

# Joint Publication 2-03



## Geospatial Intelligence Support to Joint Operations



22 March 2007



## PREFACE

### 1. Scope

This publication provides doctrine for geospatial intelligence (GEOINT) support to joint operations. This publication discusses GEOINT roles, planning, coordination, production, dissemination, and existing architectures that support GEOINT and the geospatial information and services and intelligence officer in planning, execution, and assessment of the mission.

### 2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff. It sets forth joint doctrine to govern the activities and performance of the Armed Forces of the United States in operations and provides the doctrinal basis for interagency coordination and for US military involvement in multinational operations. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders (JFCs) and prescribes joint doctrine for operations and training. It provides military guidance for use by the Armed Forces in preparing their appropriate plans. It is not the intent of this publication to restrict the authority of the JFC from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of the overall objective.

### 3. Application

a. Joint doctrine established in this publication applies to the commanders of combatant commands, subunified commands, joint task forces, subordinate components of these commands, and the Services.

b. The guidance in this publication is authoritative; as such, this doctrine will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence unless the Chairman of the Joint Chiefs of Staff, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational doctrine and procedures ratified by

the United States. For doctrine and procedures not ratified by the United States, commanders should evaluate and follow the multinational command's doctrine and procedures, where applicable and consistent with US law, regulations, and doctrine.

For the Chairman of the Joint Chiefs of Staff:

A handwritten signature in black ink, appearing to read "Walter L. Sharp". The signature is fluid and cursive, with the first name "Walter" and last name "Sharp" clearly legible.

WALTER L. SHARP  
Lieutenant General, USA  
Director, Joint Staff

**SUMMARY OF CHANGES  
REVISION OF JOINT PUBLICATION 2-03  
DATED 31 MARCH 1999**

- **Introduces the concept of geospatial intelligence (GEOINT), consisting of imagery, imagery intelligence, and geospatial information**
- **Discusses the role of the National Geospatial-Intelligence Agency in providing GEOINT**
- **Covers the foundation and evolution of GEOINT**
- **Discusses GEOINT support to operations**
- **Provides a complete discussion of the roles and responsibilities for GEOINT**
- **Discusses GEOINT in terms of the intelligence process**
- **Provides updates checklists for both contingency and crisis action planning**
- **Provides Appendices that deal with Geospatial Information and Services Sample Annex M, Geospatial Intelligence Requirements Process, Geospatial Intelligence Roles and Responsibilities and Specific Guidance, Geospatial Intelligence Products and Services, Geospatial Reference Systems, and Meteorological and Oceanographic Support to Geospatial Intelligence**
- **Added definitions for the terms advanced geospatial intelligence, change detection, foundation data, geospatial information, geospatial intelligence, and National System for Geospatial Intelligence**
- **Modified the definitions of the terms geospatial information and services, imagery, imagery intelligence, and infrared imagery**
- **Deleted the terms geospatial information and services priorities and metadata**

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# TABLE OF CONTENTS

|  | PAGE  |
|--|-------|
| EXECUTIVE SUMMARY .....  | vii   |
| CHAPTER I  |       |
| THE ROLE OF GEOSPATIAL INTELLIGENCE IN JOINT OPERATIONS                          |       |
| • Introduction .....   | I-1   |
| • Policy .....   | I-1   |
| • Geospatial Intelligence .....  | I-1   |
| • Geospatial Intelligence Support to Operations .....                            | I-5   |
| CHAPTER II   |       |
| ROLES AND RESPONSIBILITIES   |       |
| • National and Department of Defense-Level Organizations .....                   | II-1  |
| • Joint Staff .....  | II-4  |
| • Combatant Commands .....   | II-4  |
| • Subordinate Joint Force Commander .....  | II-7  |
| • Services .....   | II-7  |
| • Non-Department of Defense Agencies .....                                       | II-9  |
| • Commonwealth Partners .....  | II-10 |
| CHAPTER III  |       |
| THE GEOSPATIAL INTELLIGENCE OPERATIONS PROCESS                                   |       |
| • Introduction .....   | III-1 |
| • Planning and Direction .....   | III-1 |
| • Collection .....   | III-2 |
| • Processing and Exploitation .....  | III-4 |
| • Analysis and Production .....  | III-5 |
| • Dissemination and Integration .....  | III-7 |
| • Evaluation and Feedback .....  | III-9 |
| APPENDIX   |       |
| A Geospatial Intelligence Contingency Planning .....                             | A-1   |
| B Geospatial Intelligence Cell Crisis Action Planning Guide and Checklist .....  | B-1   |
| C Geospatial Intelligence Estimate .....   | C-1   |
| D Geospatial Information and Services Sample Annex M .....                       | D-1   |
| E Geospatial Intelligence Requirements Process .....                             | E-1   |
| F Geospatial Intelligence Roles and Responsibilities and Specific Guidance ..... | F-1   |
| G Geospatial Intelligence Products and Services .....                            | G-1   |

|   |   |     |
|---|---|-----|
| H | Geospatial Reference Systems .....  | H-1 |
| J | Meteorological and Oceanographic Support to Geospatial Intelligence ..... | J-1 |
| K | References .....  | K-1 |
| L | Administrative Instructions .....   | L-1 |

GLOSSARY

|         |                                  |      |
|---------|----------------------------------|------|
| Part I  | Abbreviations and Acronyms ..... | GL-1 |
| Part II | Terms and Definitions .....      | GL-5 |

FIGURE

|       |  |       |
|-------|--|-------|
| I-1   | Foundation and Evolution of Geospatial Intelligence .....                  | I-3   |
| I-2   | Advanced Geospatial Intelligence .....                                     | I-4   |
| II-1  | Supply Chain Partners .....  | II-4  |
| III-1 | The Intelligence Process .....   | III-2 |
| III-2 | Four Steps of Geospatial Intelligence Preparation of the Environment ..... | III-7 |
| A-1   | Geospatial Intelligence Planning Functions/Actions .....                   | A-1   |
| A-2   | Geospatial Intelligence Planning Checklist .....                           | A-8   |
| B-1   | Geospatial Intelligence Cell Crisis Action Checklist .....                 | B-2   |
| G-1   | Aim Point Graphics .....   | G-1   |
| G-2   | Flight Information Publication Chart .....                                 | G-3   |
| G-3   | Topographic Line Map .....   | G-6   |
| G-4   | City Graphic .....   | G-7   |
| G-5   | Development of Standard Products .....                                     | G-10  |
| H-1   | Global Area Reference System 30 Minute By 30 Minute Address Scheme ....    | H-3   |
| H-2   | Global Area Reference System 30 Minute Address Subdivision Scheme .....    | H-4   |
| H-3   | Examples of Authorized Reference System Formats .....                      | H-5   |

## EXECUTIVE SUMMARY COMMANDER'S OVERVIEW

- **Outlines the Role of Geospatial Intelligence in Joint Operations**
  - **Summarizes the Roles and Responsibilities of National and Defense-Level Organizations, the Joint Staff, Combatant Commanders, Subordinate Joint Force Commanders, Services, Commonwealth Partners, and Non-Department of Defense Agencies**
  - **Discusses the Geospatial Intelligence Operations Process**
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### Geospatial Intelligence in Joint Operations

#### *Geospatial intelligence (GEOINT).*

Geospatial intelligence (GEOINT) supports joint forces in their ability to rapidly respond to threats around the world by providing geo-referenced visual and data products that serve as a foundation and common frame of reference for any joint operation. GEOINT is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence (IMINT), and geospatial information.

