COMMANDER'S ESTIMATE OF THE SITUATION

(CES)

NWC 4111E

(Instructional workbook for in-class work/war gaming)

JMO Department, Naval War College
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PREFACE

This document provides a Commander's Estimate of the Situation (CES) for military problems requiring the employment of combat forces. It is based on the Navy's NWP 5-01 (Rev. A) Naval Operational Planning, CJCSM 3500.5A (DRAFT), Joint Task Force HQ Master Training Guide (March 00), U.S. Marine Corps Command and Staff College Warfighting Book, Academic Year 1991-92, MCDP-6 Command and Control, the series of the U.S. Army Command and General Staff College publications ST 100-9 The Tactical Decision Making Process (July 1991 and July 1993 editions) and ST 101-5 Command and Staff Decision Processes (February 1996), Battle Command: Leadership and Decision Making for War and Operations Other Than War (Draft 2.1), U.S. Army FM 101-5 Staff Organization and Operations, JP 5-00.2 Joint Task Force Planning Guidance and Procedures and JP 2-01.3 Joint Tactics, Techniques, and Procedures for Joint Intelligence Preparation of the Battlespace. The format is designed to accommodate the estimate requirements regardless of the size of the forces involved and the environment and the scale of the objectives to be accomplished. The format of the estimate is also intended to be applied across the full range of military operations, from "Military Operations Other Than War" (MOOTW) to war.

Electronic copies of this workbook are available through the Naval War College, Joint Military Operations Department website http://www.nwc.navy.mil/jmo.

Note: Wherever the term "OWN" is used throughout this workbook, it is assumed to include "FRIENDLY" (i.e. alliance/coalition).

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THE COMMANDER'S ESTIMATE OF THE SITUATION (CES)

Military commanders are required to make decisions constantly. Every day, they and their staffs resolve simple, routine and/or complex problems. To help them think through their options when faced with a force employment decision, while applying their knowledge, experience and judgment, military commanders use a decision-making tool called the Commander's Estimate of the Situation (CES).

Purpose: Joint Pub 5-0 (1995) defines the CES as "a logical process of reasoning by which a commander considers all the circumstances affecting the military situation and arrives at a decision as to a course of action to be taken to accomplish the mission."

In the estimate, the commander evaluates all the elements that affect the employment of forces and assets. The Course of Action (COA) selected is the basis for the development of plans and the issuing of combat orders. The commander's estimate is also a means to transmit the decision to the next higher command echelon for approval.

While the commander's estimate process provides a comprehensive framework, rigid adherence to the form, or faulty application of the commander's estimate may lead to a strictly mechanistic process of rationalization. Consequently, clarity of thinking could be undermined if most of the mental effort is spent on the mechanics of the process rather than on the estimate itself. The result may or may not be a sound decision.

Criteria: The commander's estimate should lead to the adoption of a COA that is:

- Suitable —accomplishes the mission and complies with the supported commander's guidance. A COA also should be consistent with doctrine;
- Feasible —accomplishes the mission within established time, space, and resource
- constraints;
- Acceptable —balances cost (forces, resources, risk, etc.) with advantage gained by executing a particular COA;
- Distinguishable — each COA must be significantly different (unique) from others; and
- Complete —incorporates major operations and tasks to be accomplished, to include forces required, logistics concept, deployment concept, employment concept, time estimates for reaching termination objectives, reserve force concept, and desired end state. (JP 5-00.2)

The commander's estimate is the first and most critical phase in the military planning process. It is conducted at all command echelons: tactical, operational, and theater-strategic. Normally a geographic combatant commander (CINC) will also prepare a strategic estimate during peacetime as an integral part of the deliberate planning process (DPP)[1]

[1] A Strategic Estimate provides a guide for developing assessments of national strategic issues. The format is somewhat different from the Commander's Estimate of the Situation (CES) (JP1-0).

Scope: The commander's estimate of the situation should be, within available time constraints, as comprehensive as possible. It may vary from a short, almost instantaneous mental estimate to a carefully written document that requires days of preparation and the collaboration of many staff officers. Time available to complete the estimate is an important factor in the CES process.

Format: The steps in the commander's estimate may be expanded or condensed according to the nature of a problem. However, to maintain the logical sequence of reasoning and to ensure consideration of pertinent factors, all the steps of the estimate should be generally followed whenever possible. The format of the estimate process should not prevent a commander from selecting the best method of arriving at a sound solution to a military problem.

The process is supported by staff section specific estimates. Most of the staff divisions (e.g.., J-1, J-2, J-3, etc., or Service counterparts) prepare their own estimates of the situation. Pertinent parts of these staff estimates are then inserted, verbatim or in modified form, into the commander's estimate of the situation. See CJSCM 3500.5A (DRAFT), Joint Task Force HQ Master Training Guide (http://www.jwfc.jfcom.mil/jdlc/) for a good review of each of the staff estimates.

Generic Estimate of the Situation

While Joint Operation Planning and Execution System (JOPES), Volume I (Planning Policies and Procedures), discusses the requirement for submission of a CES, it does not provide guidance for the preparation of one. CJSCM 3500.5A (DRAFT), Joint Task Force HQ Master Training Guide does provide an excellent review of an Operational-level CES. This workbook provides a discussion of how to conduct an estimate of the situation regardless of the scope of military action to be taken. It includes the elements used in the commander's estimate at most command echelons. Where appropriate, references to formats or guidance contained in joint doctrine publications (JP), or recommended formats, are provided. A CES conducted by another Service may differ in format and detail, but will address similar issues.

The generic commander's estimate consists of five principal steps:

Step 1: Joint Intelligence Preparation of the Battlespace (JIPB) and Mission Analysis
Step 2: Develop Friendly Courses of Action (COAs).
Step 3: Analyze Friendly Courses of Action (COAs).
Step 4: Compare Friendly Courses of Action (COAs).
Step 5: The Decision (Selection of a COA).

Note that in practice these steps take place sequentially, but may be compressed depending on available planning time, staff experience/capabilities, and the Commander's involvement in the process. Additionally, subordinate—or even superior commanders—will be conducting their own parallel CES that require inputs from your command's CES process. In other words, no CES is done in isolation. These steps are described and analyzed here sequentially for instructional purposes only.

STEP 1: MISSION ANALYSIS (MA) AND JOINT INTELLIGENCE PREPARATION OF THE BATTLESPACE (JIPB)

PART 1: JOINT INTELLIGENCE PREPARATION OF THE BATTLESPACE (JIPB)[2]

THE PURPOSE OF THE JIPB PORTION OF THIS CES WORKBOOK IS NOT TO MAKE THE USER A JIPB EXPERT. THE INTENT IS TO EXPOSE THE NON-INTELLIGENCE STAFF OFFICER/PLANNER TO A CRITICAL ASPECT OF THE PLANNING PROCESS WHICH IS ON-GOING THROUGHOUT THE PLANNING AND EXECUTION OF AN OPERATION. ALL PLANNERS NEED A BASIC FAMILIARITY OF THE JIPB PROCESS IN ORDER TO BECOME CRITICAL CONSUMERS OF THE PRODUCTS PRODUCED BY THE J2/G2/N2. **SEE APPENDIX A FOR GREATER JIPB DETAILS AND JOINT PRODUCT EXAMPLES.**

The primary purpose of **Joint Intelligence Preparation of the Battlespace** (JIPB) is to support the commander's decision making and planning for a major operation or campaign by identifying, assessing, and estimating the adversary's center(s) of gravity[3], critical vulnerabilities, capabilities, limitations, intentions, and courses of action (COAs) that are most likely to be encountered based on the situation. JIPB products help to provide the framework used by the joint force staff to develop friendly COAs and provide a foundation for the commander's decision regarding which friendly COA to adopt. Although JIPB support to decision making is both dynamic and continuous, it must also be "front loaded" in the sense that the majority of analysis must be completed early enough to be factored into the commander's decision making effort.

In order for the joint force staff to identify potential COAs, the Joint Force Commander (JFC) must formulate planning guidance based on an analysis of the friendly mission. This analysis helps to identify specified, implied, and essential tasks; possible branches and sequels; and any limitations on the application of military force. JIPB supports mission analysis (MA) by enabling the commander and staff to visualize the full extent of the battlespace, to distinguish the known from the unknown, and to establish working assumptions regarding how adversary and friendly forces will interact within the limitations of the battlespace environment. JIPB also assists commanders in formulating their planning guidance by identifying significant adversary capabilities and by pointing out critical battlespace factors, such as the locations of key geography, attitudes of indigenous populations, and potential land, air, and sea avenues of approach. MA and the commander's planning guidance form the basis for the subsequent development of friendly COAs by the staff.

[2] JIPB—is the analytical process used by joint intelligence organizations to produce intelligence assessments, estimates, and other intelligence products in support of the joint force commander's decision making process. (JP 2-01.3)

[3] Depending on the level of operation, the JIPB should identify enemy Centers of Gravity at the Strategic, Operational, and tactical level, as appropriate.

JIPB is a continuous process which enables JFCs and their staffs to visualize the full spectrum of adversary capabilities and limitations as well as potential enemy courses of action (ECOAs) across all dimensions of the battlespace. While JIPB is most often seen as part of the military planning process, it is actually conducted both prior to and during operations. Just as the commander must continually make decisions about the course of a campaign or operation, the intelligence staff must constantly work to seek out, analyze, and disseminate new information to support those decisions. Although the specifics of the process vary depending on the situation and force involved, there is general agreement on the four major steps of JIPB.

I. DEFINE THE BATTLESPACE ENVIRONMENT. This first step is an initial survey of the geographic and non-geographic dimensions of the battlespace. It is used to bound the problem and to identify areas for further analysis. There are generally three tasks that must be accomplished.

1. Identify the **Area of Operations** and the **Area of Interest**. Much of the information may be provided in the superior's order or OPLAN, but usually this step requires coordination with the J-5, J-3, or other elements of the staff. If a Joint Operations Area (JOA) or other operational areas have been identified, they will help guide the intelligence requirements and collection plan. The operations area, or **Area of Operations (AO)**, is generally the area of direct concern to the commander and intelligence will be focused on this area. The **Area of Interest (AOI)** is usually a larger area, including areas that may influence the operation, but might not be under direct operational control of the commander. Intelligence activities will also be focused on this area, but not necessarily to the same degree as on the AO. The AO and AOI may differ for each dimension of warfare – land, maritime, air, space, and cyberspace – and may need to be adjusted later in the planning process, e.g., if additional threats are identified outside the defined areas which may impact upon the Commander's AO.

(Joint) Area of Operations:
(Recommend this be displayed on a map/chart for clarity and reference)

Area of Interest:

2. Determine the **Significant Characteristics of the Battlespace Environment**. This sub-step is an *initial review* of the factors of **space, time,** and **forces** and their **interaction** with one another. Examining these factors in general terms early in the process will help initiate intelligence collection and other activities that will support the later steps of the CES. This review will require information on own forces and how the factors of space and time affect them. For this reason, the J2 staff must work closely with the J5, J3, and other staff members throughout the process.

3. Evaluate **Existing Data Bases** and identify **Intelligence Gaps** and **Priorities**. In this sub-step, intelligence personnel review the information found in various automated data bases, Intelink sites (the classified version of the internet), and other intelligence sources, both classified and unclassified. The staff begins to coordinate with local, theater, and national intelligence organizations that may provide support to the operation, and initiates new intelligence collection and production requests as necessary. Intelligence requests and requirements may take the form of:

- **Priority Intelligence Requirements (PIRs).** These are the *commander's* intelligence priorities for the operation and will drive all intelligence activities. The J2 staff will normally develop and propose PIRs for the commander's approval.

- **Requests for Information (RFIs).** This is a general term that may be used by operations or other personnel who need timely information from the intelligence staff or an intelligence organization concerning an aspect of the operation. If the information is readily available, such as through the Joint Intelligence Center (JIC), the RFI will be answered directly. If the answer will require additional analytical work, a *production request* may be necessary.

- **Production Requests (PRs).** These are used to request the development of new studies, reports, and other intelligence products. For example, if the initial review of available intelligence revealed that little information existed on the enemy's information operations capability, a PR might be sent by the J2 staff to the theater JIC, requesting that this information be provided by a certain date. If the information to answer such a request does not currently exist in the intelligence community, a *collection requirement* may be placed.

- **Collection Requirements (CRs).** These may take many forms, depending on the information needed and the collection assets available to get it. For example, some information may be available through the tasking of a theater intelligence collector such as U-2 aircraft. The J2 staff collection managers process these requirements and it is their job to determine where and how to best get the necessary intelligence.

This step is only a preliminary review of the intelligence available; the J2 staff will continue to levy intelligence requirements throughout the JIPB process and, in fact, throughout the entire course of the operation.

II. DESCRIBE BATTLESPACE EFFECTS. The purpose of this step is to determine how the battlespace affects both friendly and enemy operations. It begins with an identification and analysis of all militarily significant environmental characteristics of each battlespace dimension. These factors are then analyzed to determine their effects on the capabilities and broad COAs of both enemy and friendly forces. ***Not all parts of this step may be a J2 responsibility***. For example, in some commands weather and topography may not be specifically J2 functions. The J2 staff will, however, take the lead in coordinating these efforts.

1. Analyze **Factor Space** of the **Battlespace Environment**. This step involves an in-depth analysis of the factor space. Generally, only those characteristics of the AO should be considered which affect the preparation, planning, and employment of the enemy's or of own forces and assets. The scope and extent of this analysis at each level of war differs considerably. For example, the tactical commander is rarely concerned with the economic, political, and technological aspects of the situation, whereas the theater of operations and theater of war CINCs are concerned with these aspects. Moreover, weather is normally of greater concern for the tactical commander, while the climate receives greater attention at the operational and theater-strategic level. This does not mean, however, that the weather is not taken into account in determining the time and place of attack by the operational commanders, especially in planning and executing an amphibious landing. The focus in this step is to briefly describe the most important features of the situation and their effect on enemy capabilities and in the development of friendly COAs for all of the battlespace dimensions (land, maritime, air, space, electromagnetic, and cyberspace). While all of the aspects of a given element are fully considered, only those aspects that have an impact on the tactical, operational, or strategic mission are highlighted.

The land dimension is determined through terrain analysis. Terrain analysis consists of an evaluation of the military aspects of the battlefield's terrain to determine its effects on military operations, both friendly and enemy. The most important military aspects of terrain are: Observation and fields of fire; Cover and concealment; Obstacles; Key Terrain; and Avenues of Approach (**OCOKA**).

The maritime dimension pertains to key military aspects of the maritime environment. These can include maneuver space and chokepoints; natural harbors and anchorages; ports, airfields, and naval bases; sea lines of communication (SLOCs); and the hydrographic and topographic characteristics of the ocean floor and the littoral land mass.

The air dimension involves an analysis of all factors of the battlespace that may affect friendly and enemy air operations. Enemy infrastructure that supports either offensive air operations or defense against air attacks should be analyzed. This step will require analysts to consider not only terrain and weather, but aspects of enemy force structure as well; such as air crew training, status of Air C3, ECM capabilities, sustainment capabilities, doctrine, impact of WMD, etc.

The space, electromagnetic, and cyberspace dimensions analysis will vary greatly depending on the nature of the threat, the level of command involved, and the time available for planning. Specialized support may be required, such as from elements from the U.S. Space Command or

the electronic warfare and information operations communities. The J2 staff will need to coordinate with other staff elements that are involved with these areas.

The items listed below are applicable to the entire range of military operations, from peacetime competition to crisis, MOOTW, and war. Therefore, describe and analyze only those aspects of factors space, time, and forces that are applicable to the mission of the friendly forces.

a. Military geography: The physical environment includes many parameters that affect the combat capabilities and execution of actions of one's own forces and assets. In describing these features the commander and staff should be aware that there are generally accepted descriptions of related conditions as defined by the Universal Joint Task List (UJTL).

Examples of Conditions of the Physical Environment

Land

Terrain Slope
Steep (>10%); Moderate (3 to 10%); Little (<3%)
Vegetation
Jungle (rain forest, canopied); Dense (forested); Light (meadow, plain); Sparse (alpine, semi-desert); Negligible (arctic, desert)

Sea

Ocean Depth
Shallow (<100 fathoms); Limited (100 to 500 fathoms); Deep (500 to 2500 fathoms); Very Deep (>2500 fathoms)
Harbor Depth
Deep (>60 ft); Moderate (30 to 60 ft); Shallow (<30 ft)

Air

Air Temp
Hot (>85^{o}F); Temperate (40^{o} to 85^{o}F); Cold (10^{o} to 39^{o}F); Very Cold (<10^{o}F)
Visibility
WOXOF (<1/4 NM); Low (1/4 to 1 NM); Moderate (1 to 3 NM); Good (3 to 10 NM); High (10 to 20 NM); Unlimited (>20 NM)

Table 1-1

(1) *Area:* total area (in sq miles/kilometers) in which the planned combat action is to take place; length and width of the area (in miles/kilometers); geographical boundaries (land, maritime, river, lakes).

(2) *Position*: Land or maritime position; insular, peninsular position; exterior or central position, etc.

(3) *Distances*: Distances from home bases to the area of combat employment; distances between base of operations to the concentration or assembly area; distances between various physical objectives, etc.

(4) *Land Use:* The main characteristics of the land use (arable land; permanent crops, irrigated land, etc.).

(5) *Environment:* Provide an overview of the environmental issues that potentially can affect the employment of military forces on both sides (pollution—air, water, land; natural hazards; destructive earthquakes, volcanoes, etc.).

(6) *Topography:* Provide the main features of relief (flat, mountainous, swampy, desert, etc.) and the affect the topography has on the movement and employment of military forces on both sides.

(7) *Vegetation:* The main characteristics of vegetation in the area (barren, woodland, meadows and pastures, hedgerow, rice paddies, etc.) and its effect on the movement and employment of military forces on both sides.

(8) *Hydrography/Oceanography*: Characteristics of sea/ocean areas (size of the area; coastal indentation, coasts and offshore islands/islets; archipelagoes, deltas, straits, narrows, bottom's topography; water depths, salinity, bioluminescence, currents, tides, etc.), and rivers/estuaries, streams, lakes, and artificial inland waterways (canals, lakes, etc.).

(9) *Climate/Weather*: The main features of the climate (temperate, cold, arctic, tropic, subtropics); change of seasons; thaw; duration of the day (sunrise, sunset, twilight, etc. and their general affects on the preparation execution of the forthcoming military action); cloud cover, low ceiling/visibility, fog, precipitation (rainfall, snow, etc.); winds, waves (high seas—sea state 5 and higher), surf height; temperatures (sea, air, mean and extreme temperatures, etc.), humidity and its effect on the use of weapons/equipment and fatigue of personnel; precipitation (rainfall, snow, etc.) and its affect on off-road trafficability; sea ice, icebergs, currents, tides, etc.

b. Demography: Provide the analysis of the main aspects of the demographic situation; total population; age structure; racial composition; regional distribution; urban vs. rural population; average density (per sq mile/km); net migration rate; growth rate; life expectancy at birth; total fertility rate; degree of urbanization; birth rate; mortality rate; infant mortality rate; health and medical, etc.

(1) *Ethnicity:* Ethnic composition; national groups and national minorities; ethnic problems or conflicts, etc.

(2) *Religion:* Main religions; relations with the state; religious holidays; religious differences or problems; etc.

(3) *Languages:* Dominant languages; dialects; languages of the ethnic minorities; alphabet used, etc.

(4) *Literacy:* Provide general overview; illiteracy of adults; illiteracy among urban and rural population, etc.

c. Politics: The main characteristics of the political system (system of government; executive, judiciary, legislature, etc.); form of government; administrative divisions; legal system; constitutional system and constitutional issues; ruling regime; political parties and leaders; other political or pressure groups; trade unions; human rights; political stability; internal threats (political extremism, terrorism, insurgency, serious crime/drugs, etc.) external threats (border disputes, resource disputes, etc.).

d. Diplomacy: The main characteristics of the country's diplomatic position; relations with foreign countries; alliances/coalitions; bilateral agreements; diplomatic representation; international law issues/problems (maritime claims, neutrality declarations, etc.).

e. Natural Resources: Minerals (iron, zinc, lead, copper, silver, graphite, uranium, etc.); energy resources (thermal—coal, lignite, oil, natural gas, hydroelectric, wind, etc.); water supply, food supply, etc.

f. Economy: Key characteristics of economic system; economic policy; economic performance; national product (GNP); real growth of GDP; total budget; budget deficit; inflation rate; currency; debts (external, internal, etc.); external debt servicing payments; foreign investment; foreign aid; aid donors; finance (banking, insurance, etc.); domestic trade; land and maritime trade (coastal, regional, ocean-going, etc.); foreign trade; trade deficit; trading partners; heavy industry (mining, metallurgy, machine building, etc.); defense industry; military R&D; covert programs; production of weapons of mass destruction (nuclear, biological, chemical); aerospace industries; shipbuilding; ship repair facilities; light industry (consumer goods; chemicals and related products; pharmaceutical industry; food, beverages, tobacco; textile and clothing; wood and paper products; apparel, leather, footwear; etc.) petroleum products; electronics; electricity (by source-thermal, hydroelectric, nuclear, wind, solar; capacity, production, consumption); fisheries; tourism (domestic, foreign, etc.); work force by sectors (agriculture, industry, forestry, banking, education, culture, administration and justice; welfare and education, etc.); migrant workers; unemployment; income per capita; living standards; nutrition level, etc.

g. Agriculture: The main characteristics of agricultural production; cereal production; fodder crops; beef and dairy production; livestock production (sheep, cattle, etc.); produce; fruits, etc.

h. Transportation: General characteristics of the transportation system (domestic, links with other countries in the region or out of the area); land transportation—roads (paved, unpaved—gravel, earth, etc.); railroads (standard gauge, narrow gauge; electrified; industrial, etc.), inland waterways (rivers, lakes, canals, etc.); maritime transport—merchant marine (merchant vessels by type—passenger ships, ferries; crude oil tankers, liquefied natural gas (LNG) tankers; container ships freighter; bulk-carriers; size, age, speed, etc.); shipping companies; ports; port terminals—oil, container, freight, etc., air transport—civil aviation; air carriers—domestic and international service; business aviation; agricultural aviation; airports (paved or unpaved runways; runway

weight bearing capacity; Maximum on Ground (MOG) capacity; runways by length—>3,600 m 2,400-3,659 m; 1,220-2,439 m; <1,220 m), etc.

i. Telecommunications: Wire services, commercial satellite, radio (FM/AM, short-wave), cable, land line, fiber optical lines and other communications facilities in the area of operations that might enhance command and control (C2) of military forces.

j. Culture: Describe and analyze the main cultural traits; cultural biases and prejudices; sensitivities; prevalent view of other national groups, races, or nations; cultural differences among various ethnic groups, etc.

k. Ideology: Describe and analyze the key characteristics of the political ideology; strengths and weaknesses; vulnerabilities; etc.

l. Nationalism: Describe briefly and analyze the key aspects of the nationalism (country or political parties/groups, etc.); nationalistic feelings; strengths and weaknesses/vulnerabilities; etc.

m. Sociology: Social conditions run a wide range from the psychological ability of a population to withstand the rigors of war, to the health and sanitation conditions in the area of operations. Language, social institutions and attitudes, and similar factors that may affect selection of a course of action should be considered.

n. Science and Technology: Although little immediate military impact may result from the state of science and technology in a target area, the long-range effects of such factors as the technical skill level of the population and scientific and technical resources in manpower and facilities should be considered in cases where they may affect the choice of a COA.

