil intelligence preparation of the battlespace process. Civil Preparation of the Battlespace is a four-step iterative process designed to support Fleet Marine Force decision makers, staff, and the total force. It applies aspects of the civil environment within the MCPP while complementing IPB. The four steps of the CPB process are:

- **Step 1**. Define the civil operating environment.
- **Step 2**. Analyze the civil operating environment.
- **Step 3**. Develop a civil environment model.
- **Step 4**. Determine civil actions.

Each step in the process is refined continually to ensure CPB products are accurate and relevant in decision making. The following provides a brief overview of each step of CPB.

Step 1. Define the Civil Operating Environment

Step 1 focuses on collecting and categorizing civil information. This is a disciplined approach to gather and organize civil information and categorize and record the results. Assigned personnel (civil affairs or assigned intelligence personnel) should gather and organize information relevant to the assigned AO. This represents the "what do I see?" approach to looking at the data. At a minimum, information will be categorized using standard civil considerations characteristics as the baseline. The product forms the basis of all further civil information collection and should result in an ASCOPE matrix.

Civil Considerations. Generally, civil considerations focus on the immediate effect civilians have on operations in progress; however, they also include larger, long-term diplomatic, informational, and economic issues at higher levels. At the tactical level, they directly relate to key civil considerations within the AO. The world's increasing urbanization means that the attitudes and activities of the civilian population in the AO will influence the outcome of military operations.

Civil considerations can either help or hinder friendly, adversary, or enemy forces and will influence the selection of a COA. An appreciation of civil considerations—the ability to analyze their effect on operations—enhances several aspects of operations, such as the selection of objectives; location, movement, and control of forces; use of weapons; and protection measures. Civil considerations comprise six characteristics: areas, structures, capabilities, organizations, people, and events, also known as ASCOPE. (See Figure A-7.)

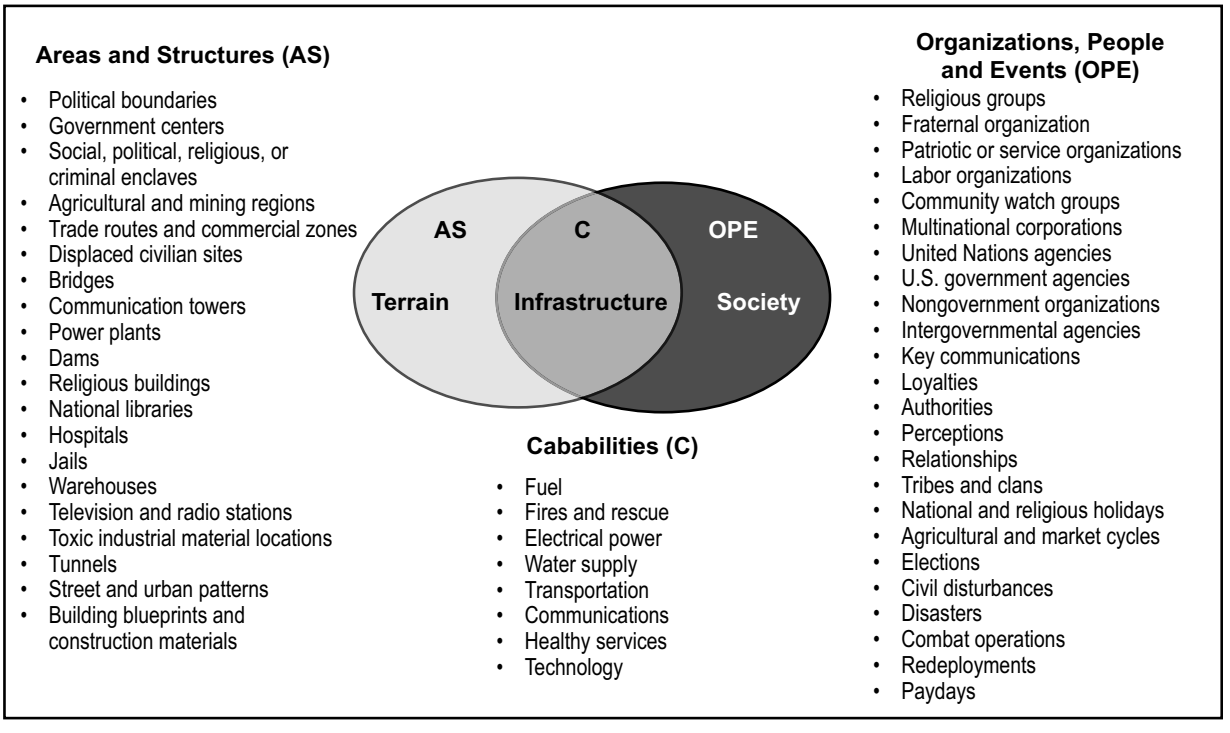


Figure A-7. Sample Civil Considerations.

Areas. *Where do people live and work?* Areas for civil considerations include political boundaries, religious boundaries, social boundaries, criminal enclaves, agricultural regions, industrial centers, education centers, and trade routes as examples. Areas are key localities or aspects of the terrain within a commander's operational environment that are not typically thought of as militarily significant. However, failure to consider key civil areas can seriously affect the success of any military mission. Civil-military operations (CMO) planners analyze key civil areas from two perspectives: how do these areas affect the military mission and how do military operations impact civilian activities in these areas? At times, the answers to these questions might dramatically influence major portions of the COAs being considered.

Structures. *Why are structures important to the people?* Structures are architectural objects, such as bridges, communications towers, power plants, and dams, and are often identified as traditional HPTs. Other structures, such as churches, mosques, national libraries, and hospitals, are cultural sites generally protected by international law or other agreements. Still other structures are facilities with practical applications, such as jails, warehouses, schools, television stations, radio stations, and printing plants, which can be useful for military purposes. Structures analysis involves determining a structure's location, function, capabilities, and application to support military operations. It also involves weighing the military, political, economic, religious, social, and informational consequences of removing the structure from civilian use; the reaction of the populace; and replacement costs.

Capabilities. *What capabilities are resident in the AO?* Typically, these include supporting infrastructure categories (sewage, water, electricity, academics, trash, medical, safety, as well as other considerations). The term capabilities can refer to—

- Existing capabilities of the populace to sustain itself, such as through public administration, public safety, emergency services, and food and agriculture systems.
- Capabilities with which the populace needs assistance, such as public works and utilities, public health, public transportation, economics, and commerce.
- Resources and services that can be contracted to support the military mission, such as interpreters, laundry services, construction materials, and equipment. Local vendors, the HN, or other nations might provide these resources and services. In hostile territory, civil capabilities include resources that can be taken and used by military forces consistent with international law. Analysis of the existing capabilities of the AO is typically conducted based on civil affairs functional specialties. The analysis also identifies the capabilities of partner countries and organizations involved in the operation. In doing so, CMO planners consider how to address shortfalls, as well as how to capitalize on capability strengths.

Organizations. *What are the different groups in the area?* Organizations include political factions, international organizations, NGOs, social groups, religious organizations, media groups, and criminal groups—they may or may not affiliate with government agencies. Organizations can assist the commander in keeping the populace informed of ongoing and future activities in an AO and influencing the actions of the populace. They can also form the nucleus of humanitarian assistance programs, interim governing bodies, civil defense efforts, and other activities.

People. *How do people organize and interact?* The people for civil consideration include political leaders, religious leaders, community leaders, business leaders, community professionals, education professionals, law enforcement leaders, and military leaders. People, both individually and collectively, can have a positive, negative, or no impact on military operations. The term can also extend to those outside the AO whose actions, opinions, or political influence can affect the military mission. In all military operations, US forces must be prepared to encounter and work closely with civilians of all types. When analyzing people, Marines should consider historical, cultural, ethnic, political, economic, and humanitarian factors. Working with the people assists Marines in identifying the key communicators as well as the formal and informal processes used to influence people. Regardless of the nature of the operation, military forces will usually encounter civilians living and operating in and around the supported unit's AO. Major categories of civilians likely to be encountered include but are not limited to—

- Local nationals, such as town and city dwellers, farmers, other rural dwellers, and nomads.
- Local civil authorities, such as elected and traditional leaders at all levels of government.
- Expatriates.
- Foreign employees of intergovernmental or NGOs.
- US Government and third-nation government agency representatives.
- Contractors, who may be US citizens, local nationals, or third-nation citizens providing contract services.
- Department of Defense civilian employees.
- The media, including journalists from print, radio, and visual media.

Events. *When and what events are important to the people?* Just as there are varied personnel types, there are various civilian events that can affect the military mission. Some examples are planting and harvest seasons, elections, riots, and voluntary and involuntary evacuations. Likewise, there are military events that affect the lives of civilians in an AO. Some examples are combat operations, including indirect fires, deployments, and redeployments. Civil-military operations planners determine what events are occurring and analyze the events for their political, economic, psychological, environmental, and legal implications.

Operational Variables. Categorizing ASCOPE characteristics using operational variables (PMESII) results in the ASCOPE-PMESII matrix (see Table 4-5). This matrix is an organizational tool designed to categorize information about the civil aspects of the environment. Each of the 36 boxes depicted has a supporting narrative, overlay, or amplifying data.

