

MAGTF Intelligence Production and Analysis



US Marine Corps

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MCCDC (C 42)
13 Jul 2004

E R R A T U M

to

MCWP 2-3

MAGTF INTELLIGENCE PRODUCTION AND ANALYSIS

1. Change the publication short title to read "MCWP 2-3" (vice MCWP 2-12).

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FOREWORD

Marine Corps Doctrinal Publication 2, *Intelligence*, and Marine Corps Warfighting Publication (MCWP) 2-1, *Intelligence Operations*, provide the doctrine and higher order tactics, techniques, and procedures for intelligence operations. MCWP 2-3, *MAGTF Intelligence Production and Analysis*, complements and expands upon this information by detailing doctrine, tactics, techniques, and procedures for the conduct of intelligence production and analysis in support of the Marine air-ground task force (MAGTF).

The target audience of this publication is intelligence personnel responsible for the planning and execution of intelligence production and analysis operations.

The MCWP 2-3, provides the information needed by Marines to understand, plan, and execute intelligence production and analysis to support MAGTF operations. It describes intelligence doctrinal fundamentals, the nature of analytical thinking, intelligence preparation of the battlespace, and intelligence support to targeting. This publication also discusses intelligence command and control, communications and information systems support, intelligence products and formats, planning, execution, and training.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS



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MAGTF INTELLIGENCE PRODUCTION AND ANALYSIS

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CHAPTER 1. FUNDAMENTALS

Marine air-ground task force (MAGTF) intelligence provides decision-makers with an understanding of the battlespace. This understanding encompasses a sophisticated knowledge of the threat and the physical, political, economic, and cultural environment in the area of operations (AO). That knowledge is developed through intelligence production and analysis (P&A).

What is Intelligence Production and Analysis?

P&A is the filtering, recording, evaluating, and analyzing of information, and product preparation of developed intelligence.

Analysis is a process that involves sifting and sorting evaluated information to isolate significant elements related to the mission of the command, determining the significance of the information relative to information and intelligence already known, and drawing deductions about the probable meaning of the evaluated information. Production is the conversion of evaluated material or information into intelligence. All sources of information are integrated, analyzed, evaluated, and interpreted to prepare intelligence products or all-source intelligence in support of known or anticipated user requirements. Production or the process of analysis and synthesis is the most important action in developing usable intelligence for the commander. Production, the fourth step in the intelligence cycle, helps forecast the effect gathered intelligence will have on the commander's ability to accomplish the mission.

Intelligence Functions

To support the commander, MAGTF intelligence organizations carry out six intelligence functions of which the P&A function is an inte-

gral part. In each function, data is synthesized into intelligence that provides a portion of the knowledge from which the commander can reach an acceptable level of understanding before making a decision. Intelligence answers the all-important question: "What effect does all this have on our ability to accomplish the mission?" Intelligence organizations—

- Support the commander's estimate.
- Develop the situation.
- Provide indications and warning.
- Support force protection.
- Support targeting.
- Support combat assessment.

Intelligence Cycle

The intelligence cycle consists of a series of related activities that translate the need for intelligence about a particular aspect of the battlespace or threat into a knowledge-based product that is provided to the commander for use in the decision-making cycle (see fig. 1-1).

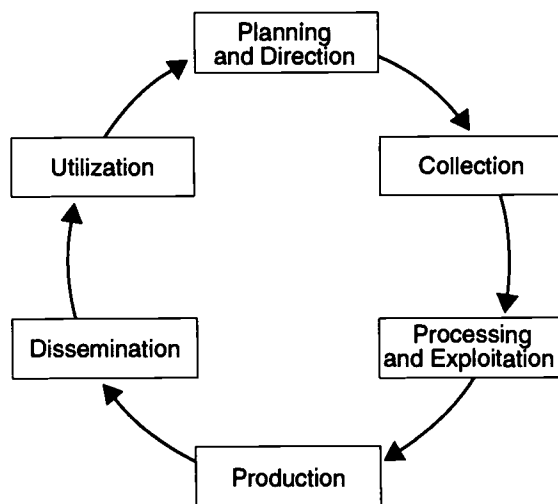


Figure 1-1. Intelligence Cycle.

Planning and Direction

The initial step identifies intelligence needs and develops a plan for satisfying those needs.

Collection

In this step, information used to generate intelligence is drawn from—

- Intelligence data that is derived from assets primarily dedicated to intelligence collection (e.g., imagery systems, electronic intercept equipment, human intelligence sources).
- Sensor data that is derived from sensors whose primary mission is surveillance or target acquisition, air surveillance radar, counterbattery radar, and remote ground sensors.
- Combat data that is derived from reporting by operational units.

Processing and Exploitation

This step converts collected information into an understandable form suitable for the production of intelligence. Processing is accomplished during collection or production. Data collected in a form suitable for analysis is processed automatically during collection. Other types of data require extensive processing, which can affect the timeliness and accuracy of the resulting information. Because processing and production are often accomplished by the same organization, production management generally encompasses processing functions that are required to convert raw data into a usable format. Examples of processing and exploitation include—

- Film processing.
- Document translation.
- Signals intercept.

Production

Production, the fourth step, converts data into intelligence and creates the knowledge (see fig. 1-2) needed for the planning and execution of operations. The intelligence must deliver knowledge, in

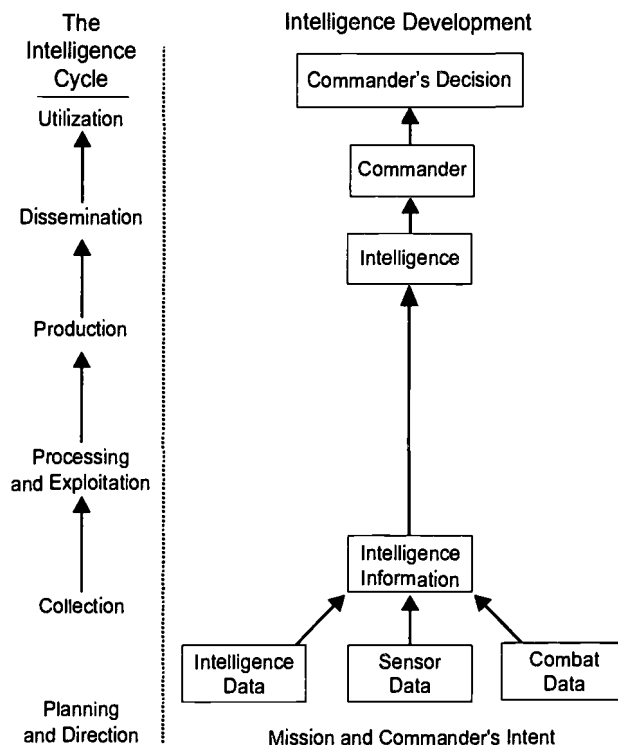


Figure 1-2. Intelligence Cycle in Support of Commander's Decision.

context, in time, and in a form usable in the decisionmaking process. In any situation, providing timely, accurate, and relevant intelligence to commanders and planners is a critical consideration. Production (analysis and synthesis) can be complex, such as comprehensive and detailed intelligence studies required to support the planning of a Marine expeditionary force (MEF) in a major theater war (MTW), or simple, such as direct answers to rapidly changing questions needed to support the ongoing battle at the battalion level. For this reason, production is distinguished as—

- Deliberate production makes full use of available information to provide a complete and extensive product that satisfies non-time sensitive intelligence requirements (IRs). This type of production normally supports operations planning.
- Immediate production identifies information directly applicable to current operations, the information is subjected to a compressed ver-

sion of the production process, and the resulting product is rapidly disseminated to those affected. This production is associated with mission execution.

Dissemination

This step conveys intelligence to users.

Utilization

During utilization, the processed intelligence is used to influence the conduct of operations.

Production Steps

Production (analysis and synthesis) encompasses the following steps, which begin with the receipt of processed information and end with the completion of an intelligence product that is ready for dissemination:

- Filtering is the discarding of irrelevant or repetitive information prior to its entering the production process.
- Recording is the reduction of information to writing or graphical representation and then the arranging of that information into groups of related items.
- Evaluating is the determining of the pertinence, reliability, and accuracy of information.
- Analyzing is the process in which information is analyzed and synthesized to predict possible outcomes.
- Product preparation is the incorporating of developed intelligence into an appropriate product (e.g., text reports and studies, graphics, overlays, or combinations) for dissemination.

Preparation for Analysis

The first three production steps are tools used to prepare information for analysis. The objective is to discard information not pertinent to the situa-

tion, organize and document the information in a manner that facilitates analysis, and assess the quality of the individual elements of information to determine the reliability and importance of each report or piece of information.

In deliberate production, comprehensive procedures are often employed to accomplish filtering, recording, and evaluating. The complexity of these procedures increases with the level of command, scope of the operation, and number of agencies or elements participating in the production process. However, it is important to note that filtering, recording, or evaluation systems are tools to support the analytical effort, not an end unto themselves. Intelligence personnel must be thoroughly familiar with the methodology being employed in preparing information for analysis to ensure that the pertinent information is available to the right analyst when needed.

In immediate production, a central node or individual, normally the intelligence watch in the combat operations center, makes a rapid assessment of each piece of incoming information to determine its pertinence and to evaluate its reliability and accuracy. The intelligence watch personnel's evaluation is based on their knowledge and understanding of the enemy situation, the current intelligence estimate, and ongoing and planned friendly operations and IRs. The watch performs the minimal collating and recording necessary so that an immediate tactical analysis may be completed and judgments made. Simultaneous with or upon completion of immediate production, the information is entered into the formal recording and evaluation system for further use in deliberate production. At lower tactical echelons, the entire process, from receipt of information to dissemination and utilization, can take a matter of seconds or minutes. Organization, established standing operating procedures, and individual and unit training are key components of effective preparation for, and conduct of, P&A.

Analytical Process

Intelligence analysis provides the commander with the battlespace and threat knowledge required for planning and executing combat operations. Intelligence analysts lessen the uncertainty facing a commander, permitting the commander to make decisions and to focus combat power on courses of action (COAs) that maximize the opportunity for success. The analysis framework used by intelligence analysts is described as analysis, synthesis, and estimation. This framework provides a disciplined approach to gathering and understanding information and a means for the analyst to place information in context and relate it to planned or ongoing operations.

Analysis

Effective analysis requires that intelligence analysts—

- Possess a thorough knowledge of—
 - Military operations.
 - Characteristics of the battlespace.
 - Friendly situation and IRs.
 - Threat situation (current situation, doctrine, and past practices).
- View collected information in relation to the—
 - Unit's mission.
 - Commander's intent.
 - Commander's IRs.
- Divide the battlespace into component parts to isolate and define the individual elements of significant information that include—
 - Physical dimensions (i.e., length, depth, width, and altitude).
 - Time.
 - Threat force structure (e.g., divisions, wings, groups, task forces).
 - Battlespace activities (e.g., command and control [C2], air and space defense, fire support).
- Other characteristics that facilitate understanding and satisfy the MAGTF's needs.
- Identify key elements of the situation to—
 - Formulate hypotheses.
 - Make deductions from those hypotheses.
 - Reach conclusions.
- Compare the existing situation to new pieces of information to determine if they relate to the identified key elements and to assess the impact of the new information on the current intelligence estimate.

Synthesis

In this step, intelligence analysts—

- Identify and integrate relationships between individual significant pieces of information with the existing battlespace picture to provide a new image of the situation.
- View the battlespace as a coherent whole.
- Discern emerging patterns in environmental conditions or enemy activity.

Estimation

The bottom line of the analytical process, estimation is based on the detailed study of the tactical situation, experience, intelligence successes, the application of specific tools and methods, and the supported commander's intelligence needs. Estimation is not guessing and it is not predicting! Estimation must describe the current conditions and present an image of future possibilities. Well-founded estimates reduce uncertainty and help the commander plan and execute successful MAGTF operations. Building on the image developed during analysis and synthesis, intelligence analysts determine a threat's—

- Capabilities.
- Intent.
- Probable COA.
- Likely reactions to friendly operations.

Product Preparation

Products are prepared by translating the results of analysis into usable intelligence formats that are timely, accurate, and tailored to both the unit and its mission. Intelligence analysts must strive to provide knowledge that the decision-maker can easily and quickly visualize and absorb. A series of standard intelligence products are used to support MAGTF operations. Standard production formats facilitate rapid preparation, mutual support between intelligence sections, ease of dissemination, and, most importantly, familiarity for the user. The baseline production formats provided in this manual can be tailored to meet the requirements of any operational situation. The following standard all-source intelligence products are prepared in MAGTF:

- Intelligence preparation of the battlespace (IPB) graphics, matrices, and charts.
- MAGTF contingency intelligence studies.
- Intelligence estimates.
- Target or objective studies.
- Intelligence summaries.
- Intelligence reports.