#### *Full utility comes from the integration of all three GEOINT elements.*

**Imagery:** A likeness or representation of any natural or man-made feature or related object or activity and the positional data acquired at the same time the likeness or representation was acquired, including products produced by space-based national intelligence reconnaissance systems, and likenesses and representations produced by satellites, airborne platforms, unmanned aerial vehicles, or other similar means (except that such term does not include handheld or clandestine photography taken by or on behalf of human intelligence collection organizations).

**Imagery Intelligence:** The technical, geographic, and intelligence information derived through the interpretation or analysis of imagery and collateral materials.

**Geospatial Information:** Information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the Earth, including: statistical data and information derived from, among other things, remote

sensing, mapping, and surveying technologies; and mapping, charting, geodetic data, and related products.

The term GEOINT encompasses both the standard, or traditional, and the specialized (integrated) capabilities of imagery, IMINT, and geospatial information. The full utility of GEOINT comes from the integration of all three, which results in more comprehensive, tailored GEOINT products for a wider scope of problems and customers across all functional areas. Advances in technology and the use of geospatial data throughout the joint force have created the ability to use geography as an integrating function resulting in more sophisticated capabilities for visualization, analysis and dissemination of fused views of the operational environment.

GEOINT provides a common framework for supporting joint operations to better enable mission accomplishment across the range of military operations and with all mission partners. The use of GEOINT can be categorized into five general areas: general military intelligence and indications and warning; safety of navigation; operational environment awareness; mission planning and command and control; and target intelligence.

### **Roles and Responsibilities**

#### *National Level.*

**The National System for Geospatial Intelligence (NSG)** is the combination of technology, policies, capabilities, doctrine, activities, people, and communities necessary to produce GEOINT in a variety of environments. The Director of National Geospatial-Intelligence Agency (DNGA) serves as the functional manager for GEOINT and the NSG, which includes the processes for tasking imagery and geospatial information collection, processing raw data, exploiting geospatial information and IMINT, analyzing, and disseminating information and GEOINT to consumers.

**National Geospatial-Intelligence Agency (NGA)** is a combat support agency as well as a national intelligence organization. NGA is the primary source for GEOINT analysis and products at the national level. NGA works with commercial imagery and geospatial data vendors to procure diverse, unclassified imagery and geospatial information to better support its customers. NGA provides an NGA support team in direct support of each combatant command's joint intelligence operations center (JIOC).

**National Reconnaissance Office** designs, builds, and operates the nation's reconnaissance satellites, which comprise one of the

primary collection sources for GEOINT data. Once GEOINT data is collected, processed, and stored, NGA takes the lead with analysis and access/distribution for both national and Department of Defense (DOD) customers.

**National Security Agency (NSA)** serves as a critical component, working closely with other NSG members. Both NSA's information assurance and foreign signals intelligence information missions incorporate GEOINT in the agency's day-to-day operations worldwide to keep the information edge.

**Central Intelligence Agency** provides foreign intelligence on national security topics and conducts counterintelligence activities, special activities, and other functions, as directed by the President. This collaboration ensures integration of GEOINT and other specialized intelligence into the agency's respective functions, products, and missions, providing more robust intelligence capabilities.

*Defense Level.*

**Defense Intelligence Agency (DIA)** is both a national and defense-level intelligence agency directly subordinate to the Secretary of Defense and the Under Secretary of Defense for Intelligence. The Director of DIA is also the manager of a DIA program in the Military Intelligence Program, which includes select DIA programs and the intelligence resources of the nine combatant commands.

**Defense Joint Intelligence Operations Center (DJIOC)** coordinates and prioritizes military intelligence requirements across the combatant commands, combat support agencies, Reserve Component, and Service intelligence centers. The DJIOC formulates recommended solutions to de-conflict requirements for national intelligence with the Joint Functional Component Command for Intelligence, Surveillance, and Reconnaissance and Director of National Intelligence representatives to ensure an integrated response to combatant command needs.

**Defense Logistics Agency (DLA).** The Director, DLA serves as the DOD integrated material manager for standard geospatial information and services (GI&S) products. The agency is responsible for maintaining sufficient inventory levels for all standard GI&S products in federal supply classes.

**Defense Distribution Mapping Agency (DDMA)** operates the wholesale depot and nine retail map support offices located

around the world. DDMA is responsible for storage and distribution of standard GI&S products.

*Joint Staff.*

The Joint Staff GEOINT responsibilities are shared between the Intelligence Directorate of the Joint Staff (J-2) and the Operations Directorate of the Joint Staff (J-3). The Joint Staff J-3 is responsible for GI&S policy and procedures, and the J-2 is responsible for imagery and IMINT policy and procedures. GEOINT officers interact with combatant commands to help articulate, refine, and convey GEOINT requirements.

*Combatant Commands.*

The combatant commands develop area and point target GEOINT requirements to support the planning and execution of joint operations. The GEOINT cell assigned to combatant commands is responsible for coordinating all GEOINT requirements within its area of responsibility while ensuring that the supporting commands or component commands are executing theater and mission-specific GEOINT requirements, to include planning provisions for war reserve requirements and enabling the common operational picture with a GEOINT framework for all needed layers of geospatial information.

Each combatant command (except US Strategic Command [USSTRATCOM]) has also established a JIOC to plan, prepare, integrate, direct, synchronize, and manage continuous, full-spectrum defense intelligence operations. The goal of all JIOCs is the integration of intelligence, operations, and plans in order to increase the speed, power, and combat effectiveness of DOD operations.

Geographic combatant commanders (GCCs), in conjunction with NGA, are responsible for ensuring the architecture is in place to support theater and mission-specific GEOINT digital logistics. GCCs have a varying level of indigenous GEOINT production capability using both NGA- and DIA-provided systems and applications. Production personnel provide tactical and operational data of special interest for use by the NSG, GCCs, coalition partners, and operators.

USSTRATCOM has primary responsibility among the combatant commanders (CCDRs) for US strategic nuclear forces to support the national objective of strategic deterrence and, unless otherwise directed, serves as the single point of contact for military space operational matters. USSTRATCOM is also responsible for providing integrated global strike planning, coordinating trans-

regional information operations, providing warning of missile attacks and planning, integrating and coordinating global missile defense operations and support for missile defense. US Transportation Command is responsible for providing common user and commercial air, land, and sea transportation, terminal management, and aerial refueling to support the global deployment, employment, sustainment, and redeployment of US forces and is also the distribution process owner. US Joint Forces Command provides joint forces and joint capabilities that support the CCDR's operational needs, leads joint force transformation, produces joint concepts and capabilities, and prepares leaders to use them. US Special Operations Command personnel provide tactical data of special interest for use by the NSG, local commanders, and operators.

*Subordinate Joint Force Commanders.*

Subordinate joint force commanders perform the crucial role of defining operational objectives and identifying GEOINT requirements based on these objectives. The J-2 will designate a GEOINT officer and form a GEOINT cell. If the combatant command has insufficient personnel on its permanent staff to provide the support, the CCDR requests additional support from NGA, other combatant commands, the Services, or other Agencies. The GEOINT cell ensures that spatial and imagery requirements are identified and resourced for timely mission development, planning, and execution.

*Services.*

The Services support their departmental planning functions and the combatant commands with GEOINT products, Service-specific content, format, and media. Designated Service GI&S functional managers are responsible for coordinating with NGA to establish policy regarding roles and responsibilities for co-production, value added and management of distributed geospatial libraries.