Political. The political variable describes the distribution of responsibility and power at all levels of government, including political structure (both formal and informal). Political considerations include but are not limited to—

- Local and regional governments.
- International relations.
- Foreign alliances.
- Unofficial power centers (gangs, cartels, multinational organizations, and militias).
- Political or ethnic grievances and affiliations.

Military. The military variable includes the military capabilities of armed forces (HN, local militia, and police). Military considerations include but are not limited to—

- Rules of engagement.
- The establishment and location of exclusion zones and no-fly zones.
- Maritime defense zones.
- Territorial waters.
- Excessive maritime claims.
- Air defense identification zones.

  NOTE: Exercise caution when analyzing the effect of military limitations that do not impose actual physical constraints (such as man-made obstacles) and could therefore be highly transitory.

Economic. The economic variable consists of general economic categories of the AO (energy, raw materials, labor distribution, income and food distribution, goods and services, and illicit markets). Considerations include but are not limited to—

- The strength or weakness of monetary elements (such as currency or electronic transfers).
- Financial systems (such as banking or informal financial institutions).
- The rate of inflation.
- Key commercial areas.
- The labor market.
- Laws and regulations impacting business.
- Work permit and visa requirements.
- The strength of trade unions.
- Industrial considerations, including but not limited to:
  - Bulk fuel storage and transport systems.
  - Natural resources.
  - Industrial centers.
  - Scientific and technological capabilities.
  - Nuclear facilities.
  - Toxic industrial material (also known as TIM).
- Agricultural factors, including but not limited to:
  - ? Planting and harvesting seasons.
  - ? Availability of commodities and services related to imports and exports.
  - ? The food distribution system.

Social. The social variable describes societies within an operational environment (a population whose members are subject to the same political authority, occupy a common territory, have a common culture, and share a sense of identity). Considerations include but are not limited to—

- The cultural effect of past wars and military conflicts.
- Territorial claims and disputes.

- History of colonial exploitation or foreign interference.
- Ethnic or social strife.
- Geographic or regional patterns of religious affiliation.
- Past and present religious conflicts among population groups.
- Religious peculiarities and sensitivities.
- The relationship of religion to other sources of social affiliation (ethnicity, economic class, political ideology, family clans, sects, tribes).
- The health of the population, to include determining the presence of—
  - Communicable diseases.
  - Toxic industrial material hazards.
  - Locations of epidemics.
  - Methods of disease transmission.
  - The location, type, and extent of environmental pollution (radiation, oil spills, and contamination of drinking water).

Information. The information variable involves the collection, access, use, manipulation, distribution and reliance on data, media, and knowledge systems (both civilian and military) by local communities. Considerations should focus on the sources and means through which information reaches the general population in the AOI, including—

- Official sources such as government-controlled news media.
- Unofficial sources such as local independent news media.
- Unauthorized internal sources such as underground radio and newspapers.
- Third-party sources such as the international press and various social media outlets.

Additionally, analysis should focus on how information is disseminated to, and shared within, the leadership structure. The credibility of various media and information sources, as perceived by the groups involved, is critical.

Infrastructure. The infrastructure variable includes the basic facilities, services, and installations needed for a community or society to function. Considerations include but are not limited to—

- Sources of potable water.
- Transportation means and systems (road and rail networks, canals, and waterways).
- Communications nodes.
- Power production facilities and transmission grids.
- Pipelines.
- Medical treatment facilities.

> *NOTE:* It is important to assess not only the current state of infrastructure but also the effect of projected military operations on infrastructure that might be critical to post-combat recovery.

Step 2. Analyze the Civil Operating Environment

Step 2 focuses on analyzing the information collected during Step 1. Analysis considers several variables, including operational culture and stability and instability dynamics. It also includes a study of geospatial and stakeholder factors. At its most basic level, the Step 2 effort is the careful examination of civil considerations using operational variables (PMESII) to ascertain primary factors relevant to Fleet Marine Force operations and to aid in understanding the stability or instability dynamics within the civil analysis of the AO.

Operational Culture. To account for, and anticipate, civil effects on Fleet Marine Forces operations, CPB seeks to account for cultural considerations. Operational culture consists of five factors that influence operationally relevant behavior, conduct, and attitudes:

- The physical environment.
- The economy of a culture.
- Social structures.
- Political structures.
- Beliefs and symbols of a culture group.

There is no singular approach to applying a cultural lens to the data collected in step 1. Every situation requires careful consideration based on commander's intent and guidance and the nature of the Fleet Marine Forces operations. In the absence of cultural expertise (foreign area officer or regional affairs officer), CMO planners and analysts should endeavor to apply cultural perspective-taking (to "see" and "feel" others' behaviors or actions in the frame of their culture) and cultural interpretation (the process by that derives understanding and meaning) to the information they have gathered. This approach minimizes mirroring (viewing the information from a US Marine or Western-culture perspective).

When applying a cultural filter to the information collected in step 1, consider the relevant questions posed in *Operational Culture for the Warfighter*, 2d Edition, Appendix B. However, without individuals possessing the relevant cross-cultural competence to support the analysis, the result might not provide more context than the raw data presented. Cultural self-awareness, perspective-taking, and sense-making are essential to successfully analyzing the operational culture. Cross-cultural competence is essential to the process of reading and interpreting the raw data while mitigating cultural and analytical biases and engaging appropriate sense-making skills and sociocultural analytic methods in such a way that they are relevant to understanding the operational environment. In this sense, cross-cultural expertise applied to the ASCOPE-PMESII matrix creates a product for which the whole is greater than the sum of its parts.

Stability and Instability Dynamics. Civil-military operations planners and analysts seek to understand instability and stability dynamics. This includes understanding resiliencies (stability) as well as the potential sources of conflict or grievances (instability) of the local population, identifying key influences, and identifying events that could affect stability and instability.

> *NOTE:* Key influences are those select individuals, groups, assets, infrastructure, and sociocultural belief sets or factors that could influence friendly mission accomplishment significantly and should be considered in operational planning and execution.

Analysis of stability and instability factors is iterative and inherent to the stability assessment framework process. Completion of the process is not required to understand stability and instability dynamics, since it provides several tools to analyze these dynamics as well as mitigation and enhancement activities to support overall stability. (See MCWP 3-03 for more information on the stability assessment framework process.)

Civil-military operations planners and analysts should consider the following to assist in assessing stability (resiliencies) within the AO:

- What factors increase support for the government?
- What factors decrease support for malign actors?
- What factors increase societal and institutional capacity and capabilities?

Instability results when factors fostering instability (grievances) overwhelm societal resiliencies or the ability of the government to mitigate these factors. Civil-military operations planners and analysts should consider the following to assist in assessing grievances within the AO:

- What factors decrease support for the government?
- What factors increase support for "malign actors"?
- What factors disrupt the normal functioning of society?

Civil-military operations planners and analysts can work closely with the green cell to develop a baseline for accounting for instability and stability dynamics.

Stakeholder Analysis. When analyzing stakeholders in the civil environment, there is no rigid methodology. New stakeholders can emerge with changes in the situation and the environment; stakeholders can change sides; and friendly actions can have negative and unintended effects on friendly stakeholders. Social network analysis is a helpful tool available to the CMO planner and analyst for analyzing stakeholders. Social network analysis should be a collaborative tool developed between the G-2 and G-9 (as well as the green cell if applicable).

When considering the stability of a populace, closely assessing the appeal of individual leaders or the attraction of a particular group is just as critical, and often more informative, than simply studying underlying causes of conflict (such as tribal or ethnic tension, competition for resources). Social network analysis can assist in appreciating the present and potential spheres of influence held by key groups and individuals. While social network analysis can show linkages, CMO planners and analysts should also consider the following three characteristics as they relate to the stakeholders: power, legitimacy, and urgency. The greater the overlap of these three characteristics, the greater the significance of that person or group. For example, a local leader might be viewed as legitimate as long as the leader has neither a power base nor a motive for change and is not likely to be very active or influential. Urgency can be both time-sensitive and of critical interest to the individual or group it affects. Because urgency is a matter of time, considering this characteristic provides insight into the dynamics of potential actions.

Step 3. Develop a Civil Environment Model

A civil environment model depicts a system of key influences. The purpose is to model civilian life and activities as a baseline for Fleet Marine Forces planning. Step 3 of CPB provides an evaluation and interpretation of information about key influences to discern catalysts of behavior and the context that shapes behavior. The civil environment model informs the commander's understanding of key influences by detailing societies, populations, and other groups of people, including their activities, relationships, and perspectives.

Modeling the civil environment can include the graphic representation of social and cultural information for a given area presented spatially (on a map) and temporally (as a snapshot in time). The environment and civil or social norms can be described in narrative form. Although the exact content of the narrative should be derived from previous analysis, it should also include all relevant civil factors such as relationships and activities of the population, social network analysis (looking at the interpersonal, professional, and social networks tied to key influences), as well as small and large group dynamics, physical environment factors, and cultural factors.