Operations and Command and Control

Intelligence drives the planning and execution of operations by providing a menu of factors that the commander considers when making a decision. The analytical and production effort identifies these factors and presents them to decisionmakers in a form that enables them to understand the battlespace, place intelligence in context, and use the product to carry out successful operations. P&A shapes operations by—

- Identifying potential advantages offered by the environment.
- Defining the limitations imposed by the environment.

- Locating and assessing enemy strengths to be avoided.
- Determining enemy vulnerabilities to be exploited.
- Providing an estimate of likely enemy actions and reactions based on reasoned analysis, synthesis, and judgment.

Intelligence and operations must be linked throughout the planning, decision, execution, and assessment (PDE&A) cycle at all command echelons. The PDE&A cycle provides the framework for the implementation of C2, which enhances the commander's ability to make sound and timely decisions. Whether the commander uses the analytical or intuitive decisionmaking approach, intelligence P&A reduces uncertainty.

Deliberate intelligence production shapes the operations plan and provides the knowledge that facilitates execution (see fig. 1-3 on page 1-6). Immediate intelligence production identifies situation changes that modify the plan or trigger decisions during execution of the operation. Intelligence production provides the basis for assessing the effectiveness of current operations, while operations drive the P&A effort. The mission and commander's intent focus the initial IPB, while the potential COAs, the concept of operations, the future planning effort, and IRs determine the scope and content of the production process. Intelligence products must be relevant to the mission and be used to satisfy specific operational and tactical IRs.

Production and Analysis Company, Intelligence Battalion

The P&A company is the MEF's primary all-source P&A element. An organic unit within the intelligence battalion (intel bn), P&A company is composed of an imagery intelligence platoon, a topographic platoon, an all-source fusion platoon, and two direct support teams. The P&A company is in general support of the MAGTF and provides direct support teams to MAGTF

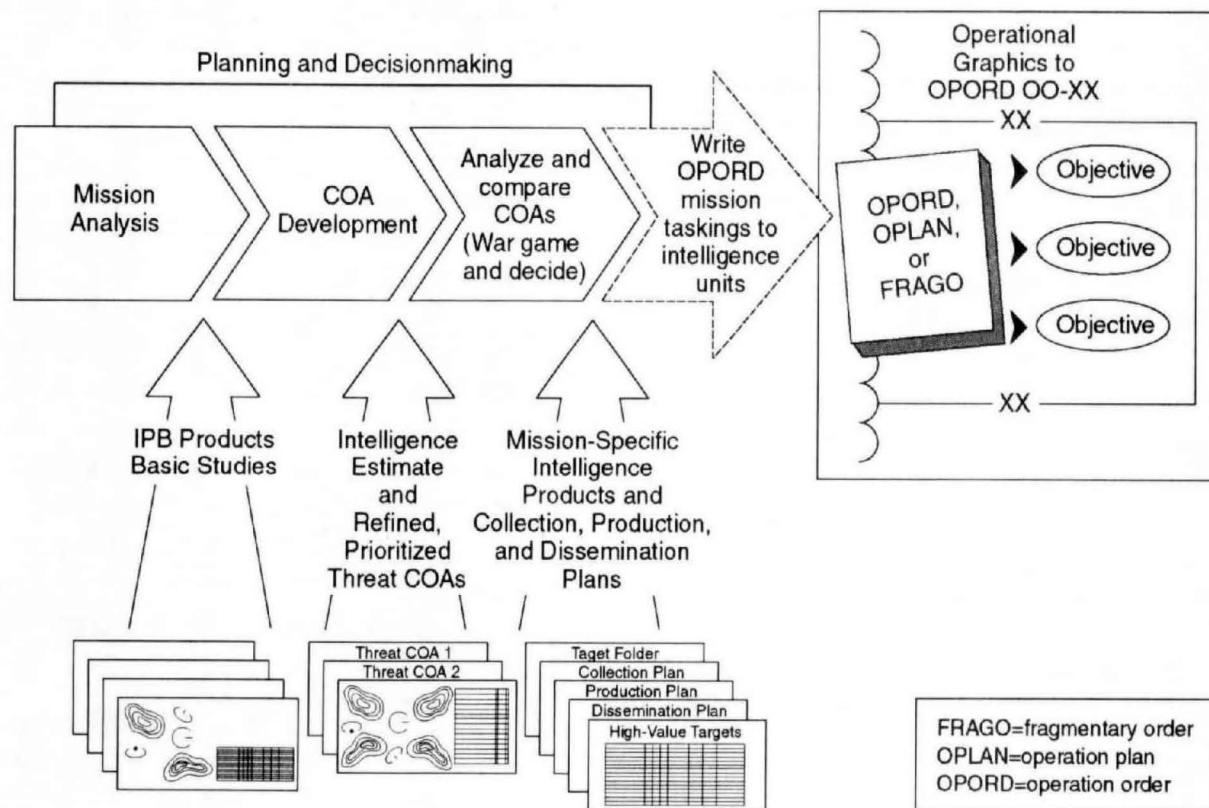


Figure 1-3. Intelligence Support to Planning and Decisionmaking.

subordinate elements, as required. The P&A company performs the following tasks:

- Assists the intel bn commander with planning, developing, and directing the MAGTF intelligence production plan and its integration with the collection and dissemination plans.
- Provides and maintains centralized all-source P&A in support of the MAGTF within the MAGTF P&A cell.
- Maintains an all-source picture of MAGTF AO and area of interest (AOI) threat situation.
- Provides MAGTFs and other commands with geographic intelligence (GEOINT) and geospatial information and services.
- Provides command and control of the topographic platoon.
- Provides imagery analysis and imagery intelligence (IMINT) production support for MAGTFs and other commands.
- Provides command and control of the imagery intelligence platoon.
- Provides task-organized, trained, and equipped detachments or teams to assist MAGTFs or designated commands in the processing, exploitation, evaluation, integration, analysis, interpretation, production, and dissemination of all-source intelligence.

Although the P&A company is a subordinate element of the MEF intel bn and the MAGTF's only dedicated production element, the company responds to the IRs of the entire force. The MAGTF G-2, through the intel bn commander in the role as intelligence support coordinator, establishes the P&A company's analytical and production priorities based on the MAGTF's mission, commander's intent, priority intelligence requirements (PIRs), the current and projected enemy situation, and ongoing planning for future operations. The P&A company focuses primarily on deliberate

production. In garrison or a pre-crisis environment, the P&A company conducts mainly IPB of potential contingency areas to produce MAGTF contingency intelligence studies. During operations and exercises, the P&A company develops intelligence to support

future operations, deliberate targeting, and development of the key target or objective area studies. A detailed discussion of the P&A company organization, functions, and employment is provided in chapter 2.

CHAPTER 2. ORGANIZATIONS AND RESPONSIBILITIES

Marine Corps operational forces are organized for combat as MAGTFs. Marine intelligence P&A operations are conducted primarily to facilitate planning and execution of MAGTF operations through the development of tactical intelligence. This chapter discusses responsible officers, organization, supporting organizations, and communications and information systems (CIS) architecture necessary to conduct MAGTF intelligence P&A.

MAGTF Commander

Intelligence is an inherent responsibility of command, and commanders must—

- Be personally involved in the conduct of intelligence activities.
- Specify intelligence requirements and establish PIRs.
- Provide guidance to ensure a timely and useful product.
- Develop an appreciation for the capabilities and limitations of intelligence.
- Make the final synthesis of intelligence.
- Supervise the overall intelligence effort to ensure the product is timely, relevant, and useful.
- Ensure intelligence activities support subordinate commanders as well as the parent unit.
- View intelligence training of all personnel as a command responsibility.

To ensure the timely development of useful intelligence products, the commander has specific P&A responsibilities.

Focus the Analytical and Production Effort

The commander must—

- Provide guidance and direction to ensure that the intelligence developed satisfies requirements.
- Issue a statement of intent and approval of the command's priority intelligence requirements, focusing the analytical and production effort.
- Supervise the process to ensure that it is responding to the intent and intelligence needs.
- Provide direction in the scope of the IPB effort, preferred product formats, and priorities among subordinates' production requirements (PRs).

Participate in the Analytical Process

The commander must understand and participate in the analytical process. Since intelligence analysis is based on incomplete information and involves assumptions and judgments, the commander must scrutinize the process by analyzing intelligence operations and resulting products to determine the operational impact and overall effectiveness.

Evaluate the Product

To provide the basis for continued improvement of the P&A effort, the commander must—

- Evaluate key areas (e.g., product content, presentation, timeliness).
- Identify where the intelligence provided met expectations and where and how it fell short.

- Provide timely and constructive feedback to the intelligence officer, the supporting intel bn commander or detachment officer in charge, and P&A elements.

Marine Expeditionary Force Command Element Intelligence Officer

The MEF assistant chief of staff (AC/S) G-2 focuses on overall C2 and direction of MEF intelligence, counterintelligence (CI), and reconnaissance operations, to include P&A. The MAGTF commander relies on the AC/S G-2 to provide the necessary information on the weather, terrain, and enemy capabilities, status, and intentions. Through intelligence operation plans (OPLANs) and supporting intelligence and reconnaissance and surveillance plans, the AC/S G-2—

- Plans and coordinates intelligence priorities.
- Integrates collection, production, and dissemination.
- Allocates resources.
- Assigns specific missions to subordinate elements.
- Supervises the overall intelligence and reconnaissance efforts.

Intelligence Battalion Commander

The intel bn commander is responsible for planning and directing, collecting, processing, producing, and disseminating intelligence, and providing CI support to the MEF and MEF major subordinate commands (MSCs).

Responsibilities in Garrison

In garrison, the principal task of the intel bn commander is to organize, train, and equip detachments that support MAGTFs or other

designated commands to execute integrated collection, intelligence analysis, production, and product dissemination.

Responsibilities During Operations

During operations the intel bn commander is dual-hatted as the intelligence support coordinator (ISC), serving under the direct staff cognizance of the MEF AC/S G-2. The intel bn S-3 section and the MEF G-2 operations center element form the core of the ISC support effort and conduct planning, directing, and C2 within the intelligence operations center (IOC) support cell. Generally, the IOC is collocated with the main command post of the MEF command element (CE). As ISC, the intel bn commander is responsible to the MEF AC/S G-2 for the overall MEF IR management. During operations, the ISC is responsible for—

- Implementing the concept of intelligence operations developed by the G-2 plans officer and approved by the AC/S G-2.
- Establishing and supervising the MEF IOC, which includes P&A cell, surveillance and reconnaissance cell (SARC), and support cell.
- Developing, consolidating, validating, and prioritizing recommended PIRs and IRs to support MAGTF planning and operations.
- Planning, developing, integrating, and coordinating MEF intelligence collection, production, and dissemination plans.
- Exercising C2 staff cognizance of supporting intelligence and reconnaissance organizations to ensure unity of effort and production of all-source intelligence.
- Developing, in conjunction with the G-2 plans officer and G-2 operations officer, and completing Annex B (Intelligence) to MEF operation order (OPORD), supporting appendices, and intelligence input to other OPORD annexes.
- Providing intelligence support to MEF CE G-2 section and MSCs.

- Preparing the intelligence and CI estimates to support G-2 plans.
- Planning, developing, integrating, and coordinating intelligence and CI support to the commander’s estimate, situation development, indications and warning, force protection, targeting, and combat assessment.

Intelligence Battalion

Within the MEF, the intel bn is organized to conduct intelligence operations for the MEF, MEF MSCs, subordinate MAGTFs, and other commands as directed (see fig. 2-1).

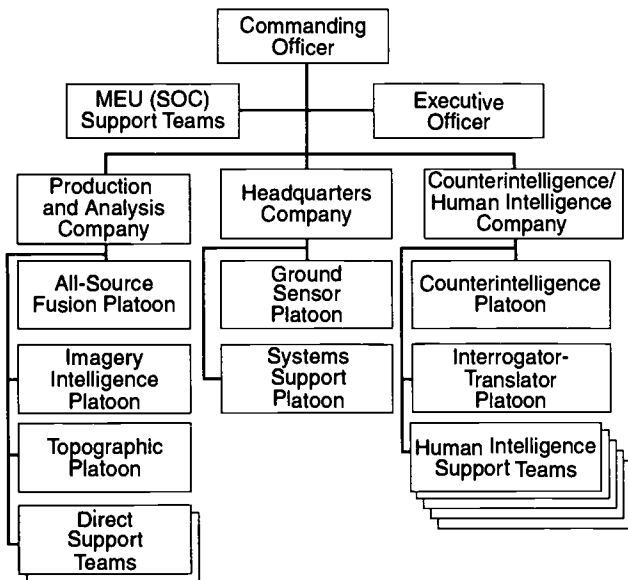


Figure 2-1. Intelligence Battalion Organization.

Production and Analysis Company

The P&A company, intel bn, is the focal point for deliberate intelligence production within the MEF. Although all P&A company elements contribute to the deliberate production process, the focal point for all-source analysis, order of battle (OOB), target intelligence, battle damage

assessment (BDA), and deliberate production is the all-source fusion platoon (AFP).