*Non-Department of Defense Agencies.*

While US DOD and intelligence community agencies are key GEOINT producers, civil agencies are playing an increasing role supporting operations, whether they are military or humanitarian in nature. These agencies are: United States Geological Survey and the Department of Homeland Security.

*Commonwealth Partners.*

As functional manager of GEOINT and the NSG, the DNGA strives to incorporate to the maximum extent its three primary commonwealth partners — Australia, Canada, and the United Kingdom. The desired objective is to work together to quickly

respond to the customer's GEOINT needs with the best technology and information.

### **The Geospatial Intelligence Operations Process**

The GEOINT operations process utilizes the intelligence process, which has six phases: planning and direction; collection; processing and exploitation; analysis and production; dissemination and integration; and evaluation and feedback.

#### ***Planning and Direction.***

The GEOINT planning function includes planning for both GI&S and imagery support. Direction refers to the process of shaping and prioritizing the actions identified during planning to create a balanced GEOINT collection requirement strategy.

#### ***Collection.***

The GEOINT process requires the tasking and collection of both imagery and geospatial data. Two major categories of collection systems used by NGA are satellite and airborne.

#### ***Processing and Exploitation.***

While NGA performs GEOINT exploitation and analysis, including standard and imagery extraction requirements, the Services and joint forces also possess exploitation capabilities for airborne, overhead, and commercial imagery and advanced geospatial intelligence to support operational requirements. After being processed, geospatial data is distributed, archived, and made accessible for users.

Imagery exploitation involves the evaluation, manipulation, and analysis of one or more images to extract information related to a list of essential elements of information. There are three phases of imagery exploitation: first phase, also known as time-dominant, and second and third phase, which are non-time dominant. The purpose of time-dominant exploitation (First Phase) is to satisfy priority requirements of immediate need and/or to identify changes or activity of immediate significance. The purpose of Second Phase exploitation is to provide an organized and comprehensive account of the intelligence derived from validated intelligence requirements tasking. In the Third Phase, detailed, authoritative reports on specified installations, objects, and activities are prepared by the agencies participating in the exploitation effort.

#### ***Analysis and Production.***

GEOINT products include traditional GI&S and imagery products as well as more advanced products created by combining GI&S and imagery data into a single, multidimensional product. Standard GEOINT products are developed from electro-optical, radar, infrared,

and multispectral sensor data. Specialized products use standard products as a foundation but provide added capabilities. GEOINT products are often developed through a process, known as “value added,” in which both the producer and the user of GEOINT update a database or product with current information. GEOINT services support the generation, management, and use of GEOINT data and products. These include tools that enable both users and producers to access and manipulate data.

*Dissemination and Integration.*

Dissemination is the timely conveyance of GEOINT products in an appropriate form and by any suitable means, whether in hard copy or electronic form. Dissemination is accomplished through both the “pull” and “push” principles. The “pull” principle provides intelligence organizations at all levels with direct reachback capability via electronic access to central databases, intelligence files, or other repositories containing GEOINT data and products. The “push” principle allows the producers to transmit GEOINT to the requestors along with other relevant information.

There are differences in dissemination methods for national, commercial, and airborne systems. The National Imagery Library is the primary on-line system for storage of information derived from national imagery systems. There are several dissemination systems used to distribute information derived from commercial overhead systems. The Commercial Satellite Imagery Library is an imagery archive that stores commercial imagery purchased by NGA. The Distributed Common Ground/Surface System is a family of systems connected through designated points of interoperability designed to provide airborne system derived, multi-intelligence discipline, intelligence, surveillance, and reconnaissance task, post, process and use capabilities at the joint task force level and below through a combination of reachback, forward support, and collaboration.

*Evaluation and Feedback.*

It is imperative that intelligence personnel and consumers at all levels provide honest, timely feedback, throughout the intelligence process, on how well the various intelligence operations perform to meet the commander’s requirements. Military units can provide feedback up to the national level through their components, to the joint task force and/or combatant command levels. Services and combatant commands can also participate in NGA led forums to vet issues and communicate needs. The executive level forum is the NSG Senior Management Council, and the action officer level forum is the Geospatial Intelligence Board.

## CONCLUSION

This publication provides doctrine for GEOINT support to joint operations. This publication discusses GEOINT roles, planning, coordination, production, dissemination, and existing architectures that support GEOINT and the geospatial information and services and intelligence officer in planning, execution, and assessment of the mission.

# CHAPTER I

## THE ROLE OF GEOSPATIAL INTELLIGENCE IN JOINT OPERATIONS

*“The want of accurate maps of the Country which has hitherto been the Scene of War, has been a great disadvantage to me. I have in vain endeavored to procure them and have been obliged to make shift with such sketches as I could trace from my own Observations.”*

**General George Washington**

### 1. Introduction

Joint forces require the ability to rapidly respond to threats around the world. Geospatial intelligence (GEOINT) supports this requirement by providing geo-referenced visual and data products (e.g., maps, charts, and digital files) that serve as a foundation and common frame of reference for any joint operation.

### 2. Policy

The National Geospatial-Intelligence Agency (NGA) mission to provide GEOINT is established in Title 10 US Code (USC) section 442. GEOINT consists of imagery, imagery intelligence (IMINT), and geospatial information as defined in Title 10 USC section 467.

### 3. Geospatial Intelligence

a. GEOINT is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, IMINT, and geospatial information.

b. Geospatial information and services (GI&S) is the collection (satellite and airborne systems), information extraction, storage, dissemination and exploitation of geodetic, geomagnetic, imagery, gravimetric, aeronautical, topographic, hydrographic, littoral, cultural, and toponymic data accurately referenced to a precise location on the Earth’s surface. These data sets are used for military planning, training and operations, including navigation, mission planning, mission rehearsal modeling, simulation, and precise targeting. Geospatial information provides the basic framework for visualizing the operational environment. It is information produced by multiple sources to common interoperable data standards. It may be presented in the form of printed maps, charts, digital files, and publications; in digital simulation and modeling databases; in photographic form; or in the form of digitized maps and charts or attributed centerline data. Geospatial information does not come only from imagery and imagery-derived products, but can come from other intelligence disciplines as well. Geospatial services include tools that enable users to access and manipulate data and also include instruction, training, laboratory support, and guidance for the use of geospatial data.

## GEOSPATIAL INTELLIGENCE ELEMENTS

**Imagery:** A likeness or representation of any natural or man-made feature or related object or activity and the positional data acquired at the same time the likeness or representation was acquired, including products produced by space-based national intelligence reconnaissance systems, and likenesses and representations produced by satellites, airborne platforms, unmanned aerial vehicles, or other similar means (except that such term does not include handheld or clandestine photography taken by or on behalf of human intelligence collection organizations).

**Imagery Intelligence:** The technical, geographic, and intelligence information derived through the interpretation or analysis of imagery and collateral materials.

**Geospatial Information:** Information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the Earth, including: statistical data and information derived from, among other things, remote sensing, mapping, and surveying technologies; and mapping, charting, geodetic data, and related products.