Step 4. Determine Civil Actions

Step 4 focuses on using the information and analysis from previous steps to determine potential civil actions regarding Fleet Marine Forces operations within the AO—specifically during the COA wargaming in the MCPP. Civil actions refer to the independent will of the population and key influences relating to friendly and malign actions within the AO. Civil-military operations planners and analysts (or green cell members) develop an initial assessment of possible civil actions in a particular area within the Fleet Marine Forces battlespace. This can be an overall assessment for an operation or be based on a particular point in time for a plan (such as a phase, stage, or part of a plan). The assessment may be described in two ways—civil "most likely" or "disruptive" actions. This assessment is further refined by the green cell and used during COA wargaming.

Civil actions focus not only on the operational environment's indigenous people and their leadership but also on any international organizations, NGOs, or other stakeholders in the AO (battlespace, village, district, and province). By the time the operational planning team gets to the COA wargaming, the CMO planner, analyst, or green cell should be prepared to describe and project how the friendly COA and the civil environment will affect one each other.

APPENDIX B.
INTELLIGENCE STAFF OFFICER IPB CHECKLIST

Each step of the IPB process consists of several principal judgment decisions and evaluations that, together, form the basic "how to" of IPB. Table B-1 outlines the "how to" of IPB as a checklist for the S-2. Table B1. Intelligence Staff Officer Intelligence Preparation of the Battlespace Checklist.

Step 1—Define the operational environment (See figure 3-1)
☐ Identify the limits of the commander's area of operations
☐ Identified by the G-3/S-3
☐ Identify the limits of the commander's area of interest:
☐ S-2 recommends any changes ☐ Commander approves/disapproves ☐ higher headquarters approves/disapprov
☐ Identify significant characteristics within the area of operations and area of interest for further analysis:
☐ Enemy ☐ Terrain ☐ Weather ☐ Civil considerations
☐ Evaluate current operations and holdings to determine additional information needed to complete IPB:
☐ Staff identifies information gaps ☐ Staff develops assumptions for information gaps
☐ Initiate process necessary to acquire the information needed to complete IPB:
☐ Staff sections submit requests for information and intelligence collection.
Note. An operational environment encompasses physical areas and factors of the air, land, maritime, space, and cyberspace domains, and information environment, which includes cyberspace. IPB applies to the full range of operations. It is important to consider all domains which operations can occur.
Step 2—Describe effects on operations (See figure 4-1)
☐ Describe how the enemy/adversary can affect friendly ops (IPB products—enemy/adversary overlay, enemy/adversary description table): ☐ Regular ☐ Irregular
☐ Describe how terrain (KOCOA) can affect friendly and enemy/adversary operations (IPB products—MCOO, terrain effects matrix)
☐ Key terrain ☐ Observation and fields of fire ☐ Cover and concealment ☐ Obstacles ☐ Avenue of approach
☐ Describe how weather can affect friendly and enemy/adversary operations (IPB products—weather forecast chart, light and illumination data table, operational impacts chart):
☐ Visibility ☐ Precipitation ☐ Temperature ☐ Atmospheric pressure
☐ Wind ☐ Cloud cover/ceiling ☐ Humidity ☐ Sea State
☐ Describe how civil considerations (ASCOPE and PMESII-PT) can affect friendly and enemy/adversary operations (IPB products—civil considerations overlay, civil considerations assessment):
☐ Areas ☐ Structures ☐ Capabilities ☐ Organizations ☐ People ☐ Events
☐ Political ☐ Military ☐ Economic ☐ Social ☐ Information ☐ Infrastructure ☐ Physical environment ☐ Time
Step 3—Evaluate the enemy/adversary (See figure 5-1)
☐ Identify enemy/adversary order of battle (IPB products—enemy/adversary order of battle files)
☐ Create or refine enemy/adversary models (IPB products—enemy/adversary template, high-value target list):
☐ Convert enemy/adversary doctrine or patterns of operation to graphics ☐ Describe the enemy/adversary tactics and options ☐ Identify high-value targets
☐ Identify enemy/adversary models (IPB products—enemy/adversary capability statement):
☐ Identify enemy/adversary capabilities by using statements ☐ Identify other enemy/adversary capabilities
Step 4—Determine enemy/adversary COAs (See figure 6-1)
☐ Develop enemy/adversary COAs (IPB products—situation template, enemy/adversary COA statement)
☐ Develop the event template and matrix (IPB products—event template, event matrix)

COA	course of action	MCOO	modified combined obstacle overlay
G-3	Div/Wing and higher operations section	S-2	Regiment/MAG and below Intelligence staff section
IPB	intelligence preparation of the battlespace	S-3	Regiment/MAG and below operations staff section

APPENDIX C.
TOOLS AND SYMBOLS FOR USE DURING INTELLIGENCE PREPARATION OF THE BATTLESPACE

TOOLS

When conducting IPB, analysts should strive to collect the most accurate and current information on the operational environment. This requires extensive research and analysis. If the data is unavailable, this appendix contains general data that should provide analysts with a firm starting point for creating an IPB product.

> *NOTE:* These tables and figures should be used as a last resort, and only when better and timely information is not available.

Slope calculator

Many slope calculators have been made by various terrain detachments. These calculators show different contour densities to be used on maps at various scales with various contour intervals. They are usually reproduced on transparent plastic.

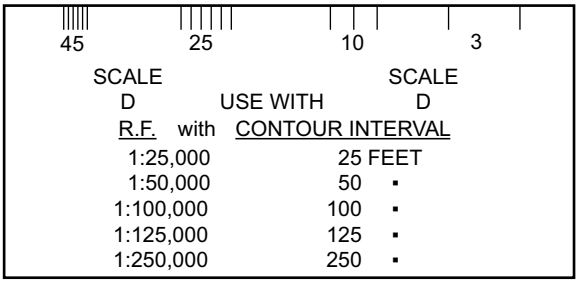


Figure C-1. Example Slope Calculator.

To construct a slope calculator, Marines must know:

- The map scale, for example 1:100,000.
- The map contour interval, for example 10 meters.
- The percentage of slope you wish to calculate, for example 20 percent.

The formula below helps determine the amount of space between each line on the slope calculator. Use at least five lines. Place the slope calculator over the map section you are evaluating. If the contours on the map are more closely spaced than those on the calculator, the slope is greater than that depicted by the calculator. Conversely, if they are less closely spaced, the slope is less than that depicted on the calculator.

$$\frac{\text{contour interval x 100}}{\text{\% Slope}}$$

In the above example: $\frac{10 \times 100}{20} = \frac{1{,}000}{20} = 50$ meters

Next, convert the ground distance into map distance with the formula:

$$\frac{\text{ground distance}}{\text{map scale}}$$

Using above example: $\frac{50 \text{ meters}}{100{,}000} = 0.0005$ meters (or 0.5mm)

Table C-1. Height-of-Eye Versus Horizon Range.

Height (feet)	*Nautical miles*	*Statute miles*	*Height (feet)*	*Nautical miles*	*Statute miles*	*Height (feet)*	*Nautical miles*	*Statute miles*
1	1.1	1.3	120	12.5	14.4	940	35.1	40.4
2	1.6	1.9	125	12.8	14.7	960	35.4	40.8
3	2.0	2.3	130	13.0	15.0	980	35.8	41.8
4	2.0	2.6	135	13.3	15.3	1000	36.2	42.8
5	2.6	2.9	140	13.6	15.6	1100	37.9	43.7
6	2.8	3.2	145	13.8	15.9	1200	39.6	45.6
7	3.0	3.5	150	14.0	16.1	1300	41.2	47.8
8	3.2	3.4	160	14.5	16.7	1400	43.8	49.8
9	3.4	4.0	170	14.9	17.2	1500	44.8	52.0
10	3.6	4.2	180	15.3	17.7	1600	45.8	52.8
11	3.8	4.4	190	15.8	18.2	1700	47.2	54.8
12	4.0	4.6	200	16.2	18.6	1800	48.5	55.9
13	4.1	4.7	210	16.6	19.1	1900	49.9	57.8
14	4.9	4.9	220	17.0	19.5	2000	51.2	58.9
15	5.1	5.1	230	17.3	20.0	2100	52.4	60.4
16	4.6	5.3	240	17.7	20.4	2200	53.7	61.8
17	4.7	5.4	250	18.1	20.8	2300	54.9	63.2
18	4.9	5.6	260	18.4	21.2	2400	56.0	54.8
19	5.0	5.7	270	18.8	21.6	2500	57.2	65.8
20	5.1	5.9	280	19.1	22.0	2600	58.3	57.2
21	5.2	6.0	290	19.5	22.4	2700	59.4	68.4
22	5.4	6.2	300	19.8	22.8	2800	60.5	69.7
23	5.5	6.3	310	20.1	23.2	2900	61.6	70.9
24	5.6	6.5	320	20.5	23.6	3000	62.7	72.1
25	5.7	6.6	330	20.8	23.9	3100	63.7	73.3
26	5.8	6.7	340	21.1	24.3	3200	34.7	74.5
27	5.9	6.8	350	21.4	24.6	3300	65.7	75.7
28	6.1	7.0	360	21.7	25.0	3400	66.7	76.8
29	6.2	7.1	370	22.0	25.3	3500	67.7	77.8
30	6.3	7.2	380	22.3	25.7	3600	68.6	79.0

Table C-1. Height-of-Eye Versus Horizon Range (continued).