All-Source Fusion Platoon

The AFP, in conjunction with other elements of the intel bn and production elements of radio battalion, force reconnaissance company, Marine tactical electronic warfare squadron (VMAQ), and Marine unmanned aerial vehicle squadron (VMU), provide the capability for all-source intelligence P&A support to the full range of operations conducted by the MEF and other MAGTFs. During operations, AFP forms the core of P&A cell.

Organization for Support

Intel bn’s P&A company is organized to provide intelligence support to elements of the MEF CE and MSCs. During operations, P&A company is functionally organized into teams as the P&A cell. The teams support other MAGTF staff organization cells (see table 2-1).

Table 2-1. P&A Company Organization for Support.

Intel Bn, P&A Company Team or Unit	MEF CE Supported Cell
All-source fusion platoon	
● Analysis team	G-3 current and future operations, G-5, and other MEF staff elements*
● OOB team	G-3 current and future operations, G-5, and other MEF staff elements*
● Target analysis and BDA team	G-3 targeting cell and other MEF staff elements*
● IPB team	G-3 current and future operations, G-5, and other MEF staff elements*
Topographic platoon	MEF
Imagery intelligence platoon	MEF
Direct support teams	P&A cell, G-3 current or future operations, G-5, or designated MSC G-2
*The P&A cell supports the G-4, G-1, and other MEF CE staff elements, as appropriate.	

Production and Analysis Cell

The mission of P&A cell is to plan, coordinate, and produce fused all-source tactical intelligence in support of the MEF, its MSCs, and other MAGTFs and commands as directed. A multi-disciplined group of intelligence officers and specialists, the P&A cell provides the intelligence necessary to support contingency planning and current intelligence threat requirements of the MEF, its subordinate MAGTFs, and other commanders as directed.

Tasks

During operations and exercises, the P&A cell provides the intelligence necessary to support current and future operations, future plans, targeting, and development of enemy situation and capabilities. It is responsible for processing information and intelligence from organic and external commands and intelligence organizations. The P&A cell personnel—

- Receive, process and exploit, integrate, analyze, evaluate, interpret, and synthesize intelligence and other information into comprehensive and tailored intelligence products required for the planning and execution of MAGTF operations.
- Provide intelligence support across the conflict spectrum and in support of deliberate and crisis planning, MAGTF deployments, and other operations as directed.
- Provide a dynamic, detailed OOB picture of threats within the MAGTF AO and AOI.
- Provide detailed intelligence P&A support to targeting.
- Maintain a MAGTF-wide summation of damages caused to hostile targets and augment BDA efforts of MAGTF elements as required.
- Provide MAGTF-level BDAs for forwarding to the component, joint task force (JTF), and/or theater commander in chief (CINC) as applicable.
- Provide IPB support to the MAGTF G-3/S-3 and G-5 for battle management and planning efforts and provide IPB-related support to MAGTF elements beyond their organic capabilities.
- Disseminate intelligence products and information to the MAGTF staff and MSCs in a timely, relevant manner.
- Establish and maintain intelligence data bases to support intelligence P&A.
- Coordinate with the collection management and dissemination officer to provide the SARC with collection requirements for MAGTF and external collection units.
- Coordinate with the dissemination manager to disseminate intelligence products throughout the MEF and external organizations.
- Coordinate with the MEF G-2 and intel bn commander/ISC to—
 - Ensure disseminated intelligence and products are understood.
 - Determine whether intelligence products answer commander's PIRs and users' IRs.
 - Identify new intelligence production requirements (IPRs) that result from disseminated intelligence products.
 - Assess the overall effectiveness of intelligence production operations.

Organization

The P&A cell is essentially organized in garrison as it would be organized for operations. Each team has the flexibility to add intelligence and nonintelligence specialists (e.g., G-2 operations red cell members) from other intelligence and reconnaissance organizations as required based on the specific mission and intelligence needs of the MAGTF. For sustained MEF-level operations, global sourcing from other Marine Corps organizations may be required to augment the P&A team structure and to provide sufficient personnel depth for 24-hour operations.

The following P&A cell internal organization and subordinate teams and units provide the P&A functions required to support current and future operations, future planning, targeting, and BDA.

P&A Cell Staff

Members of the staff provide leadership and support functions such as maintenance of the intelligence library. In conjunction with the intel bn's collection management and dissemination officer, P&A cell staff members are responsible for production and IPR management as well as coordination of IPRs with intel bn's overall IR collection and dissemination.

Analysis Teams

The two analysis teams are composed of all-source analysts and specialists from other disciplines (e.g., medical, weather, CI/human intelligence [HUMINT], imagery, terrain, signals intelligence [SIGINT]). With support from other elements of the P&A company, the rest of intel bn, radio battalion, force reconnaissance, VMU, VMAQ, and MSC G-2 intelligence analysts, P&A cell analysis teams produce integrated all-source intelligence products to include—

- Contingency and other focused intelligence studies.
- Intelligence estimates.
- Intelligence summaries.
- Briefings.

OOB Teams

The P&A cell has two OOB teams. These teams analyze and maintain a detailed, comprehensive, evolving picture of ground, air, naval, electronic, weapons of mass destruction, and other threats within the MAGTF AO and AOI. The OOB teams perform OOB analysis, and the primary products include—

- Graphic or electronic situation overlays.

- OOB data bases and files.
- Threat models for various threat elements.

Target Analysis and BDA Teams

The two target analysis and BDA teams focus on detailed analysis of MAGTF commander, staff, and MSC-identified targets not destined for the air tasking order (ATO). (The Marine aircraft wing [MAW] G-2 section generally manages target and BDA analysis and intelligence support for ATO-nominated targets.) These teams—

- Provide target development and analysis to support the MAGTF deliberate and reactive targeting efforts.
- Maintain the comprehensive picture of battle damages caused to targets.
- Prepare BDA reports and assessments, which support the MEF combat assessment effort.

IPB Teams

The two IPB teams focus on IPB production support to the MEF G-3 and G-5 in the areas of current battle management and future planning. They also assist subordinate unit intelligence personnel with IPB-related production when requirements are beyond the organic capabilities of that unit.

Direct Support Teams

The two P&A cell direct support teams allow enhanced IR management, intelligence P&A, and dissemination capabilities to be focused down to one or more MSCs. Direct support teams augment the supported unit's intelligence section by—

- Providing an extension of the intel bn's P&A cell or MSC G-2 intelligence operations element for the receipt, collaborative analysis, production, and dissemination of intelligence to the supported unit.
- Tailoring higher and external intelligence products to the needs of the supported unit.

- Assisting the supported unit's intelligence officer in the formulation and management of external IRs.
- Assisting the supported unit in the production of IPB and other intelligence products to support detailed mission planning and execution.
- Enhancing the intelligence dissemination efforts of the supported unit's intelligence section.

Supporting Organizations

Several organic MAGTF intelligence organizations support the P&A cell P&A effort by contributing specialized MAGTF intelligence expertise and resources. The intel bn commander, serving as the ISC, is directly responsible to MEF AC/S G-2 for exercising C2 staff cognizance of supporting intelligence and reconnaissance organizations to ensure unity of effort and production of all-source intelligence. These supporting organizations contribute to fused, all-source MAGTF intelligence products. The following supporting intelligence and reconnaissance organizations provide significant specialized support to the P&A cell P&A effort.

Imagery Intelligence Platoon

Organized under the intel bn, P&A company, imagery intelligence platoon (IIP) provides imagery interpretation support for MEF requirements and maintains the imagery data base and imagery library for the MAGTF (see fig. 2-2). The IIP is capable of providing IMINT derived from available imagery sources in support of MEF P&A cell products. This includes annotated imagery in support of MEF P&A cell production or in response to separate IRs. A key imagery exploitation resource organic to the IIP is the tactical exploitation group (TEG), which is an element of the broader Joint Services Imagery Processing System (JSIPS). The IIP normally concentrates on the exploitation of imagery and production of IMINT from MEF,

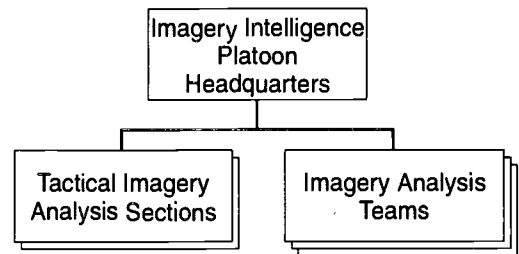


Figure 2-2. IIP Organization.

JTF, and other tactical resources, such as unmanned aerial vehicles (UAVs) or the F/A-18D (RC) advanced tactical aerial reconnaissance system (ATARS).

Topographic Platoon

Organized under the intel bn, P&A company, the topographic platoon provides geospatial information and GEOINT support for all MAGTF requirements (see fig. 2-3). The topographic platoon and IIP work closely as both use many of the same baseline intelligence data and sources for production.

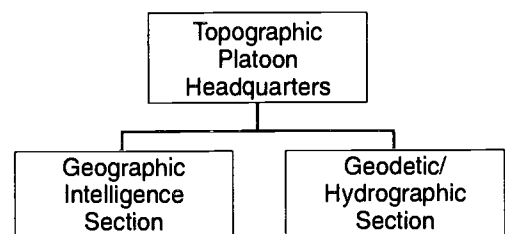


Figure 2-3. Topographic Platoon Organization.

The topographic platoon personnel—

- Integrate, deconflict, analyze, and disseminate theater, Service, and national geospatial data bases for the MAGTF.
- Provide GEOINT and specialized mapping, graphics and other geospatial information and services, and GEOINT products in support of P&A cell all-source intelligence products.
- Provide key support to the IPB process.

- Produce independent GEOINT studies in response to separate requirements.

CI/HUMINT Company

Organized under the intel bn, the CI/HUMINT company is responsible for the development and maintenance of the MEF CI estimate and reporting information (see fig. 2-4). The CI/HUMINT company produces—

- Intelligence derived from human source exploitation, to include—
 - Interrogations of enemy prisoners of war, refugees, and displaced persons.
 - Counterintelligence operations.
 - Human source operations.
- Intelligence derived from exploitation of captured documents or materiel.
- Specialized CI or force protection assessments in support of P&A cell production or in response to specific IPRs.

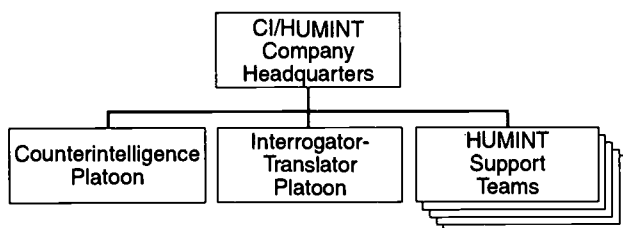


Figure 2-4. CI/HUMINT Company Organization.

Radio Battalion Operational Control and Analysis Center

The radio battalion operational control and analysis center (OCAC) provides the principal MEF SIGINT analytical and production support to MEF IRs. Under staff cognizance of the ISC, the radio battalion is tasked with the responsibility of maintaining the MAGTF electronic OOB and SIGINT data bases and of providing SIGINT analytical and production support to the P&A cell. The OCAC provides MAGTF units with time-sensitive SIGINT and product report-

ing based on intelligence reporting criteria and the MAGTF intelligence dissemination plan.

VMAQ

In conjunction with the MAW G-2, VMAQ is responsible for the processing, analysis, and production of routine and time-sensitive electronic intelligence reports resulting from EA-6B operations. The resulting information and intelligence is used to help update and maintain the threat electronic OOB, which is used in the planning and execution of aviation and other MAGTF operations. A threat's electronic OOB and the location of electronic emitters in the battlespace are important indicators of threat dispositions, capabilities, and intentions.

Force Reconnaissance Company

The mission of the force reconnaissance company is to conduct amphibious reconnaissance, surveillance, and limited-scale raids in support of the MEF, other MAGTFs, or JTFs as directed.

Under the staff cognizance of the ISC, force reconnaissance company conducts specialized terrain reconnaissance and prepares intelligence products to support hydrographic, beach, road, bridge, route, urban area, helicopter landing zones (HLZs), drop zones (DZs), landing craft air cushion (LCAC) landing zones (LZs), and aircraft forward operating site intelligence studies.

Principal Staff Officers

Like the commander, the other principal staff officers play an important role in intelligence P&A. Through development of focused intelligence requirements, and recommending which should be priority intelligence requirements PIRs, they assist in directing the intelligence P&A effort. They also assist the analytical effort by availing the wide range of skills and backgrounds resident within their staff sections to the intelligence section. A tremendous synergism is achieved when

task-organized teams of intelligence analysts and other occupational specialists form to analyze a specific issue. Likewise, a key component to effective wargaming is a red cell, which has experts in various warfighting functions thinking and fighting like the threat. Principal staff officers must—

- Use the intelligence products.
- Evaluate the worth and effectiveness of those products.
- Provide constructive feedback.
- Develop IRs and recommend their priority.