### Definitions from Title 10, US Code, Section 467

c. The term GEOINT encompasses both the standard, or traditional, and the specialized (integrated) capabilities of imagery, IMINT, and geospatial information. The full utility of GEOINT comes from the integration of all three, which results in more comprehensive, tailored GEOINT products for a wider scope of problems and customers across all functional areas. For example, GEOINT can incorporate advanced technology to create dynamic, interactive products such as realistic mission simulations that help determine the effects of speed, currents, tide, wind, daylight, etc. on a mission or intelligence problem. These products might be virtual fly-through and walk-through mission scenarios or interactive maps. GEOINT can also create a common operational picture (COP) of a specific area by effectively using multiple and advanced sensors, multiple types of data and information (including operations, planning, logistics, etc.), as well as multiple intelligence disciplines to present a comprehensive visual depiction. This capability provides many advantages for the warfighter, national security policymakers, homeland security personnel, and intelligence community (IC) collaborators by precisely locating activities and objects, assessing and discerning the meaning of events, and providing context for decision makers.

d. GEOINT is an intelligence discipline that has evolved from the integration of imagery, IMINT, and geospatial information. Advances in technology and the use of geospatial data throughout the joint force have created the ability to use geography as an integrating function resulting in more sophisticated capabilities for visualization, analysis and dissemination of fused views of the operational environment.

(1) The basic capabilities and products of these three areas still exist as the foundation of GEOINT (see Figure I-1). However, geospatial information, imagery, and IMINT are now considered

to be three complementary elements of GEOINT. Advances in technology and the use of geospatial data have created the ability to integrate and/or combine elements of any or all of the areas resulting in many new, more sophisticated capabilities.

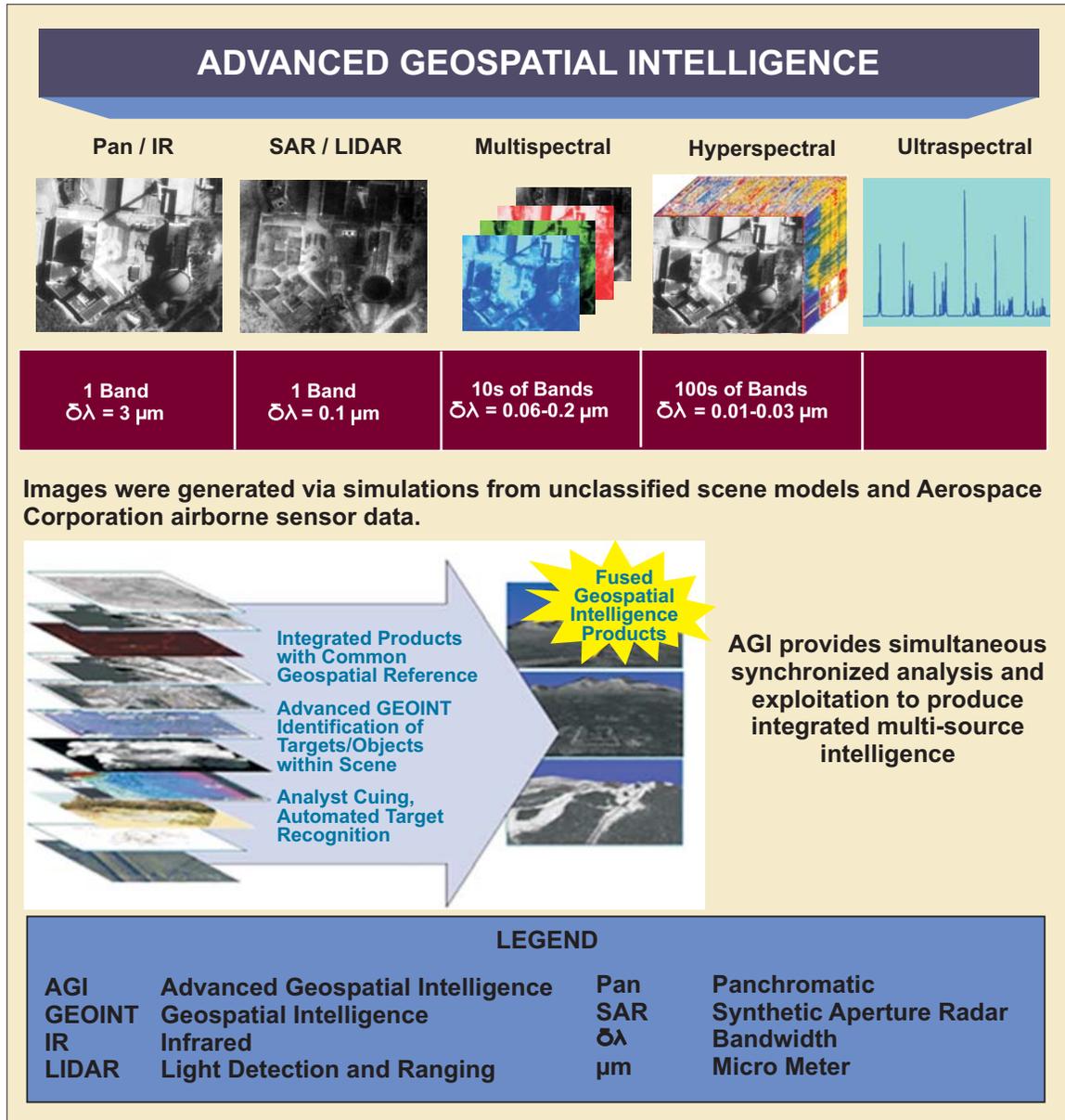
(2) Advanced geospatial intelligence (AGI) is an important subset of GEOINT (see Figure I-2). AGI employs advanced processing techniques to extract technical, geospatial and intelligence information from imagery or imagery related collection systems. AGI was previously referred to as imagery derived measurement and signature intelligence (MASINT) and often employs nonliteral analysis.

(3) The transition point between standard and nonstandard GEOINT capabilities is not clear-cut. However, below is a list of elements that pushed the evolution from GI&S and imagery to GEOINT.

(a) GEOINT Characteristics:



Figure I-1. Foundation and Evolution of Geospatial Intelligence



**Figure I-2. Advanced Geospatial Intelligence**

1. Incorporates intelligence analysis into all aspects.
2. Uses multiple types of sensors and advanced sensor technology.
3. Combines multiple types of geospatial data.
4. Uses intelligence data from other intelligence disciplines for corroboration and context.
5. Adds more dimensions to standard geospatial products.

a. 3rd Dimension: provides the capability to visualize in three dimensions.

b. 4th Dimension: integrates the elements of time and movement (allowing for realistic motion to create dynamic and interactive visual products).

(b) Some factors listed above may occasionally apply to standard capabilities but are more commonly associated with advanced capabilities.

(4) There are four fundamental components of GEOINT: the **discipline** of GEOINT, the **data** that comprise GEOINT, the **process** used to develop GEOINT products, and the **products** derived from GEOINT.

(a) **Discipline.** GEOINT is a specialized field of practice within the broader field of intelligence. The GEOINT discipline encompasses all activities involved in the planning, collection, processing, analysis, exploitation, and dissemination of geospatial information to gain intelligence about the operational environment, visually depict of this information, and fuse the visual information with other information through analysis and visualization processes.

(b) **Data.** GEOINT is developed from the same geospatially-derived data used to create geospatial information, imagery, and IMINT. It also uses intelligence data from other intelligence disciplines to corroborate and provide context to geospatial information. The full capabilities of GEOINT are only realized when two or more types of data are combined and analyzed to create a comprehensive GEOINT product.

(c) **Process.** Many different analytic processes have been used successfully over the years to create geospatial products. The analytic methodology used by NGA is known as GEOINT preparation of the environment (GPE). GPE supports joint intelligence preparation of the operational environment (JIPOE). It is a proven methodology and, of equal importance, it provides a common frame of reference and language between military and civilian personnel. GPE is discussed in more detail in the processing and exploitation section of Chapter III, “The Geospatial Intelligence Operations Process.”