Height (feet)	*Nautical miles*	*Statute miles*	*Height (feet)*	*Nautical miles*	*Statute miles*	*Height (feet)*	*Nautical miles*	*Statute miles*
31	6.4	7.3	390	22.6	26.0	3700	69.6	80.1
32	6.5	7.5	400	22.9	26.3	3800	70.5	81.3
33	6.6	7.6	410	23.2	26.7	3900	71.4	82.3
34	6.7	7.7	420	23.4	27.0	4000	72.4	83.3
35	6.8	7.8	430	23.7	27.3	4100	73.3	84.3
36	6.9	7.9	440	24.0	27.6	4200	74.1	85.4
37	7.0	8.0	450	24.3	27.9	4300	75.0	86.4
38	7.1	8.1	460	24.5	28.2	4400	75.9	87.4
39	7.1	8.2	470	24.8	28.6	4500	76.7	88.4
40	7.2	8.3	480	25.1	28.9	4600	77.6	89.3
41	7.3	8.4	490	25.3	29.2	4700	78.4	90.3
42	7.4	8.5	500	25.6	29.4	4800	79.3	91.2
43	7.5	8.6	520	26.1	30.0	4900	80.1	92.2
44	7.6	8.7	540	26.6	30.6	5000	80.9	93.1
45	7.7	8.8	560	27.1	31.2	6000	88.6	102.0
46	7.8	8.9	580	27.6	31.7	7000	95.7	110.9
47	7.8	9.0	600	28.0	32.3	8000	102.3	117.8
48	7.9	9.1	620	28.5	32.8	9000	108.5	124.8
49	8.0	9.2	640	28.9	33.3	10000	114.4	131.7
50	8.1	9.3	660	29.4	33.8	15000	140.0	161.3
55	8.5	9.8	680	29.8	34.3	20000	161.8	186.3
60	8.9	10.2	700	30.1	34.8	25000	180.9	208.2
65	9.2	10.6	720	30.7	35.3	30000	198.1	228.1
70	9.6	11.0	740	31.1	35.8	35000	210.0	246.4
75	9.9	11.4	760	31.5	36.3	40000	228.8	263.8
80	10.2	11.8	780	31.9	36.8	45000	242.7	279.4
85	10.5	12.1	800	32.4	37.3	50000	255.8	294.5
90	10.9	12.5	820	32.8	37.7	60000	280.2	322.8
95	11.2	12.8	840	33.2	38.2	70000	302.7	345.4
100	11.4	13.2	860	33.5	38.6	80000	322.6	372.5
105	11.7	13.5	880	33.9	39.1	90000	342.2	395.1
110	12.0	13.8	900	34.3	39.5	100000	361.8	416.5
115	12.3	14.1	920	34.7	39.9	200000	511.6	560.0

Table C-2. Terrain Types for Mechanized or Armored Forces.

Terrain Type	Slope (%)	Streams			Vegetation			Typical Speeds (Unopposed) (mph/km)
		Depth (Feet)	Current (Feet/Sec)	Width (Feet)	Spacing (Feet)	Trunk Diameter (Inches)	Roads/ Trails (Per km)	
Unrestricted	< 30	< 2	-----	< 5	> 20	< 2	2/4	24
Restricted	30 to 40	2 – 4	> 5	< AVLB length	< 20	2 to 6	1/2	16 (8 at night)
Severely restricted	> 45	> 4	> 5	> AVLB length	< 20	> 6	0/< 2	1 (.4 at night)

LEGEND
AVLB armored vehicle-launched bridge km kilometers
mph miles per hour sec second

Table C-3. Cover from Flat Trajectory Weapons.

Parameter	Factor	Criteria (Percent)
Good	Slope	>30
	Canopy closure	>50*
	Roof coverage	>40
	Slope	10 to 30
Fair	Canopy closure	<50
	Roof coverage**	20 to 40
	Slope	<10
Poor	Nonforested	
	Roof coverage**	<20

*Or stem spacing 5 meters
** If evaluated

Table C-4. Concealment from Aerial Detection and Percentage of Roof Coverage.

Roof Coverage (Percentage)	Category	Concealment
75 to 100	Congested	Excellent
50 to 75	Dense	Good
25 to 50	Moderate	Fair
5 to 25	Sparse	Poor
0 to 5	Open	None

Table C-5. Port Categories.

Category	Vessel	Water Depth (Meters)	Other (Meters)
Deep draft*	Naval	10	
	Container	10 to 5	
	Bulk carrier	12 to 18	
	Tankers	10 to 28	
Shallow draft**	Lash	2	3
	Seabee	3.4	31
	Barge	38	38
*Each vessel hatch requires 30 meters of wharf space, with the wharf at least 30-meters wide. **The wharf length must be 12 meters.			

Table C-6. Potential Obstacles for Entry Zones.

• Ditches	• Tree stumps	• Hedgerows
• Embankments	• Stone walls	• Scattered trees
• Large rocks	• Bushes	• Barbed-wire fences
• Boulders	• Buildings	• Cemeteries
• Wood fences	• Minefields	• Karst Topography
• Quaries	• Levees	• Overhead power lines
• Ruins	• Towers	• Overhead telephone lines
• Rice paddy dikes	• Cuts and fills	

Table C-7. Minimum Helipad and Heliport Requirements.

Landing Pad					Runway*		
Helipad or Heliport Type	Length (Feet)	Width (Feet)	Shoulder Width (Feet)	Taxi/Hover Lane** Width (Feet)	Length (Feet)	Width (Feet)	Shoulder Width (Feet)
UH-1	20	20	0-25	140-200	N/A	N/A	N/A
AH-1	20	20	0-25	140-200	N/A	N/A	N/A
CH-46	50-100	25-50	0-25	180-240	450	25-49	10-25
CH-53	50-100	50-100	0-25	200-250	450	50-60	10-25
MV-22	50-100	50-100	60-80	200-250	3,000	60	90
*Where runway is not shown, takeoff and landing are on taxi/hover lane. **Taxi/Hover lane is used for takeoff and landing where provided; length is variable.							
LEGEND N/A not applicable							

Table C-8. Factors of Foot Marches for Typical Dismounted Units .

Basic Data Table, Foot Marches				
Terrain	**Visibility**	**Rate of March* (Kilometers/Hour)**	**Normal March (8 Hours) (Kilometers)**	**Forced March (12 Hours) (Kilometers)**
Roads	Day	4	32	48
	Night	3	24	36
Cross-country	Day	2	16	24
	Night	1	8	12
*Computed on a 50-minute hour, allowing for a 10-minute halt each hour.				
Length of Column,* Factor Table, Foot Marches				
Formation**	**2 Meters/Person Distance**			**5 Meters/Person Distance**
Single file	2.4			5.4
Column of twos	1.2			2.7
*To determine the length of a column occupied by a dismounted unit, multiply the estimated or known number of personnel by the applicable factor. **Foot marches vary with the tactical situation; normal formation is a column of twos with a file on either side of the road and staggered, much like US forces. However, columns of threes and fours may be employed where conditions permit.				
Pass Time Factors,* Foot Marches				
Rate (Kilometer/Hour)	Factor			
4	0.015			
3	0.018			
2	0.020			
1	0.023			
*To determine the pass time in minutes for a dismounted unit, multiply th length of the column by the appropriate factor for the estimated or known rate of march.				

Table C-9. Maximum Distance Between and Typical Widths of Mobility Corridor.

Avenue of Approach	Cross-country Mobility Corridor Classification	Approximate Distance Between Terrain Features (in Kilometers)
Division	Regiment	10 kilometers
Regiment	Battalion	6 kilometers
Battalion	Company	2 kilometers
Typical Widths of Mobility Corridors		
Unit	**Width**	
Division	6 kilometers	
Regiment	3 kilometers	
Battalion	1.5 kilometers	
Company	500 meters	

Table C-10. Unopposed Movement Planning Speeds for US and Opposition Forces.

A. United States Movement Speeds	
1. Maximum road speeds (day)	
• M1/M2/M3 = 70 kilometers/hour • M113/M901 = 40 kilometers/hour • Wheeled vehicle on road = 80 kilometers/hour	• Wheeled vehicle off road = 10 kilometers/hour • Cross-country movement speed = 30 kilometers/hour
2. Maximum road speeds (night)	
• M1A1/M1A2/M3 = 45 kilometers/hour • M113/M901 = 30 kilometers/hour • Wheeled vehicle on road = 10 kilometers/hour	• Wheeled vehicle off road = 6 kilometers/hour • Cross-country movement speed = 18 to 20 kilometers/hour
B. Opposition Forces Movement Speeds	
1. Day	
Maximum speed = 30 kilometers/hour	Average speed off road = 20 kilometers/hour
2. Night	
Maximum speed = 20 kilometers/hour	Average speed off road = 10 kilometers/hour
C. Aircraft Movement Speeds	
Rotary-wing flight speed = 150 kilometers/hour	Fixed-wing = 500 knots
D. Dismounted Movement Speeds	
Dismounted rate = 3 kilometers/hour	

Table C-11. Travel Time in Minutes.