Unit Intelligence Officer

The intelligence officer manages the intelligence effort for the commander by implementing activities that execute the intelligence P&A function for the command. Understanding the scope and rationale behind the commander's decisionmaking process enables the intelligence officer to anticipate future requirements and properly focus the P&A effort. To execute P&A responsibilities, the intelligence officer must—

- Integrate and focus all-source intelligence on the commander's and sub-ordinate commanders' PIRs to support estimates of the situation, situation development, COA development, planning, and decisionmaking.
- Supervise the development and dissemination of all-source intelligence products that are tailored to the units' needs and concepts of operations and that are provided in time to support planning and decisionmaking.
- Provide the commander and staff with a bottom-line analysis of enemy capabilities, strengths, and vulnerabilities as well as opportunities and limitations presented by the environment.
- Request P&A support for requirements that exceed organic capabilities.
- Ensure the nature of the analytical effort and the content of the intelligence product is

understood and properly used in the planning and execution of combat operations.

Organic Intelligence Sections

The unit intelligence section supports the commander, the intelligence officer, and the command through the development of mission-oriented intelligence products. The analytical and production capabilities of organic intelligence sections vary with the size of the section and level or type of command it supports. However, intelligence sections and their supporting intel bn or detachment are capable of performing the following P&A tasks:

- Conducting mission-focused IPB P&A for the unit's AO and AOI.
- Developing and maintaining a comprehensive intelligence estimate.
- Tailoring intelligence products to meet unit requirements.
- Maintaining an accurate all-source picture of the enemy situation in the AO and AOI.
- Preparing target analysis and target intelligence products.
- Providing intelligence operational linkage and communications and information system connectivity with higher, adjacent, supporting, and subordinate analytical elements.

Organization for Employment

When deployed, the P&A cell functions as part of the MEF CE combat intelligence center (CIC), IOC, under C2 of the ISC.

Combat Intelligence Center

The MEF CE CIC is the overarching IOC, which is established within the MEF main command post to conduct the primary functions of MEF intelligence section and intel bn. Key CIC elements (see table 2-2) are designed to

provide tailored, yet flexible, intelligence C2 and functional capabilities to meet MEF and subordinate commander's IRs and supporting intelligence and reconnaissance operations.

Command and Control

The MEF AC/S G-2 focuses on overall C2 and direction of MEF intelligence, CI, and reconnaissance operations by exercising staff cognizance over intel bn, radio battalion, force reconnaissance company, and other MEF intelligence and reconnaissance assets (e.g., UAV

squadron). Within this C2 authority, the intel bn commander, serving as the G-2's ISC, performs MEF-wide IR management; develops, integrates, and manages supporting intelligence plans; and supervises plan execution.

These plans encompass the MEF-wide organic efforts for collection, processing, production, and dissemination activities of intelligence and reconnaissance operations. The intel bn commander/ISC is responsible for the establishment and operation of the IOC (see fig. 2-5 on page 2-10).

Table 2-2. MEF CE's CIC Key Elements.

Element	Responsibilities
G-2 Plans	Serves as the G-2 section's main element for coordinating and providing intelligence support to the MEF CE future plans team and leadership and direction of the G-2 section's imagery and mapping, SIGINT, and weather sections.
G-2 Operations	Serves as the G-2 section's main element for coordinating and providing intelligence support to the MEF CE commanding general (CG), battle staff, and current operations center elements; target intelligence support to the force fires and future operations; G-2 section intelligence requirements management activities; red cell support; and MEF intelligence liaison with external commands and organizations.
IOC	Serves as the principal MEF intelligence operations and C2 center that is established by intel bn; performs intelligence requirements management, staff cognizance of ongoing organic and supporting collection operations, intelligence P&A, and intelligence dissemination.
● Support Cell	Serves as primary element for conducting MEF-wide intelligence requirements management, weather support, collections and dissemination planning and direction, and intelligence staff cognizance of MEF organic and supporting intelligence and reconnaissance operations.
● P&A Cell	Serves as the primary P&A element of the MEF; processes and produces all-source intelligence products in response to requirements of the MEF; serves as the principal IMINT and GEOINT production element of the MEF.
● SARC	Serves as the primary element for the supervision of MEF collection operations; directs, coordinates, and monitors intelligence collection operations conducted by organic, attached, and direct support collection assets.
CI/HUMINT Company Command Post	Serves as the primary element for conducting CI/HUMINT planning and direction, C2, and coordination of MEF CI/HUMINT operations with external CI/HUMINT organizations.
OCAC	Serves as the main node for the C2 of radio battalion SIGINT operations and the overall coordination of MEF SIGINT operations; processes, analyzes, produces, and disseminates SIGINT-derived information; and directs the ground-based electronic warfare activities of the radio battalion.
Reconnaissance Operations Center	Serves as the main node for the C2 of force reconnaissance company's operations and the overall coordination of MEF ground reconnaissance operations; processes, analyzes, produces, and disseminates ground reconnaissance-derived information in support of MEF intelligence requirements.

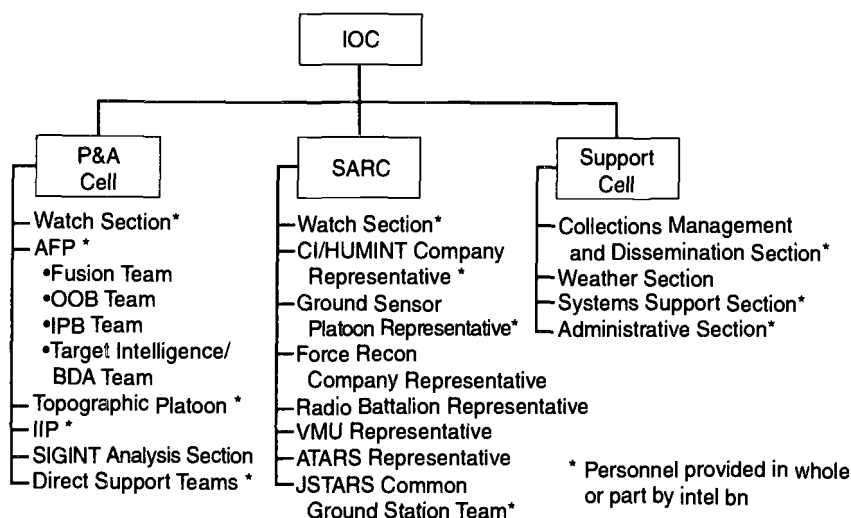


Figure 2-5. IOC Organization.

Senior Marine Expeditionary Force Intelligence Staff Officers

Table 2-3 highlights the key MEF senior intelligence staff officers and their responsibilities, roles, and tasks.

Intelligence Production Support Flow

Requests for intelligence production support from the P&A cell, or other MEF intelligence or reconnaissance elements, must be validated and forwarded via the chain of command to the MEF G-2 for validation, prioritization, and tasking. The intel bn commander, serving as ISC, performs this function for the G-2.

The ISC, upon approval by the AC/S G-2, uses the prioritized intelligence collection requirements (ICRs), IPRs, and intelligence dissemination requirements (IDRs) for planning and direction, follow-on taskings to MEF organic and supporting intelligence and reconnaissance units, C2, and execution. The ISC's overall intelligence production staff cognizance relationships and resulting P&A cell intelligence

production support flow are as indicated in figure 2-6.

Organization for Combat Operations

The intel bn and P&A company tailor day-to-day garrison operations to support the IRs of the commander, staff, and MEF subordinate units. With minor adjustments, the P&A company transitions from garrison pre-hostilities organization to P&A cell crisis or combat operations functioning. In practice, the organization of the P&A cell supporting each MEF is based on prospective missions of that MEF and corresponding potential AOs.

During contingency or combat operations, the P&A cell functions as part of the MEF CE's CIC and the intel bn's IOC. The P&A cell may be tasked to provide limited personnel support to an intelligence node or cell with the MEF. In such cases, the intelligence component of these command echelons will contain a limited P&A capability (focused on providing the commander with situational awareness).

Table 2-3. Senior Intelligence Staff Officers.

ISC	G-2 Operations Officer	G-2 Plans Officer
Planning and execution of intelligence operations to support all MEF IRs.	Providing intelligence support to MEF CE battle staff and current operations center agencies.	Providing intelligence support to the plans officer's future planning team for future planning IRs.
Establishing and directing the IOC (P&A cell, SARC, and support cell).	Coordinating intelligence support to higher and adjacent headquarters and agencies.	Recommending IR validation, prioritization, and tasking to AC/S G-2.
Managing IRs (collection, production, and dissemination), validating, prioritizing, and tasking IRs, per AC/S G-2 direction.	Recommending IR validation, prioritization, and tasking to AC/S G-2.	Establishing and directing the G-2 future planning intelligence element.
Exercising C2 of intel bn and staff cognizance over SIGINT, CI, HUMINT, measurement and signature intelligence, IMINT, and air and ground reconnaissance, including staff cognizance of designated G-2 elements.	Establishing and directing intelligence elements and support to the combat operations center, future operations center, target intelligence section, force fires, red cell, and MEF intelligence liaison teams.	Establishing and operating the intelligence section's imagery and mapping, CI, HUMINT, SIGINT, and weather sections (less that under staff cognizance of the ISC).

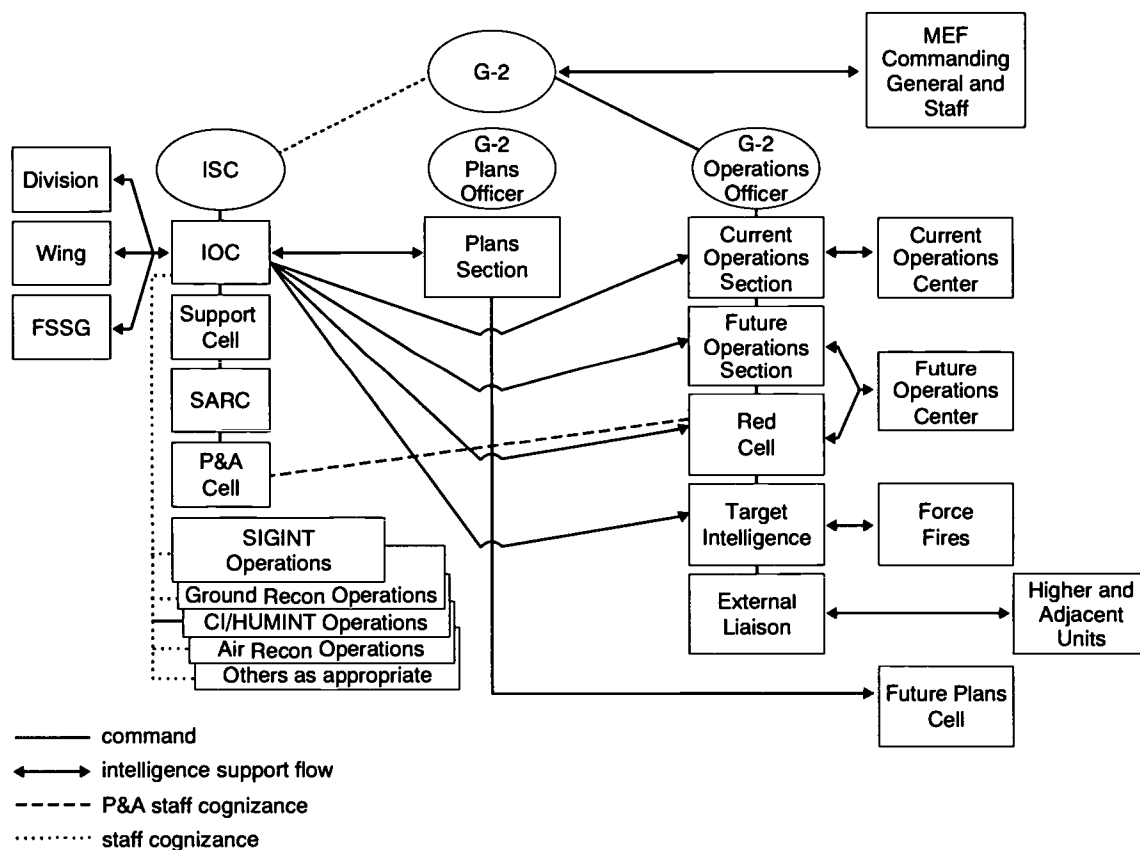


Figure 2-6. C2 and Staff Cognizance of Intelligence Production Support Flow.

The P&A cell may be tasked to provide personnel to support intel bn detachments provided to subordinate commands, MAGTFs, or separate units. Each P&A cell contains within its table of organization (T/O) two direct support teams which can be used to augment the IR management, analysis, production, and dissemination capabilities of the supported unit. Direct support teams can be employed by the MEF AC/S G-2 or ISC to focus intelligence planning, direction, analysis, production, and dissemination support to the main effort or other specified MEF priority. When not so assigned, direct support teams will be integrated within other P&A cell or intel bn operations.