Summarize the Key Elements of Factor Space:

2. Analyze **Factor Time** of the **Battlespace Environment**. This part of the analysis should analyze the factor of time in generic terms and how it affects the mission accomplishment on both sides. Particular attention must be given to the interaction of time-space and time-forces.

a. Preparation Time: Estimate the time required to prepare for war or for the forthcoming military action based on the doctrinal tenets or empirical data.

b. Duration of the Enemy Action: Estimate the time of the expected or pending enemy tactical action, major operation, or campaign.

c. Warning Time: Estimate the warning time for the forthcoming military action for both own and enemy forces (based on the existing RECCE/intelligence and early warning capabilities).

d. Decision Cycle: Estimate the time required for both sides to make a decision - the time from receipt of the mission to the selection of the optimal COA.

e. Planning Time: Estimate the time required for both sides to issue a directive - the time from the selection of a COA to the issuance of a directive.

f. Time for Mobilization: Estimate the time required for both sides to mobilize ready reserves or complete partial or total mobilization.

g. Reaction Time: Estimate the time for both sides (based on doctrinal tenets or empirical data) to *effectively* react to the enemy's move or action.

h. Time Required for Deployment: Estimate the time both sides require to prepare and move forces from their home stations to the ports or airfields of embarkation.

i. Deployment Transit Time: Estimate the time required to move forces by land, sea, and air from major base or staging/deployment areas into the theater or area of operations; compute distances and transit times for each own unit/force, and enemy unit/force.

j. Time for Concentration: Estimate the time both sides require to move and concentrate forces within the battlespace.

k. Time To Prepare And Complete Maneuver: Estimate the time necessary for both sides to prepare, execute, and complete their maneuvering (tactical or operational).

l. Time to Accomplish the Mission: Estimate the time both sides require to accomplish the entire combat mission.

m. Rate of Advance (or Delay): Estimate potential rates of advance (in an offensive) or rate of delaying action (in a defensive) for both sides (applicable only in land warfare).

n. Time for Bringing up Reinforcements: Estimate the time required by both sides to move and effectively employ reinforcements.

o. Time to Commit Reserves: Estimate the time required by both sides to effectively commit tactical or operational reserves.

p. Time to Regenerate Combat Power: Estimate the time both sides need to regenerate combat power (R&R for manpower; replenishment of POL, AMMO, food, water, etc.)

q. Time for Redeployment: Estimate the time both sides require to prepare and complete redeployment of forces to a new area/mission.

r. Time to Reconstitute Forces: Estimate the time required by both sides to reconstitute forces after the end of the hostilities, it encompasses regeneration of combat power and reorganization.

Summarize the Key Elements of Factor Time:

3. Determine the Battlespace Effects on Enemy and Friendly Capabilities and Broad Courses of Action (COAs). The analysis that has been conducted in STEP 1 is combined into a single integrated product that focuses on the total environment's effects on all COAs available to both friendly and enemy forces. The product may take the form of a briefing, set of overlays, intelligence estimate, or any other format the commander deems appropriate. **Regardless of the format, this product is designed to support the development and evaluation of friendly COAs** by providing the J5/J3 and commander with an evaluated and prioritized set of land, sea, and air avenues of approach, potential engagement areas, key terrain, maritime geography, and an analysis of the periods of optimal weather conditions for specific types of military operations.

Example of Battlespace Effects on Enemy and Friendly COAs

Item: REDLAND is bounded on three sides by neutral nations, and water on the fourth side.	Effect on ECOAs Enemy can minimize Force deployments on those neutral borders	Effect on friendly COAs Friendly Lines of Operation will be predictable.

Summarize The Key Influences of Time & Space on ECOAs and Potential Friendly COAs

SITUATION	EFFECT ON ENEMY COAs	EFFECT ON FRIENDLY COAs
Item:		
Item:		
Item:		
Item:		

Table 1-2, Influences of Time and Space on ECOAs and Potential Friendly COAs

Charts or overlays that show the important aspects of terrain for all significant dimensions of military operations are the primary products that are developed during this sub-step. **The most important graphic is a modified combined obstacle overlay (MCOO)** that depicts critical information such as restricted areas, avenues of approach, likely engagement areas, and key terrain. Examples of a Land MCOO, Maritime MCOO, and Air MCOO are provided in Appendix A (source Joint Pub 2-01.3, JTTP for Joint IPB).

III. EVALUATE THE ENEMY (Factor Forces). The third step in the JIPB process is to identify and evaluate the enemy's centers of gravity, critical vulnerabilities, capabilities, limitations, doctrine, and tactics, techniques and procedures (TTP) likely to be employed. In this step, analysts develop models to portray how the enemy normally operates and identifies capabilities in terms of broad ECOAs the enemy might take. Analysts must take care not to evaluate enemy doctrine and concepts by "mirror imaging" U.S. doctrine.

1. Identify Enemy Centers of Gravity. Analysis of COGs (at each level of war as appropriate) is conducted after the analyst has gained an understanding of the broad operational environment (Sub-Steps I and II of the JIPB above), but before a detailed study is made of the enemy's potential COAs. The staff analyzes leadership, fielded forces, resources, infrastructure, population, transportation systems, and internal and external relationships of the enemy to determine from which elements the enemy derives freedom of action, physical strength, or the will to fight. These strengths will normally be revealed during the analysis of **Factor Forces,** which are covered in this section of the JIPB process. Analysts must determine whether or not potential COG(s) are truly critical to the enemy's strategy and must thoroughly examine the means by which COG(s) influence and affect enemy strategy and potential COAs. **The determination of the enemy's COG(s) is one of the most critical parts of the JIPB process** because their proper identification can help the JFC better anticipate enemy COAs and will help shape friendly strategy and plans.

At this point the intelligence staff will normally utilize basic intelligence data that has been produced by theater joint intelligence centers and other analytical organizations to analyze the enemy factor of force. Factor force should be understood as not only troops, naval forces, or air forces, but also forces of all Services of the armed forces. The broader term "means" can be used when not only military forces, but also other sources of power (political, economic, etc.) of a nation or a group of states are brought to bear. This part of the estimate may provide a detailed analysis of the armed forces as a whole or individual Services or focus on the combat forces and combat support forces on both sides depending on the scale of the forthcoming military action and the command echelon.

a. Defense System: Provide an overview and analysis of the defense system; components of defense system (armed forces, police, para-military forces/groups; civil defense, etc.); national military organization; civilian control; civil-military relations; defense expenditures; security assistance; arms transfers; arms imports; foreign military aid; military relations with foreign countries; foreign military advisors; etc.

b. Armed Forces: Total strength; trained reserve; mobilized manpower; officer corps, NCOs/POs, soldiers/seamen; Services (Army, Navy, Air Force and/or Air Defense, Marine Corps or Naval Infantry, Coast Guard); etc. The following elements should be analyzed: overall numerical strength of forces on both sides; active forces vs. reserves; combat vs. noncombat forces; forces in combat vs. forces assigned for protection of the rear areas; types of forces and force mix; mobility (tactical or strategic); task organization; reconstitution ability; logistic support and supportability; combat readiness; transportation assets, etc.

c. Relative Combat Power of Opposing Forces: The *relative combat power* is derived by evaluating the strengths and weaknesses of own and enemy forces, their location and disposition, logistics, time and space factors, and combat efficiency (see Appendix B). Normally, the staff will identify relevant factors, tabulate the facts, and then draw conclusions. Comparisons are meaningful only if they reflect the forces that will directly oppose each other. Any strength or weakness factor must reflect directly or indirectly the ability or inability of a force to achieve its assigned objective.

(1) Composition of Forces: This includes order of battle (OOB) of major enemy forces or formations; type and forces' mix; major weapons systems and equipment and their operational characteristics.

(2) Reserves: Describe and analyze reserves (tactical, operational, or strategic) for the forthcoming action on both sides.

(3) Reinforcements: Estimate own and enemy reinforcement capabilities that can affect the forthcoming action in the area under consideration. This study should include ground, naval, air, and space elements; weapons of mass destruction (WMD); and an estimate of the relative capacity to move these forces into the area of operations or theater of operations.

(4) Location and Disposition: This includes geographic location of enemy units; fire support elements; C2 facilities; air, naval, and missile forces; and other elements of combat power in, or deployable, to the area of operations or the given theater of operations.

(5) Relative Strengths: List the number and size of enemy units committed and those available for reinforcement in the area. This should *not* be just a tabulation of numbers of aircraft, ships, missiles, or other weapons, *but* rather *an analysis of what strength the enemy commander can bring to bear in the area* in terms of ground (air, naval) units committed and reinforcing, aircraft sortie rates, missile delivery rates, unconventional, psychological, and other strengths the commander thinks may affect the ratio of forces in the employment area.

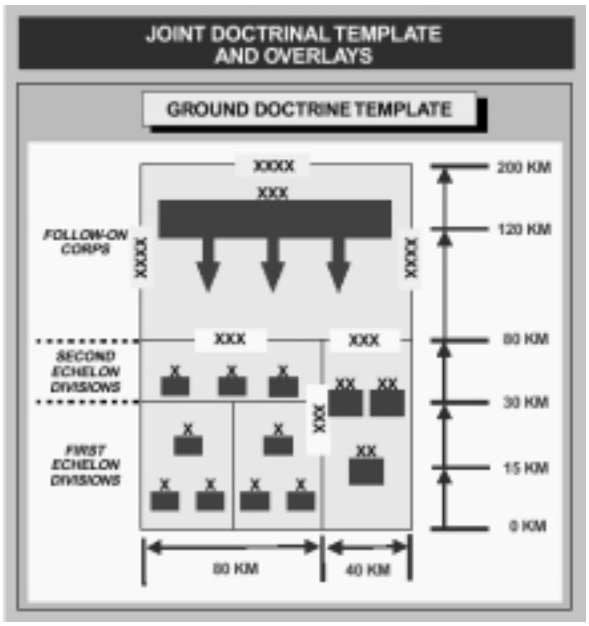
d. Logistics: Summarize such considerations as transportation, supply, maintenance, hospitalization and evacuation, labor, construction, type of LOCs (land, air, sea) and their position (exterior or interior); protection and degree of vulnerability to diverse types of threat, and other elements of logistical support and sustainment.

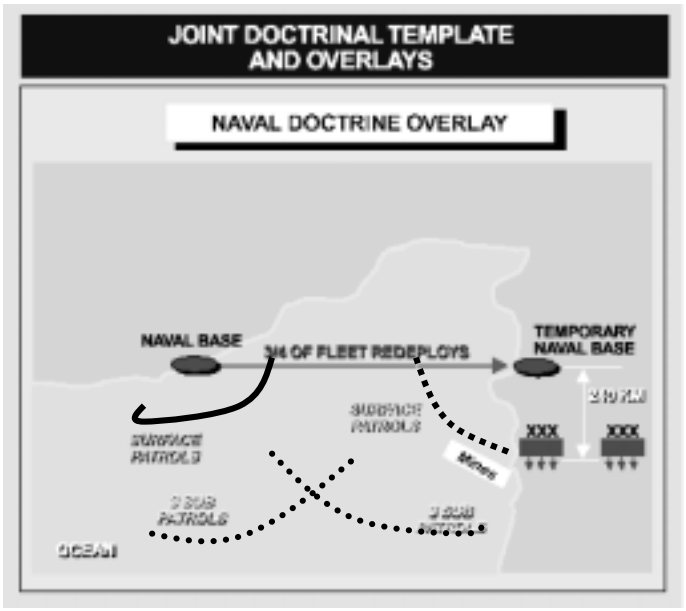
e. Combat Efficiency: Estimate own and enemy state of training, readiness, battle experience, physical condition, morale, leadership, motivation, doctrine, discipline, and whatever significant strengths or weaknesses may appear from the preceding paragraphs.

Summarize the Key Elements of Factor Forces (Enemy):

2. "DRAW-D". At this point, the analyst begins to consider ***general*** enemy COAs and how the enemy might be expected to act under each of these general COAs. General COAs can be described using the acronym "DRAW-D", which stands for **D**efend, **R**einforce, **A**ttack, **W**ithdraw, or **D**elay.

a. Doctrinal templates. Individual service templates are usually constructed that portray each of the enemy's service or functional area employment patterns. For example, in addition to a ground template that illustrates the enemy's typical land force organization for an offensive, separate templates are constructed for naval, air, space, and cyberspace assets, as appropriate. These templates may be combined into joint doctrinal templates for each of the broad COAs (DRAW-D) the enemy may employ. These templates (see Figure 1-1) are constructed by analyzing all available intelligence on the enemy's doctrine and through an examination of the enemy's past operations and exercises.





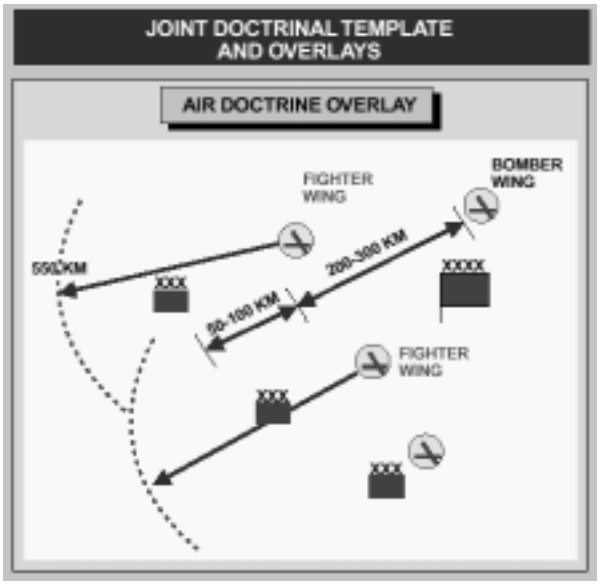


Figure 1-1. Examples of Doctrinal Templates (JP 2-01.3)

b. Description of enemy tactics. In addition to a graphic depiction shown in the template, an enemy model should at a minimum include a written description of an enemy's preferred

tactics. These descriptions should answer questions such as: does the enemy typically initiate offensive operations at night?; how does the enemy utilize reserve forces?; and how does weather affect the enemy's operations? Time event matrices may be used to show how the enemy might be expected to sequence and synchronize an operation over time.

c. Identification of High Value Targets (HVTs). The enemy model should include a list of HVTs – those assets ***the enemy commander requires*** for the successful completion of the missions that are depicted on the doctrinal templates. For example, an enemy ground force may be vulnerable to amphibious flanking attacks. In such a situation, the enemy's coastal defense assets, such as artillery and anti-ship cruise missiles, may be HVTs. This list of HVTs is developed in collaboration with the joint target coordination board (JTCB)[4]and may be used later in the planning process to develop specific target sets.

3. Determine the current enemy situation (Situation Template). The intelligence staff uses all available sources, methods, and data bases to determine the enemy's current situation. This includes all significant elements of Space, Time, and Forces addressed in previous steps. Enemy orders of battle, current force status and composition, and other factors are considered in maintaining a current situation plot, which is continuously updated throughout the planning process and the execution of the operation. See Appendix A for an example of a Situation Template.

4. Identify enemy capabilities. At this point, the intelligence staff is ready to determine what broad COAs the enemy is capable of taking that would allow him to achieve his objectives. Although the full analysis of the enemy's potential COAs will be done in the next JIPB step, here the analysts may begin to refine the DRAW-D general COAs. For example, what kind of attack might the enemy conduct – an envelopment, penetration, or another kind? Are there nonconventional capabilities the enemy might use, such as WMD or information operations? One tool is to compare the current enemy situation with each of the enemy doctrinal templates already constructed. Based on this situation, what does the enemy doctrine suggest it may do? As an example, this analysis might lead to a capability statement such as the following: "The enemy has the capability to interdict friendly SLOCs at chokepoints GREY and BLUE after repositioning units of the southern fleet. Current naval deployments preclude an attack before 4 August." The J-2 disseminates this evaluation of enemy capabilities to the other staff sections as soon as possible, typically as a written **intelligence estimate** that can support a wide range of further planning efforts. Depending on time available and the requirements of the JFC, however, the evaluation may be disseminated in a briefing or in other forms as desired.

IV. DETERMINE ENEMY COAs (ECOAs). Accurate identification of ECOAs requires the commander and his staff to think "as the enemy thinks." From that perspective, it is necessary first to postulate possible enemy objectives and then visualize specific actions within the capabilities of enemy forces that can be directed at these objectives and their impact upon potential friendly operations. This visualization should consider enemy actions two levels down. From the enemy's perspective, appropriate physical objectives might include own forces or their

[4] JTCB—A group formed by the joint force commander to accomplish broad targeting oversight functions that may include but are not limited to coordinating targeting information, providing targeting guidance and priorities, and preparing and/or refining joint target lists. (JP 1-02).

elements, own or friendly forces being supported or protected, facilities or LOCs, and geographic areas or positions of tactical, operational or strategic importance.

The commander should not consider ECOAs based solely on factual or supposed knowledge of the enemy intentions. The real COA by the enemy commander cannot be known with any confidence without knowing the enemy's mission and objective – and that information is rarely known. Even if such information were available, the enemy could change or feign his ECOA. Therefore, considering all the options the enemy could physically carry out is more prudent. No ECOA should be dismissed or overlooked because it is considered as unlikely or uncommon, only if impossible.

Potential enemy actions relating to specific physical objectives normally need to be combined to form *statements of ECOAs*. These statements should be broad enough so that the fundamental choices available to the enemy commander are made clear. Once all ECOAs have been identified, the commander should eliminate any duplication and combine them when appropriate.

To develop an ECOA, one should ask the following two questions:

- *Can* the enemy do it?
- *Will* the enemy accomplish his objective?
- *Would it* materially affect the accomplishment of my mission?

The final step in the JIPB process is designed to produce, **at a minimum**, two ECOAs: the enemy's most likely COA and the most dangerous COA. This gives the commander a "best estimate" and "worst case" scenario for planning, but, if time allows, other ECOAs are also developed. Each ECOA usually includes a description of expected enemy activities, the associated time and phase lines expected in executing the COA, expected force dispositions, associated COG(s), a list of assumptions made about the enemy when projecting the COA, a list of refined HVTs, and a list of named areas of interest (NAIs), which are geographical areas where intelligence collection will be focused. There are six sub-steps involved in determining the ECOAs.

1. Identify the enemy's likely objectives and desired end state. The analyst should begin by identifying the enemy's overall desired end state and strategic objective(s)[5] which will form the basis for identifying subordinate objectives—which may be both tangible and intangible. Because hard intelligence may not be available to answer these questions, assumptions will likely have to be made. These assumptions should be coordinated with the Joint Force Commander, J-3, J-5, and other staff planning sections as necessary.

[5] The enemy's Desired End State and Strategic Objective(s) are products of national-strategic analysis and should be provided from those sources.

2. Identify friendly objectives and critical factors *as seen from the enemy perspective*. ✯ATTENTION: This sub-step requires the intelligence analysts to coordinate with J3/J5 Joint Planning Group and others in an attempt to determine friendly critical factors such as strengths, weaknesses, and COG(s), as the enemy would see them. ✯

List Friendly Objective(s)

Strategic:
Operational:

List Friendly Critical Factors[6]

Critical Strengths	Critical Weaknesses

List Friendly Centers of Gravity (COG)[7]

Strategic	Operational

[6] Critical Factors—cumulative term for critical strengths and critical weaknesses of a military or nonmilitary source of power; they can be **quantifiable (tangible) or unquantifiable (intangible)**; critical factors are present at each level of war; they require constant attention because they are relative and subject to changes resulting from actions of one's forces or of the enemy's action. (Vego, Milan ***Operational Warfare,*** Naval War College, 2000)

[7] If the unit conducting the CES is a tactical headquarters, you may wish to identify a tactical COG.