		Distance Traveled (Meters)									
Kilometers per Hour		1,000 m	2,000 m	3,000 m	4,000 m	5,000 m	6,000 m	7,000 m	8,000 m	9,000 m	10,000 m
	60	1	2	3	4	5	6	7	8	9	10
	50	1.2	2.4	3.6	4.8	6	7.2	8.4	9.6	10.8	12
	40	1.5	3	4.5	6	7.5	9	10.5	12	13.5	15
	30	2	4	6	8	10	12	14	16	18	20
	25	2.4	4.8	7.2	9.6	12	14.4	16.8	19.2	21.6	24
	20	3	6	9	12	15	18	21	24	27	30
	15	4	8	12	16	20	24	28	32	36	40
	10	6	12	18	24	30	36	42	38	54	60
	5	12	24	36	48	60	72	84	96	108	120

Table C-12. Movement Conversion Rates.

Kilometers per Hour	Meters per Minute	Miles per Hour	Knots	Feet per Second
60	1,000	37	32	55
50	833	31	27	46
40	667	25	22	36
30	500	19	16	27
25	417	16	13	23
20	333	12	11	18
15	250	9	6	14
10	167	6	5	9
5	83	3	3	5
1	17	0.6	0.5	0.9

Table C-13. Reaction and March Times for Opposition Force Units.

Reaction Times to Mounting an Attack			March Column Assembly Times	
Unit	Reaction Time	Planning Time	Unit	Minutes
Division	2 to 4 hours	1 to 3 hours	Motorized rifle company	5
			Motorized rifle battalion	10 to 15
Regiment	1 to 3 hours	30 minutes to 2.5 hours	Artillery battalion	15 to 20
			Artillery regiment	40 to 50
Battalion	25 to 60 minutes	20 to 45 minutes	Motorized rifle regiment (reinforced)	60 to 120

Table C-14. Typical Frontages and Depths of Objectives (Offense)

	Unit (Kilometers)	Division (Kilometers)	Brigade/Regiment (Kilometers)	Battalion (Kilometers)
Zone of attack	60 to 100	15 to 25	8 to 15	2 to 3
Main attack axis	35 to 45	6 to 10	3 to 5	1 to 2
Immediate objective depth	100 to 150	20 to 30	8 to 15	2 to 4
Subsequent objective depth	250 to 350	50 to 70	20 to 30	8 to 15
NOTE: These figures will vary with the tactical situation and terrain.				

Table C-15. Tactical Tasks (Effects on Enemy Forces).

• BLock	• Destroy	• Interdict	• Penetrate
• Canalize	• Disrupt	• Isolate	• Turn
• Contain	• Fix	• Neutralize	• Supress
• Defeat		•	

Table C-16. Tactical Tasks (Actions by Friendly Forces).

• Assault	• Control	• Occupy
• Attack-by-fire	• Counterreconnaissance	• Reconstitution
• Breach	• Disengagement	• Reduce
• Bypass	• Exfiltrate	• Retain
• Clear	• Follow and assume	• Secure
• Combat search and rescue	• Follow and support	• Seize
• Consolidation and reorganization	• Linkup	• Support-by-fire

Table C-17. Tactical Tasks for Decisive Action and Enabling Force.

Elements of Decisive Action	Tactical Enabling Tasks
Movement to contact: • Search and attack • Cordon and search **Attack:** • Ambush • Demonstration • Feint • Raid • Spoiling attack **Exploitation** **Pursuit** **Forms of offensive maneuver** • Envelopment • Frontal attack • Infiltration • Penetration • Turning movement **Area defense** (complex and simple battle positions) **Mobile/Maneuver defense** **Retrograde operations:** • Delay • Withdrawal • Retirement	**Reconnaissance operations:** • Zone • Area (including point) • Route • Reconnaissance in force **Forms of security operations:** • Screen • Guard • Cover • Area security • Local security **Information operations** **Encirclement operations** **Mobility operations** **Passage of lines** **Relief in place** **Troop movement:** • Administrative movement • Approach march • Road march **Surveillance operations:** • Zone • Point • Area • Network

Table C-18. Tactical Mission Tasks.

Purpose of Tactical Mission Tasks			
• Divert • Enable • Deceive • Deny	• Prevent • Open • Envelop • Surprise	• Cause • Protect • Allow	• Create • Influence • Support
Tactical Mission Tasks for Support Operations			
Obstacles	**Air Defense Artillery (Fires)**	**Sustainment**	
• Disrupt • Turn • Fix • Block	• Disrupt • destroy • neutralize	• Conduct logistics • Establish resupply on the move, brigade supply area	
Tactical Mission Tasks for Mission Command and Intelligence			
Mission Command		**Intelligence**	
• Command and control		• Provide intelligence support to targeting and information capabilities • Collect information	
Tactical Mission Tasks for Fire Support			
• Suppress • Neutralize (10%) • Destroy (30%)	• Exploit • Degrade • Deceive	• Delay • Deny • Disrupt	• Interdict • Divert • Defeat

Analyzing weather data is an important aspect of the IPB process. Table C-19 weather data information and how it can affect operation systems on the battlespace.

Table C-19. Environmental Mission-Limiting Thresholds .

Operation/System	Favorable (No Degradation)	Marginal (Some Degradation)	Unfavorable (Significant Degradation)
Rotary Wing (Helicopter)			
Ceiling/Visibility	≥ 1000 feet / 2 SM (400 m)		≤ 500 feet / ½ SM (800 m)
Weather/Precipitation	None	Blowing sand	Thunderstorms or freezing precipitation
Wind speed	< 35 knots		≥ 45 knots
Density altitude	< 5000 feet		≥ 6000 knots
Turbulence	None to light (category II)	Moderate (category II)	Severe (category II)
Icing	None – light	Moderate	Severe
Unmanned Aircraft Systems			
Ceiling/Visibility	≥ 3000 feet / 3 SM (4800 m)		< 3000 feet / 3 SM (4800 m)
Weather/Precipitation	None	Light to moderate	Heavy precipitation, thunderstorms, or freezing precipitation
Wind speed	< 25 knots		≥ 45 knots
Turbulence	None to light (category I)	Moderate (category I)	Severe (category I)
Icing	None		Any
Close Air Support			
Ceiling/Visibility	≥ 10000 feet/ 3 SM (4800 m)		≤ 5000 feet/ 3 SM (4800 m)
Weather/Precipitation		Thunderstorms/blowing sand	

Table C-19. Environmental Mission-Limiting Thresholds (Continued).

Operation/System	Favorable (No Degradation)	Marginal (Some Degradation)	Unfavorable (Significant Degradation)
Air Interdiction			
Ceiling/Visibility	≥ 300 feet/ ¼ SM (400 m)		≤ 300 feet/ ¼ SM (400 m)
Aerial Reconnaissance			
Ceiling/Visibility	≥ 5000 feet/ 3 SM (4800 m)		≤ 1000 feet / 1600 m
Weather/Precipitation	None	Blowing sand	Thunderstorms
Wind speed	< 60 knots		≥ 60 knots
Icing	None	Trace	Light to severe
Night Vision Goggles			
Cloud cover /ceiling	< 50% / ≥ 300 feet	≥ 50% / < 3000 feet	
Visibility	≥ ½ SM (800 m)	< ½ SM (800 m)	
Precipitation	Light to moderate	Heavy	
Temperature	33˚F to 124◦F	≥ 125˚F to < 33˚F	
Smoke			
Precipitation	None	Light to moderate	Severe
Temperature	< 80˚F		>120˚F
Nuclear, Biological, Chemical			
Ceiling/temperature	>600 feet/86˚F to 32˚F	< 600 feet/> 86˚F	< -15˚F
Precipitation	None	Light	Moderate
Low-level inversion or stability	Yes or stable	No or unstable	
Wind speed	0 to 9 knots		>20 knots
Personnel			
Temperature or heat index	84◦F to 33˚F	>85◦F or < 33˚F	>95◦F or < -40˚F
Wind chill	>15˚F		< -25˚F
Weather/precipitation	Light liquid or snow	Moderate or freezing drizzle	Heavy or freezing rain
Vehicles			
Snow depth	< 6 inches	< 12 inches	12 inches
Weather/precipitation	None or light	Moderate or light freezing rain	Heavy or moderate to heavy freezing rain
Temperature	104˚F to 1˚F	>105˚F or < 1˚F	-53˚F
Air Defense Artillery			
Ceiling/visibility	>5000 feet/ 1 SM (1600 m)		< 2500 feet/ ½ SM (800 m)
Wind	< 35 knots		>50 knots
Weather/precipitation	None to light	Blowing sand or dust	Heavy
Visual Systems			
Visibility /weather	>2 SM (3200 m) /light precipitation		>5/8 SM (1000 m) / heavy precipitation
Temperature or RH	< 100˚F or RH < 80%	≥ 100˚F or < -25˚F or RH ≥ 80%	
Infrared Sensors			
Visibility /precipitation	≥ 2 SM (3200 m) / light precipitation	< 2 SM (3200 m) / moderate precipitation	Heavy precipitation, fog, blowing sand, or snow
Temperature or RH	125˚F to 20˚F or RH < 80%		>125˚F or < -25˚F or RH > 85%
˚F degrees Fahrenheit	m meter	SM statute mile	RH relative humidity
NOTE: Table C-27 is an example; it should only be used when more accurate information is not available			

Tables C-20 through C-22 provide additional tools that can be useful in completing the IPB process.