When a MAGTF of less than full MEF size is deployed, the P&A cell may contribute personnel to a task-organized intel bn detachment normally attached to the MAGTF or special-purpose MAGTF (SPMAGTF) command element. A common example would be the detachments provided to Marine expeditionary unit (special operations capable) (MEU[SOC]) CEs. Standing support includes small detachments from the IIP and topographic platoon. The lead and tactical echelons' intelligence nodes and detachments rely heavily on electronic CIS connectivity to allow reach back to the more robust and capable analytical and production resources of the MEF and intel bn.

Communications and Information Systems

The intel bn, P&A cell, subordinate elements, and other key intelligence producers (e.g., radio battalion) must have sufficient communications resources to support internal C2, operations, and IR support. Communications capabilities generally consist of short- and medium-range voice communications equipment. The communications battalion or communications elements provide P&A CIS support beyond the basic requirements.

Basic Requirements

Regardless of the size of the MAGTF, the following standing CIS requirements must be satisfied to facilitate intelligence P&A operations.

Capability to Command and Control Subordinate Units

Intelligence officers and intelligence production element commanders or officers in charge must be capable of positive staff cognizance or C2 of subordinate units and integration of their operations with broader MAGTF and external intelligence and operations C2. Traditionally, single-channel radio and record message traffic have been used to support MAGTF intelligence units' C2, particularly at echelons below the MSC level. At MSC, major subordinate element (MSE), MAGTF CE, and higher command echelons, high capacity communications networks support intelligence production C2, operations, and product dissemination. In semi-static situations, secure electronic mail or telephone provide significant communications capabilities; in highly fluid or mobile scenarios, cellular, satellite communications (SATCOM), and very high frequency (VHF) and high frequency (HF) radios may be used.

Ability to Receive Collected Data, Information, and Intelligence from Organic and External Intelligence Organizations and Production Elements

The CIS architecture must provide connectivity between organic and supporting intelligence units and production elements. Principal and alternate means of CIS are dependent on mission, enemy, terrain and weather, troops and support available-time available (METT-T) factors. The commanders and users' desired product formats also influence the selection of CIS means. The means of communication must include the capability to transmit imagery, GEOINT, and other intelligence products with large data files as well as the capability to

disseminate IMINT and reports digitally via fiber optics, wire, radio, and voice formats.

Ability to Provide Intelligence to Supported Commanders

Supported commanders' intents, concepts of operations and intelligence, command relationships, and standing PIRs and IRs influence intelligence production CIS requirements. The CIS architecture must be capable of integrating production elements' C2 and supporting CIS operations, including general service (GENSER) and sensitive compartmented information (SCI) communications with the primary CIS channels used by supported commanders. The determination of principal and alternate CIS means depends on METT-T. The product format desired by commanders and intelligence users also influences the CIS means. The means of communication must include the capability to transmit imagery, GEOINT, and other intelligence products with large data files as well as the capability to disseminate SCI and GENSER all-source and intelligence discipline-unique reports digitally via fiber optics, wire, radio, and voice formats.

Ability to Share Intelligence Products and Reports with All-Source JTF, Other Components, Theater, National, and Multi-national Intelligence Organizations, Agencies, and Centers

Traditionally, MAGTF GENSER secure record and voice communications provide this capability. While these techniques continue to be used for MAGTF intelligence production, they are now secondary in importance to the use of Joint Worldwide Intelligence Communications System (JWICS), SECRET Internet Protocol Router Network (SIPRNET), and other CIS

capabilities which allow participants to access each others' intelligence products and data bases and to immediately pull required data, intelligence, and other products. This CIS requirement includes the capability to disseminate intelligence with designated nongovernmental organizations (NGOs), private volunteer organizations (PVOs), and other U.S. and multinational governmental agencies, particularly during military operations other than war (MOOTW).

Information Systems

Information systems, such as the intelligence analysis system (IAS), and their associated networks are the lifeblood and lifelines of P&A cell and MAGTF intelligence analysis, production, and dissemination operations. Intel bn has sufficient information systems resources to satisfy internal C2, operations, and intelligence needs. Most information systems require access to SIPRNET for GENSER requirements and to JWICS for SCI requirements, which provide intelligence and data base access to MAGTF, JTF, and other components' elements, and theater and national intelligence reporting and data bases.

The nonsecure internet protocol router network (NIPRNET) is also a key resource for intelligence analyst research and access to public domain information, as well as a means to exchange unclassified information. The supporting MEF communications battalions provide the necessary network connectivity for GENSER information networks and communications pathways, and radio battalion provides SCI networks. Figure 2-7 on page 2-14 depicts a notional MEF intelligence processing, analysis, production, and dissemination CIS architecture and resources.

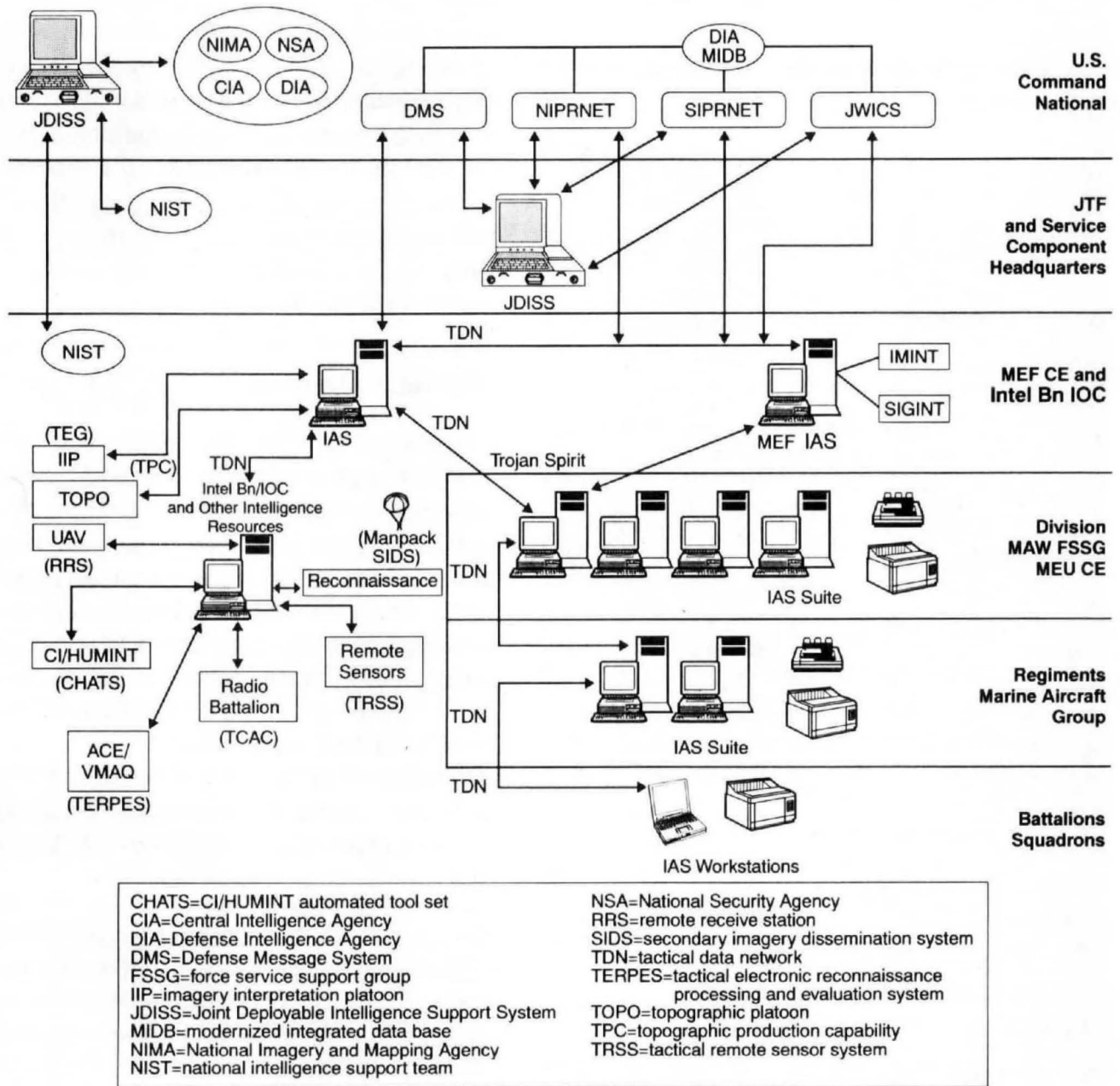


Figure 2-7. Notional MEF CIS Architecture.

CHAPTER 3. FILTERING, RECORDING, AND EVALUATING

When preparing information for analysis, intelligence personnel—

- Identify Information of Immediate Tactical Value. Every piece of data, information, or intelligence received must be assessed to determine its tactical value and its effect on current operations. Particular attention must be paid to possible alarms, triggers, and high-payoff targets (HPTs), which are defined by, and tied to, the PIRs, commander's decision support tools, and targeting priorities. If the information is relevant to ongoing operations, immediate production is initiated. The information is rapidly evaluated, analyzed, and disseminated for use by the commander and staff as well as subordinate and other affected units.
- Eliminate Redundant and Irrelevant Data Early in Processing. Each item received must be scrutinized to determine its pertinence to the unit's intelligence requirements. The incoming flow of data, information, and intelligence must be filtered for redundancy and relevance to the mission, AOI, and timeliness. This ensures intelligence analysts receive information and data that is useful to the analytical process while not being overwhelmed with unnecessary information or repetitive reporting.
- Identify Relevance to Ongoing Production. An important aspect of preparing an item for analysis is determining its impact on the ongoing intelligence production effort. The received data or information is evaluated to identify how it

contributes to ongoing production in order to determine who should get the information, how urgent the information is, and in what format the information should be provided.

- Practice Standing Operating Procedures. The employment of information handling standing operating procedures (SOPs) saves time and effort. Standard methods of filtering, collating, recording, and evaluating speed up the preparation of incoming items for analysis, provide consistency in the way information is handled, and enhance comprehension of personnel performing the procedures and of the analysts receiving the incoming items.
- Employ Reliable and Accessible Recording Tools. Effective analysis depends in part on the ability to access, recall, and manipulate the stream of all-source data, information, and intelligence flowing into the command. Recording methods should be simple and flexible without interfering with timely analysis, production, dissemination, and use of intelligence. Analysts must be able to access information when they need it to receive the information in a form that facilitates understanding, and to rapidly integrate the data with other information or intelligence. The widespread use of automated information systems enhances the speed and utility of intelligence recording tools. However, analysts must ensure the necessary reliability and accessibility are built into the automated information systems and that associated backup procedures are established.

SECTION I. FILTERING

Filtering is the discarding of irrelevant or repetitive information prior to its entering the P&A process. Because current and emerging collection, communications, and intelligence auto-

mated information systems provide access to a vast quantity of raw data, processed information, and finished intelligence, there is significant potential for information overload of intelligence

sections and personnel. An effective filtering system is essential for managing the flow of data, information, and intelligence into the unit's intelligence processing and production system.

Filtering Criteria

Before information is entered into the production process, each item's relevance to the unit's intelligence requirements is assessed and unrelated material is discarded. The unit intelligence officer establishes basic criteria for filtering. Critical criteria drive the establishment of PIRs and IRs. The filtering criteria must be reviewed on a regular basis and updated to reflect changes in intelligence requirements, the AOI, and timeliness of information needed. Intelligence analysts use the following criteria when making assessments.

Subject Matter

The content of the data or report must be related to the unit's PIRs/IRs. Information that has no bearing on the PIRs/IRs is discarded, unless the information may impact future requirements.

Location

The event detailed in the data or report must have occurred within the unit's AO or AOI.

Time of Occurrence

The report should have continuing significance. For example, reports of future air or missile strikes may be received after the strike has begun; such reports are discarded unless they contain details of analytical importance.

Redundancy

Multiple reports relating to the same data or event are often received. Reports that repeat the initial information without adding significant data or

analysis should be discarded, unless the reports provide critical confirmatory information.

Methodology

Filtering should occur as early as possible in the information processing system. Despite the fielding of automated intelligence systems, such as the Marine Corps IAS and the technical control and analysis center (TCAC), filtering is largely a manual process. A human must review voice reports, translated documents, images, and finished intelligence documents from higher echelons.

Manual Filtering

Most intelligence sections establish a central point for the receipt and distribution of incoming intelligence, counterintelligence, and reconnaissance reports. Normally, the intelligence watch within the combat operations center or the surveillance and reconnaissance cell is the receiving and distribution point. The watch examines each piece of data, information, and intelligence received; compares the content to the filtering criteria; and decides whether to discard the report. Filtering personnel must be able to rapidly identify new intelligence information of immediate tactical value and to quickly initiate the necessary actions.