List Friendly Critical Vulnerabilities (CVs)[8]

List Friendly Decisive Points (DPs)[9]

Geographically-Oriented	Force-Oriented	Cyber-Oriented

3. Identify enemy critical factors / COGs /CVs/ DPs . As done in the previous step for the friendly forces, the J2 now does the same for the enemy forces. Determine enemy critical factors, COG(s), CVs, and DPs.

Identify Likely Enemy Objective(s)

Strategic:
Operational:

[8] Critical Vulnerabilities—weaknesses (and sometime strengths) in relationship to the COG, that are open to the enemy's attack or can be exploited by the enemy. (Vego, Milan ***Operational Warfare****,* Naval War College, 2000)

[9] Decisive Point—a geographic location or source of military or nonmilitary power whose destruction or capture, control or defense, or continuous surveillance and monitoring would give immediate and marked advantage over the opponent in accomplishing one's military objective. (Vego, Milan ***Operational Warfare****,* Naval War College, 2000)

List Enemy Critical Factors

Critical Strengths	Critical Weaknesses

List Enemy Centers of Gravity (COG)[10]

Strategic	Operational

List Enemy Critical Vulnerabilities (CVs)

List Enemy Decisive Points (DPs)

Geographically-Oriented	Force-Oriented	Cyber-Oriented

4. Identify the full set of ECOAs available to the enemy. In this sub-step, the preliminary list of ECOAs (developed from DRAW-D) is reviewed and analyzed against the lists that have been made of enemy objectives and the friendly critical factors as seen by the enemy. Additional

[10] If the unit conducting the CES is a tactical headquarters, you may wish to identify a tactical COG.

ECOAs are developed and a consolidated list of all potential ECOAs is constructed. Each identified ECOA is examined to determine whether it meets the following tests:

- **Suitability:** does the ECOA have the potential to accomplish the enemy's objective?
- **Feasibility:** does the enemy have sufficient space, time, and forces to execute the ECOA?
- **Acceptability:** is the amount of risk associated with the ECOA likely to exceed the level of risk the enemy will accept?
- **Uniqueness:** each ECOA must be significantly different from the others, or else it should be considered a variation, branch or part of another ECOA.
- **Consistency with doctrine:** does this ECOA appear to be consistent with the enemy's doctrine, TTP, and observed patterns of operations?

In applying these tests the analyst must always be careful not to discard an ECOA just because it appears unacceptable, inconsistent with past practices, etc., *from our own perspective*. These tests are useful tools in determining which ECOAs the enemy might be likely to follow, but because our understanding of the enemy's thinking will never be perfect, we must be cautious not to apply these tests too stringently. In particular, the J-2 staff should attempt to anticipate possible "wildcard" COAs the enemy might use. Such asymmetric or unexpected ECOAs could be the result of either a careful, deliberate strategy, or of a miscalculation on the part of the enemy—but they can be extremely dangerous in either case. The J2 should also be careful not to "mirror image"—assuming the enemy would react as we would.

ECOAs
ECOA #1
ECOA #2
ECOA #3
ECOA #4

ECOA #1 REDLAND armed forces disperse into small formations and initiates a guerrilla operation to defeat the JTF ground forces.

Example ECOA

5. Evaluate and prioritize each ECOA. All of the identified ECOAs are evaluated and ranked according to their probability of adoption[11]. This prioritized list is intended to provide commanders and staffs with a starting point for the development of an OPLAN that takes into

[11] Ranking is recommended by the J2 and approved by the commander.

consideration the most likely, as well as the most dangerous, ECOAs. Developing this list requires an analysis of the situation from the enemy's perspective, using what may be known about the enemy's *intentions*. This knowledge will never be complete and much of this step is based on assumptions rather than facts.

Not all potential ECOAs need be retained in this step. Those that would not affect the friendly mission and those that are clearly unfeasible are discarded at this point. Potential ECOAs should not be discarded merely because they are considered unlikely; retain it if an ECOA would affect the mission, but list it low in probability as appropriate. Analysts must also be on guard against enemy deception efforts. The enemy may deliberately adopt a less than optimal ECOA in order to maximize surprise or may gradually increase preparations for a specific ECOA over a lengthy period of time, thereby psychologically conditioning the JIPB analyst to accept that level of activity as normal and not threatening. **If an ECOA is discarded, to avoid confusion, it is strongly recommended that you do not renumber the ECOAs**.

After listing the ECOAs in the relative probability of adoption, a list of enemy vulnerabilities should be compiled. These are vulnerabilities that could be exploited by own forces and it could be a general list or tied to specific ECOAs. This list will aid in later steps of the planning process when own COAs are compared against ECOAs and the advantages and disadvantages of each are evaluated.

Example Prioritization of Retained ECOAs

	RETAINED ECOAs (Prioritized)	**Vulnerability**
ECOA # 3	Enemy conducts a two pronged ground attack with supporting air. (Most Likely)	• No operational Reserves remaining • Extended LOCs • C3
ECOA # 4	Enemy conducts a delay and interdicts friendly APODs / SPODs	• Weak maritime interdiction capability • Limited Battlespace for delay
ECOA # 1	Enemy disperses into small formations and initiates a guerrilla operation. (Most Dangerous)	• Limited popular support • Centralized C3

	RETAINED ECOAs (Prioritized)	VULNERABILITIES
ECOA #		
ECOA #		
ECOA #		
ECOA #		

6. Develop each ECOA in the amount of detail time allows. Depending on the amount of time available for analysis and planning, each ECOA is developed in sufficient detail to describe: the type of military operation involved; the earliest time military action could commence; the location of the sectors, zones of attack, avenues of approach, and objectives that make up the COA; and the expected scheme of maneuver and desired end state. ECOAs will usually be developed in the order of their probability of adoption and should consist of a situation sketch/template, a narrative description, and a listing of HVTs.

The **situation template** (see Appendix A) for each ECOA will normally consist of a Modified Combined Obstacle Overlay (MCOO), which depicts the battlespace, together with a doctrinal template or model that shows how the enemy would be expected to act in that environment. Whenever possible, time phase lines (TPLs) should be placed on the situation template to depict the expected progress of enemy force movements (such as D+1, D+2, etc.). A **situation matrix** (see Appendix A) that depicts the expected progress of enemy activity across time in a spread sheet format may also be used.

The ECOA **narrative description** accompanies the situation template and usually addresses the earliest time the ECOA could be executed, location of the main effort, supporting operations, time and phase lines. In addition, critical decisions that the enemy commander must make during implementation of the ECOA are described in terms of their location and space as decision points.

High Value Targets (HVTs) have been initially identified in earlier JIPB steps. They should be refined and reevaluated at this point, identified on the templates, and coordinated with the staff targeting elements for possible targeting during combat.

7. Identify initial collection requirements. Once the J-2 staff has determined the likely ECOAs, the challenge becomes determining which one the enemy will actually adopt. In this sub-step, the analyst attempts to identify specific areas and activities which, when observed, will reveal which COA the enemy has chosen. The geographic areas where you expect key events to occur are called **named areas of interest (NAIs)** and the activities themselves are called **indicators**. Using a situation matrix, an **event template** graphic (see Appendix A), or other tool, the intelligence staff begins to task the appropriate collection systems and analytical assets to watch for indicators in given NAIs.

PART 2: MISSION ANALYSIS

I. Mission analysis is a problem-solving technique used to study the assigned mission and to identify all tasks necessary to accomplish it. Mission analysis is critical because it provides direction to the commander and the staff, enabling them to focus effectively on the problem at hand.

The mission is the primary factor in the estimate, because it is the key first step in the commander's mental process of reaching a sound decision. The commander is responsible for analyzing the mission and restating the mission for subordinate commanders to begin their own estimate and planning efforts.

During the mission analysis process, it is essential that the tasks (specified and implied) and their purposes are clearly stated to ensure planning encompasses all requirements; limitations (restraints – can't do, or constraints – must do) on actions that the commander or subordinate forces may take are understood; and the correlation between the commander's mission and intent and those of higher and other commanders is understood.

When the commander receives a mission tasking—normally through a WARNING ORDER (WO) during Crisis Action Planning (CAP) or PLANNING GUIDANCE during Deliberate Planning Process (DPP)—analysis begins with the following questions:

- **What tasks must my command do for the mission to be accomplished?**
- **What is the purpose of the mission received?**
- **What limitations have been placed on my own forces' actions?**
- **What forces/assets are available to support my operation?**

Once these questions have been answered, the commander should understand the mission. The commander should be familiar with the area and the situation before initiating analysis and issuing planning guidance, particularly if this is a mission not anticipated by the command.

Pertinent and significant facts are identified, and the initial assumptions to be used in the estimate process are assessed to decide their current validity.

II. Mission analysis normally contains the following steps:

- Determine Planning Facts
  - Determine the source(s) of the mission.
  - Determine who are the "supporting" and "supported" commanders.
  - State higher Commander's mission.
  - State higher Commander's intent.
  - Determine specified, implied, and essential tasks.
  - Identify externally imposed limitations affecting the mission.
  - Identify available forces and assets and noted shortfalls.
  - Identify (planning) assumptions.
- Conduct initial risk assessment.
- Develop the proposed mission statement.
- Provide a mission analysis brief
- Receive own Commander's Planning Guidance/Intent.
- Issue WARNING ORDER to subordinate commands.

1. Determine Planning Facts: The essence of the Mission Analysis step is to ascertain **"What does the organization know about the current situation and status?"** The following paragraphs should lead the staff through the discovery of those facts.

2. The **Source(s) of the Mission**: Normally found in a higher HQ OPORD/OPLAN, planning directive, or WARNING ORDER. Depending on the scope of the operation, consider also reviewing applicable UNSCRs, alliance directives, National Security Presidential Decision Directives, and other authoritative sources for additional information.

3. Who are **"Supported" and "Supporting Commanders" and Agencies?**: The staff should be clear in their understanding of support relationships. This information will also be normally found in the Source of Mission document (s).

4. Analyze the **Higher Commander's Mission**: The higher commander's mission statement—normally contained in his directive—and the capabilities and limitations of one's own forces must be studied. The commander must draw broad conclusions as to the character of the forthcoming military action. However, the commander should not make assumptions about issues not addressed by the higher commander and if **the higher headquarters' directive is unclear, ambiguous, or confusing, the commander should seek clarification.**

Higher Commander's Mission:

5. State the Higher Commander's Intent: A main concern for a commander during mission analysis is to study not only the mission, but also the intent of the higher commander. Within the breadth and depth of today's battlespace, effective decentralized control cannot occur without a shared vision. Without a commander's intent that expresses that common vision, unity of effort is difficult to achieve. In order to turn information into decisions and decisions into actions that are "about right," commanders must understand the higher commander's intent. While the commander's intent had previously been considered to be inherent in the mission and concept of operations, most often you will see it explicitly detailed in the plan/order. Successfully communicating the more enduring intent allows the force to continue the mission even though circumstances have changed and the previously developed plan/concept of operations is no longer valid.

The higher commander's intent is normally found in paragraph 3, Execution. It may also be found in the Warning Order (WO), although its location in the text may vary. Sometimes the higher's intent may not be transmitted at all. When this occurs, the subordinate commander and staff should derive an intent statement and confirm it with the higher headquarters. The intent statement of the higher echelon commander are repeated in paragraph 1, Situation, of the OPORD or OPLAN to ensure that the staff and supporting commanders understand it. Each subordinate commander's intent must be framed and embedded within the context of the higher commander's intent. Intents must be "nested" both vertically and horizontally to achieve a common end state throughout the command.[12] The intent statement at any level must support the intent of the next higher commander.

A Commander's Intent is broader than the mission statement and is generally accepted to be a concise, free-form expression of the *purpose of the force's activities, the desired results, and how actions will progress toward that end*. It is a clear and succinct vision, of how to conduct the action. In short, it links the mission and the concept of operations. The intent expresses the broader purpose of the action that looks beyond the "why" of the immediate operation to the broader operational context of that mission and may include "how" the posture of the force at the end state of the action will transition to or facilitate further operations (sequels).

Commander's Intent is not a summary of the concept of operations. It does not tell specifically "how" the operation is to occur, it must be crafted to allow subordinate commanders

[12] Nested refers to the concept of complementary intents among the joint force commands to ensure all are similarly focused.

sufficient flexibility and freedom to act in accomplishing their assigned mission(s) even in the "fog of war." The intent consists of three components[13]:

Purpose: the reason for the military action with respect to the mission of the next higher echelon. The purpose explains why the military action is occurring. This helps the force pursue the mission without further orders, even when actions do not unfold as planned. Thus, if an unanticipated situation arises, participating commanders will understand the purpose of the forthcoming action well enough to act decisively, and within the bounds of the higher commander's intent.

Method: the "how," in doctrinally concise terminology, explains the offensive form of maneuver, the alternative defense, or other action to be used by the force as a whole. Details as to specific subordinate missions are not discussed.

End State[14]: the relationship ("military landscape") between own force, the enemy and the factor space that describes the posture of the force at the completion of the operation.

The commander is responsible for formulating the single unifying concept for a mission. Having developed that concept, the commander then prepares his intent statement from the mission analysis, the intent of his higher commander, and his own vision to ensure his subordinate commanders are focused on a common goal. The task here is to clearly articulate the intent so it is understandable two echelons below. When possible, the commander delivers it, along with the order (or plan), personally (and/or via VTC). Face-to-face delivery ensures mutual understanding of what the issuing commander wants by allowing immediate clarification of specific points. While intent is more enduring than the concept of operations, the commander can, and should, revise his intent when circumstances dictate.

Higher Commander's Intent:

6. Determine specified, implied, and essential Tasks: Any mission consists of two elements: the task(s) to be accomplished by one's forces and their purpose. If a mission has multiple tasks, then the priority of each task should be clearly expressed. Usually this is done by the sequence in which the tasks are presented. There might be a situation in which a commander has been given such broad guidance that all or part of the mission would need to be deduced. Deduction should be based on an appreciation of the general situation and an understanding of the superior's objective. Consequently, deduced tasks must have a reasonable chance of accomplishment and should secure results that support the superior commander's objective.

[13] There is no specified joint format for Commander's Intent, though the offered construct is generally accepted.

[14] This should not be confused with the concept of "**Desired End State**" which reflects a broader view of all elements of power and the conditions that the highest political leadership of national or alliance/coalition forces wants in a given theater after the end of hostilities. (Vego, Milan ***Operational Warfare,*** Naval War College, 2000).

a. State the Task(s): The task is the job or function assigned to a subordinate unit or command by higher authority. A mission can contain a single task, but it often contains two or more tasks. If there are multiple tasks, they normally will all be related to a single purpose.

Depending on the objective to be accomplished, tactical, operational, and strategic tasks are differentiated. Examples of **tactical** tasks are: destroy enemy convoy TANGO; seize enemy naval base (airfield) ZULU; destroy enemy submarines in combat zone ROMEO; seize hill BRAVO, etc. Examples of **operational** tasks are: obtain and maintain sea control in maritime operations area ECHO; obtain air superiority in air area of operations HOTEL; conduct amphibious landing operation in BRAVO amphibious objective area (AOA); conduct a blockade of the CHARLIE Strait; conduct amphibious defense in the ALFA area of the coast, etc. Examples of strategic tasks are: destroy Purple armed forces in the Theater of Operations; seize control of country RED; destroy RED sea-based nuclear deterrent forces, etc.

(1) ***Specified Task(s)*:** Tasks listed in the mission received from higher commander's headquarters are specified or stated (assigned) tasks. They are what the higher commander wants accomplished. The commander's specified tasks are normally found in paragraph 3b (Execution - Tasks) section of the order, but could also be contained elsewhere—for example in coordinating instructions or in annexes (though this should be avoided if possible).

Specified Task(s):

(2) ***Implied Task(s)*:** After identifying the specified tasks, the commander identifies additional major tasks necessary to accomplish the assigned mission. Though not facts, these additional major tasks are implied tasks which are sometimes deduced from detailed analysis of the order of the higher commander, known enemy situation, and the commander's knowledge of the physical environment. Therefore, the implied tasks subsequently included in the commander's proposed mission should be limited to those considered essential to the accomplishment of the assigned mission. Implied tasks do not include routine or standing operating procedures (SOPs) that are performed to accomplish any type of mission by one's own forces. Moreover, tasks that are inherent responsibilities of the commander (providing protection of the flank of own unit, reconnaissance, deception, etc.) are not considered implied tasks. The exception occurs *only* if such routine tasks to be successfully accomplished must be coordinated or supported by other commanders. An example of an implied task is if your command was given a specified task to seize a seaport facility, the implied task might be the requirement to establish sea control within the area of operations before the assault.

Implied Task(s):

(3) ***Essential Task(s)*:** Essential tasks are a subset of the specified and implied Tasks—though most often are specified. They are those tasks that must be executed to achieve the conditions that define success. **Only essential tasks should be included in the mission statement.** Tasks should answer the "who,""what,""when," and "where" questions.

Essential Task(s):

b. State the Purpose: The purpose follows the statement of task(s). To clearly delineate the two, the statement "in order to" should be inserted between the task(s) and purpose. Purpose is normally found at the beginning of the "Execution" section of the superior's directive. If the superior's directive also contains an intent statement, that should also be reviewed to help analyze the "purpose" of the operation. **The purpose always dominates the tasks.** A task or tasks can be changed due to unforeseen circumstances, but the purpose remains essentially the same if the original mission remains unchanged. Purpose should answer the "why" question.

Example; "JTF X will seize seaport Y (*task*) **in order to** sever Country Z's Lines of Communication (*purpose*)."

Purpose:

7. Identify Externally Imposed Limitations:

a. Restraints (Can't Do): Restraints or restrictions are things the higher commander prohibits subordinate commander(s) from doing (for example, not conducting reconnaissance flights beyond Latitude 52˚, not to approach the enemy coast closer than 30 nautical miles, specific Rules of Engagement (ROE) guidance, etc.). The commander and staff should consider

the impact of the stated ROE on their ability to accomplish the mission (for example, access to or through sovereign land, sea, or airspace as a legal/political consideration). Any requirement to change the ROE, either relaxation or more restrictive, must be considered and addressed when developing the COAs.

Restraints (Can't Do):

b. Identify Externally Imposed Constraints (Must Do): The superior's directive normally indicates circumstances and limitations under which one's own forces will initiate and/or continue their actions. Therefore, the higher commander may impose some constraints on the commander's freedom of action with respect to the actions to be conducted. These constraints will affect the selection of COAs and the planning process. Examples include tasks by the higher command that specify: "Be prepared to . . . "; "Not earlier than . . . "; "Not later than . . . ."; "Use coalition forces…" Time is often a constraint, because it affects the time available for planning or execution of certain tasks.

Constraints (Must Do):

Constraints and restraints collectively comprise "limitations" on the commander's freedom of action. Remember restraints and constraints do not include doctrinal considerations. Do not include self-imposed limitations during this portion of the CES.

8. Analysis of Available Forces and Assets:

a. Review forces that have been provided for planning and their locations (if known). Determine the status of reserve forces and the time they will be available.

b. Referring back to paragraph 6 in which you identified your specified and implied tasks, now determine what broad force structure and capabilities are necessary to accomplish these

tasks (e.g., Is a Carrier Battle Group or forcible entry capabilities required?). Note: The Service component Liaison Officers (LNOs) and planners are critical players in this step.

c. Identify shortfalls between the two.

CAUTION: This is just an initial JTF force structure analysis. More specific requirements will be determined after the Courses of Action have been developed and analyzed!

Forces Available and Noted Shortfalls by Task or Function
Example: **Task**: Seize APOD. **Observation:** No forced entry capability (MEU, Airborne)

9. Identify Higher Command's Assumptions and Create Own Assumptions: An assumption is used in the absence of facts that the commander needs to continue planning. An assumption is a supposition on the current situation (or a supposition on the future course of events), which is (1) assumed to be true without positive proof, and (2) necessary to enable the commander, during planning, to complete an estimate of the situation and decide the course of action (Joint Pub 1-02). An assumption encompasses the issues over which a commander normally does not have control. If you make an assumption, you must direct resources towards turning that assumption into a fact (i.e., directing intelligence collection, RFI's, etc) and/or developing a branch plan.

Assumptions are made for both friendly operations and the enemy. The commander can assume the success of friendly supporting actions that are essential for success, but cannot assume success for the actions of his own forces—no matter which COA he chooses. Planners should normally assume the worst-case scenario. In other words, they must assume that the opponent will use every capability at his disposal and will operate in the most efficient manner possible. To dismiss enemy options as unlikely could dangerously limit the depth and validity of planning. Planners should not assume away an enemy capability. They cannot assume a condition simply because of a lack of accurate knowledge of friendly forces or a lack of intelligence about the enemy.

Key characteristics of assumptions are that they are reasonable suppositions— **logical** and **realistic**; and they must be **essential** for planning to continue. Existing capabilities should not be treated as assumptions. Examples of inappropriate assumptions include: “Our forces will flow into theater without delay”; “necessary logistics resources, including support to available operational forces . . . will be provided from CONUS as required”; “communications will be provided as required”; etc. An appropriate assumption might be, “Country Orange will remain neutral during the operation.”

Assumptions given by the higher headquarters must be treated as facts by subordinate commanders. If the commander or staff does not concur with the higher commander's planning assumptions, they should be challenged before continuing with the planning process. All assumptions should be continually reviewed.

Assumptions are used in the commander's estimate at each command echelon. Usually, commanders and their staffs should make assumptions that fall within the scope of their battlespace. We often see that the higher the command echelon, the more assumptions that will be made. Assumptions enable the commander and the staff to continue planning despite a lack of concrete information. They are artificial devices to fill gaps in actual knowledge, but they play a crucial role in planning. A poor assumption may partially or completely invalidate the entire plan—to account for a possible wrong assumption, planners should consider developing branches to the basic plan. Assumptions should be kept at a minimum. For examples of planning assumptions see Appendix B to this workbook.