Table C-20. Maximum Ranges for the Identification of Select Targets.

Targets	Meters	
	Naked Eye	Magnification Power of 7.8x
Tank crew members, troops, machine guns, mortars, antitank guns, antitank missile launchers	500	2,000
Tank, armored personnel carriers, truck (by model)	1,000	4,000
Tank, howitzer, armored personnel carriers, trucks	1,500	5,000
Armored vehicles, wheeled vehicles	2,000	6,000

Table C-21. Minimum Airfield Requirements.

Airfield Type	Runway Length (feet)	Runway Width (feet)	Runway Shoulder width (Feet)	Total Aircraft traffic area* (1,000 Square Feet)
Battle Area				
Light lift and medium lift	2,000	60	10	223
Forward Area				
Liaison	1,000	50	N/A	37.5
Surveillance	2,500	60	10	337
Light lift and medium lift	2,500	60	10	358
Support Area				
Liaison	1,000	50	N/A	50
Surveillance	3,000	60	10	490
Light lift and medium lift	3,500	60	10	753.5
heavy lift	6,000	100	10	1,421
Tactical	5,000	60	4	1,071
Rear Area				
Army	3,000	72	10	882
Medium lift	6,000	72	10	2,362
Heavy lift	10,000	156	10	3,926
Tactical	8,000	108	20	1,989
*This area includes parking, runway, taxiway, and warm-up apron.				

Table C-22. Typical Planning Force Ratios.

Force Ratio (Friendly: Enemy)	Typical Mission
1:6	Delay
1:3	Defend (prepared)
1:2.5	Defend (hasty)
1.5:1	Attack (hasty positions)
3:1	Attack (prepared position)
1:1	Counterattack (flank)

Weights, distances, quantities, and measurements in publications must be expressed in both US standard and metric units. Table C-23 is a conversion chart for measurements in this publication.

Table C-23. Measurement Conversion Chart.

Unit	Multiplied by	Equals
Feet	0.30480	Meters
Feet per second	18.2880	Meters per second
Inches	2.54000	Centimeters
Inches	0.02540	Meters
Inches	25.40010	Millimeters
Miles (statute)	1.60930	Kilometers
Pounds	453.59000	Grams
Pounds	0.45360	Kilograms
Pounds per square inch	6.9000	Kilopascal
Short tons	0.90700	Metric (long) tons
Square feet	0.09290	Square meters
Square inches	6.45160	Square centimeters
Square yards	0.83610	Square meters
Yards	0.91400	Meters
Centimeters	0.39370	Inches
Kilograms	2.20460	Pounds
Grams	0.0022046	Pounds
Kilometers	0.62137	Miles (statute)
Kilopascal	0.14493	Pounds per square inch
Meters	3.28080	Feet
Meters	39.37000	Inches
Meters	1.09360	Yards
Meters per second	3.28080	Feet per second
Metric (long) tons	1.10200	Short tons
Millimeters	0.03937	Inches
Square centimeters	0.15500	Square inches
Square meters	1.19600	Square yards
Square meters	10.76400	Square feet

Table C-24. Traffic Flow Capability Based on Route Width.

	Limited Access	Single Lane	Single Flow	Double Flow
Wheeled	At least 3.5 meters	3.5 to 5.5 meters	5.5 to 7.3 meters	More than7.3 meters
Tracked or a combination of vehicles	At least 4.0 meters	4.0 to 6.0 meters	‘6.0 to 8.0 meters	More than 8 meters

Symbols

Table C-25 through C-27 include symbols used during the IPB process (see the most current version of MIL-STD-2525, Joint Military Symbology, for additional symbols).

Table C-25. Most Commonly Used Unit Symbols.

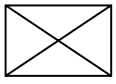
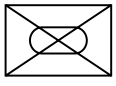
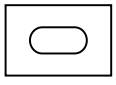
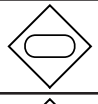
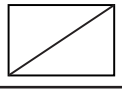
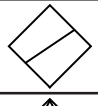
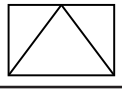
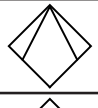
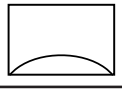
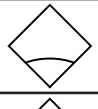
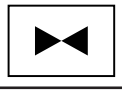
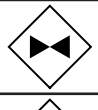
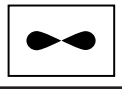
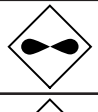
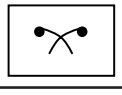
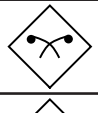
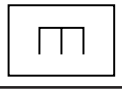
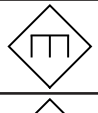
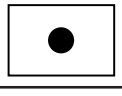
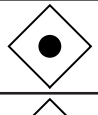
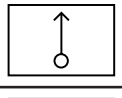
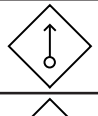
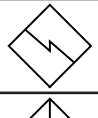
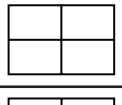
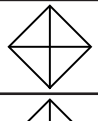
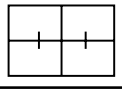
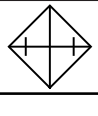
Description	Friend	Hostile
Infantry		
Mechanized Infantry		
Armor/Mechanized		
Reconnaissance/Cavalry		
Antitank/Antiarmor		
Air Defense		
Aviation Rotary Wing		
Aviation Fixed Wing		
CBRN Defense		
Engineer		
Field Artillery		
Mortar		
Military Intelligence		
Signal		
Medical		
Medical Treatment Facility		

Table C-26. Unit Identifiers and Common Symbols.

Description	Amplifier
Team/Crew	⌀
Squad	●
Section	●●
Platoon/Detachment	●●●
Company/Battery/Troop	I
Battalion/Squadron	I I
Regiment/Group	I I I
Brigade	X
Division	X X
MEF/Corps	X X X
Army	X X X X

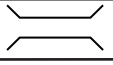
Description	Symbol
Bridge/Bridging	
Decision Point	

Table C-27. Tactical Task Symbols.

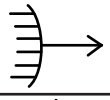
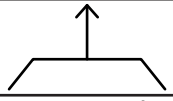
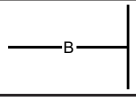
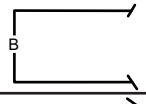
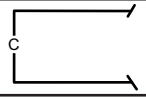
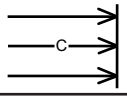
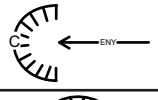
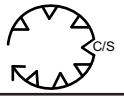
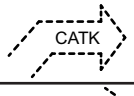
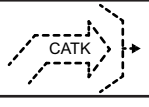
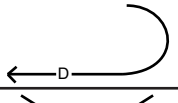
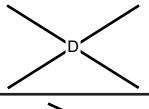
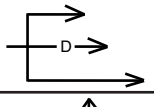
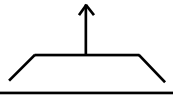
Description	Control Measure Symbols
Ambush	
Attack by Fire	
Block	
Breach	
Bypass	
Canalize	
Clear	
Contain	
Cordon and Knock	
Cordon and Search	
Counterattack	
Counterattack by Fire	
Delay	
Destroy	
Disrupt	
Envelopment	

Table C-27. Tactical Task Symbols (continued).

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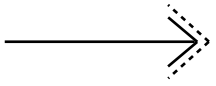
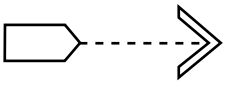
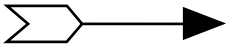
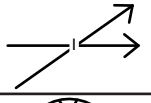
Feint	
Fix	
Follow and Assume	
Follow and Support	
Interdict	
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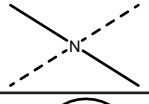
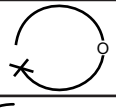
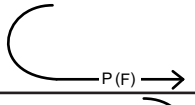
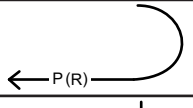
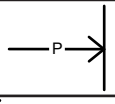
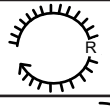
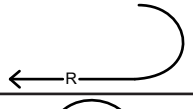
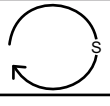
Neutralize	
Occupy	
Forward Passage of Lines	
Rearward Passage of Lines	
Penetrate	
Relief in Place	
Retain	
Retire/Retirement	
Secure	

Table C-27. Tactical Task Symbols (continued).