Automated Filtering

For machine-readable formatted messages, automated intelligence systems are significant filtering tools. Systems such as the IAS can automatically filter incoming messages according to specified parameters such as location, time, and type of report. Use of IAS speeds the filtering process by correlating incoming information to existing units' tracks within the data base. However, the unit name or identification and location data fields in the formatted message must be filled out for this automatic function to occur, or the system will hold the message for

manual correlation. Automated systems are a tool to assist the analyst, not replace them. The system operator must continually review the filtering parameters and assess the effectiveness of the

information filtering system. As with manual filtering, IAS operators must be familiar with the unit's intelligence requirements, have situational awareness, and exercise sound judgment.

SECTION II. RECORDING

Recording is the reduction of information to written or other graphical representation and the arranging of this information into groups of related items. This step is performed so items of information can be observed as an integrated picture and studied in relation to each other. Recording information makes evaluation and analysis easier and helps prepare intelligence products by drawing together available information on a specific subject. It also provides a record of events for post-operation study of the enemy and AO.

Methodology

Recording performed by intelligence sections at all levels normally involves—

- Registering all incoming information.
- Logging, map or chart marking, filing and indexing, or entering information in the data base of an automated system.
- Maintaining a system designed for rapid and efficient operations.

At lower command echelons, especially during mobile operations, recording may be no more than the maintenance of a log and marked map. At higher command echelons, recording relies heavily on automated information systems, electronic data bases, and visual display units. Both methods should make full use of graphic recording tools (i.e., maps, overlays, graphs, and charts) that make it possible to visualize and absorb the maximum amount of information in the shortest possible time. The indexing and

categorizing of subject matter in a recording system must be related to the projected area, scope, and nature of the operations and must be based on the—

- Commander's PIRs.
- Other IRs.
- Anticipated information flow.

The recording means must be able to handle the volume of information and intelligence received and to serve the needs of individuals requiring access to that information. In addition, recording means and techniques must permit timely dissemination of information and intelligence.

In the past, most recording was manually generated either on a map, journal, or status board. Today, the most common recording devices are automated data processing and information systems such as IAS. Office automation software allows the rapid creation of charts and graphs, the annotation and manipulation of images, and the rapid assembly of words and text. Intelligence journals, files, records, and data bases can be updated automatically, and the data can be recalled and displayed in an overlay form.

Recording Tools

Whether operating in a manual or automated environment, the most common types of recording tools used by the intelligence analyst are the intelligence journal, enemy situation map, intelligence workbook, order of battle or analyst files, and target files.

- The originating agency or addressee.
- A brief description of the item.
- The disposition information.

Enemy Situation Map

The enemy situation map is a temporary graphic display of current enemy dispositions, major enemy activities, and other pertinent intelligence and information. By presenting that information in relation to each other, the enemy situation map also helps with interpretation, analysis, and decisionmaking. In addition, it helps dissemination by permitting the ready transfer of intelligence concerning enemy forces capable of interfering with the mission of the unit concerned. A primary analytical tool, the enemy situation map is often the only recording device used during fast-moving combat operations, particularly at lower command echelons.

Methodology

The enemy situation map should cover enough area to facilitate the conduct of current operations and the planning of future operations. A large MAGTF, such as a MEF, normally requires the following three enemy situation maps:

- Large-scale tactical map (approximately 1:50,000) for current ground operations.
- Medium-scale operational map (approximately 1:250,000) covering the AO and portions of the AOI to record deep enemy installations (e.g., airfields, missile sites) and enemy forces that can affect friendly operations.
- Small-scale strategic map (approximately 1:1,000,000 or smaller) to cover the MAGTF AOI and beyond.

At lower echelons, one map may suffice. The scale depends on the mission and threat. The map scale(s) used should be decided between the G-2/S-2 and the G-3/S-3 when the battlespace is defined (step one of the IPB process). Often, a combined G-2/G-3 map is

used to conserve space in the combat operations center or other C2 cells. If separate intelligence and operations maps are maintained, overlays must be readily interchangeable between maps. Information displayed on the situation map must be tailored to the—

- Mission.
- Nature of the threat or enemy.
- Terrain.
- Command echelon being supported.
- Unit's PIRs/IRs.
- Force protection.
- Targeting priorities.

Generally, enemy maneuver units posted on the situation map are two echelons below that of the friendly unit. Enemy units, regardless of size, in friendly rear areas are always posted because of the amount of damage they can inflict on C2 and sustainment. The situation map reflects—

- Enemy unit identification, disposition, and boundaries.
- Significant terrain and infrastructure features.
- Locations of manmade and natural obstacles.

When plotting enemy activities and dispositions, intelligence personnel—

- Indicate the latest time when the activity was observed or the disposition was confirmed.
- Post information using standard military symbols and abbreviations. See Field Manual (FM) 101-5-1/Marine Corps Reference Publication (MCRP) 5-2A, *Operational Terms and Graphics*, for standard symbology.
- Explain any deviations from these symbols in the marginal data on the map or overlay.
- Mark maps and overlays clearly with the appropriate classification.

Information is posted on the situation map as it is received. Information is removed promptly when

no longer current, because omissions or outdated information may result in erroneous evaluations, interpretation, and decisions. On a hard copy situation map, separate flaps of acetate can be used to record different types of information, which reduces overcrowding. Also, to reduce overcrowding, a number or letter system can be used to record significant events or activity. The letter or number is marked at the appropriate location on the map where the activity occurred. On a board or marginal area alongside the map, the same letter or number is recorded with a notation of the activity observed. A numbering system that is easily cross-indexed to the journal or message file should be used.

Automation

Automated functions of the IAS and other intelligence information systems greatly assist the maintenance of an enemy situation map. The IAS enables the operator to—

- Zoom in and out through various maps to quickly change scale views of the battlefield, thereby enhancing the number, size, and types of enemy units displayed.
- Call up information, including last report and location, by clicking on the unit of interest.
- Forward electronic overlays to other IAS users or to systems such as tactical combat operations for display.
- Use large-screen displays to deliver information briefings.
- Share a common picture of the battlespace in near-real time with users at separate locations by using robust communications connectivity. Consideration must be given to developing manual and electronic backups in the event of catastrophic failure of the system.

Intelligence Workbook

Incoming information is recorded by subject in the intelligence workbook for ready reference

and comparison. The workbook helps in determining the meaning and significance of related items of information, which facilitates further processing, production, and dissemination (i.e., preparation of intelligence summaries and reports). The workbook can be set up in any format; however, the most common format organizes the book according to topics in the intelligence summary.

As information is received, it is recorded in one or more parts of the workbook based on its content. For example, a report concerning a newly identified enemy armor unit could be recorded under the new units section as well as in the armor section. Each entry should include—

- Journal entry number for the source report.
- Time of the event or observation.
- Location.
- Brief extract of the information applicable to the workbook section.

Maintaining the workbook is a time-intensive, manpower effort, but a properly maintained workbook is a powerful analysis tool. The IAS operator has the ability to simultaneously break down portions of incoming messages into numerous sections of an electronic data base or workbook. Employed properly, this capability can significantly streamline the maintenance of an intelligence workbook.

Order of Battle Files

OOB files include information and intelligence on the identification, strength, command structure, and disposition of personnel, units, and equipment of a military force. Combined with information on the threat, terrain, and weather, OOB information is a key element in the creation of finished intelligence products (e.g., IPB, estimates, BDA).

OOB files maintained on threat, allied, and neutral or third party forces can be subdivided into—

- Ground OOB.
- Air OOB.
- Naval OOB.
- Electronic OOB.
- Weapons of mass destruction.
- Other categories tailored to the unit's needs.

The OOB subdivisions and level of detail maintained in each subdivision depends on the—

- Command level where the analysis takes place.
- Type of threat forces that can influence friendly operations.
- Mission assigned.
- Area of responsibility.

A MEF conducting an amphibious operation needs to maintain information on all types of forces, while a battalion or squadron operating as part of sustained operations ashore focuses on the ground or air OOB that most affect them. The battalion or squadron relies on higher, adjacent, supporting, or Service commands in the theater to provide other OOB (e.g., weapons of mass destruction, electronic OOB, naval OOB). Specific factors are evaluated for each type of OOB (see chapter 7 for a detailed discussion of these factors).

Lower command echelons' OOB analysis is generally more focused, less detailed, immediate in nature, and performed by the unit's intelligence personnel as part of their general duties. At higher levels, particularly at a MEF or MAGTF CE, one or more analysts are assigned to each type of OOB. At these levels, OOB information normally becomes voluminous in a short period of time. In organizing this information, OOB analysts must maintain extensive and systematic compilations and filing systems. Specific items of information and intelligence must be located on

short notice and incorporated into comprehensive reports or analyses. Regardless of the level of command, analysts at the tactical intelligence level use several OOB tools.

Unit Workbook

The format for the unit workbook depends on the structure of the enemy force being monitored. It consists of a collection of unit worksheets arranged by type of unit or in numerical sequence. Analysts with OOB baseline documents at their disposal use them as unit workbooks by inserting additional pages as new information is received. Normally, the parent unit listed on the unit worksheet is equivalent in size to the level of command performing the analysis. Records are maintained on units one level above and two levels below the enemy unit being monitored; however, this can be modified based on the situation. The date and the source of information are recorded for each entry (see fig. 3-2 on page 3-8). Unit OOB details noted in the remarks column include—

- Reports of branch insignia.
- Number and types of weapons.
- Local residents' statements in abbreviated form.

OOB Situation Overlay

This is a graphic portrayal of current confirmed or unconfirmed enemy OOB. It shows identification and disposition of enemy units and other information that will assist in developing the enemy OOB. Enemy units, down to and including two echelons below the analyst's own level of command, are plotted using the standard symbols included in FM 101-5/MCRP 5-2A.

Peculiarities of enemy organizations, the tactical situation, and time and personnel available determine what to plot or omit on OOB maps. The information time and date are entered below each plotted symbol.

Parent Unit _____						
Subordinate Units	City	Coordinates	Installation	Personalities	Identification or Code No.	Remarks
Division Headquarters	Stein	PV818147	1 and 3	Commander Col Crechin		EPW no. 26, captured 2 Feb 68
96th Mechanized Rifle Regiment	Delltach	PU820934	4	Commander Col Kurshave	16181	Document captured 19 Mar 68
145th Mechanized Rifle Regiment	Ellenburg	PU852961	2	LtCol Shrenko	16182	Deserter 21 Mar 68
3d Battalion	Gladbach	PV891024	1			Gladbach residents report battalion subordinate to headquarters in Ellenburg, 3 Feb 68
43d Medical Tank Regiment	Linburg	PV863106	3	Commander Col Reshvic		Agent report 26 May 68
358th Transportation Battalion	Lehrt	PV825158	1		16195	OOB Bank

Figure 3-2. Example of a Unit Workbook Page.

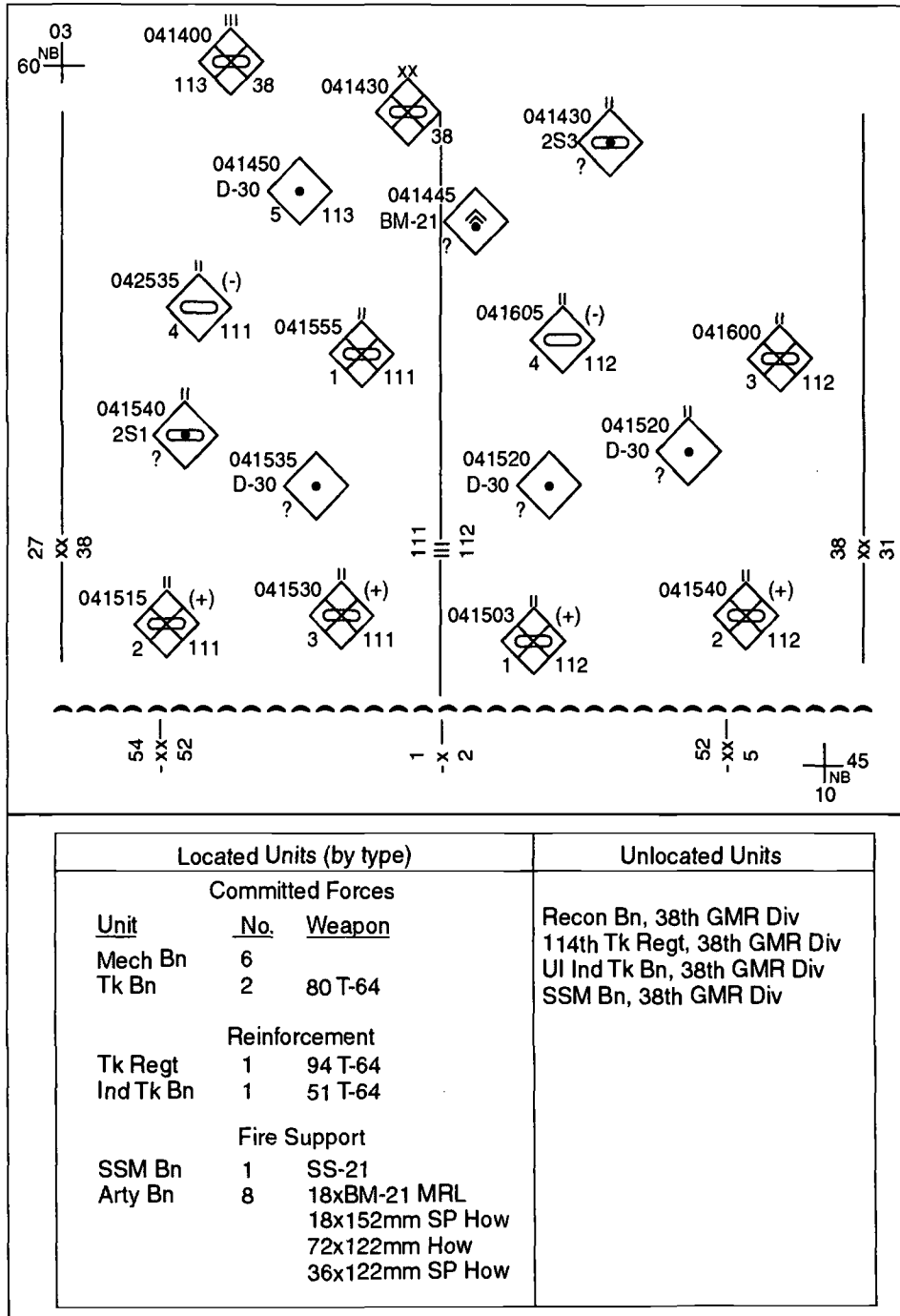
An OOB situation map caption box contains annotated information that helps explain the OOB situation. Normally, the three types of caption boxes are: strength, unlocated units, and legend. At lower tactical echelons, the OOB situation overlay and the enemy situation map are combined for simplicity. At higher echelons, applicable analysts maintain separate types of OOB on overlays near their work area. A composite OOB overlay is used for the enemy situation map and for briefings (see fig. 3-3). The IAS allows the rapid generation of tailored electronic overlays based on available data base information.