Assumptions are not rigid. They must be continuously checked, revalidated, and adjusted until they are proven as facts or are overcome by events.

Higher Command's Assumptions:

Own Assumptions:

Tests for an Assumption:
Is it logical?
Is it realistic?
Is it essential for planning?

10. Conduct an Initial Risk Assessment: In order to advise the Commander of initial apparent risks, the staff should conduct an initial risk assessment. Risks, and their mitigation, are addressed again in STEP 2 Developing COAs.

a. There may be risks associated with:

(1)Mission (risks the Commander is willing to take for mission accomplishment, e.g., forward presence vs. risk of provocation).

(2)Force protection issues (e.g., a high risk of significant casualties, medium risk of fratricide, low risk of terrorist activities in the JOA).

(3) Time available as provided by Higher HQ-imposed limitations.

b. Higher HQ might state or imply acceptable risk (e.g., could be addressed in the Higher Commander's intent, concept of operations, additional guidance).

c. Individual staff sections determine risks from their own situational analysis and provide them to the Joint Planning Group / Operational Planning Group (JPG/OPG)[15] through their representatives.

d. The JPG/OPG determines the overall risks and considers potential methods for risk mitigation.

Initial Risk Assessment

11. Develop Proposed Mission Statement: The product of the mission analysis is the proposed mission. It must be a clear, concise statement of the essential (specified and implied) tasks to be accomplished by the command and the purpose(s) of those tasks. Multiple tasks are normally listed in the sequence to be accomplished. Although several tasks may have been identified during the mission analysis, the proposed mission includes only those that are critical to the overall success of the mission. The tasks that are routine or inherent responsibilities of a commander are not included in the proposed mission. The external limitations, assumptions and facts identified in STEP 1 are used later during the formulation of COAs. **The proposed mission becomes the focus of the commander's and staff's estimates**. It should be reviewed at each step of the CES process to ensure planning is not straying from this critical focus (or that the mission requires adjustment). It is contained in paragraph 1 of the commander's estimate and paragraph 2 of the basic operations plan (OPLAN) or operations order (OPORD).

All efforts by the commander and the staff should be mission-oriented. Losing sight of the assigned mission will result in a confused analysis, which may ultimately lead to failure. The mission statement must contain all of the following elements:

- Who (what types of forces) will execute the action?
- What type of action (for example, deterrence, defeat, evacuation, etc.) is contemplated?
- When will the action begin?
- Where will the action occur (area of operations and objectives)?
- Why (for what purpose) will each force conduct its part of the operation?

[15] OPG—Operational Planning Group. JPG—Joint Operational Planning Group. Those members of the service components or joint staff engaged in the planning process.

The element of "what" states the mission essential tasks. The unit mission statement will include on-order missions; be-prepared missions will be in the concept of operations.

On order, Commander JTF Blue Sword conducts operations to seize lodgments in REDLAND and defeat the REDLAND armed forces in order to eliminate terrorist safe havens in the region.

Sample Proposed Mission Statement

Proposed Mission Statement:

PART 3: MISSION ANALYSIS BRIEF

Upon conclusion of the Mission Analysis and JIPB, the staff will present a Mission Analysis Brief to the Commander. Though unit Standard Operating Procedures (SOPs) may dictate the specific format for a Mission Analysis Brief, the following sample format is provided:

MISSION ANALYSIS BRIEFING

BRIEFER	SUBJECT
CoS[16] or J5/J3	- Purpose and agenda - Area of Operations (Joint Operations Area)
J2	- Initial intelligence situation brief (could also include elements of the Joint Intelligence Preparation of the Battlespace)
J5/J3	- CINC's mission, intent and concept of operations - Forces currently available (US and multinational) - Assumptions - Limitations — Must do and cannot do - Centers of gravity/decisive points — Enemy and friendly - Tasks to be performed — Specified — Implied — Essential - *Initial* JTF force structure analysis - Risk assessment - End state - Proposed mission statement - Proposed Initial CCIR* - Time analysis—Including projected planning milestones
J1**	- Facts, assumptions, conclusions — Personnel actions — Personnel services — Other personnel related support
J4**	— Facts, assumptions, conclusions — Supply — Services — Health services — Transportation — Others
J6**	- Facts, assumptions, conclusions
Others**	- Others as appropriate to the mission

* Optional—depends on SOP.
** Should only be amplifications that each of these staff sections believe necessary for the Commander to hear.

[16] Chief of Staff (CoS)

PART 4: COMMANDER'S GUIDANCE

1. Commander's Intent: The commander will normally issue an **initial intent** (see discussion in Part 2, paragraph 5, pp. 1-25 and 1-26) with the planning guidance and in the WARNING ORDER. The commander's intent should focus on the aim of the forthcoming action for subordinate units two levels down. The intent statement in an OPORD or OPLAN is placed in paragraph 3, Execution.

Remember, the commander's intent must be crafted to allow subordinate commanders sufficient flexibility in accomplishing their assigned mission(s). It must provide a "vision" of those conditions that the commander wants to see after the military action is accomplished. The commander must define how the "vision" will generally be accomplished by forces and assets available, and the conditions/status of own and enemy forces with respect to the battlespace as the end state. The best commander's intent is written by the commander.

Sample Commander's Intent Statement for a JTF Commander

COMMANDER'S INTENT

The purpose of this operation is to eliminate REDLAND's support to international terrorism.

Method: JTF Blue Sword will conduct rapid and decisive military operations to quickly overwhelm REDLAND's armed forces, and thoroughly dismantle their terrorist support structure. Surprise and speed of operations will be keys to our success. The flow of JTF forces into REDLAND must occur seamlessly upon seizure of requisite APODS/SPODS; we cannot lose the initiative at this critical stage. All operations must minimize collateral damage or the environment may become more conducive to a population more receptive to REDLAND guerilla operations.

End state: at the conclusion of operations, the REDLAND armed forces are defeated and the terrorist C2 and camp infrastructure in REDLAND is destroyed and our forces are postured to hand-over the JOA to an International Peacekeeping force.

Commander's Initial Intent:

2. Commander's Critical Information Requirement (CCIR): Are elements of information personally required and approved by the commander that directly affects his decision making. CCIR result from the analysis of Information Requirements (IR) against the mission and commander's intent and are normally limited in number (often 5 or fewer items) to enhance comprehension. They help the commander filter information available to him by defining what is important to mission accomplishment. They also help focus the efforts of his subordinates and staff in allocating resources and to assist staff officers in making recommendations. The CCIR directly affect the success or failure of the mission and they are time-sensitive in that they drive commanders' decisions at decision points. The CCIR contain two key subcomponents of information requirements:

- **Priority Information Requirements (PIR)—**What do I need to know about the enemy (as discussed in the JIPB section of this workbook)?
- **Friendly Force Information Requirements (FFIR)—**What do I need to know about the capabilities of own and adjacent friendly forces (what information must we track on our own forces)?

The key question is, "What does the commander need to know in a specific situation to make a particular decision in a timely manner?" The commander decides what information is critical, based on his experience, the mission, the higher commander's intent, and input from the staff. CCIR are situation-dependent and specified by the commander for each operation. He must continuously review the CCIR during the planning process and adjust them as situations change. During the CES, initial CCIR are identified from the Joint Intelligence Preparation of the Battlespace (JIPB) (STEP 1. Part II) and Analyze Friendly COAs (STEP 3). The staff often nominates proposed Initial CCIR for the Commander's approval during the Mission Analysis Brief.

Initial CCIR:

3. Commander's Planning Guidance: The commander approves or modifies the proposed mission and provides his staff and the subordinate commanders and their staffs initial planning guidance. **This guidance is essential for timely and effective COA development and analysis.** The guidance should precede the staff's preparation for conducting their respective staff estimates. The commander's responsibility is to implant a desired vision of the forthcoming combat action into the minds of the staff. Enough guidance (preliminary decisions) must be provided to allow the subordinates to plan the action necessary to accomplish the mission consistent with the intent of the commander two echelons above. The commander's guidance

must focus on the essential military tasks and associated objectives that support the accomplishment of the assigned mission.

The commander may provide the planning guidance to the entire staff and/or subordinate commanders or meet with each staff officer or subordinate unit commander individually as the situation and information dictates. The guidance should be published in written form. No format for the planning guidance is prescribed, however, the guidance should be sufficiently detailed to provide a clear direction and to avoid unnecessary effort by the staff or subordinate commanders. The more detailed the guidance is, the more specific staff activities will be. And, the more specific the activities, the more quickly the staff can complete them. Yet, the more specific the activities, the greater the risk of overlooking or inadequately examining other details that may affect mission execution.

The purpose of Commander's Guidance is to focus staff effort in meaningful direction to develop courses of action that reflect the Commander's style and expectations. The content of planning guidance varies from commander to commander and is dependent on the situation and time available. Commander's planning guidance should consider addressing:

- Specific course(s) of action to consider or not to consider, both friendly and enemy, governing factors to use for COA assessment, and the priority for addressing them.
- Initial CCIR.
- Initial intent.
- Initial Risk assessment.
- Intelligence, Surveillance and Reconnaissance (ISR) guidance.
- Military deception guidance (this guidance may be limited in dissemination for OPSEC purposes).
- Fires (lethal and non-lethal) guidance.
- Effects (lethal and non-lethal) guidance.
- Targeting guidance.
- Security measures to be implemented.
- The time plan (back briefs, rehearsals, movement, etc.).
- The type of order to be issued.
- Collaborative planning sessions to be conducted.
- Deployment guidance.
- The type of rehearsal to conduct.
- Additional specific priorities for sustainment.
- Any other information the commander wants the staff and/or components to consider.

Planning guidance can be very explicit and detailed, or it can be very broad, allowing the staff and/or subordinate commanders wide latitude in developing subsequent COAs. However, regardless of its scope, the content of planning guidance must be arranged in a logical sequence to reduce the chances of misunderstanding and to enhance clarity. Moreover, it must be recognized that all the elements of planning guidance are only tentative.

The commander may issue additional planning guidance during the decision making process. The focus should remain upon the framework provided in the initial planning guidance. There is no limitation as to the number of times the commander may issue his planning guidance.

However, when guidance radically changes prior communications, the commander should clarify why the guidance has changed since some other aspect of the planning process may also be compromised.

Commander's Planning Guidance:

4. Warning Order (WO): Once the commander approves the mission following the Mission Analysis Brief and evaluates the factors affecting mission accomplishment, a WO will normally be issued to subordinate commanders using the five paragraph format (SMEAC).

1. Situation
2. Mission
3. Execution
4. Admin and Logistics
5. Command and Control

It serves as a preliminary notice of a forthcoming military action with an understanding that more information will follow after the COA is selected. It is normally issued as a brief written message that lists the available information and required instructions.

The commander and his staff also refine their initial planning timeline for the use of available time. They compare the time needed to accomplish essential tasks to the higher headquarters' time line to ensure mission accomplishment is possible in the allotted time.

The commander and staff specify when and where they will conduct the various briefings that are the result of the planning process, if they will conduct collaborative planning sessions and, if so, when and by what means, and when, where, and in what form they will conduct rehearsals. The commander can maximize available planning time for his

own and subordinate units by sending additional WOs as detailed planning develops. This allows parallel planning by subordinate units. The commander also frequently uses liaison officers (LNOs) to stay abreast of planning at higher headquarters.

STEP 2: DEVELOP FRIENDLY COURSES OF ACTION (COAs)

A COA is any concept of operation open to a commander that, if adopted, would result in the accomplishment of the mission. For each COA, the commander must envisage the employment of his forces and assets *as a whole*—normally two levels down—taking into account externally imposed limitations, the factual situation in the area of operations, and the conclusions previously drawn up during STEP 1 (JIPB and Mission Analysis).

This step should begin with the Joint Planning Group reviewing some key Step 1 information:

- Mission
- Commander's Intent
- Assumptions
- Objectives (enemy & friendly)
- Centers of Gravity (enemy & friendly)
- Decisive Points (enemy & friendly)

After receiving guidance, the staff develops COAs for analysis and comparison. The commander must involve the entire staff in their development. Commander's guidance and intent focus the staff to produce a comprehensive, flexible plan within the time constraints. Direct commander participation helps the staff get quick, accurate answers to questions that occur during the process. COA development is a deliberate attempt to design unpredictable COAs (difficult for the enemy to deduce). A good COA will position the force for future operations and provide flexibility to meet unforeseen events during execution. It also provides the maximum latitude for initiative by subordinates.

The order from higher headquarters normally provides the what, when, and why for the force as a whole. The "who" in the COA does not specify the designation of units; it arrays assets by component (for example, naval, ground, air, space) and by function (intelligence, maneuver, fires, logistics, command and control, protection).

Staffs developing multiple COAs must ensure that options are:

- **Suitable.** It must accomplish the mission and comply with higher command guidance. However, the commander may modify his guidance at any time. When the guidance changes, the staff records and coordinates the new guidance and reevaluates each COA to ensure it complies with the change.
- **Feasible.** The unit must have the capability and resources to accomplish the mission in terms of available time, space, and resources, within constraints of the physical environment, logistics and sustainability, and in the face of extreme enemy opposition. This requires a visualization of the COA against each ECOA. Innovative COAs take full advantage of the situation and *all* available forces and assets. Any assessment of the feasibility at this point in the estimate is only tentative. The intent here is to discard COAs that are clearly not feasible because available forces and assets are inadequate.

- **Acceptable.** The advantage gained by executing the COA must justify the cost in resources, especially casualties. A COA is considered acceptable if the estimated results are worth the estimated costs – losses of own forces versus the mission's purpose – and it complies with higher's guidance. Moreover, losses in regard to time, position, or opportunity must be estimated as well. Whether a COA is acceptable must be considered from both the commander's view and the view of the commander's superior. A COA that does not meet this test must be modified to make it acceptable or discarded at this point in the estimate. This assessment is largely subjective. Like the feasibility test, the acceptability of a specific COA can only be tentative at this stage. The prospect of risk needs to be taken into account, and may have to be accepted.
- **Distinguishable.** Each COA must differ *significantly* from any others. The variability or significant differences of each COA is ensured by emphasizing distinctions in regard to: focus of direction of the main effort; focus of direction/type of supporting effort; scheme of maneuver (air, land, maritime); task organization; phasing/sequencing; anticipated use of reserves; principle method of combat employment or method[17] of mission accomplishment; and logistics considerations.
- **Complete.** A COA is complete if it includes the following: WHO? (which component commander(s) is/are to conduct combat action(s); WHAT? (the type of combat action: Defend/Reinforce/Attack/Withdraw/Delay (DRAW-D)); WHEN? (the time the action will begin); WHERE? (the location of action); HOW? (the method or scheme of employment of forces and assets); and WHY? (the purpose of combat action).

There are normally six steps in COA development:

- Analyze relative combat power.
- Generate options.
- Array initial forces.
- Develop the scheme of maneuver.
- Recommend command relationships.
- Prepare COA statements and sketches.

1. Analyze Relative Combat Power: Combat power is the effect created by combining the elements of maneuver, firepower, protection, information, combat experience, state of training, morale, sustainability, and leadership in operations against the enemy. The commander integrates and applies the effects of these elements, along with logistics, against the enemy. The goal is to generate overwhelming combat power to accomplish the mission at minimal cost. Planners should compare friendly strengths against enemy weaknesses, and vice versa, for each element of combat power. From these comparisons, they may deduce particular vulnerabilities for both enemy and friendly forces that may be exploitable or may need to be protected. These comparisons may provide planners with insights into effective force employment.

By determining each force's strengths and weaknesses as a function of combat power and analyzing force ratios, planners can gain some insight into:

[17] Method differs from scheme of maneuver in that method reflects a markedly different way to accomplish a mission, e.g. blockade versus forced entry.

- What friendly capabilities pertain to the operation.
- What type operations may be possible from both friendly and enemy perspectives.
- How and where the enemy may be vulnerable.
- What additional resources may be required to execute the mission.
- How to allocate existing resources.

Planners initially determine the relative combat power of the opposing forces. The JIPB in STEP 1 is used to assess the capabilities and limitations of enemy forces and their weapon systems and how these systems compare to one another. After completing the relative combat power estimates of the units involved, planners can use historical minimum-planning ratios for various combat missions (see Appendix B). After carefully considering battlespace and enemy capabilities, they can generally conclude what types of operations can be conducted successfully. This step provides the planners with what might be possible, not assurance that a specific COA will succeed or fail. Planners can further refine the ratios by considering the affects generated by other combat multipliers, i.e., airpower, terrain, weather, morale, etc., in determining minimum-planning ratios for various combat missions (see Appendix B).

Planners must not develop and recommend COAs based solely on mathematical analyses of relative combat power and force ratios. Although some numerical relationships are used in this process, the estimate is largely subjective. It requires assessing both **tangible and intangible factors**, such as friction or enemy will and intentions. Numerical force ratios do not include the human factors of warfare that, many times, are more important than the number of tanks, ships, or airplanes. The staff must carefully consider and integrate the intangible factors into their comparisons.

Risk is inherent in any use of military force or routine military activity. Earlier, in STEP 1, the commander conducted his initial risk assessment. In STEP 2 the staff will develop a more focused view of the operational risks and offer means to mitigate them. There are several types of risk. However, the risk discussed in relation to the CES is associated with the dangers which exist due to the presence of the enemy, the uncertainty of the enemy intentions, and the potential rewards or dangers of own force action in relation to mission accomplishment.

Where resources are scarce, the commander may accept risk by applying the principle of economy of force in one area (supporting effort) in order to generate “massed effects” of combat power elsewhere (main effort). In an effort to effect surprise or maintain tempo he may begin action prior to the closure of all units or sustainment. To maneuver or move the force for further actions he may sacrifice somewhat on force protection by transiting a part of the force through a contested area. It is the rare situation where forces are so mismatched that the commander is not concerned with risk to the mission, and even in these situations he will still desire to minimize the individual risk to his forces. All these are examples of risk - risk a commander alone determines how and where he is willing to accept.

While risk cannot be totally eliminated, it can be “managed” by a systematic approach that weighs the costs - time, personnel, resources - against the benefits of mission accomplishment. Commanders have always risk-managed their actions: intuitively, by their past experiences, or otherwise. Risk management won’t prevent losses but, properly applied, it will allow the

commander to take necessary and prudent risks without arbitrary restrictions, and while maximizing combat capabilities.

Accepting risk is a function of both risk assessment and risk management. This entails:

- ***Identification of threats.*** Identify threats to the force. Consider all aspects of **M**ission, **E**nemy, **T**errain, **T**ime, **T**roops, and **C**ivil Considerations (METT-TC) for current and future situations. Sources of information about threats include reconnaissance, intelligence, experience/expertise of the commander and staff, etc.

- ***Assessment of threats***. Assess each threat to determine the risk of potential loss based on **probability** (frequent–occurs often, continuously experienced; likely–occurs several times; occasional–occurs sporadically; seldom–unlikely, but could occur at some time; unlikely–can assume it will not occur) and **severity** (catastrophic–mission is made impossible; critical–severe mission impact; marginal–mission possible using alternate options; negligible–minor disruptions to mission) of the threat. Determining the risk is more an art than a science. Use historical data, intuitive analysis, and judgment to estimate the risk of each threat. Probability and severity levels are estimated based on the user's knowledge of probability of occurrence and the severity of consequences once the occurrence happens. The *level of risk* is assessed by a combination of the threat, its probability of occurring, and *degree of severity*. The levels of risk are extremely high–loss of ability to accomplish mission; high–significantly degrades mission capabilities in terms of required mission standard; moderate–degrades mission capabilities in terms of required mission standards; and low–little or no impact on accomplishment of the mission.

- ***Address risk, determine residual risk, and make risk decision.*** For each threat, develop one or more options that will eliminate or reduce the risk of the threat. Specify who, what, where, when, and how. Determine any residual risk and revise the evaluation of the level of risk remaining. The commander alone then decides whether or not to accept the level of residual risk. If the commander determines the risk is too great to continue the mission or a COA, he directs the development of additional measures to account for the risk or he modifies (or rejects) the COA.

- ***Define indicators.*** Think through the threat—what information will provide indication that the risk is no longer acceptable? Ensure subordinates and staff are informed of the importance of communicating the status of those indicators.

- ***Observe and evaluate.*** In execution, monitor the status of the indicators and enact further options as warranted. After the operation, evaluate the effectiveness of each option in reducing or eliminating risk. For options that were not effective, determine why and what to do the next time the threat is identified.

Applying risk management requires a clear understanding of what constitutes "unnecessary risk", when the benefits actually do outweigh costs, and guidance as to the command level to

make those decisions. When a commander decides to accept risk, the decision must be coordinated with the affected units—where and how the commander is willing to accept risk is detailed in each COA.

2. Generate Options: A good COA should be capable of defeating all retained enemy COAs. In a totally unconstrained environment, the goal is to develop several such COAs. Since there is rarely enough time to do this, the commander usually limits the options with his commander's guidance. The options should focus on enemy COAs arranged in order of probable adoption.

Brainstorming is the preferred technique for generating options. It requires time, imagination, and creativity, but it produces the widest range of options. The staff must be unbiased and open-minded in evaluating proposed options. Staff members can quickly identify COAs not obviously feasible in their particular areas of expertise. They can also quickly decide if they can modify a COA to accomplish the requirement or eliminate it immediately. If one staff member identifies information that might affect another's analysis, he shares it immediately. This eliminates wasted time and effort.