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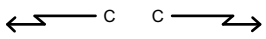
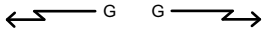
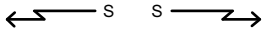
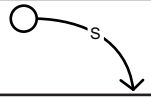
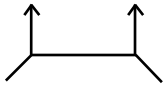
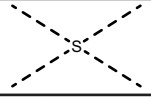
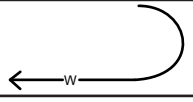
Security (Cover)	
Security (Guard)	
Security (Screen)	
Seize	
Support by Fire	
Suppress	
Turn	
Withdraw	
Withdraw Under Pressure	

GLOSSARY

Section I. Abbreviations and Acronyms

A2	antiaccess
AA	avenue of approach
AD	area denial
AO	area of operations
AOI	area of interest
ASCOPE	areas, structures, capabilities, organizations, people, and events
C2	command and control
CAS	close air support
CBRN	chemical, biological, radiological, and nuclear
CCIR	commander's critical information requirement
C-IED	counter-improvised explosive device
CMO	civil-military operations
COA	course of action
COG	center of gravity
CPB	civil preparation of the battlespace
DoD	Department of Defense
DP	decision point
DRAW-D	defend, reinforce, attack, withdraw, and delay
DST	decision support template
DZ	drop zone
EMS	electromagnetic spectrum
EW	electromagnetic warfare
FARP	forward arming and refueling point
FHA	foreign humanitarian assistance
FM	field manual (USA)

G-2	assistant chief of staff, intelligence/intelligence staff section
G-3	assistant chief of staff, operations and training/operations and training staff section
G-4	assistant chief of staff, logistics/logistics staff section
G-6	assistant chief of staff, communications/communications system staff section
G-7	assistant chief of staff, information environment/ information environment staff section
G-9	assistant chief of staff, civil affairs/civil affairs staff section
GBAD	ground-based air defense
GEOINT	geospatial intelligence
GIRH	Generic Intelligence Requirements Handbook
HN	host nation
HPT	high-payoff target
HUMINT	human intelligence
HVT	high-value target
IADS	integrated air defense system
IED	improvised explosive device
IPB	intelligence preparation of the battlespace
ISR	intelligence, surveillance, and reconnaissance
JP	joint publication
JPP	joint planning process
JWICS	Joint Worldwide Intelligence Communications System
KOCOA	key terrain, observation and fields of fire, cover and concealment, obstacles, and avenues of approach
LAAD	low altitude air defense
LOC	line of communications
LOS	line of sight
LZ	landing zone
MAGTF	Marine air-ground task force
MCDP	Marine Corps doctrinal publication
MCOO	modified combined obstacle overlay
MCPP	Marine Corps Planning Process

MCRP	Marine Corps reference publication
MCTP	Marine Corps tactical publication
MCWP	Marine Corps warfighting publication
MEB	Marine expeditionary brigade
MEF	Marine expeditionary force
METOC	meteorological and oceanographic
METT-T	mission, enemy, terrain and weather, troops and support available—time available
MEU	Marine expeditionary unit
NAI	named area of interest
NEO	noncombatant evacuation operation
NGA	National Geospatial-Intelligence Agency
NGO	nongovernmental organization
NOE	nap-of-the-Earth
OPLAN	operation plan
OPORD	operation order
PIR	priority intelligence requirement
PMESII	political, military, economic, social, information, and infrastructure
RFI	request for information
S-2	intelligence officer/ office
S-3	operations and training officer/ office
S-4	logistics officer/ office
S-6	communications system officer/communications staff office
S-7	information environment officer/ office
SIPRNET	SECRET Internet Protocol Router Network
TAI	target area of interest
TPED	tasking, processing, exploitation, and dissemination
TTP	tactics, techniques, and procedures
UAS	unmanned aircraft system
US	United States
WMD	weapons of mass destruction

GLOSSARY

Section II. Terms and Definitions

Adversary
A party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged.

adversary template
A model that portrays the adversary's frontage depths, echelon spacing, and force composition as well as the disposition of adversary combat, combat support, and combat service support units for a given operation. It portrays how the adversary would like to fight if unconstrained by the operational environment. (USMC Dictionary)

air domain
The atmosphere, beginning at the Earth's surface, extending to the altitude where its effects upon operations become negligible. (DoD Dictionary)

antiterrorism
Defensive measures used to reduce the vulnerability of individuals and property to terrorist acts, to include rapid containment by local military and civilian forces. Also called **AT**. (DoD Dictionary)

area of influence
An area inclusive of and extending beyond an operational area wherein a commander is capable of direct influence by maneuver, fire support, and information normally under the commander's command or control. (DoD Dictionary)

area of interest
That area of concern to the commander, including the area of influence, areas adjacent to it, and extending into enemy territory. Also called **AOI**. (DoD Dictionary)

area of operations
An operational area defined by a commander for the land or maritime force commander to accomplish their missions and protect their forces. Also called **AO**. (DoD Dictionary)

avenue of approach
An air or ground route of an attacking force of a given size leading to its objective or to key terrain in its path. Also called **AA**. (Upon approval of this revised publication, this term and its definition will be included in the USMC Dictionary.)

battlespace
The environment, factors, and conditions that must be understood to successfully apply combat power, protect the forces, and/or complete the mission. It includes the physical environment (air, land, maritime, and space domains); the information environment (which includes cyberspace); the electromagnetic spectrum; and other factors. Included within these are friendly, enemy, adversary, and neutral entities contained within or having an effect on the operational areas, areas of interest, and areas of influence. (USMC Dictionary)

begin morning civil twilight
The period of time at which the sun is halfway between beginning morning and nautical twilight and sunrise, when there is enough light to see objects clearly with the unaided eye. Also called **BMCT**. (Upon approval of this revised publication, this term and its definition will be included in the USMC Dictionary.)

begin morning nautical twilight

The start of that period where, in good conditions and in the absence of other illumination, the sun is 12 degrees below the eastern horizon and enough light is available to identify the general outlines of ground objects and conduct limited military operations. (DoD Dictionary)

center of gravity

(See DoD Dictionary for core definition. Marine Corps amplification follows.) A key source of strength without which an enemy cannot function. Also called **COG**. (USMC Dictionary)

collection

(See DoD Dictionary for core definition. Marine Corps amplification follows.) The gathering of intelligence data and information to satisfy the identified requirements. (USMC Dictionary)

commander's critical information requirement

(See DoD Dictionary for core definition. Marine Corps amplification follows.) Information regarding the enemy and friendly activities and the environment identified by the commander as critical to maintaining situational awareness, planning future activities, and facilitating timely decision-making. The two subcategories are priority intelligence requirements and friendly force information requirements. Also called **CCIR**. (USMC Dictionary)

cover

In intelligence usage, the concealment of true identity or organizational affiliation with assertion of false information as part of, or in support of, official duties to carry out authorized activities and lawful operations. (DoD Dictionary)

cyberspace

A global domain within the information environment consisting of the interdependent networks of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers. (DoD Dictionary)

decision point

(See DoD Dictionary for core definition. Marine Corps amplification follows.) An event, area, or point in the battlespace where and when the friendly commander will make a critical decision. (USMC Dictionary)

decision support template

(See DoD Dictionary for core definition. Marine Corps amplification follows.) A staff product initially used in the wargaming process that graphically represents the decision points and projected situations and indicates when, where, and under what conditions a decision is most likely to be required to initiate a specific activity (such as a branch or sequel) or event (such as lifting or shifting of fires). (USMC Dictionary)

decisive point

Key terrain, key event, critical factor, or function that, when acted upon, enables commanders to gain a marked advantage over an enemy or contribute materially to achieving success. (DoD Dictionary)

end evening civil twilight

The point in time when the sun has dropped 6 degrees beneath the western horizon, and is the instant at which there is no longer sufficient light to see objects with the unaided eye. Also called **EECT**. (Upon approval of this revised publication, this term and its definition will be included in the USMC Dictionary.)

end evening nautical twilight

The point in time when the sun has dropped 12 degrees below the western horizon, and is the instant of last available daylight for the visual control of limited military operations. Also called **EENT**. (Upon approval of this revised publication, this term and its definition will be included in the USMC Dictionary.)

event matrix

A cross-referenced description of the indicators and activity expected to occur in each named area of interest. (Upon approval of this revised publication, this term and its definition will be included in the USMC Dictionary.)

event template

(See DoD Dictionary for core definition. Marine Corps amplification follows.) A model against which enemy activity can be recorded and compared. It represents a sequential projection of events that relate to space and time on the battlefield and indicate the enemy's ability to adopt a particular course of action. It is a guide for collection and reconnaissance and surveillance planning. (USMC Dictionary)

H-hour

1. The specific hour on D-day at which a particular operation commences. 2. In amphibious operations, the time the first landing craft or amphibious vehicle of the waterborne wave lands or is scheduled to land on the beach and, in some cases, the commencement of countermine breaching operations. (DoD Dictionary)

high-payoff target

A target whose loss to the enemy will significantly contribute to the success of the friendly course of action. See also high-value target. (DoD Dictionary)

high-value target

A target the enemy commander requires for the successful completion of the mission. Also called **HVT**. See also high-payoff target. (DoD Dictionary)

information environment

The aggregate of social, cultural, linguistic, psychological, technical, and physical factors that affect how humans and automated systems derive meaning from, act upon, and are impacted by information, including the individuals, organizations, and systems that collect, process, disseminate, or use information. Also called **IE**. (DoD Dictionary)

information requirements

(See DoD Dictionary for core definition. Marine Corps amplification follows.) All information elements the commander and staff require to successfully conduct operations, that is, all elements necessary to address the factors of mission, enemy, terrain and weather, troops and support available time available. Also called **IR**. (USMC Dictionary)

intelligence

(See DoD Dictionary for core definition. Marine Corps amplification follows.) Knowledge about the enemy or the surrounding environment needed to support decision making. Intelligence is one of the seven warfighting functions. (USMC Dictionary)

intelligence estimate

The appraisal, expressed in writing or orally, of available intelligence relating to a specific situation or condition with a view to determining the courses of action open to the enemy or adversary and the order of probability of their adoption. (DoD Dictionary)

intelligence preparation of the battlespace

The systematic, continuous process of analyzing the threat and environment in a specific geographic area. Also called **IPB**. (USMC Dictionary)

intelligence requirement

(See DoD Dictionary for core definition. Marine Corps amplification follows.) Questions about the enemy and the environment, the answers to which a commander requires to make sound decisions. Also called **IR**. (USMC Dictionary)

intelligence, surveillance, and reconnaissance

1. An integrated operations and intelligence activity that synchronizes and integrates the planning and operation of sensors; assets; and processing, exploitation, and dissemination systems in direct support of current and future operations. 2. The organizations or assets conducting such activities. Also called **ISR**. (DoD Dictionary)

key terrain

Any locality, or area, the seizure or retention of which affords a marked advantage to either combatant. (DoD Dictionary)

land domain

The area of the Earth's surface ending at the high water mark and overlapping with the maritime domain in the landward segment of the littorals. (DoD Dictionary)

line of communications

A route, either land, water, and/or air, that connects an operating military force with a base of operations, and along which supplies and military forces move. Also called **LOC**. (Upon approval of this revised publication, this term and its definition will be included in the USMC Dictionary.)