OOB Record

As referenced in Standardization Agreement (North Atlantic Treaty Organization [NATO]) (STANAG) 2077, *Orders of Battle*, OOB record files are used to maintain accurate and complete data on all units. Normally, one record is maintained on each threat

unit in a position to affect current or future operations (see fig. 3-4 on page 3-10). The OOB record contains the following information:

- Service (branch of armed forces to which the unit belongs, including paramilitary and insurgent).
- Formation or unit name (official title).
- Alternative name (unofficial name).
- Role (principal function of the unit, e.g., command, combat, combat service support [CSS]).
- Superior formation (immediate senior formation or unit).
- Headquarters location name (nearest identifiable town or village).
- Headquarters location coordinates (universal transverse mercator [UTM] and latitude and longitude).



Arty=artillery
 Bn=battalion
 Div=division
 GMR=guard motorized
 How=howitzer
 Ind=Independent
 Mech=mechanized
 mm=millimeter

MRL=multiple rocket launcher
 Recon=reconnaissance
 Regt=regiment
 SP=self-propelled
 SS=surface-to-surface
 SSM=surface-to-surface missile
 Tk=tank
 UI=unidentified

Figure 3-3. Example of OOB Overlay.

PARENT FORMATION									
Service		Formation or Unit Name		Alternative Name		Role		Superior Formation	
HQ Location Name		HQ Location Coordinates		Combat Effectiveness		Allegiance		Commander's Last Name	
SUBORDINATE FORMATIONS/UNITS									
Serial Number	Subordinate Unit or Formation Name	Location Coordinates	Role	Signature Equipment	Equipment Quantity	Commander's Last Name	Personnel Strength	Combat Effectiveness	Record Date/Update
Record Evaluation and Source					Remarks				

Figure 3-4. Sample OOB Record.

- Combat effectiveness assessment (ability to perform intended mission or function expressed in a percentage).
- Allegiance (entity or country to which unit owes its loyalty).
- Commander's last name.
- Subordinate formations' and units'—
 - Serial number.
 - Subordinate unit name.
 - Location coordinates (UTM and latitude and longitude).
 - Role.
 - Signature equipment (equipment that might identify the unit).
 - Equipment quantity (number of signature equipment in the unit).
- Commander's last name.
- Personnel strength (assessed strength).
- Combat effectiveness.
- Record date and update (date of information or last time record was updated which-ever is later).
- Record evaluation and source (listing of source and reliability as well as validity of the information).
- Remarks (e.g., unit history, insignia).

Personality File

Personality data on designated categories of individuals are recorded. Information on key figures is valuable in establishing an opponent's intent.

Military Installation File

This file contains collected information on each installation, to include the—

- Number and types of buildings and their capacities.
- Personnel uniforms and insignia.
- Major items of equipment.
- Maps, town plans, or sketches that show the location of each installation within the city.

Organizational Chart

This chart depicts the organization of units, from the highest headquarters to the lowest unit. It includes personnel and major weapon strengths. Principal weapon and equipment charts may be prepared to supplement organizational charts.

Strength Worksheet

Used to maintain a running numerical tabulation of the enemy's personnel and equipment strengths, the worksheet contains information recorded on committed units, fire support units, and reinforcements. The strength worksheet may be combined with OOB cards or other unit files. See chapter 8 for a detailed discussion of combat strength assessment.

Target Files

Target files are either standard (full page) or card type files.

Target Intelligence Files

Target intelligence files are developed selectively and aggressively to include the targets which, when attacked, will have an effect on the enemy. These files contain the following information:

- Location (geographic and UTM coordinates, accurate within 10 meters).
- Altitude (target location expressed in meters or feet above sea level).

- Description (type, shape, attitude, dispersion, and composition).
- Vulnerability (assessed vulnerability of target to ordnance delivery, including construction, degree of protection, and dependence of the target on component parts).
- Recovery time (accurate assessment of the time required for the enemy to replace or return the target to active or usable status).
- Accessibility (location of a target with respect to other terrain or cultural features that may limit the direction or angle of attack).
- Importance (estimate of how the enemy would be affected by damage to that target).

Target Card Files

These files are comprised of sets of cards; each card contains a target serial number and information concerning a specific target. Target card files are prepared and maintained on current targets and serve as a basis for the preparation of the target list and target bulletins. Cards are also prepared and maintained on potential targets so that a threat unit changing status can quickly be added to the target list. Complete target card files are maintained by commands that will exercise control of the target list during some phase of the operation.

Tools Automation

The IAS provides an automated means to employ the intelligence recording tools. When attached to appropriate communications, the IAS can automatically filter, parse, collate, update, and display threat-related data received from the national and theater level's modernized integrated data base. That data can be manipulated to provide the functionality of an intelligence journal, enemy situation map, workbook, OOB overlays, OOB files, and target files. Desktop application software can be used to generate spread sheets for strength tabulations and other files.

SECTION III. EVALUATION

During evaluation, the intelligence section determines the relevance, the source reliability, and the accuracy of recorded information. Evaluating information in this manner also determines whether immediate or deliberate production and dissemination should be performed.

Relevance

Upon receipt, each item of information is examined for its relevance by area, time, and content. Information relevant to the AO or AOI is processed further. Urgent information is rapidly evaluated and disseminated to those who need it. Information that is not of an urgent nature is usually fully evaluated, interpreted, and disseminated later.

Reliability

The information source and the information collection agency are evaluated for reliability. The principal basis for judging the reliability of a source or agency outside the MAGTF is previous experience with the source. Normally, analysts expect a highly reliable source to provide accurate information. Analysts must consider that even highly reliable human sources have limitations and a reliable electronic source may be subject to enemy interference and deception measures. Information reported from reliable sources should be compared with other facts before being classified as fact.

The headquarters closest to the source or agency is ordinarily the best judge of its reliability. Normally, a higher headquarters accepts the reliability evaluation of the reporting headquar-

ters. Criteria for evaluating MAGTF unit reliability include knowledge of the unit's—

- Training.
- Experience.
- Past performance.

Accuracy

Accuracy involves the probable truth of the information. The most reliable method of judging accuracy is comparison with other information obtained through other collection sources and agencies.

A marked difference in the information accuracy evaluation may occur between higher and lower echelons. Higher echelons have access to more sources of information and intelligence than lower echelons, thus they provide more opportunity to confirm, corroborate, or refute the accuracy of reported data.

Regardless of the source, the accuracy of each report or piece of information is reevaluated at each echelon. Processed, evaluated, and interpreted information received from higher headquarters may be old, or new information that was not available at the time of the higher headquarters assessment may alter the information's accuracy.

Evaluation Rating System

A technique for evaluating the reliability and accuracy of information is determined by using a standard system described in STANAG 2022, *Intelligence Reports*. This system uses code letters to indicate reliability of the source and code numerals to indicate accuracy of the information.

Evaluation ratings are most valuable when information is disseminated to higher, adjacent, or lower units. Each item of information in a report should contain an evaluation to aid the recipient in understanding its significance.

Reliability Evaluation Codes

Agencies are ordinarily rated **A**, **B**, or **C**; however, when the source and the collecting or reporting agency are evaluated differently, the lowest degree of reliability is indicated. Reliability of the source is rated as—

- **A**—Completely reliable (indicates the source has experience and extensive background with the type of information reported).
- **B**—Usually reliable (indicates a source of known integrity).
- **C**—Fairly reliable.
- **D**—Not usually reliable.
- **E**—Unreliable.
- **F**—Reliability cannot be judged (indicates there is no basis for estimating the reliability of the source).

Accuracy Evaluation Codes

Accurate ratings are preferred, but when the truth cannot be judged, the rating of **6** is always favored over the inaccurate of ratings **1** to **5**. The accuracy of information is rated as—

- **1**—Confirmed by other sources (indicates that the information confirms currently held information and originates from a different source).

- **2**—Probably true (indicates that the information confirms all or essential parts of currently held information and does not come from the same source, but cannot be confirmed by other sources).
- **3**—Possibly true (indicates that the reported facts, on which no further information is yet available, are compatible with the previously observed target behavior; or that the known background of a person confirms that person's reported actions).
- **4**—Doubtfully true (indicates unconfirmed information that contradicts estimates or the known behavior of the target).
- **5**—Improbable (indicates information that is not confirmed by available data and that contradicts the experience previously assumed reliable).
- **6**—Truth cannot be judged (indicates there is no basis for ratings 1 to 5 because of the complete absence of other information on the same subject).

Although both letters and numerals are used to indicate the evaluation of an item of information, they are independent of each other. A completely reliable agency may report information obtained from a completely reliable source which, on the basis of other information, is judged to be improbable and rated as **A-5**. A source known to be unreliable may provide raw information that is confirmed by reliable sources, accepted as credible information, and rated as **E-1**. A report evaluated **F-6** may be accurate and should not be arbitrarily discarded.

CHAPTER 4. ANALYTICAL THINKING

Through analysis, information is transformed into knowledge. Understanding is achieved by applying judgment to knowledge, and the future is anticipated by understanding the present. Intelligence analysts enhance the understanding of the commander and staff to reduce uncertainty, limit risk, and support planning and decisionmaking. To enhance understanding for the commander, intelligence analysts must understand how decisionmaking occurs, the forms of reasoning, and the pitfalls often associated with analysis. At a minimum, the analyst must—

- Know the commander's mission, intent, and guidance.
- Understand the battlespace framework, which includes the AO, AOI, battlefield organization, and tangible and intangible factors (e.g., culture, politics, economics, religious, ethnic).

- Understand information management.
- Understand friendly and threat doctrine and tactics.
- Develop PIRs and IRs with the commander, other staff sections, and subordinate units' intelligence officers, who are geared to answer or provide additional information on a threat's capabilities, vulnerabilities, intentions, and COAs.
- Understand how to use analytical tools (i.e., IPB, automated intelligence systems, data bases, indications and warning, situation development, targeting, and OOB factors).
- Relate information to the six intelligence functions and METT-T.

SECTION I. ANALYTICAL PROCESS

Intelligence personnel analyze, synthesize, and estimate data gathered on a specific area or subject to support the commander's decision-making process.

Analysis

Analysis is a process used by commanders and analysts to establish IRs, to study information and available intelligence, and to determine a threat's capabilities, vulnerabilities, intentions, and COAs against friendly operations and systems. During analysis, a commander's AO and AOI are dissected for pertinent information and intelligence. In its simplest terms, analysis breaks down a geographic region or subject into bits and pieces of information and evaluates that

information for its significance. Analysis considers the battlespace and its parts in terms of depth, width, height, time, surface, subsurface, and both friendly and threat commanders' IRs and decision cycles.

The commander starts the analysis process by defining the battlespace and submitting IRs; analysts can then—

- Focus on the AO and critical aspects of the AOI.
- Prioritize all IRs.
- Query intelligence data bases.
- Determine gaps.
- Leverage collection and production assets to estimate the threat's capabilities, vulnerabilities, and intentions.