(d) **Products.** GEOINT products range from standard geospatial data-derived products, maps, and imagery to specialized products that incorporate data from multiple types of advanced sensors and use four dimensions. A more detailed description of products is provided in the production section of Chapter III, “The Geospatial Intelligence Operations Process,” and in Appendix G, “Geospatial Intelligence Products and Services.”

#### 4. Geospatial Intelligence Support to Operations

a. GEOINT provides a common framework for supporting joint operations to better enable mission accomplishment across the range of military operations and with all mission partners. GEOINT support to joint operations supports the multidirectional flow and integration of geospatially-referenced data from all sources to achieve shared awareness of the operational environment, near-

real-time tracking, and collaboration between forces. The GEOINT cell at the combatant command coordinates closely with the joint force commander (JFC) GEOINT cell to ensure continuity in operations across all functions, organization levels, and levels of warfare.

b. GEOINT activities necessary to support joint operations include capability to define GEOINT requirements, discover and obtain GEOINT, put GEOINT in a usable form, and then maintain, use, and share GEOINT. The GEOINT cell interfaces directly with mission customers to define user requirements and then interfaces with the National System for Geospatial Intelligence (NSG) to obtain and provide the best quality GEOINT possible directly to the joint warfighter in fulfillment of the broad range of requirements depicted by the various mission functions. The GEOINT cell supports joint operations with the five activities:

(1) **Define GEOINT Mission Requirements.** For all assigned forces, the GEOINT cell collects and prioritizes GEOINT mission requirements and employs a standardized process that defines:

- (a) Mission partners and other trusted data sources.
- (b) Data layers.
  - 1. Baseline layers form starting point for analysis, visualization, and sharing.
  - 2. Scenario-dependent layers typically change frequently or are somewhat specialized.
- (c) Search parameters (e.g., classification level, content, resolution, accuracy, completeness, and currency) for all missions.
- (d) Form (e.g., media and exchange format).
- (e) Geographic area coverage requirements to support annex M of operation plans (OPLANs) and contingency plans.

(2) **Obtain Mission Essential GEOINT.** The GEOINT cell uses technological advances and improved metadata within NSG, enabling the joint warfighter to efficiently search geospatial databases to:

- (a) Identify geospatial information sources/imagery/sensors.
- (b) Access unified operations directories/catalogs/web mapping services/libraries.

(3) **Evaluate Available GEOINT Data.** The next step is to identify gaps in coverage, existing sources, and planned source acquisition. The results are evaluated to determine if data is available, meets the requirement, and is in the form required. Any data obtained may need to be intensified if data elements are missing. In the event the required GEOINT does not exist or does not

fully meet the stated requirements, GEOINT may need to be generated. The GEOINT cell employs standardized processes enabling the joint warfighter to make a decision on the most cost-effective approach for meeting the requirement within specified timelines. In the event the data does not exist or does not meet the stated requirements, the GEOINT cell employs standardized processes to monitor and track capabilities of providers and the capacity of distribution channels. From available NSG assets, the GEOINT cell may:

(a) Submit collection requests to NGA in accordance with (IAW) NSG processes. This will ensure requirements are documented in the appropriate GEOINT system.

(b) Collect geospatial data utilizing organic assets and exploit this data to extract the required geospatial information.

(c) Request combatant command support in tasking other assets within the NSG.

(4) **Use and Disseminate GEOINT.** The ultimate objective of the GEOINT in joint operations is to enable the joint warfighter to use authoritative GEOINT in order to more efficiently complete the assigned mission. GEOINT is shared with the NSG and combatant command and across the JTF down to the lowest tactical level to achieve shared awareness of the operational environment. GEOINT developed below the level of the JTF is made available to the JTF and combatant command to augment the NSG library holdings. Theater level storage, retrieval, and production capability is required for all the components of GEOINT.

(5) **Maintain and Validate GEOINT.** As changes and updates are received, relevant GEOINT must be kept current and continuously validated for accuracy and consistency. Data element changes must be conflated with current data and shared across forces to maintain consistency in the shared awareness of the operational environment. The GEOINT cell, in conjunction with NGA, may:

(a) Receive updated GEOINT.

(b) Purge databases and archive deleted holdings as necessary.

(c) Establish version control and naming conventions.

(d) Check reliability, availability, and authentication.

(e) Monitor and track holdings throughout the command to ensure use of most current and relevant GEOINT IAW mission requirements.

c. The use of GEOINT can be categorized into five general areas:

(1) **General Military Intelligence and Indications and Warning (I&W).** As one component of general military intelligence and I&W, GEOINT supports monitoring scientific and technological developments and capabilities of foreign military forces for long-term planning purposes;

detecting and reporting foreign developments that could involve a threat to US, allied, and coalition military, diplomatic, or economic interests or to US citizens abroad. Additionally, GEOINT supports I&W situational awareness (SA) by providing warning of possible increased threats or significant increased tactical positioning of enemy wartime assets.

(2) **Safety of Navigation.** Using bathymetric, hydrographic, maritime safety, gravimetric, aeronautical, and topographic information for ship, aircraft, and land navigation.

(3) **Operational Environment Awareness.** Visualizing the operational environment, tracking movements of interest, monitoring airfield and port activity.

(4) **Mission Planning and Command and Control (C2).** Employing foundation data and mission-specific data to plan and execute missions, evaluate mission progress, adjust schedules, and assign and apportion forces as appropriate.

(5) **Target Intelligence.** GPE, target development, which includes precise point generation, with collateral damage estimate, battle damage assessment, and munitions effectiveness assessment functionally integrated into a seamless repeatable standardized end-to-end process.

## CHAPTER II

### ROLES AND RESPONSIBILITIES

*“Nothing should be neglected in acquiring a knowledge of the geography and military statistics of their states, so as to know their material and moral capacity for attack and defense as well as the strategic advantages of the two parties.”*

Jomini  
*Precis de l’Art de la Guerre, 1838*

#### 1. National and Department of Defense-Level Organizations

a. **National System for Geospatial Intelligence.** The NSG is the combination of technology, policies, capabilities, doctrine, activities, people, data, and communities necessary to produce GEOINT in a variety of environments (e.g., multinational and US classification levels, multi-intelligence disciplines). Operating within policies and guidelines established by the Director of National Intelligence (DNI), the NSG community consists of members of the IC, Services, Joint Staff, combatant commands, and elements of the civil community. Also contributing are the NSG partners that include Civil Applications Committee members, international partners, industry, academia, and defense and civil community service providers. The Director of National Geospatial-Intelligence Agency (DNGA) serves as the functional manager for GEOINT and the NSG, which includes the processes for tasking imagery and geospatial information collection, processing raw data, exploiting geospatial information and IMINT, analyzing, and disseminating information and GEOINT to consumers. The DNGA is chartered to set standards for end-to-end architecture related to GEOINT; geospatial information products; career and training programs for imagery analysts, cartographers, and related fields; and technical guidance for systems using GEOINT. The DNGA has delegated operational responsibility and management for functional GEOINT areas (e.g., analysis and production, source collection management) to senior NGA leadership and knowledgeable staff managing the same or similar activities for NGA. This allows these individuals and their organizational resources to better manage and lead the NSG community and develop related planning, policies, and guidance.

b. **National Geospatial-Intelligence Agency.** By law, NGA is a combat support agency (CSA) as well as a national intelligence organization, and is directly subordinate to the Secretary of Defense (SecDef) and the Under Secretary of Defense for Intelligence (USD[I]). NGA is the primary source for GEOINT analysis and products at the national level. In addition to the GEOINT support identified in Joint Publication (JP) 2-01, *Joint and National Intelligence Support to Military Operations*, NGA’s mission supports national and homeland security, defense policy and force structure, and advanced weapons and systems development. Since NGA disseminates data and standard products and makes them available in repositories, GEOINT-trained personnel throughout much of the IC, including military personnel in the field, can access the data to develop their own GEOINT analysis and nonstandard products.