line of sight

The unobstructed path from a Marine, weapon, weapon site, electronic sending and receiving antennas, or piece of reconnaissance equipment from one point to another. Also called **LOS**. (USMC Dictionary)

maritime domain

The oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals. (DoD Dictionary)

mobility corridor

Areas that are relatively free of obstacles where a force will be canalized due to terrain restrictions allowing military forces to capitalize on the principles of mass and speed. (Upon approval of this revised publication, this term and its definition will be included in the USMC Dictionary.)

modified combined obstacle overlay

A joint intelligence preparation of the operational environment product used to portray the militarily significant aspects of the operational environment, such as obstacles restricting military movement, key geography, and military objectives. Also called **MCOO**. (DoD Dictionary)

named area of interest

(See DoD Dictionary for core definition. Marine Corps amplification follows.) A point or area along a particular avenue of approach through which enemy activity is expected to occur. Activity or lack of activity within a named area of interest will help to confirm or deny a particular enemy course of action. Also called **NAI**. (USMC Dictionary)

obstacle

Any barrier designed or employed to disrupt, fix, turn, or block the movement and maneuver, and to impose additional losses in personnel, time, and equipment. (DoD Dictionary)

operational environment

The aggregate of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. Also called **OE**. (DoD Dictionary)

priority intelligence requirement

(See DoD Dictionary for core definition. Marine Corps amplification follows.) An intelligence requirement associated with a decision that will critically affect the overall success of the command's mission. Also called **PIR**. (USMC Dictionary)

request for information

Any specific, time-sensitive, ad hoc requirement for intelligence information or products to support an ongoing crisis or operation not necessarily related to standing requirements or scheduled intelligence production. Also called **RFI**. (DoD Dictionary)

risk management

(See DoD Dictionary for core definition. Marine Corps amplification follows.) The five steps of risk management are identify the hazards, assess the hazards, develop controls and make risk decision, implement controls, and supervise and evaluate. (USMC Dictionary)

situation template

(See DoD Dictionary for core definition. Marine Corps amplification follows.) A series of projections that portray, based on enemy doctrine, the most probable disposition and location of enemy forces within constraints imposed by weather and terrain. (USMC Dictionary)

situational understanding

The product of applying analysis and synthesis to relevant information to determine the relationship among the mission, enemy, terrain and weather, troops and support available time available variables to facilitate decision-making. (USMC Dictionary)

sociocultural factors

The social, cultural, and behavioral factors characterizing the relationships and activities, informal and formal power structures, laws and policies, access to resources, and decision making of the population of a specific region or operational environment. (DoD Dictionary)

space domain

The area surrounding Earth at altitudes of greater than or equal to 100 kilometers above mean sea level. (DoD Dictionary)

target

An entity or object that performs a function for the threat considered for possible engagement or other action. (DoD Dictionary)

targeting

The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. (DoD Dictionary)

target list

Those targets maintained and promulgated by the senior echelon of command that are to be engaged by supporting arms, as distinguished from a “list of targets” (confirmed, suspected, or possible) maintained by any echelon for informational and planning purposes. (USMC Dictionary)

terrain analysis

The collection, analysis, evaluation, and interpretation of geographic information on the natural and man-made features of the terrain, combined with other relevant factors, to predict the effect of the terrain on military operations. (Upon approval of this revised publication, this term and its definition will be included in the USMC Dictionary.)

terrorism

The unlawful use of violence or threat of violence, often motivated by religious, political, or other ideological beliefs, to instill fear and coerce individuals, governments or societies in pursuit of terrorist goals. (DoD Dictionary)

REFERENCES AND RELATED PUBLICATIONS

Department of Defense

Department of Defense Manual
5105.21 Volume 1 -Sensitive Compartmented Information (SCI) Administrative Security Manual: Administration of Information and Information Systems Security

Joint Publications (JPs)

1 Vol 2	The Joint Force
2-0	Joint Intelligence
3-0	Joint Campaigns and Operations
3-04	Information in Joint Operations
3-06	Joint Urban Operations
3-07.3	Peace Operations
3-07.4	Counterdrug Operations
3-09.3	Close Air Support
3-12	Cyberspace Operations
3-13.3	Operations Security
3-14	Space Operations
3-15	Barriers, Obstacles, and Mine in Joint Operations
3-16	Multinational Operations
3-24	Counterinsurgency
3-25	Countering Threat Networks
3-26	Joint Combating Terrorism
3-30	Joint Air Operations
3-31	Joint Land Operations
3-32	Joint Maritime Operations
3-40	Joint Countering Weapons of Mass Destruction
3-42	Joint Explosive Ordnance Disposal
3-59	Meteorological and Oceanographic Operations
3-60	Joint Targeting
3-68	Joint Noncombatant Evacuation Operations
3-85	Joint Electromagnetic Spectrum Operations (replaces JP 3-13.1)
4-0	Joint Logistics
4-02	Joint Health Services
5-0	Joint Planning

Miscellaneous
DoD Dictionary of Military and Associated Terms

Marine Corps Publications

Marine Corps Doctrinal Publications (MCDPs)

1	Warfighting
1-0	Marine Corps Operations
2	Intelligence
3	Expeditionary Operations
8	Information

Marine Corps Warfighting Publications (MCWPs)

2-10	Intelligence Operations
3-01	Offensive and Defensive Tactics
3-02	Insurgencies and Countering Insurgencies
3-03	Stability Operations
3-10	MAGTF Ground Operations
3-31	Marine Air-Ground Task Force Fires
3-34	Engineering Operations
5-10	Marine Corps Planning Process

Marine Corps Tactical Publications (MCTPs)

2-10A	MAGTF Intelligence Collection
2-10B	MAGTF Intelligence and Production and Analysis
3-01B	Air Assault Operations
3-02A	MAGTF Network Engagement
3-03B	Multi-Service Tactics, Techniques, and Procedures for Conducting Peace Operations (ATP 3-07.31/AFTTP 3-2.40)
3-40D	General Engineering
10-10C	MAGTF Counter-Improvised Explosive Device Operations
12-10A	Mountain Warfare Operations
12-10B	Urban Operations
12-10C	Jungle Operations
12-10D	Desert Operations
13-10L	Multi-Service Tactics, Techniques, and Procedures for Shipboard Helicopter and Tiltrotor Aircraft Operations

Marine Corps Reference Publications (MCRPs)

1-10.1	Organization of the United States Marine Corps
2-10.2	Operational Level Integration of METOC Capabilities
2-10A.2	Counterintelligence and Human Intelligence
2-10A.3	Open-Source Intelligence (ATP 2-22.9)
2-10B.4	Geospatial Information and Intelligence
2-10B.6	MAGTF Meteorological and Oceanographic Operations

3-30B.1	Multi-Service Tactics, Techniques, and Procedures for Multi-Service Brevity Codes
3-34.3	Engineer Reconnaissance (ATP 3-34.81)
12-10A.4	Cold Region Operations
12.10B.1	Military Operations on Urbanized Terrain (MOUT)

Marine Corps Orders (MCOs)

5100.29C Vol.2	Marine Corps Safety Management System-Risk Management
5500.6H CH 1	Arming of Law Enforcement and Security Personnel and the Use of Force

Miscellaneous

Marine Corps Supplement to the DoD Dictionary of Military and Associated Terms

Marine Corps CMO School Circular 3.0

Navy Warfare Publications (NWPs)

NWP 3-59M Operational Level Integration of METOC Capabilities

Related Publications

Cultural Intelligence Indicator Guide. Quantico, VA: U.S. Marine Corps Intelligence Activity. October 2009. Available online at https://www.intelink.gov/mcia, accessed15 October 2014.

Generic Intelligence Requirements Handbook. Quantico, VA: U.S. Marine Corps Intelligence Activity. June 2003. Available online at https://www.intelink.gov/mcia, accessed15 October 2014.

Swinton, Ernest Dunlop. The Defense of Duffer's Drift. Washington, DC: The United States Infantry Association. Available online at www.gutenberg.org, accessed 23 October 2014.