All COA development planning should consider all joint force capabilities and focus on contributing to the defeat/ neutralization of the enemy's Center of Gravity (COG) and the protection of the friendly COG. As identified in STEP 1, Part 1 (JIPB), access to **both** of these COGs is found through the control/neutralization /defeat of identified critical vulnerabilities and decisive points. The COA should mass the effects of overwhelming combat power at these points to achieve a result with respect to the enemy's COG. These will be the decisive operations. Next, the staff determines the **shaping operations**—those operations that set conditions for the decisive operation to succeed. The **decisive operation**'s purpose directly relates to the mission of the unit; the shaping operation's purpose relates directly to the decisive operation. The staff then determines the essential tasks for the decisive, shaping, and **sustaining operations** to achieve these purposes.

Once staff members have explored each COA's possibilities, they can examine each, (by changing, adding, or eliminating COAs as appropriate), to determine if it satisfies the COA-selection criteria. The staff must avoid the common pitfall of presenting one good COA among several "throwaway" COAs. Often the commander will combine COAs or move desirable elements from one to another.

COA#1: JTF Blue Sword conducts airborne and amphibious forced entry operations to seize REDLAND airbase and projects ground forces into REDLAND to defeat the 23rd Red Guard Division and destroy terrorist sites. Air and maritime forces conduct supporting operations and neutralize REDLAND air and naval capabilities.

Sample COA Statement

List *Tentative* Courses of Action:
COA #1:
COA #2:
COA #3:
COA #4:

3. Array Initial Forces: To determine the forces necessary to accomplish a given COA and to provide a basis for the scheme of maneuver, planners must consider:

- The organization's mission statement and the higher commander's intent and guidance.
- The air, ground, and sea avenues of approach (both enemy and friendly).
- As many possible enemy COAs as time permits, starting with the most likely and including the worst case (most dangerous).

Planners then determine the ratio of friendly to enemy units required for each task. They consider the entire battlespace organization, to include decisive, shaping, and sustaining operations. **The ratio is a starting point only**; planners can adjust the ratio as they develop the COA. Planners next determine the battlespace geometry, or Areas of Operation (AOs) for component commands. The J2's initial space analysis should validate the selection, or determine a recommended change, which must then be resolved with higher headquarters.

Planners should consider military deception operations for their potential influence on COAs since aspects of the deception operation may influence unit positioning.

Planners next make the initial array of friendly forces. Planners normally array forces two levels down.[18] The initial array of forces focuses on generic units without regard to specific units or task organization, and then considers all force multipliers, i.e., airpower, IO, etc., they must allocate to accomplish the mission.

[18] The intent of arraying forces two levels down is to assess force requirements and not to micromanage subordinates.

The initial array identifies the total number of units or assets needed, develops a base of knowledge to make decisions, and identifies possible methods of dealing with the enemy during scheme-of-maneuver development. If the number arrayed is less than the number available, the additional units or assets are placed in a pool for use during scheme-of-maneuver development. If the number arrayed is greater than the number available, the shortfall becomes a possible requirement for additional resources or a place to possibly accept risk.

4. Develop the Tentative Concept of Operations for each COA: The concept of operations describes how the forces will accomplish the commander's intent. It concisely expresses the commander's concept for operations and governs the design of supporting plans or annexes. Planners develop a concept by refining the initial array of forces and using graphic control measures to coordinate the operation and to show the relationship of friendly forces to one another, the enemy, and the battlespace. During this step, units are converted from generic to specific types of units, such as armored or mechanized divisions. The purpose of this step is to clarify the commander's initial intent about the deployment, employment, and support of friendly forces and assets and to identify major objectives and target dates for their attainment. In drafting the tentative concept of operations for each COA should state, in broad but clear terms, what is to be done, the size of the forces deemed necessary, and time in which force needs to be brought to bear.

A tentative concept of operations should be simple and complete. It should address all the elements of organizing the battlespace. The concept of operations includes:

- The purpose of the combat action.
- When forces will be deployed.
- A statement of where the commander will accept operational (and/or tactical) risk.
- Identification of critical friendly events[19] and phases of the operation (if phased).
- How and where joint forces will be employed.
- Designation of the decisive operation, along with its task and purpose.
- Designation of shaping operations, along with their tasks and purposes, linked to how they support the decisive operation.
- Designation of sustaining operations, along with their tasks and purposes, linked to how they support the decisive and shaping operations.
- Designation of reserve, to include location, composition, task, and purpose.
- ISR and protection operations.
- Identification of options that may develop during an operation.
- Assignment of subordinate areas of operations.
- Concept of operational fires.[20]
- Determined IO concept of support and objectives.
- Prescribed formations or dispositions when necessary.
- Priorities for each operational function in support of the operation.

[19] These Critical Events will be used later in Step 3, *Analyze Friendly Courses of Action* (Wargame).
[20] Operational Fires —fires applied to achieve a decisive impact on the outcome of a campaign or major operation. They can be lethal or nonlethal. (Vego, Milan ***Operational Warfare***, Naval War College, 2000)

- Considerations of the effects of enemy weapons of mass destruction (WMD) on the force (as applicable).

Planners select control measures[21] to control subordinate units during the operation. Planners base control measures on the array of forces and the scheme of maneuver to defeat probable enemy courses of action. Control measures clarify responsibilities and synchronize combat power at decisive points while lessening the risk of fratricide. All control measures impose some constraints on subordinate commanders. Control measures used should be the minimum required to exercise necessary control over the operation while allowing as much freedom of action as possible to subordinates. Planners should also develop phase lines to implement expected branches and sequels. When developing the CONOPs, planners should use any forces remaining from the initial array to weight the decisive operation.

5. Recommend Task Organization: Planners next establish preliminary command and control (C2) arrangements to groupings of forces, thus creating a task organization. This assignment should consider the types of units to be assigned to a headquarters or component and its span of control. If planners need additional headquarters, they note the shortage and resolve it later. Task organization takes into account the entire battlespace organization. It also accounts for the special C2 requirements of operations that have special requirements, such as amphibious landings.

6. Prepare COA Statements and Sketches: The staff prepares a COA statement and sketch for each COA developed and retained. The COA statement must clearly portray how the unit will accomplish the mission and explain the tentative CONOPs. It should include the mission and end state and address the battlespace organization/framework. The sketch provides a picture of the joint force employment concept of the COA. Together, the statement and sketch cover the "who" (generic task organization), "what" (tasks and purposes), "when", "where," "how," and "why" (purpose of the operation) for each subordinate unit/component command; any significant risks; and where they occur for the force as a whole.

The sketch could include the array of generic forces and control measures, such as:

- Component command boundaries that establish the JOA/AO.
- Unit deployment/employment.
- Control graphics.
- Ground, air, and sea axes of advance, i.e., Lines of Operation (LOOs).
- Intermediate Staging Bases (ISBs), i.e., Bases of Operation (BOOs); Lines of Communication (LOCs); and Objectives (OBJs).
- Sequencing of events.
- Designation of the decisive, i.e., main effort, and shaping, i.e., supporting effort, operations.
- Enemy known or templated locations.

[21] Some examples are identifying Joint Special Operations Area (JSOA), Amphibious Objective Areas (AOA), specific Areas of Operations for ground and/or maritime components, Joint Rear Areas, specific fire control measures, etc.

Planners can enhance the sketch with identifying features such as cities, rivers, and roads to help orient the commander and staff. The sketch may be on any media; what it portrays is more important than its form (see figure 2-1).

At this stage of the process, the staff might propose, or the commander require, a briefing on the COAs developed and retained. The purpose of this briefing is to gain the commander's approval of the COAs to be further analyzed; to receive guidance on how COAs are to be compared and evaluated; or to receive guidance for revision of briefed COAs or the development of additional COAs. This is another place where a collaborative session may facilitate subordinate planning.

The COA briefing includes:

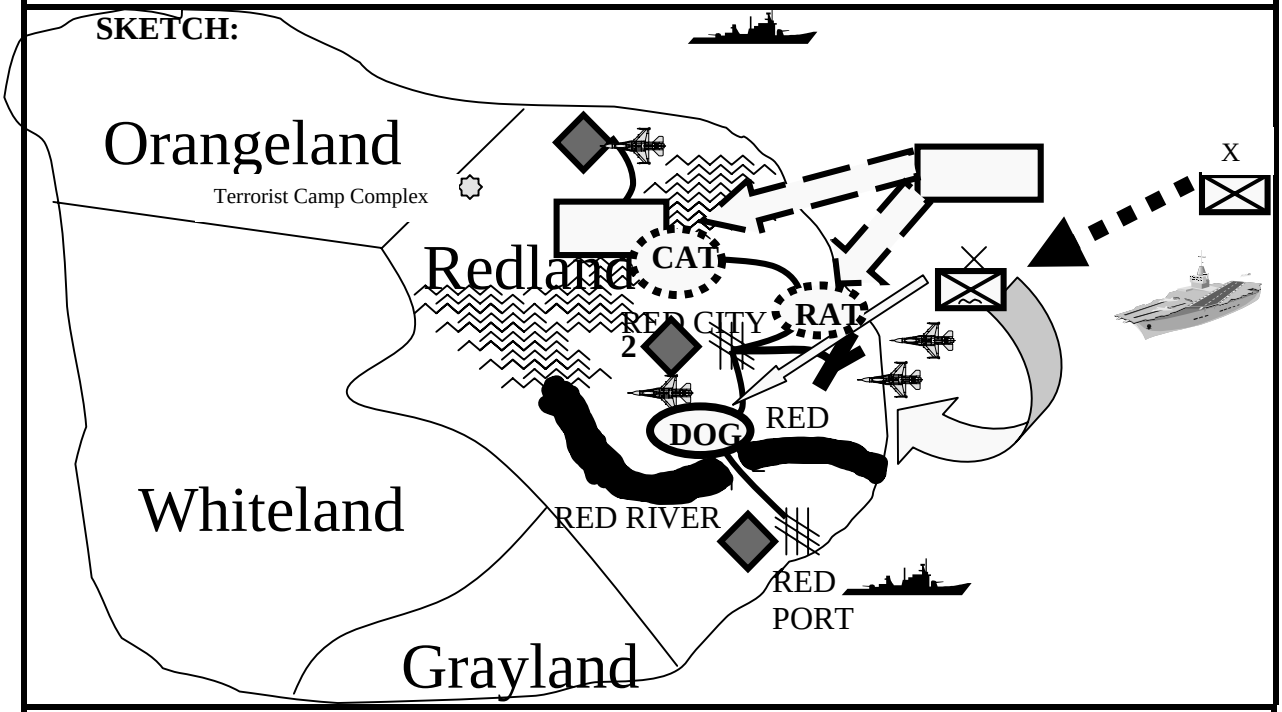
- Updated JIPB.
- Possible ECOAs.
- The unit mission statement.
- The commander's and the higher commander's intent.
- The COA statements and sketches.
- The rationale for each includes: considerations that might affect ECOAs; deductions resulting from a relative combat power analysis; the reason units are arrayed as shown on the sketch; the reason the staff used the selected control measures; and updated facts and assumptions.

After a decision is made concerning which COAs are to be further analyzed, the commander should provide additional planning guidance to subordinate commands and also request their analysis of the COAs. During Crisis Action Planning, this process may be verbal, via a change to the original WARNING ORDER and/or through the release of a COMMANDER EVALUATION REQUEST message. If he rejects all COAs, the staff begins again. If he accepts one or more of the COAs, staff members begin the wargaming process.

Figure 2-1. Example COA Sketch and Statement

Proposed Course of Action __1___: (Airborne Forced Entry)

SKETCH:



COA STATEMENT:

This is a five phased operation. The first phase's focus is to shape the conditions for the subsequent decisive operations. During Phase 1, the JFACC will conduct operations to: ensure air superiority in the objective areas, destroy REDLAND Military and Terrorist C2 nodes, neutralize enemy forces in the vicinity of RED CITY AIRFIELD, and OBJ DOG, and delay enemy movement towards the AIRFIELD, in priority, of 2d, 3d, and 1st RED GUARD Bdes (RGB). JSOTF will support with surveillance and targeting upon the 3 RGB. JFMCC will destroy REDLAND maritime capability and support deception operations which will portray an amphibious assault in the vicinity of RED PORT. Information Operations will support the deception and shape the REDLAND public response to the operation. Phase 1 will end when the JFACC has gained air superiority over the objective areas and the enemy threat at the AIRFIELD and DOG are neutralized. Phase 2 begins with the main effort, a Brigade-size airborne assault to seize the RED CITY AIRFIELD and establish a blocking position at OBJ DOG. JFACC continues to support objectives of Phase 1, and expands air superiority throughout REDLAND. JSTOF continues to support 3 RGB operations and expands surveillance to suspected terrorist training camps. JFMCC continues to support Phase 1 objectives and positions to support JTF operations if the MEU is committed. IO operations remain unchanged. The MEU is the JTF reserve with priority of employment, in order, to OBJ RAT (blocking position if 3 RGB deploys) and CAT (if 2 RGB deploys). Phase 2 ends with the AIRFIELD is secured. Phase 3 begins with the deployment of follow-on air landed forces, and ends when the second Brigade-size force is in the JOA. Phase 4, becomes the decisive operation, when the JFLCC, main effort, accepts the MEU, and completes the destruction of the RGB's and remaining terrorists. Phase 5 is hand-over and redeployment.

Proposed Course of Action _____: ( )
SKETCH:
COA STATEMENT:

Figure 2-1. Course of Action Sketch and Statement

STEP 3: ANALYZE FRIENDLY COURSES OF ACTION (COAs) (WARGAME)

The heart of the commander's estimate process is the *analysis of opposing courses of action.* Analysis is nothing more than war gaming--either manual or computer assisted. In the previous steps of the estimate, ECOAs and COAs were examined relative to their basic concepts--ECOAs were developed based on enemy capabilities and COAs developed based on own mission and capabilities. In this step we conduct an analysis of the probable affect each ECOA has on the chances of success of each COA. The aim is to develop a sound basis for determining the *feasibility* and *acceptability* of the COAs. **Predicted outcomes may also show the need to consider additional modifications to the COAs that could mitigate risk or improve their expected performance.** Analysis also provides the planning staff with a greatly improved understanding of their COAs and the relationship between them.

The COA analysis identifies which COA best accomplishes the mission while best positioning the force for future operations. It helps the commander and staff to:

- **Determine how to maximize combat power against the enemy while protecting the friendly forces and minimizing collateral damage.**
- **Have as near an identical visualization of the combat action as possible.**
- **Anticipate battlespace events and potential reaction options.**
- **Determine conditions and resources required for success.**
- **Determine when and where to apply the force's capabilities.**
- **Focus JIPB on enemy strengths, weaknesses, center of gravity, and decisive points.**
- **Determine the most flexible COA.**

COA analysis is conducted using war gaming. The war game is a disciplined process, with rules and steps, that attempts to visualize the flow of the operation. The process considers friendly dispositions, strengths, and weaknesses; enemy assets and probable COAs; and characteristics of the AO. It relies heavily on joint doctrinal foundation, tactical judgment, and operational experience. It focuses the staff's attention on each phase of the operation in a logical sequence. It is an iterative process of action, reaction, and counteraction. War gaming stimulates ideas and provides insights that might not otherwise be discovered. It highlights critical tasks and provides familiarity with operational possibilities otherwise difficult to achieve. War gaming is the most valuable step during COA analysis and comparison and should be allocated more time than any other step.

During the war game, the staff takes a COA and begins to develop a detailed plan (Concept of Operations—CONOPS), while determining the strengths or weaknesses of each COA. War gaming tests a COA or improves upon a developed COA. The commander and his staff (and subordinate commanders and staffs if the war game is conducted collaboratively) may change an existing COA or develop a new COA after identifying unforeseen critical events, tasks, requirements, or problems.

Planners need to follow these general rules during the conduct of the war game:

- Remain objective, not allowing personality or their sensing of "what the commander wants" to influence them. They must avoid defending a COA just because they personally developed it.

- Accurately record advantages and disadvantages of each COA as they become evident.
- Continually assess feasibility, acceptability, and suitability of the COA. If a COA fails any of these tests during the war game, they must reject it.
- Avoid drawing premature conclusions and gathering facts to support such conclusions.
- Avoid comparing one COA with another during the war game. This must wait until STEP 4 (Comparison of Friendly COAs).

The OPG/JPG chief at the Operational level, is normally responsible for coordinating actions of the staff during the war game.[22] The Chief is the unbiased controller of the process, ensuring the staff stays on a timeline and accomplishes the goals of the wargaming session. In a time-constrained environment, the Chief ensures that, at a minimum, the decisive action is wargamed.

The J3 (for short-term planning) or J5 (for long-term planning) normally selects the techniques and methods that the staff will use for war gaming. The J3 role-plays the friendly commander during the war game. The J3 staff must ensure that the war game of the COA covers every operational aspect of the mission, records each event's strengths and weaknesses, and annotates the rationale. When staff members are available, the J3 should assign different responsibilities within the J3 section for war gaming. The rationale for actions during the war game are annotated and used later to compare COAs in addition to the commander's guidance.

The J1 analyzes COAs to project potential personnel battle losses and determine how Combat Service Support (CSS) provides personnel support during operations.

The J2 role-plays the enemy commander. He develops critical enemy decision points in relation to the friendly COA, projects enemy reactions to friendly actions, and projects enemy losses. When staff members are available, the J2 should assign different responsibilities to individual staff members within the section for wargaming—such as enemy commander, friendly J2, and enemy recorder. The J2 must capture the results of each enemy action and counteraction and the corresponding friendly enemy strengths and vulnerabilities. By trying to win the war game for the enemy, he ensures that the staff fully addresses friendly responses for each enemy COA. For the friendly force, he identifies information requirements (IR) and refines the event template to include Named Areas of Interest (NAIs) that support decision points and refines the event matrix with corresponding decision points, Target Areas of Interest (TAIs), and high-value targets (HVTs); refines situation templates; and participates in the targeting meetings and determines high-payoff targets (HPTs)[23] based on JIPB.

The J4 analyzes each COA to assess its transportation and sustainment feasibility. He estimates how long it will take for assets to arrive in theater and he determines critical requirements for each sustainment function by analyzing each COA to identify potential problems and deficiencies. He assesses the status of all sustainment functions required to support the COA and compares this to available assets. He identifies potential shortfalls and recommends

[22] This role is sometimes filled by the J5, J3, or Chief of Staff depending on a variety of factors—not the least of which is time available. Whoever fills this role, should have a clear understanding of the commander's intent.
[23] High Payoff Targets (HPTs) are those targets whose loss to the enemy will significantly contribute to the success of the friendly course of action. HPTs are those High-value targets (STEP I JIPB) identified through wargaming that must be acquired and successfully attacked for the success of the friendly commander's mission. (JP 2-01.3)

actions to eliminate or reduce their effect for that COA. While improvising can contribute to responsiveness, only accurate prediction or requirements for each sustainment function can ensure the continuous sustainment of the force. In addition, the J4 ensures that available movement times and assets will support the COA.

The Civil-Military Operations (CMO) staff analyzes each COA for effectively integrating civil considerations into the operation. The CMO staff focuses on the operational areas, but like the J1 and J4, they must also focus on the Combat Support (CS) and CSS issues, particularly those regarding foreign nation support and the care of displaced civilians. The staff's analysis of each COA considers the impact of operations on public order and safety, potential for disaster relief requirements, NEO, emergency services, and protection of culturally significant sites. If the unit does not have an assigned CMO staff, these responsibilities should be assigned to another staff section.

Special staff officers help the coordinating staff by analyzing the COAs in their own areas of expertise (legal, public affairs, etc.), indicating how they could best support the mission. Every staff member must determine the force requirements for external support, the risks, and each COA's strengths and weaknesses. This can be greatly facilitated and refined when wargaming is done collaboratively. In addition, when conducted collaboratively, war gaming allows subordinate units to immediately see refinements to the concept of the operation that emerge with the wargame process; thus the units tailor their own concepts accordingly and speed up the process.

The staff follows eight steps during the wargaming process:

- Gather the tools.
- List all friendly forces.
- List assumptions.
- List known critical events and decision points.
- Determine Governing Factors.
- Select the wargame method.
- Record and display results.
- Wargame the operation and assess the results.

1. Organize for the Wargame: The JPG/OPG Chief directs the staff to gather the necessary tools, materials, and data for the wargame. Units need to wargame on maps, sand tables, computer simulations and other tools that accurately reflect the nature of the terrain. The staff then posts the COA on a map displaying the JOA/AO and other significant control measures. Tools required include, but are not limited to:

- Display Critical Mission Analysis Information: Higher and own—Mission, Commander's Intent, Assumptions and CCIR.
- Event template.
- Recording method.
- Completed COAs, to include maneuver and ISR.
- Means to post enemy and friendly unit symbols.

- Chart or Map of AO/JOA(either paper or digital).
- Updated estimates and Common Operating Picture (COP).

2. List all Friendly Forces: The commander and staff consider all units that can be committed to the operation, paying special attention to support relationships and limitations. The friendly force list remains constant for all COAs that the staff analyzes.

NOTE: Friendly Force information should have been recorded during STEP 1—Mission Analysis.

Friendly Forces			
Ground	**Maritime**	**Air**	**SOF**

3. Review Assumptions. The commander and staff review assumptions (**as developed in STEP 1**) for continued validity and necessity.

4. List Known Critical Events and Decision Points: Critical events are those that directly influence mission accomplishment. They include events that trigger significant actions or decisions (commitment of an enemy reserve), complicated actions requiring detailed study (amphibious landing), and essential tasks identified during mission analysis. The list of critical events includes major events from the unit's current position to the accomplishment of the mission. Decision Points are situations in the battlespace where decisions are required during mission execution. Decision Points do not dictate what the decision is, only that one must be made, and when and where it should be made, to have the maximum impact on friendly or enemy COAs. Therefore, critical events and Decision Points must be listed for each enemy COA wargamed against. Decision Points relate to identified critical events. The staff must keep the list of critical events and Decision Points manageable. When time is short, the staff must reduce the list to only essential critical events and Decision Points. Component commanders and their staffs will more than likely analyze these factors in greater detail than the operational level commander and staff.