Synthesis

Synthesis is the piecing of information into a coherent, meaningful picture. It is based on the ongoing or previous analysis of separate information and events taking place within a given area. More than simply pulling together information, synthesis determines the relationships that exist among that information. It allows commanders and analysts to see the battlespace as a whole and to rapidly discern emerging patterns and indicators. Threat capabilities, vulnerabilities, and intentions are estimated based on the synthesized picture.

Estimation

Estimation is the most challenging element and the last step in the analytical process. It involves a high degree of risk because it addresses future outcomes and probabilities. Intelligence analysts must stretch their intellectual resources to the limit to provide the best estimate possible given the information at hand and the needs of the commander. Employing experience, judgment, intelligence tools, and methodologies, the intelligence analyst must base estimates on solid analysis of identified activity patterns to determine the threat's intentions and probable COAs as well as the effects of those actions on friendly forces. The following example illustrates the analysis, synthesis, and estimation process.

Example: Analysis, Synthesis, and Estimation Process.

Information from aerial reconnaissance indicates the movement of approximately 31 moving target indicators (MTIs). The MTI locations and times are annotated on a mission report. Based on this report, the analyst conducts mental functions (analysis), attempts to fuse this information into what is happening in the battlespace (synthesis), and predicts intentions (estimation). To arrive at a conclusion, the analyst—

- Plots MTI locations on a situation map and annotates the date-time group. Looks for any relationships to previously reported units in the area and—
 - If a relationship is not found, determines what must be done to answer the who, what, where, and why questions.
 - If a relationship is found, determines the type of unit (e.g., tanks, armored personnel carriers), the direction of movement, and the unit's speed as MTIs pass through named AOIs.
- Looks at the big picture to synthesize the information and to answer the following questions:
 - Does the movement indicate where the MTIs will be committed?
 - Is this part of the threat's main effort?
- Prepares to state the threat's intentions through the combination of analysis and synthesis.
 - Provides an estimate, which specifies the type of equipment, the unit designator, the speed of march, and the probable time of attack.

SECTION II. ANALYTIC PROBLEM SOLVING

Intelligence analysis involves the application of reason and logic to solve problems related to the effects of weather, terrain, and threat on current and future friendly operations. During fast-paced, tactical-level operations, the entire

analyze-synthesize-estimate process may occur mentally within a matter of seconds. At higher levels, the process may be more involved, with more time available to rigorously apply the analytical techniques. This section discusses

the problem solving analytical theories, terms, and processes most commonly used by military intelligence analysts.

Analytical Theories

Most analytical theories begin with a proposition or premise, which is a statement that may or may not be true.

Proposition or Premise

A proposition or premise is a combination of evidence and assumptions, which, when combined, lay the foundation for an argument, hypothesis, or conclusion. Propositions can be detailed or abstract, observable or inferable, with varying degrees of certainty and fuzziness.

Detailed

In military intelligence, the term for a detailed proposition is a specific information requirement. An example of a detailed proposition is: "An enemy company is defending at named area of interest (NAI) 13." When creating this mental proposition, the analyst is at the "I wonder if stage" of analysis. Because the statement is not known to be true or false, the analyst rephrases the proposition as a question. For example: "Is there an enemy company defending at NAI 13?" The detailed proposition requires verification from a collection asset.

Abstract

The doctrinal term for an abstract proposition is an IR, but commanders designate critical abstract propositions as PIRs. An abstract proposition might be: "Is the enemy's main effort going to be along the landing beaches south of Church Hill?" This proposition is abstract because no one single observation will confirm or deny it. The abstract proposition requires analysis and deduction based on multiple collection asset reports of detailed propositions.

These reports would allow the analyst to discern or infer the enemy's main effort.

Observable

A single collection asset can verify a detailed proposition through observation and documentation in a single report.

Inferable

Abstract propositions can only be inferred by the analysis of a set of detailed propositions from multiple reports. The intelligence staff normally generates specific information requirements to subdivide an IR or PIR into more detailed propositions that can be addressed through integrated intelligence operation (i.e., collection, production, and dissemination) planning. The relationship between two propositions allows an intelligence analyst to make inferences and analyze intelligence information or to arrive at analytical conclusions. This relationship is expressed as: "Proposition X causes proposition Y." The same relationship can also be expressed as: "From the observance of proposition Y, we can infer proposition X." The following example illustrates the relationship between two propositions.

Example: Relationship between Two Propositions.

The existence of a regimental artillery group at NAI 14 will cause the existence of certain air defense assets in and around NAI 14. This proposition is restated as: "From the observance of certain air defense assets in and around NAI 14, we can infer the existence of a regimental artillery group at NAI 14."

The probability of each relationship must be taken into account. For example, the types of air defense assets normally associated with the regimental artillery group may also protect a logistic support area or command post. It is more accurate to state: "From the observance of a certain type of air defense near NAI 14, we can infer there is a 50 percent probability of a regimental artillery group in the NAI 14, a 40 percent probability NAI 14 contains a logistic support area, and a 10 percent probability it contains a command post."

Certainty and Fuzziness

Propositions have varying degrees of both certainty and fuzziness. Certainty is the degree of belief in something. An example of certainty is: "I personally saw an enemy company at NAI 13, and we have six corroborating reports." A less certain proposition would be: "HUMINT has a semireliable source that claims there is a company at NAI 13, and we have no other reports on the subject."

Fuzziness is the measure of how well the known information matches the desired information. An example of a certain proposition is: "Our patrol reports the exact number of enemy soldiers and equipment for an enemy company." A fuzzy proposition would be: "Our patrol reports about half the number of men and equipment of an enemy company, so this could be an augmented platoon, two understrength platoons, an extremely weak company or an under-reported enemy company."

A Priori

Probabilities, in the absence of other information, are called *a priori*. In practice, the *a priori* is rarely assessed in isolation of other information; however, more information is possessed than the contents of a single report. This leads to the use of a conditional probability. An example of this situation states *a priori* of the enemy commander choosing to concentrate his main effort along avenue of approach number 1 (AA-1) may be 66 percent. However, the conditional probability of the main effort along AA-1 might be 25 percent given that an unusually large number of combat vehicles on AA-2 were observed.

Applied Logic

Typically, intelligence deals with obscure data, few facts, and severe time constraints, which can limit the analyst's ability to apply formal logic in intelligence analysis. Nevertheless, there are areas of applied logic that are most relevant to intelligence analysis.

In its most basic form, analysis involves drawing reliable conclusions based on facts, opinions, and inferences. As information is received, it is categorized as either fact or opinion. From these facts and opinions, analysts attempt to piece together a picture of the battlefield and the commander's battlespace and to make certain inferences or conclusions. When presenting the resulting conclusions, it is important to distinguish between what is fact and what is opinion.

Facts

A fact is a statement that has been demonstrated to be true. As an example, it is a fact that you are reading this statement. Given a preference, an analyst will always choose to work with facts. Unfortunately, facts are not always available. In the absence of facts, opinions may be used. Combining available facts and expert judgment, analysts attempt to piece together a picture of the battlefield and the commander's battlespace. When presenting the resulting conclusions, it is important to distinguish between what is fact and what is opinion.

Opinions

When facts are unavailable, an analyst might use opinions. An opinion is what someone believes to be true, but it may or may not be true. Sometimes opinions are uttered as statements of fact and often they reflect value judgments. A value judgment is an expression of personal taste, reference, worthiness, merit, quality, excellence, or bias. For example: "Electronic intelligence is a far more reliable source of intelligence than HUMINT." In this case, the speaker's perception is an opinion or generalization. Analysts must use extra caution when basing conclusions on opinions.

Inferences

Inferences are conclusions drawn from facts, opinions, or other inferences. Noting that one area of foliage appeared discolored in contrast

to surrounding foliage, an image interpreter concluded that the area being looked at contained a camouflaged position. Based on expert knowledge of imagery, the analyst inferred the presence of a camouflage position from the fact of discolored foliage. Such inferences may serve as input for subsequent problems; in this case, determining what is camouflaged at that particular location. Inferences are particularly important in determining a threat commander's intent. Unless the threat commander announces it, intent can only be established by inference. Such inferences are based on facts developed through the continual study of an adversary's doctrine, tactics, and capabilities. Whenever possible, inferences should be drawn from facts, or a mixture of facts and opinion. Conclusions drawn from opinions alone are prone to be wrong and should not carry the same weight as those drawn from facts.

Reasoning

Reasoning is the mental process that is brought to bear on facts, opinions, and inferences. Analysts solve problems through deductive and inductive reasoning.

Deductive

The process of reasoning from general cases to specific cases is deductive reasoning. It is the drawing of conclusions from one or more propositions or premises. For example, the statement, "Air strikes and naval bombardment always precede an amphibious landing," is a proposition based on an assumption. Propositions may or may not be true; in the case of the statement above, not all amphibious landings are preceded by preparatory fires. For deduction to be used effectively, intelligence analysts must make certain their propositions are true and their reasoning is correct or valid.

Example 1: Deductive Reasoning.

A Naval intelligence analyst is given a report about an unidentified submarine transiting the polar ice cap. The analyst deduces that—

- The ability to transit under the ice cap requires long submerged endurance.
- The only submarines with adequate endurance are nuclear-powered.
- The unidentified submarine is nuclear-powered.

In this case, the analyst reasoned from a general type (submarines) to a specific type (nuclear-powered).

In the example, the propositions are stated as facts. However, depending on the time of year, the polar ice cap can be transited on the surface. Furthermore, the second proposition, although stated as a fact, assumes that the threat has not developed high-endurance power sources other than nuclear energy. As a result, the conclusion, although valid, is unreliable. In order to be reliable, a conclusion must be drawn from valid and true propositions. If a deductive argument is valid, and if the propositions of that argument are true, then the conclusion of that argument must also be true.

Example 2: Deductive Reasoning.

During a field training exercise, reconnaissance elements are able to photograph opposing force tanks in defilade. The photograph shows a main gun tube with a 125mm bore and three track-return rollers. Four types of threat tanks are equipped with the 125mm gun (T-64, T-72, T-80, and T-90), but only two have three track-return rollers (T-72 and T-90). Since the T-90 was not replicated in this exercise, analysts conclude that friendly forces will be engaging T-72 tanks. In this case, the reasoning went from the general (125mm gun and three track-return rollers) to the specific (T-72, which was the only tank with both characteristics replicated in the exercise). The argument is valid and the propositions forming the argument are true, so the conclusion of the argument must also be true.

Inductive

The process of arriving at conclusions based on evaluating facts or inferences is inductive reasoning.

Example 1: Inductive Reasoning.

The following reports reach an intelligence agency regarding the actions of two adversarial countries—

- Country X is massing armor and artillery along the border of Country Y.
- Country X has also blockaded sea-lanes used by both countries.
- Finally, Country X has imposed wartime restrictions on its civilian population.

From these reports, the analyst uses inductive reasoning by inferring that hostilities between the two countries are imminent.

Induction goes beyond the facts or observations to a statement that has not been or cannot be verified. Since only verified data can be called reliable, conclusions drawn inductively are somewhat unreliable.

Example 2: Inductive Reasoning.

An intelligence analyst is given the following information about a coalition armored vehicle:

- Fact 1—Five road wheels and four return rollers.
- Fact 2—Armament that includes a single 73mm gun, one coaxial- and two hull-mounted 7.62mm machineguns, and a single SAGGER antitank missile mounted on the barrel of the 73mm gun.
- Fact 3—Crew of four with three passengers.
- Inference 1—A maximum speed estimated to be 80 kilometers per hour.

From these characteristics, the analyst inferred that the reported vehicle was a Russian-made BMD. Since a number of separate facts or inferences were used in the reasoning process, the analyst arrived at a conclusion through inductive reasoning.

The strength of an inductive argument depends on how probable the conclusion would be true if the premises or propositions were true. Inductive arguments are characterized as being strong or weak vice valid and invalid. Arguments are made strong by—

- The number of instances cited in the propositions.
- The number of propositions that confirm the conclusion.
- The closer in time the occurrences are to the conclusion.
- Dissimilarities in the evidence that still support the conclusion.

Very often propositions used in deduction are arrived at inductively and vice versa.

Example: Deduction and Induction.

Major proposition: The massing of troops along a border is a prelude to war.

Minor proposition: A country is known to have massed troops along the border.

Conclusion: This country is about to initiate war with its neighbor.

At first glance, the deductive argument shown above might seem acceptable. However, a closer look will show that the major proposition is not always true. In certain instances, troops could be massed for internal security, exercises, or a show of force. The major proposition, derived from inductive reasoning, by itself is an ambiguous signal. Assuming the propositions are true, and assuming the analyst reasoned validly, the conclusion the analyst reached is valid. An analyst may reason correctly, but from data that is incorrect, thus arriving at conclusions that are not true.