(1) NGA works with commercial imagery and geospatial data vendors to procure diverse, unclassified imagery and geospatial information to better support its customers. This effort facilitates

NGA's support to and collaborative efforts with allies and coalition partners, other IC agencies, Department of Defense (DOD) organizations, and other civil and government entities. NGA also provides GEOINT strategic workforce planning and specific training for general and specialized tradecraft skills through the National Geospatial-Intelligence College.

(2) NGA provides an NGA support team (NST) in direct support each combatant command's joint intelligence operations center (JIOC). Each NST provides the full spectrum of NGA's GEOINT capabilities and is composed of a core cadre that includes geospatial analysts, imagery analysts, and staff officers. The NST also has full connectivity with NGA to ensure reachback capability into NGA's total support effort.

(a) The NST cadre includes personnel who are trained and ready to deploy with the command staff at any time. Emergency-essential designation (EED) personnel deploy at the discretion of the host commander and in coordination with the NST chief. The EED personnel provide deployed on-site GEOINT support, working directly with and augmenting their military counterparts, and serve as a conduit to the NGA and the remaining NST contingent. The NST headquarters (HQ) element can then provide reachback to the national-level as needed, potentially augmenting any NGA presence as part of a national intelligence support team (NIST), if present.

(b) NISTs are interagency intelligence teams comprised of intelligence and communications experts from the Defense Intelligence Agency (DIA), Central Intelligence Agency (CIA), NGA, National Security Agency (NSA), and other agencies as required to support the specific needs of the JFC. The NIST mission is to provide national level, all-source intelligence support from throughout the IC to deployed commanders during crisis or contingency operations. NISTs are managed by the DIA's Defense Joint Intelligence Operations Center (DJIOC).

c. **National Reconnaissance Office (NRO).** The NRO designs, builds, and operates the nation's reconnaissance satellites, which comprise one of the primary collection sources for GEOINT data. The satellites also provide significant imagery to support DOD targeting and mapping requirements and targeting data. Applications of this data include: I&W; monitoring of arms control agreements; and the planning and execution of military operations. Once GEOINT data is collected, processed, and stored, NGA takes the lead with analysis and access/distribution for both national and DOD customers.

d. **National Security Agency.** The NSA is America's cryptologic organization. It is a CSA and a national intelligence organization and is subordinate to the SecDef and the USD(I). It serves as a critical component, working closely with other NSG members. Both NSA's information assurance and foreign signals intelligence (SIGINT) information missions incorporate GEOINT in the agency's day-to-day operations worldwide to keep the information edge. SIGINT complements and enhances geospatial analysis and becomes an important partner with GEOINT and the NSG. With the implementation of expanding technology and increasing IC collaboration and partnerships, NSA is able to gain a deeper understanding of SIGINT through geospatial associations and pattern analysis.

e. **Central Intelligence Agency.** CIA is a national-level intelligence agency reporting to the President through the DNI. It provides foreign intelligence on national security topics and conducts

counterintelligence activities, special activities, and other functions, as directed by the President. CIA and NGA have liaisons and analysts embedded in each other's agencies and other sites. This collaboration ensures integration of GEOINT and other specialized intelligence into the agency's respective functions, products, and missions, providing more robust intelligence capabilities.

f. **Defense Intelligence Agency.** DIA is both a national and defense-level intelligence agency directly subordinate to the SecDef and the USD(I). It is also designated as a CSA. The Director of DIA is the program manager of the General Defense Intelligence Program, which is comprised of DIA and the intelligence organizations in the military departments. The Director of DIA is also the manager of a DIA program in the Military Intelligence Program (MIP), which includes select DIA programs and the intelligence resources of the nine combatant commands. The MIP manages and programs over 500 military imagery analysts in support of the combatant commands. DIA is responsible for coordinating requirements between the national level organizations and theater users for the collection of both national and airborne imagery. DIA is also the functional manager for the components of MASINT.

g. **Defense Joint Intelligence Operations Center.** The Director, DIA serves as the Director, DJIOC and reports to SecDef through the Chairman of the Joint Chiefs of Staff (CJCS). As the lead DOD intelligence organization for coordinating intelligence support to meet combatant command requirements, DJIOC coordinates and prioritizes military intelligence requirements across the combatant commands, CSAs, Reserve Component, and Service intelligence centers. The DJIOC formulates recommended solutions to de-conflict requirements for national intelligence with the Joint Functional Component Command for Intelligence, Surveillance, and Reconnaissance (JFCC-ISR) and DNI representatives to ensure an integrated response to combatant command needs. The DJIOC also provides support to United States Strategic Command (USSTRATCOM) as requested.

h. **Defense Logistics Agency (DLA).** DLA is the DOD agency that provides worldwide logistics support for Military Departments and the combatant commands as well as other DOD components and federal agencies. The director of DLA serves as the DOD integrated material manager for all standard GI&S products. The Mapping Customer Operations (MCO) Division, located at the Defense Supply Center Richmond (DSCR) is the inventory control point (ICP). ICP is responsible for maintaining sufficient inventory levels for all standard GI&S products in federal supply classes.

i. The **Defense Distribution Mapping Agency (DDMA)** located in Richmond Virginia operates the wholesale depot and nine retail map support offices (MSOs) located around the world (see Figure II-1). DDMA is responsible for storage and distribution of standard GI&S products. The MSOs also provide standard GI&S products and training (e.g., how to establish an account, how to order products, how to use the customer portal, and how to use the DLA Map Catalog) to regional customers located near the MSOs. The Defense Logistics Information Service (DLIS) produces the DLA Map Catalog. The catalog contains only standard GI&S products available in the DLA inventory. For more information about MCO, DDMA and/or DLIS refer to DLA website at [www.dscr.dla.mil/rmf](http://www.dscr.dla.mil/rmf).



Figure II-1. Supply Chain Partners

## 2. Joint Staff

The Joint Staff GEOINT responsibilities are shared between the Intelligence Directorate of the Joint Staff (J-2) and the Operations Directorate of the Joint Staff (J-3). The Joint Staff J-3 is responsible for GI&S policy and procedures, and the J-2 is responsible for imagery and IMINT policy and procedures. GEOINT officers interact with combatant commands to help articulate, refine, and convey GEOINT requirements.

## 3. Combatant Commands

a. The combatant commands develop area and point target GEOINT requirements to support the planning and execution of joint operations.

(1) The GEOINT cell assigned to combatant commands is responsible for coordinating all GEOINT requirements within its area of responsibility (AOR) while ensuring that the supporting commands or component commands are executing theater and mission-specific GEOINT requirements, to include planning provisions for war reserve requirements and enabling the COP with a GEOINT framework for all needed layers of geospatial information.