COA # _____

Critical Events:	
Decision Points:	

5. Determine the Governing Factors[24]: Governing Factors are those criteria the staff uses to measure the effectiveness and efficiency of one COA relative to other COAs following the wargame. Governing Factors change from mission to mission. Though these factors will be applied in the next step when the COAs are compared, it will be helpful during this war gaming step for all participants to be familiar with the factors so that any insights into a given COA which influence a factor are recorded for later comparison. The criteria may include anything the commander desires. If not received directly from the commander, they are often derived from his intent statement. See Appendix D for a list of possible Governing Factors. Examples include:

- The commander's guidance and intent.
- Mission accomplishment at an acceptable cost.
- The principles of war/MOOTW (MOOSEMUSS/SLURPO).
- Doctrinal fundamentals for the kind of operation(s) being conducting.
- The level of residual risk for nontactical hazards in the COA.
- Performance criteria in the UJTL.

The factors should look not only at what will create success, but also at what will cause failure. They may be used to determine the criteria of success for comparing the COAs in STEP 4.

6. Select the Wargame Method: There are a variety of wargaming methods that can be used, with the most sophisticated being computer-aided modeling. Time and resources available to support the wargaming will undoubtedly influence the method selected. However, wargaming can be as simple as using a detailed narrative in conjunction with a map or situation sketch. Each critical event within a proposed COA should be wargamed based upon time available using the action, reaction, counteraction method of friendly and/enemy interaction.

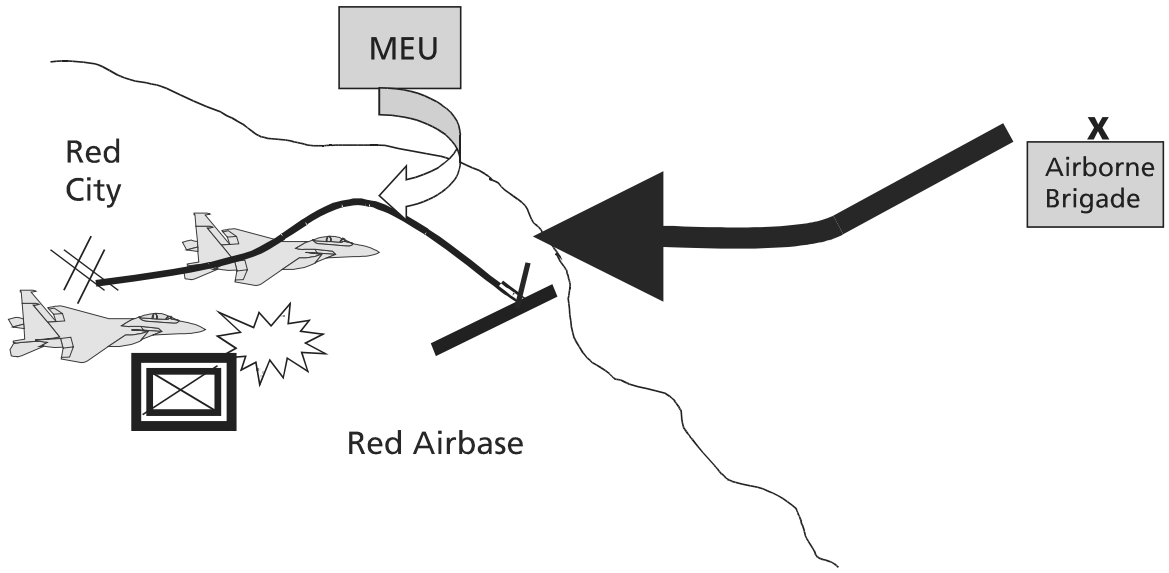
7. Record and Display Results: Recording the wargame's results gives the staff a record from which to build task organizations, synchronize activity, develop decision support templates, confirm and refine event templates, prepare plans or orders, and analyze COAs based on identified strengths and weaknesses. The **Wargame Worksheet** (Figure 3-1) can be used by staff members to record any remarks regarding the strengths and weaknesses they discover. The amount of detail depends on the time available. Details and methods of recording and displaying wargame results are best addressed in unit Standard Operating Procedures (SOPs).

The Wargame Worksheet allows the staff to synchronize the COA across time and space in relation to the enemy COA. The Wargame Worksheet uses a simple format that allows the staff to game each critical event using an action/reaction/counter-action method, with an ability to record the timing of the event, force/assets requirements and remarks/observations.

[24] The JPG/OPG may include the suggested Governing Factors in their Mission Analysis brief at the end of STEP 1 in order to receive the Commander's guidance / modification.

Figure 3-1. Wargame Worksheet

SKETCH



COA# 1	Critical Event: Seize Red Airbase					
Sequence Number	Action	Reaction	Counter Action	Time	Forces/ Assets	Remarks
1	Abn Bde conducts forced entry onto airfield	Garrison from Red City launches counter attack against Abn force at the Airfield	MEU establishes Blocking Psn on Main Road; Air Interdicts Red force	H+1	-Abn Bde -MEU AI	Requires early commitment of afloat reserve (MEU); PSYOPS Focus
2						

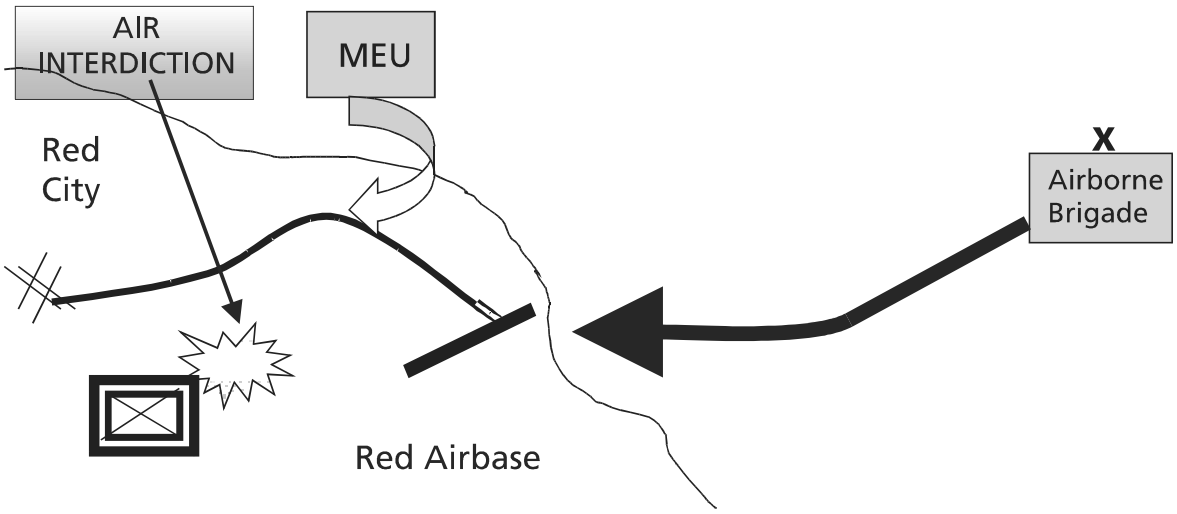
Sketch:

COA #	**Critical Event:**					
Sequence Number	**Action**	**Reaction**	**Counter Action**	**Time**	**Forces/ Assets**	**Remarks**
1						
2						
3						

If more time is available, the staff should use the more detailed **Wargame Synchronization Matrix** (Figure 3-2). This recording tool allows the staff to better focus the analysis within specific components and operational functions, as well as other planning considerations. Though its takes longer to complete, this tool will prove more helpful when the staff begins developing the detailed concept of operations upon the completion of the CES process (see JP 5-00.2).

Friendly COA #1 Short Name: **Forced Entry**
Enemy COA-Most Likely/~~Most Dangerous~~
~~Time/Phase/~~ Critical Event: **Seize Airfield**

Figure 3-2 Wargame Synchronization Matrix



	COMPONENTS/ FUNCTIONS	ACTION	REACTION	COUNTERACTION
COMPONENTS	ARFOR	Abn Bde conducts airborne forced entry on Red Airfield	Garrison from Red City launches Counter-attack against Abn force at airfield	Completes Airfield seizure; establishes hasty defense
	MARFOR	MEU positioned afloat — JTF Reserve		MEU establishes blocking psn on Red City MSR
	MCC	CVGB provides aircap over objective area		AI focus on delay of Red Garrison Force
	JFACC	Coord forced entry air ops and CAS		Coord CAS and AI ops
	JSOTF	SR forces in psn at airfield and Red MSR NLT H-4		Report status of Garrison Force counter attack
	JPOTF	PSYOP Theme per OPORD- spt forced entry		PSYOP teams with MEU, focus on Garrison force
OPERATIONAL FUNCTIONS	INTELLIGENCE	NAIs 1 &2		Status of Garrison Force
	FIRES	CVGB provides air support		CAS / AI support continues
	LOGISTICS	Abn Force has 3 DOS		MEU has 15 DOS
	COMMAND & CONTROL	JTF HQ afloat		O/O MEU is passed TACON to the Abn force.
	PROTECTION	Deception theme: no impending U.S. ops		
OTHERS	DECISION POINTS		Commitment of MEU (JTF Reserve)	
	CCIR	Enemy Disposition at the airfield		Movement of the Garrison Force
	BRANCHES			Early Commitment of MEU; Joint Force Coord Required
	REMARKS			Add additional PSYOPS Tm to MEU. Change to CCIR AI planning for Garrison Force

Friendly COA # _____ Short Name :
Enemy COA- (Most Likely / Most Dangerous)
Time / Phase / Critical Event _____

	COMPONENTS/ FUNCTIONS	ACTION	REACTION	COUNTERACTION
COMPONENTS	ARFOR/LCC			
	MARFOR/LCC			
	NAVFOR/MCC			
	AFFOR/JFACC			
	JSOTF			
	JPOTF			
OPERATIONAL FUNCTIONS	INTELLIGENCE			
	FIRES			
	LOGISTICS			
	COMMAND & CONTROL			
	PROTECTION			
OTHERS	DECISION POINTS			
	CCIR			
	BRANCHES			
	REMARKS			

8. Wargame the Combat Action and Assess the Results: During the wargame, the commander and staff try to foresee the dynamics of an operation's action, reaction, and counteraction. The staff normally analyzes each selected event by identifying the tasks the force must accomplish two echelons below. Identifying the COAs' strengths and weaknesses allows the staff to make adjustments as necessary.

The wargame follows an action-reaction-counteraction cycle. *Actions* are those events initiated by the side with the initiative (normally the force on the offensive). *Reactions* are the other side's actions in response. *Counteractions* are the first side's responses to reactions. This sequence is continued until the critical event is completed or until the commander determines that he must use some other COA to accomplish the mission.

The staff considers all possible forces, including templated enemy forces outside the AO/JOA/AOR, that could react to influence the operation. The staff evaluates each friendly move to determine the assets and actions required to defeat the enemy at each turn. The staff should continually evaluate the need for branches to the plan that promote success against likely enemy moves in response to the friendly COA. The staff lists assets used in the appropriate columns of the worksheet and lists the totals in the assets column (not considering any assets lower than two command levels down).

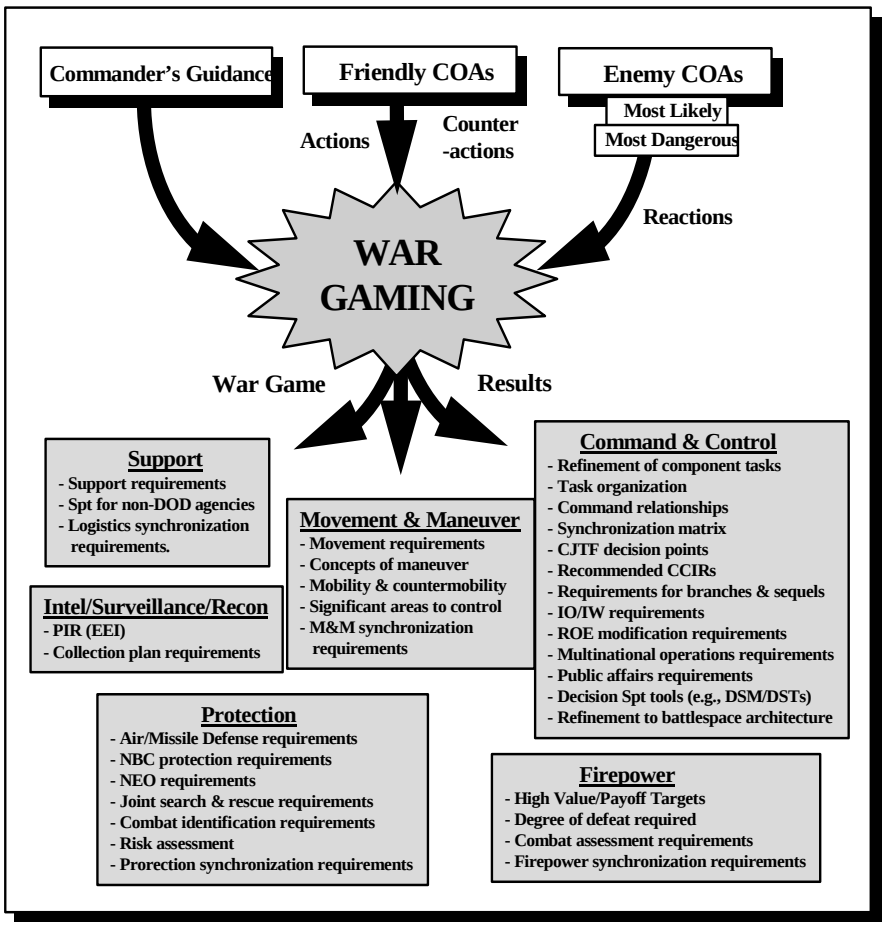
The commander and staff look at many areas in detail during the wargame, including all enemy capabilities, deployment considerations and timelines, ranges and capabilities of weapon systems, and desired effects of fires. They look at setting the conditions for success, protecting the force, and shaping the battlespace. Experience, historical data, SOPs, and doctrinal literature provide much of the necessary information. During the wargame, staff officers conduct a risk assessment in their area of expertise and responsibility for each COA.

The staff continually assesses the risk to friendly forces from catastrophic threats, seeking a balance between mass and dispersion. When assessing WMD risk to friendly forces, the planners view the target that the force presents through the eyes of an enemy target analyst. They must consider ways to reduce vulnerability and determine the mission-oriented protective posture (MOPP) level needed for protection consistent with mission accomplishment. They must also consider deployment of nuclear, biological, and chemical (NBC) decontamination assets.

The staff identifies the operational functions required to support the scheme of maneuver and the synchronization of the sustaining operation. If requirements exceed available assets, the staff recommends the priority for use to the commander based on his guidance and intent, and on the situation. To maintain flexibility, the commander may decide to withhold some assets for unforeseen tasks or opportunities. He uses this analysis to determine his priorities of support.

During the wargame, the commander can modify the COA based on how the operation develops. When modifying the COA, the commander should validate the composition and location of decisive and shaping operations and reserve forces, based on the METT-TC factors, and adjust control measures as necessary. The commander may also identify combat situations or

opportunities or additional critical events that require more analysis. This should be conducted expeditiously and incorporated into the final results of the wargame.



Results of War gaming

- Results of war gaming will affect the six joint functional areas of :

-- Movement & maneuver

-- Intelligence

-- Firepower

-- Support

-- Command and control

-- Protection

- Synch matrices and decision support matrices are means to record these results.

An effective wargame may also produce the some of the following results:

- Refining or modifying the COA, to include identifying branches and sequels that become on-order or be-prepared missions.
- Insights into the COAs that will support the next CES step, which will be to compare the COAs.
- Identifying key or decisive terrain and determining how to use it.
- Refining the enemy event template and matrix.
- Refining task organization, to include forces retained in general support of the command.
- Identifying tasks the unit must retain and tasks to be assigned to component commands.
- Allocating operational function assets to component commands to accomplish their missions.
- Developing, identifying or confirming the locations of decision points as well as the NAIs, TAIs, and IR needed to support the decision points.
- Developing a synchronization matrix; Developing a decision support template.
- Developing IO objectives and tasks.
- Estimating the duration of each critical event as well as of the entire operation.
- Projecting the percentage of total enemy forces defeated in each critical event as well as overall.

- Identifying likely times and areas for enemy use of WMD and friendly NBC defense requirements.
- Identifying the location and commitment of the reserve.
- Identifying / Confirming the most dangerous enemy COA.
- Identifying the location of the commander, unit command posts, and IO nodes.
- Identifying additional critical events.
- Identifying additional requirements for operational function support with supporting plans and graphics.
- Determining requirements for deception and surprise.
- Refining C2 requirements, to include control measures and updated operational graphics.
- Refining CCIR and IR, to include the last time information is of value, and incorporating them into the ISR plan.
- Developing the intelligence collection and dissemination plan and the resulting ISR plan and graphics.
- Determining the timing of force concentration and initiation of the attack or counterattack.
- Determining deployment times for critical assets.
- Identifying, analyzing, and evaluating strengths and weaknesses of the COA.
- Integrating the targeting process, to include identifying or confirming High Payoff Targets (HPTs) and determining attack guidance.
- Identifying additional hazards, assessing their risk, developing control measures to reduce risk from all identified hazards, and determining residual risk.

STEP 4: COMPARE FRIENDLY COURSES OF ACTION (COAs)

The fourth step in the CES is a comparison of the remaining COAs. The commander and staff develop and evaluate a list of important *governing factors*, consider each COA's advantages and disadvantages, identify actions to overcome disadvantages, make final tests for feasibility and acceptability and weigh the relative merits of each.

The COA comparison starts with each staff officer analyzing and evaluating the advantages and disadvantages of each COA from his perspective. Each staff member presents his findings for the others' consideration. Using the governing factors developed as evaluation criteria earlier, the staff then outlines each COA, highlighting its advantages and disadvantages. Comparing the strengths and weaknesses of the COAs identifies their advantages and disadvantages with respect to each other.

The actual comparison of COAs is critical. The staff may use any technique that facilitates the staff reaching the best recommendation and the commander making the best decision. The most common technique is the decision matrix, which uses evaluation criteria (governing factors) to assess the effectiveness and efficiency of each COA (see Table 4-1). Each staff officer may use his own matrix, using the same evaluative criteria, for comparison in his own field of interest. Decision matrices alone cannot provide decision solutions. Their greatest value is to provide analysts a criteria to compare several competing COAs against criteria, which, when met, will produce operational success. The matrix should use the evaluation criteria developed earlier. See Appendix E for an example of a completed matrix.

I. Governing Factors.

The comparison of COAs begins with *governing factors*—those aspects of the situation (or externally imposed factors) that the commander deems *critical* to the accomplishment of his mission. These factors were selected during STEP 3. Potential influencing factors include elements of the commander's guidance and/or intent, selected principles of war, external constraints, and even anticipated future operations for involved forces or against the same objective. For selected examples of governing factors see Appendix D.

The techniques for conducting the comparison vary, but all of them must assist the commander in reaching a sound decision. Normally, a "decision matrix" (Table 4-1) is used to facilitate this process. This matrix numerically portrays subjectively chosen and subjectively weighted governing factors. Each staff member may use his own matrix or recommend his own choice of governing factors based on his respective functional area.

The commander reviews this list and deletes or adds to it as he sees fit. The list need not be a lengthy one—there should be few factors, though enough to differentiate COAs.

Some general comments for creating the decision matrix:

- Having determined the governing factors, ensure each is defined so its meaning is understood by all. (For example, if MASS is selected as a factor, is MASS good—as in massing effects, or is it bad, as in complicating operational protection.)

- Determine how you will measure the advantages or disadvantages of a governing factor. (For example, again using achievement of MASS—as in massing effects as a governing factor, then what do you assess as a strength? Does the ability to achieve greater than a 6:1 ratio of ground forces at the point of decision, coupled with local air superiority define strength, while anything less is weakness?)
- Prioritize the governing factors by overall importance. (This assists in determining if weights should be assigned to each.)
- Determine the range of values which may be assigned. The higher number in the range indicates the better value. Keep the numbers manageable in order to be meaningful.

As demonstrated in the completed decision matrix of Appendix D, the governing factors may be evaluated on their individual merits (all weights equal) or each factor may be weighted for importance.

- When assigning weights, you should ask the question "is this factor *really* two (or three) times more important than that factor?"
- The weights are multiplied by the initially assigned score in each column; the results are then totaled.

The Chief of the OPG/JPG (sometimes the CoS) normally determines the weight of each criterion based on its relative importance. The commander may also designate importance of some criteria that result in weighting those criteria. The staff officer responsible for a functional area scores each COA using those criteria. Multiplying the score by the weight yields the criterion's value. The staff officer then totals all values. However, he must be cautious in portraying subjective conclusions as being the objective results of quantifiable analysis. Comparing COAs by category is more accurate than attempting to aggregate a total score for each COA.

The result obtained is *not* meant to be absolute or objective in nature. However, if the same criteria are ruthlessly applied to all COAs, the relative ranking and the merits (or faults) of each should be readily apparent. Note that each situation is different and requires a different set and number of governing factors to be established.

II. List Advantages and Disadvantages of Each COA.

This is perhaps the most valuable part of the comparison as it is here that the tradeoffs between the COAs should be most apparent. The advantages and disadvantages of any particular COA could be quite lengthy and detailed. Many advantages and disadvantages should be carried forward from the conception and analysis steps. Table 4-2 provides a format.

The staff compares feasible COAs to identify the one that has the highest probability of success against the most likely enemy COA and the most dangerous enemy COA. The selected COA should also:

- Pose the least risk to the force and mission accomplishment.
- Best position the force for future operations.

- Provide the best flexibility to meet unexpected threats and opportunities.
- Provide maximum latitude for the initiative by subordinates.

III. Compare the Merits of COAs.

The commander compares the various remaining COAs and selects the one which, in the commander's judgment, best satisfies the requirements of the mission. The commander should also ask: “Is this the utmost I can do in carrying out my mission?” This question requires a resounding “yes!” The commander relies heavily on professional judgment and experience in making the final selection of a COA. The remaining COAs should not be discarded — they may be retained as possible branches, alternate plans or deception plans.

However, the commander may find none of the COAs analyzed to be valid. Consequently, new COAs would need to be developed. They must also be tested for adequacy and then analyzed against each ECOA in order to predict the outcomes of the new COAs against each ECOA. If, after all analysis and comparison, no COAs are found adequate, feasible, and acceptable, the commander should present the examined options along with supporting facts to his higher commander. The commander should point out what could be accomplished under the circumstances and estimate what additional forces would be required to accomplish the original mission. It is then the responsibility of the superior commander to either order that a selected COA be carried out despite the consequences or change the original mission statement.

TABLE 4-1: SAMPLE DECISION MATRIX

(See Appendix E for a Sample Completed Matrix)

GOVERNING FACTORS	WT	COA #1		COA #2		COA #3		COA # 4	
TOTAL									
WEIGHTED TOTAL									

Table 4-2 COMPARISON OF ADVANTAGES/DISADVANTAGES WITH MODIFICATIONS

COA	ADVANTAGES	DISADVANTAGES	MODIFICATIONS

STEP 5: THE DECISION (Select a COA)

After completing its analysis and comparison, the staff identifies its preferred COA and makes a recommendation. If the staff cannot reach a decision, the J3, J5, or CoS decides which COA to recommend at the commander's decision briefing. The staff then briefs the commander. The Chief of the OPG/JPG highlights any changes to the COA as a result of the wargaming process. Component commanders may be present, but are not required, for the decision brief; their participation, either in person or via VTC, enhances the planning process. The **decision-briefing format** includes:

- The intent of the higher headquarters (two levels up).
- The mission.
- The status of own forces.
- An updated JIPB.
- Own COAs, including the assumptions used in planning, results of staff estimates, and advantages and disadvantages (including risk) of each COA (with decision matrix or table showing COA comparison).

After the decision briefing, the commander selects the COA most effective to accomplish the mission. If the commander rejects all developed COAs, the staff will start the process again. If the commander modifies a proposed COA or gives the staff an entirely different one, the staff must wargame the revised or new COA to derive the products that result from the wargame process. Once the commander has selected a COA, the intent statement and CCIR to support the selected COA may need refinement. It is this COA that the staff will continue to refine, analyze and synchronize to produce the concept of operation. The commander then issues any additional guidance on priorities for operational functions (particularly for resources he needs to preserve his freedom of action and to ensure continuous service support), orders preparation, rehearsal, and preparation for mission execution.

Having already identified the risks associated with the selected COA, the commander decides what level of residual risk he will accept to accomplish the mission and approves control measures that will reduce the risks. If there is time, he discusses the acceptable risks with adjacent, subordinate, and senior commanders, often through VTC. However, the higher commander's approval to accept any risk that might imperil the higher commander's intent must be obtained. Based on the commander's decision, the staff immediately issues a Warning Order with essential information so subordinate commands can refine their plans. This Warning Order confirms guidance issued in person or by VTC and expands on details not covered by the commander personally.

Based on the commander's decision and final guidance, the staff refines the COA and completes the plan and prepares to issue the order. The staff prepares the order or plan to implement the selected COA by turning it into a clear, concise concept of operations: a scheme of maneuver, and the required fire support. The staff development of the order/plan is often aided by completing a **joint synchronization matrix**. This internal staff planning tool is used in much the same manner as the wargaming synchronization matrix, see Appendix F for more information. The commander can use the COA statement as his concept of operations statement.

The COA sketch can become the basis for the operation overlay. Orders and plans provide all of the necessary information subordinates require for execution, but without unnecessary limitations that would inhibit subordinate initiative. The staff assists subordinate staffs with their planning and coordination as needed.

The concept of operations is the commander's clear, concise statement of where, when, and how he intends to concentrate combat power to accomplish the mission according to his higher commander's intent. It broadly outlines considerations necessary for developing a scheme of maneuver. It includes designation of the decisive operation and key shaping operations, the commander's plan to defeat the enemy, and specific command and support relationships. These relationships are then included in the task organization and organization for combat in plans and orders. It can also include:

- Physical Objective(s)
- Commander’s Intent
- Scheme of Maneuver
- Sector of Main Effort
- Sector of Supporting Effort
- Phasing
- Cover and Deception
- Employment of force elements (ground, naval, air, special forces, space, etc.)
- Fires (type, purpose, priorities)
- Allocation of sustainment assets
- NBC (offensive and/or defensive)
- Reserves (designation, purpose, location, and anticipated employment)

The commander reviews and approves orders before the staff reproduces and briefs them unless he has delegated that authority to his CoS or J3/5. The commander and staff should conduct confirmation briefings with subordinates immediately following the issue of orders to ensure subordinates understand the commander's intent and concept. Confirmation briefings can be done in person, collaboratively with several commanders at the same time, or through one-on-one VTCs.

APPENDIX A: JIPB Products

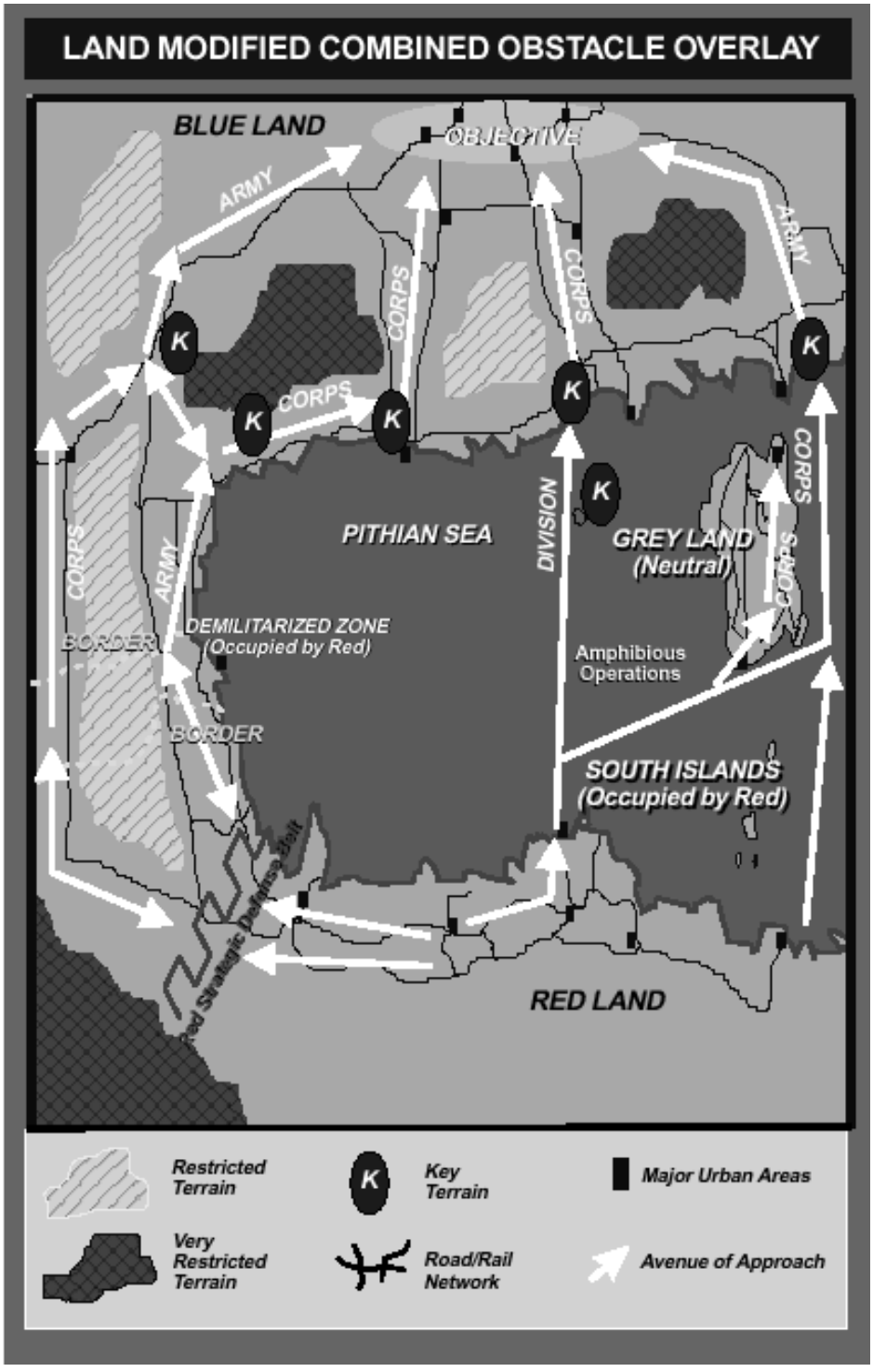


Figure A-1. Example of a Land MCOO (JP 2-01.3)

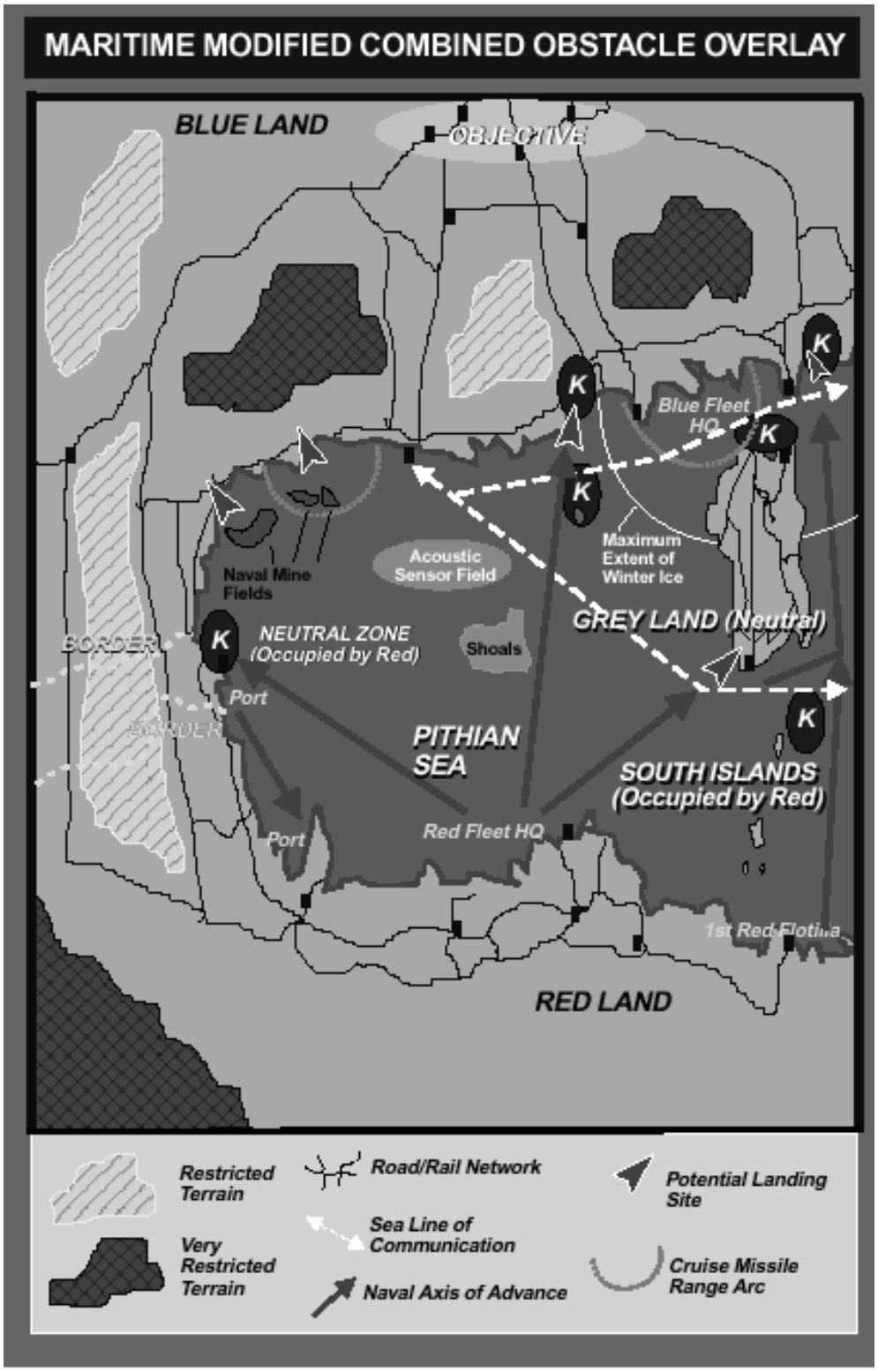


Figure A-2. Example of a Maritime MCOO (JP 2-01.3)

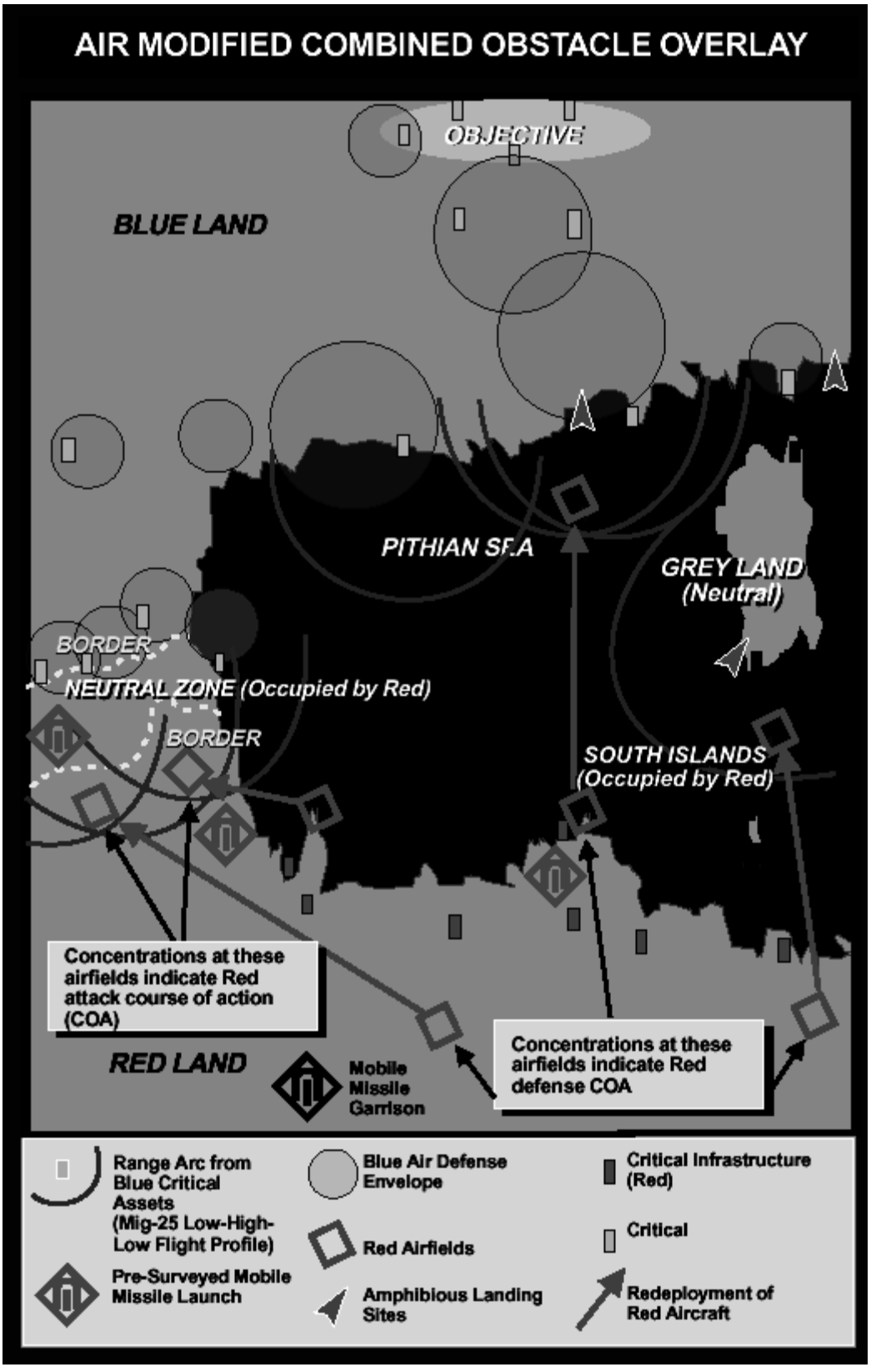


Figure A-3. Example of an Air MCOO (JP 2-01.3)

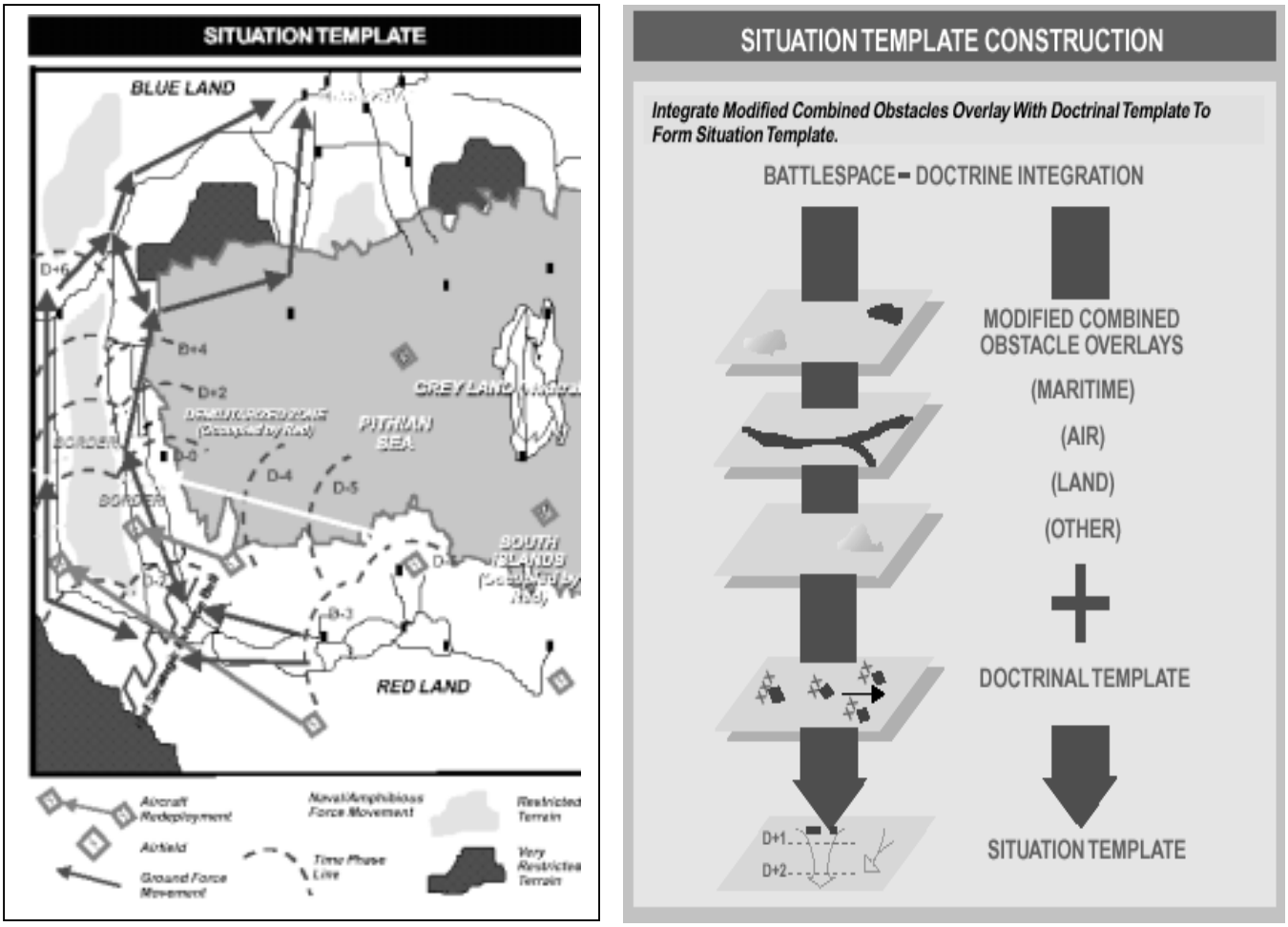


Figure A-4. Situation Template Construction and Example (JP 2-01.3)