(2) Each combatant command (except USSTRATCOM) has also established a JIOC to plan, prepare, integrate, direct, synchronize, and manage continuous, full-spectrum defense intelligence operations. The goal of all JIOCs is the integration of intelligence, operations, and plans in order to increase the speed, power, and combat effectiveness of DOD operations. These organizations facilitate access to all available intelligence sources and analyze, produce, and disseminate accurate and timely all-source intelligence and GEOINT to support planning and execution of military operations. The combatant commands have imagery exploitation capabilities and GI&S capabilities.

(3) The types of imagery-derived products generated by the combatant commands include text reports, database entries, target materials and support products, visualization products, and annotated graphics. The GEOINT cell provides advice to the combatant commander (CCDR) on all geospatial information and geodetic sciences. While the combatant commands rely heavily on basic maps, charts, target coordinates, geodetic surveys, and other standard geospatial information provided by NGA, they also research, develop, and produce mission-specific, specialized geospatial products and services for the CCDR and components. These products (e.g., aeronautical and hydrographic products, terrain graphics/data, charts, perspective views, image graphics, target materials) provide value-added improvements to NGA digital products.

b. The NST is the primary mechanism for NGA interaction with its customers. The NST coordinates NGA's operational, policy and training support to its customers. NGA maintains NSTs at the Joint Staff, combatant commands, Services, and DOD agencies. Additional NSTs are located at several non-DOD government organizations (e.g., Department of State). A typical NST is composed of a senior representative (a military O-6 or a defense intelligence senior leader), staff officers, and imagery and geospatial analysts. A reachback component at NGA HQ focuses NGA production support. In addition to using NSTs, NGA may deploy crisis support teams of two to five imagery and geospatial analysts upon request, either independently, as augmentation to an existing NST, or as part of a NIST, a nationally sourced team composed of intelligence and communications experts from either DIA, CIA, NSA, or any combination of these agencies. These teams of government and/or contract personnel employ deployable GEOINT production systems. NST personnel have reachback to NGA for data and products, fuse this information with tactical and theater sources, and work with users to produce products tailored to their needs.

c. **Geographic Combatant Commander (GCC) Responsibilities.** GCCs, in conjunction with NGA, are responsible for ensuring the architecture is in place to support theater and mission-specific GEOINT digital logistics.

(1) The GEOINT cell assigned to each GCC is responsible for coordinating all GEOINT activities while ensuring that the supporting commands or component commands are executing those theater and mission-specific GEOINT requirements to include the planning provisions for war reserve requirements. GCCs have a varying level of indigenous GEOINT production capability using both NGA- and DIA-provided systems and applications. Production personnel provide tactical and operational data of special interest for use by the NSG, GCCs, coalition partners, and operators.

(2) War Reserve Stocks (WRSs). WRSs, a responsibility of GCC, is one of the three categories of inventory authorized to support SecDef sustainability planning guidance. JP 4-09, *Joint Doctrine for Global Distribution*, contains in-depth explanations regarding the identification and stocking of war reserve to support CCDR operations, and Title 10 USC identifies Service responsibilities for identifying war-reserve requirements. The combatant command GEOINT cells should work closely with Service GI&S personnel to ensure that war reserve requirements are properly reviewed, updated, and maintained in peacetime to support crisis or wartime operations.

d. There are four functional combatant commands: USSTRATCOM, United States Transportation Command (USTRANSCOM), United States Joint Forces Command (USJFCOM), and United States Special Operations Command (USSOCOM). They have worldwide functional responsibilities that are not bounded by geography.

(1) **USSTRATCOM** has primary responsibility among the CCDRs for US strategic nuclear forces to support the national objective of strategic deterrence and, unless otherwise directed, serves as the single point of contact (POC) for military space operational matters. USSTRATCOM is also responsible for providing integrated global strike planning, coordinating trans-regional information operations, providing warning of missile attacks and planning, integrating and coordinating global missile defense operations and support for missile defense. Serves as the lead for integrating and synchronizing DOD combating weapons of mass destruction efforts. USSTRATCOM plans, integrates, and coordinates intelligence surveillance, and reconnaissance (ISR) in support of strategic and global operations (via JFCC-ISR), as directed. As a member of a DJIOC, JFCC-ISR and DNI team, JFCC-ISR formulates recommendations to integrate global ISR capabilities associated with the missions and requirements of DOD ISR assets into the DJIOC in coordination with Commander, USSTRATCOM. The individual who serves as Director, DIA, also serves as the Commander, JFCC-ISR.

(2) **USTRANSCOM** is responsible for providing common user and commercial air, land, and sea transportation, terminal management, and aerial refueling to support the global deployment, employment, sustainment, and redeployment of US forces. USTRANSCOM is also the distribution process owner. USTRANSCOM's three component commands, Air Mobility Command, Military Sealift Command, and Surface Deployment and Distribution Command provide intermodal transportation.

(3) **USJFCOM** provides joint forces and joint capabilities that support the CCDR's operational needs, leads joint force transformation, produces joint concepts and capabilities, and prepares leaders to use them. USJFCOM is responsible for transformation of US military capabilities and has four primary roles in this endeavor: joint concept development and experimentation; joint training; joint interoperability and integration; and the primary conventional force provider. These duties are outlined in the DOD Unified Command Plan.

(4) **USSOCOM** serves as the lead CCDR for planning, synchronizing, and as directed, executing global operations against terrorist networks in coordination with other CCDRs in the conduct of the war on terrorism to disrupt, defeat, and destroy terrorist networks that threaten the US, its citizens, and interests worldwide. It organizes, trains, and equips special operations forces

provided to GCCs. USSOCOM personnel provide tactical data of special interest for use by the NSG, local commanders, and operators.

#### 4. Subordinate Joint Force Commander

a. Subordinate JFCs perform the crucial role of defining operational objectives and identifying GEOINT requirements based on these objectives. Timely GEOINT support is critical for it provides a common framework for viewing the operational environment.

b. The J-2 will designate a GEOINT officer and form a GEOINT cell. The J-2 may request additional GEOINT support from the CCDR. If the combatant command has insufficient personnel on its permanent staff to provide the support, the CCDR requests additional support from NGA, other combatant commands, the Services, or other agencies. NGA personnel, as part of a NST or NIST, may provide reachback support to the GEOINT cell.

c. The GEOINT officer must be knowledgeable of air, land, sea, space, and special operations capabilities and requirements for GEOINT across all functional areas within the command to successfully execute the subordinate JFC's vision and concept of operations (CONOPS). Succinctly stated, the GEOINT cell ensures that spatial and imagery requirements are identified and resourced for timely mission development, planning, and execution.

d. Since the subordinate JFC is responsible for issuing mission-type orders, the GEOINT cell must be fully aware of requirements management for organic and nonorganic allocation and de-confliction. Effective integration of organic assets with national capabilities minimizes overlap of asset allocation while providing the best data population to local and national databases. The GEOINT cell must also identify/resolve communications shortfalls to ensure GEOINT support. The GEOINT cell should lead the development, coordination, and execution of strategies for the timely collection, production, dissemination, and management of GEOINT data into, within, and out of theater.