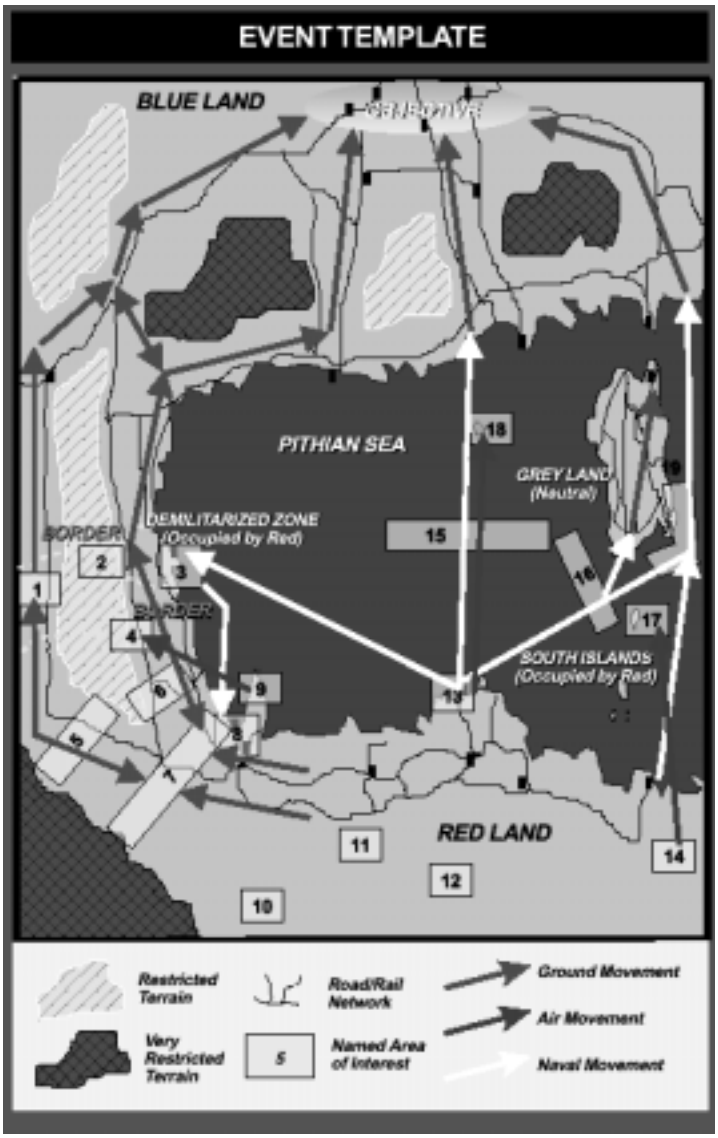


Figure A-5. Sample Event Template Showing NAIs (JP 2-01.3)

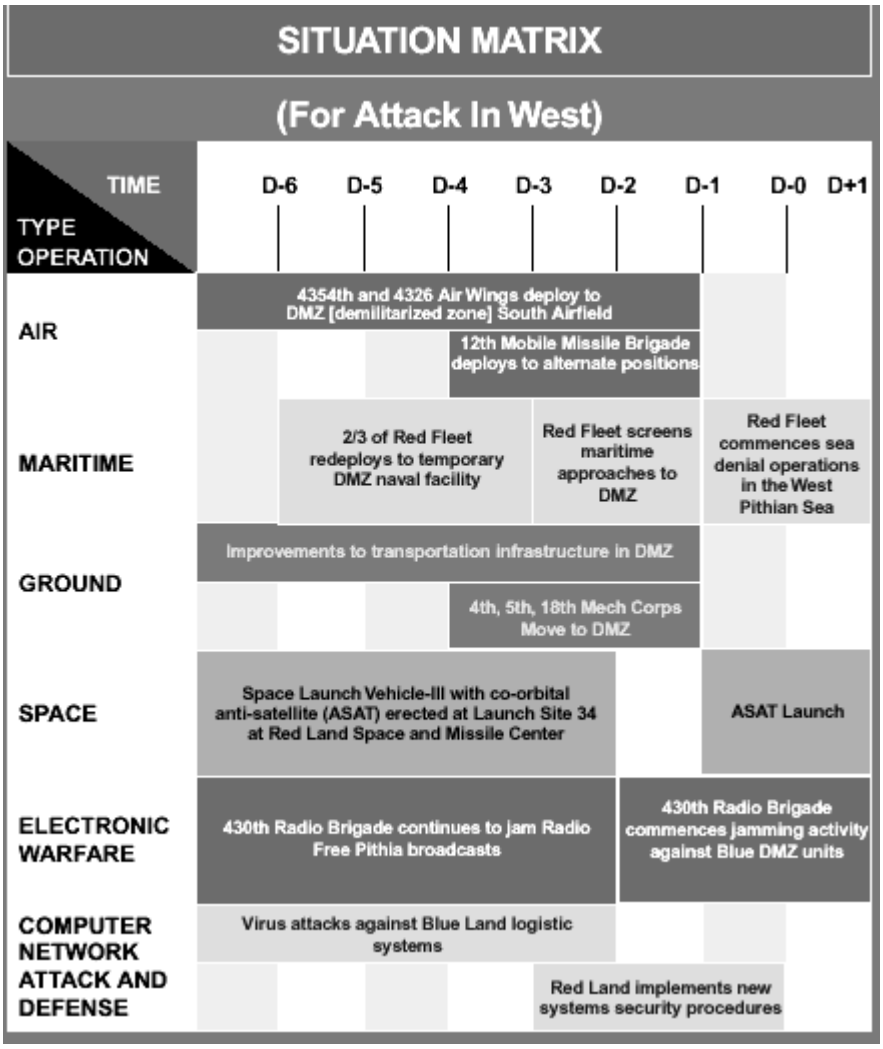


Figure A-6. Example of a Situation Matrix (JP 2-01-3)

Many different formats and methods may be used. An example of one type of collection matrix is provided below.

NAI	Est Time	Indicators ECOA1	Indicators ECOA2	Indicators ECOA3
1	D-3	Surface combatants missing from port		Forward movement of corps size force
2	D-2		Forward deployment of combat aircraft	Laying of minefields
3	D-1	Increased reconnaissance along coastal areas	Increased IADS readiness and activity	
4	H-12	Naval SOF activity		Artillery assault

APPENDIX B: Sample Planning Assumptions

- Shipping and air augmentation assets will be available when the country YELLOW becomes involved in the hostilities.
- Country YELLOW will remain neutral, but will deploy the major part of its forces along the border of country BRAVO.
- Country GREEN will (not) allow use of its ports and air heads for transit of BLUE forces.
- Canal ZULU will remain open during hostilities for all U.S. shipping.
- Country PURPLE and YELLOW will (not) remain neutral.
- Country GREEN will (not) allow over flight rights to U.S. aircraft.
- Country ORANGE will (not) provide basing rights for U.S. ships carrying nuclear weapons.
- Country CRIMSON will (not) allow basing of U.S. ships and aircraft if they do (not) conduct combat missions against country RED.
- Country BROWN will not grant basing rights to the enemy forces.
- RED will (not) use weapons of mass destruction (WMD).
- No RED reinforcements are expected in the Bravo area.
- RED Force ALFA will (not) use air surveillance/targeting aircraft.
- Ratios of forces will (not) remain unchanged for the next 48 hours.
- Reserves will be fully mobilized NLT _____.
- Forces will deploy with _____ Days of Supply.

APPENDIX C: Force Ratio / Force Multiplier Data

Summary

This appendix lays out two methods of computing force ratios. Both methods are rough analysis techniques which give planners a starting point for considering force requirements for a given operation. The first technique is a simple comparison of like type forces with little further refinement. The second, technique adjusts like type force comparison based upon differing force structures. Each technique requires increasingly more time to construct the supporting data. However, no matter which technique is used, the planners must also consider the impact of other tangible and intangible factors as well as the influence of other joint forces on the force ratios.

I. ANALYZING RELATIVE COMBAT POWER[25]

Combat power is the effect created by combining maneuver, firepower, protection, and leadership, the dynamics of combat power, in combat against the enemy. By integrating and applying the effects of these elements with any other potential force multipliers (logistics, morale, experience, doctrine, etc.) as well as other joint forces available against the enemy, the commander can generate overwhelming combat power to achieve victory at minimal cost. This task is difficult, at best. It requires an assessment of both tangible and intangible factors as well as consideration of an inordinate number of those factors either directly or indirectly affecting the potential outcome of the battle.

However, by analyzing relative-force ratios and determining and comparing each force's most significant strengths and weaknesses as a function of combat power, planners can gain some insight into:

-Friendly capabilities pertaining to the operation.
-What type operations may be possible from both friendly and enemy perspectives.
-How and where the enemy may be vulnerable.

Although some numeric relationships are used in this process, it is not like the former-Soviet mathematically substantiated computation for the correlation of forces. Rather, it is only a largely subjective estimate. The COAs must not be based strictly on mathematical analyses. Pure, logical approaches are often predictable, sacrificing the surprise that bold, audacious action can achieve.

1. Equal Value Force Ratios.

Planners can initially make a rough estimate of relative-force ratios. Figure B-1 shows an analysis in which planners are counting land-centric forces as roughly equal to enemy equivalents.

[25] This Appendix draws heavily from the Army CGSC ST 100-3 Battle Book and FM 34-3 Intelligence Preparation of the Battlefield, Appendix F.

Friendly Force		Enemy Force	
Unit	**#**	**Unit**	**#**
Armored Division	3	Armored Division	4
Airborne Brigade (1 ea)	(1/3 of a Div)	Airborne Brigade(1 ea)	(1/3 of a Div)
TOTAL	**3.33**	**TOTAL**	**4.33**
Ratio = 3.33 : 4.33 or 1.0 : 1.3			

Figure B-1. Sample of equal value force ratios (equal values)

2. Equivalent Relative Force Ratios.

Seldom will the U.S. face a force that has equal force values as we see in Figure B-1. In order for the planners to adapt this rough planning tool they must have a means to adjust enemy force values to an equivalency to U.S. forces. The intelligence staff is responsible for producing these enemy equivalency values. For example, though REDLAND may have fielded Armored Divisions, their Divisions may be smaller, with fewer tanks of lesser capability than the U.S. Armored Division. As such, the intelligence staff may assess the REDLAND Division at a lesser value than the U.S. Armored Division, possibly a .55 value. The same analysis would follow for each REDLAND combat capability. A further refinement of this process would be using a single base combat element (in this case an Armored Division) and providing an *equivalent relative value* to each force element (both enemy and friendly). For example, a U.S. Airborne Brigade's relative strength to a U.S. Armored Division is .30 and a REDLAND Airborne Regiment might have an assessed value of .25. See Figure B-2 for an example of relative combat power computations.

Friendly Force		Enemy Force	
Unit	**#**	**Unit**	**#**
Armored Division (3)	3	Armored Division (4)	1.20
Airborne Brigade (1)	.30	Airborne Brigade (1)	.25
Attack Avn Brigade (1)	.50	Aviation Regiment (1)	.30
Field Arty Brigades (4)	1.20	Field Arty Regiments (3)	.90
		Anti-Tank Regiment (1)	.20
TOTAL	**5**	**TOTAL**	**2.85**
Ratio = 5 : 2.85 or 1.0 : .6			
NOTE: Using Armored Division Equivalents			

Figure B-2. Sample of equivalent relative force ratios (relative values)

This form of calculation is normally only applied between like services, since assessing an Armored Division Equivalent (or other single service combat force) value to a Carrier Battle Group or Air Superiority Squadron becomes complex and diminishes the value of this rough analytic tool. Techniques that integrate other joint force assets are addressed later in this appendix.

3. Other Force Ratio Considerations.

When the staff finishes its computations, it draws conclusions about friendly and enemy relative capabilities and limitations as they pertain to the operational situation. These computations give the staff a feel for relative strengths and weaknesses, but not absolute mathematical answers as to what friendly or enemy forces will do. Numerical relative-force ratios do not include the human factors of warfare. Many times human factors may be more important than the number of tanks or tubes of artillery. Therefore, the staff must carefully consider and integrate them into their comparisons. By using historical minimum-planning ratios for various combat missions and carefully considering terrain and enemy templating assumptions, planners can generally conclude what type of operations they can conduct (Figure B-3).

Friendly mission	**Friendly: Enemy**	**Position**
Delay	1 : 6	N/A
Defend	1 : 3	Prepared or fortified
Defend	1 : 2.5	Hasty
Attack	3 : 1	Prepared or fortified
Attack	2.5 : 1	Hasty
Counterattack	1 : 1	Flank

Figure B-3. Historical minimum planning ratios

A planner first compares the relative force ratios with the ratios in column 2 of Figure B-3. He can then determine if his unit has the odds that would give him the flexibility to conduct any type of operation he desires. The J2/G2/N2 will also assess if the enemy has that capability. In a defensive situation, the planner would know the enemy must conduct a penetration. In an offensive situation, he would know he cannot conduct offensive operations without massing his forces and accepting risk in some area. He would be able to use this information when he begins developing a scheme of maneuver. If he identifies a ratio closer to one of the other planning ratios, he could draw other conclusions indicating another type of possible operation. This step provides the planner with a notion of "what to"; not "how to." There is no direct relationship between force ratios and attrition or advance rates. Relative-force ratios do not necessarily indicate the chance for success.

II. REFINE ANALYSIS AND DETERMINE RELATIVE COMBAT POWER

The values calculated earlier are empirical values based solely on relative technological levels, equipment capabilities, and manning levels of the affected units. Other factors such as weather, morale, leadership, training, terrain, cultural and societal limitations, relative technological levels between the forces, and surprise can greatly influence the relative combat power of units.

"A unit can achieve effects beyond its absolute combat power by maximizing relative combat power potential. Through the application of strengths against weaknesses and the minimization of weaknesses against enemy strengths, the maneuver-oriented unit can attain a relative combat power advantage against a numerically superior force."[26]

The J2/G2/N2 must incorporate subjective factors into the analysis to more precisely determine the relative combat power between friendly and threat forces. When realistically conducted, the wargaming phase of the CES is particularly useful in determining some of the additional factors that will influence the combat power of a unit. Some factors that may affect relative combat power potential:

1. Force Capabilities.

Air, Naval, and Space Superiority. Air, naval, and space superiority generally allow the dominant power to more effectively deliver munitions against the threat forces, and conduct more efficient resupply operations. Bad weather, favorable terrain for the threat forces, lack of suitable port facilities or airfields, or an effective concealment and deception plan can mitigate these advantages.

Information Operations (IO). Information operations include military deception, counter-deception, OPSEC, electronic warfare capabilities, information assurance, psychological operations, counterintelligence, and counterpropaganda operations. The threats ability to conduct or counter friendly efforts in the IO spectrum can decisively influence the relative combat potential of a threat force.

Information Superiority. Relative advantages in intelligence and command and control can decisively influence the outcome of combat and substantially increase the lethality of friendly forces. U.S. initiative in the areas of digitalization, automation, and intelligence provide a significant advantage to U.S. forces due to significant advantages in situational awareness. The availability of other assets such as JSTARS and tactical UAV can drastically improve targeting. On the other hand, loss of these systems or an effective threat deception plan can neutralize the advantages of these assets.

NBC Capabilities. The presence of NBC munitions, delivery systems, their use or indications of imminent use may significantly affect the relative combat power potential. Also considered under this category is whether the threat force possesses the national will to use NBC weapons.

[26] Army CGSC ST 100-3, p. 15-17.

Special Operations Forces (SOF). Both threat and friendly special operations forces are a force multiplier, the effects of whose actions cannot be quantified through the calculation of a Relative Combat Power Value. For example, the presence of a small threat SOF unit in the friendly force's rear area, although relatively ineffective in terms of combat power, may divert significant forces for rear area security. Several threat countries maintain a robust SOF capability, which through sabotage and other operations may profoundly affect friendly force combat and resupply operations.

Threat leadership and C2. Command and control may also influence threat capabilities, especially if threat leadership has either positively or negatively influenced morale. Charismatic leadership may greatly improve threat unit capabilities, whereas either poor leadership or successful efforts by friendly forces to undermine threat command-and-control may diminish the relative capabilities of threat units.

2. Environmental Effects.

Terrain. Terrain affords each force certain mobility or positional advantages and disadvantages. The relative advantages and disadvantages will further define how effectively each unit is able to bring its combat power to bear. Each unit's knowledge of the area of operation can also influence the relative combat power of each. In most instances, the force most familiar with the terrain will be able to use its existing combat power most effectively.

Weather. Weather conditions may provide an advantage to either friendly or threat forces that could improve or diminish their relative combat power. For example, under certain environmental conditions such as heavy fog or smoke obscuration, the US force may have a relatively greater capability to detect threat movement at longer ranges due to a technological advantage in thermal sight capability or ground-surveillance radar. Under those specific conditions, forces may have a greater force value than originally assigned. The intelligence officer for the US force under these weather conditions may choose to subjectively downgrade the values for the opposing units to reflect these conditions.

3. Combat Effects.

Experience. Relative levels of combat experience of the threat commander will influence the combat effectiveness of the units and therefore the relative force ratios.

NBC Posture. Operations in an NBC environment or by personnel in NBC defensive gear may significantly degrade due to the physical and psychological limitations of operating in an NBC environment.

Reconstitution. The ability of a force to reconstitute itself during a campaign will significantly affect the combat strength of the unit. Additionally, a reconstituted force will possess somewhat less combat power than the original force due to the effects of integrating new personnel, losses in leadership and experience, combat damage to equipment, etc.

Tactical Surprise. Surprise may significantly influence the relative combat power resulting in a significantly higher value for the surprising force. The intelligence analyst must subjectively determine how drastically the element of surprise will affect the force ratio.

Threat morale. Morale is an intangible that may greatly affect the combat power of a unit. An assessment of the threat forces' morale may be based on HUMINT or COMINT reporting, observed threat behavior, or other forms of reporting and can be difficult to discern reliably except under extreme circumstances. For example, threat forces defending their homeland, although under demoralizing conditions, may be highly motivated and be capable of defending at a higher level than represented in the assigned force values. Conversely, friendly psychological or combat operations may substantially degrade the morale of a threat force.

4. Other Factors.

Other factors such as training, or cultural, societal, or seasonal limitations may further affect threat and friendly unit relative capabilities.

The scope of the calculations for absolute force ratios and relative combat force potential is limited only by time and analytical resources. Deliberate planning may allow for a more thorough calculation of force ratios, while the analyst in a high OPTEMPO environment may be able to complete only a rudimentary calculation during the CES.

At the end of this analysis, the intelligence analyst should be able to succinctly state the relative combat potential for the threat force. For example, "although the absolute force ratio between the U.S. force and the 23rd Guards Division is 1.96: 1.00, REDLAND, has superior knowledge of the terrain and has occupied heavily fortified defensive positions along the high ground in vicinity of the capital city. According to HUMINT reporting, the morale of 23rd Guard's units is mostly high. Their leadership has participated in four other battles against U.S. forces, and has likely learned from those experiences.

APPENDIX D: Example of Governing Factors

- Which is most *decisive*?
- Which requires the *least time*?
- Which is least complicated by *Rules of Engagement*?
- Which allows the greatest flexibility in selecting the *time and place* of the action?
- Which offers the greatest *flexibility*?
- Which offers the least *operational risk*?
- Which is easiest to support from the perspective of *command, control, and communications*?
- Which offers best logistics/sustainability?
- Which makes the enemy's *logistic support* most difficult?
- Which is most dependent on *weather*? on *terrain*?
- Which offers best use of our *transportation links*?
- Which has the most adverse affect on the enemy's *center of gravity*?
- Which allows the accomplishment of the assigned objective in the *shortest time*?
- Which will best facilitate the attainment of the next *objective*?
- Which best capitalizes on the *Principles of War* (MOOSEMUSS) or *Principles of MOOTW* (SLURPO)? (List each or selected ones as directed.)
- Which offers the *least losses*?
- Which inflicts the *largest losses* on the enemy?
- Which offers the greatest hope of splitting the *enemy's coalition*?
- Which will most strengthen the cohesion of *our coalition*?
- Which will reduce the enemy *morale* the most?
- Which offers the most favorable ratio of relative *combat power*?
- Which will best facilitate *future operations*?

NOTE: No matter which Governing Factors are chosen, it is important that every member of the joint planning group have the same understanding of what the factor means. For example, simply stating "Risk" as a governing factor with no further explanation could lead to multiple interpretations: Risk to forces? Risk to aircraft / ships / coalition? Risk of mission failure? etc.

APPENDIX E: Sample Decision Matrix

GOVERNING FACTORS	WT	COA #1		COA #2		COA #3		COA #4	
SIMPLICITY	3	2	6	1	3	4	12	3	9
SURPRISE	1	2	2	3	3	3	3	4	4
SPEED	2	1	2	2	4	3	6	4	8
MASS	4	3	12	1	4	2	8	4	16
COMBINED ARMS	2	4	8	3	6	4	8	4	8
SECURITY	4	3	12	3	12	4	16	3	12
SUSTAINMENT	3	3	9	3	9	2	6	3	9
OBJECTIVE	5	2	10	3	15	2	10	4	20
C2	3	3	9	2	6	1	3	3	9
OFFENSIVE	4	4	16	2	8	3	12	3	12
TOTAL		27		23		31		35	
WEIGHTED TOTAL			86		70		84		104

NOTE: This is simply a staff planning decision aid, and should be viewed as such. Selection of a numerically superior COA may not be the best recommendation. The strength of this aid is that it allows the commander and staff to systematically review specific important strengths and weaknesses of each COA.

1. Numerical values for each governing factor are assigned after the COA is war-gamed. These values reflect the relative advantages or disadvantages of each governing factor for each COA.

2. These numbers provide a subjective evaluation of the best COA without weighting one governing factor over another.

3. The weights are multiplied by the initially assigned score in each column.

4. Scores are totaled to provide a “best” COA based on weights assigned by the commander.

5. There is no requirement to rank each COA governing factor (i.e., all three COAs can receive the same assessment score for a particular COA).

6. There are other recording techniques that can be used by the JPG/OPG. The staff can assign + (for strengths), - (for weaknesses), and 0 (for neither a strength or weakness) and then add up the results. The COA with the largest number of +s is assessed as "best."

APPENDIX F: SAMPLE JOINT SYNCHRONIZATION MATRIX

	TIME C DAY/D DAY /H HOUR										DECISION POINT
PRE-PHASE I OPERATIONS											
PHASE I											
PHASE II											
PHASE III											
PHASE IV											
PHASE V											

Commander's Estimate of the Situation