#### 5. Services

The Services support their departmental planning functions and the combatant commands with GEOINT products, Service-specific content, format, and media. Capabilities exist primarily within the intelligence and geospatial engineering elements. The Services are responsible for ensuring forces train with the appropriate range of GEOINT. Services also have the responsibility to keep combatant commands informed on Service GEOINT programs and capabilities. Designated Service GI&S functional managers are responsible for coordinating with NGA to establish policy regarding roles and responsibilities for co-production, value added and management of distributed geospatial libraries. Services will ensure that all systems provided are compatible with the NSG.

a. **United States Army (USA).** The USA GEOINT supports all aspects of military planning and ground force operations. GEOINT provides the basic framework for visualizing the operational environment and the foundation for understanding the operational environment. The Army uses GEOINT by analyzing aeronautical, topographic, hydrographic, littoral, cultural, imagery-based, and atmospheric

data that is essential for successful ground combat. GEOINT support is deeply embedded in field commands. Army GEOINT consists of both GI&S and imagery/intelligence. The GI&S aspect of GEOINT is derived largely from the brigade combat team's or Special Forces groups' terrain analysis team, topographic engineer companies, and geospatial planning cells that provide in-depth geospatial analysis and topographic support to warfighters. Army intelligence units use imagery and feature data from NGA, supplemented by commercial and field-derived information, to produce imagery intelligence and conduct all-source intelligence analysis. Army terrain and intelligence units have the latest technology and work closely with the commands at all levels to conduct JIPOE, produce specialized, tailored views and products, and then support mission execution.

b. **United States Marine Corps (USMC).** The USMC uses GEOINT to analyze the topographic effects and climatic conditions on friendly and enemy force capabilities. All related USMC GEOINT efforts support the Marine air-ground task force (MAGTF) in performing its missions. A common geographic reference is critical in supporting any MAGTF operation. Accurate positioning information is key in supporting all of the following warfighting functions: C2, intelligence, fires, protection, movement and maneuver, and sustainment. During rapid response planning, GEOINT provides the initial framework to support visualizing the operational environment. This assists warfighters in developing their courses of action (COAs) as well as conceptualizing possible enemy COAs.

c. **United States Navy.** GEOINT supports the planning and execution of traditional Navy operations such as forward presence, crisis response, deterrence, sea control, and power projection as well as the nontraditional missions of counterinsurgency, maritime security operations, missile defense, and security cooperation. GEOINT provides the framework for visualization and knowledge of the operational environment. Intelligence units use imagery and feature data from NGA to produce imagery intelligence, and conduct all-source intelligence analysis. The Navy utilizes GEOINT by analyzing aeronautical, topographic, hydrographic, littoral, cultural, and atmospheric data for successful combat rehearsals and operations. Through the use of NST geospatial analysts embedded with the Navy, GEOINT has been applied to intelligence, operations, force protection, ISR, surface, subsurface, and air operations.

d. **United States Air Force (USAF).** GEOINT products are key enablers across the range of USAF operations. This technology is used for intelligence collection, processing, exploitation, and dissemination; modeling and simulation; mission planning and rehearsal; acquisition and targeting; C2; and communication and visualization capabilities. One of the Air Force's key responsibilities is to analyze data collected by airborne ISR sensors. This is accomplished through the Air Force Distributed Common Ground System (DCGS) ISR family of systems. Air Force DCGS is a network-centric, global enterprise tasked and managed to support CCDRs and forces — primarily at the joint task force (JTF) level and below — with actionable, decision-quality information. It operates with the full flexibility of the established *intelligence process*, as detailed in JP 2-01, *Joint and National Intelligence Support to Military Operations*, in order to make usable information immediately and simultaneously available to both engaged forces and intelligence analysts. Air Force DCGS takes advantage of US Service, national, allied, and coalition sensors in the air, on land, in space, and at sea spanning multiple intelligence sources.

e. **United States Coast Guard (USCG).** The USCG, a member of the IC as well as a Department of Homeland Security (DHS) component, is a maritime Service with multiple missions and is one of the nation's five Armed Services. Its mission is to protect the public, the environment, and US economic interests — in the nation's ports and waterways, along the coast, on international waters, or in any maritime region as required to support national security. The USCG uses GEOINT data and products in support of its multiple missions. These missions include surveillance functions in: maritime and port security, fisheries enforcement, migrant interdiction, maritime drug interdiction, intelligence production, and search and rescue. The USCG is a provider of intelligence information to members of the IC and law enforcement. The Intelligence Coordination Center (ICC), a USCG tenant command at the National Maritime Intelligence Center, provides strategic intelligence support to Coast Guard law enforcement, military readiness, port security, marine safety, and environmental protection missions. The ICC relies upon GEOINT to support its analytic and warning mission.

## 6. Non-Department of Defense Agencies

While US DOD and IC agencies are key GEOINT producers, civil agencies are playing an increasing role supporting operations, whether they are military or humanitarian in nature. As examples, the Department of Interior's United States Geological Survey (USGS) and elements of the DHS participate with the NSG in providing support to defense and civil operations through the acquisition and analysis of commercial imagery and topographic products.

a. **United States Geological Survey.** The USGS, under the US Department of Interior, provides reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect quality of life. As the nation's largest water, earth, and biological science and civilian mapping agency, the USGS collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. The USGS forms cooperative partnerships with organizations from all levels of government and industry. It chairs the Civil Applications Committee, which is an interagency forum that coordinates and oversees the Federal civil use of classified collections.

b. **Department of Homeland Security.** The DHS mission depends upon accurate and timely GEOINT focused across the US. Much of the GEOINT data needed for DHS activities comes from local and state sources. Under certain conditions, however, DHS requests and receives GEOINT support from the national IC, principally NGA and through its relationship with US Northern Command (USNORTHCOM). Review intelligence oversight and HQ coordination requirements relating to support to civil authorities during the planning process. See JP 3-26, *Homeland Security*; DOD 5240.1-R; DOD Directive 3025.1, *Military Support to Civil Authorities*; DOD Directive 3025.15, *Military Assistance to Civil Authorities*. Within DHS, the Federal Emergency Management Agency (FEMA) and the USCG represent important NSG members. FEMA leads the effort to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident. Missions range from assisting law-enforcement agencies with security, transporting and distributing food and water, conducting search and rescue operations, providing counseling services, hiring and assigning critical personnel, planning for continuity of DOD operations, and coordinating relief efforts. FEMA

also initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program and the US Fire Administration.

### 7. Commonwealth Partners

As functional manager of GEOINT and the NSG, the DNGA strives to incorporate to the maximum extent its three primary commonwealth partners — Australia, Canada, and the United Kingdom (UK). While there will always be diversity in the relationships between different countries due to varying strategic goals, the desired end state is a common analysis and production agreement for GEOINT. The desired objective is to work together to quickly respond to the customer's GEOINT needs with the best technology and information.

a. **The United Kingdom.** The focal point for GEOINT in the UK is the Defence Intelligence Joint Environment (DIJE). The DIJE provides strategic direction, policy, and guidance on four-dimensional environmental information (EI) and imagery management, requirements, and capabilities to the Ministry of Defence (MOD) central staffs, commands, agencies, and related organizations. DIJE integrates output from the four existing principal UK Defence EI providers, the Defence Geographic and Imagery Intelligence Agency, the UK Hydrographic Office, the Meteorological Office, and the No 1 Aeronautical Information and Documentation Unit. The DIJE acts as a single joint directorate to provide vision and formulate policy for EI and imagery management across UK defense. The DIJE also coordinates MOD relationships with other government departments and other organizations arising from bilateral and international agreements relating to EI, IMINT, and MASINT.

b. **Australia.** Australia's lead GEOINT agency is the Defence Imagery and Geospatial Organisation (DIGO). DIGO collaborates with the Australian Hydrographic Service and the Royal Australian Air Force Aeronautical Information Service for the provision of maritime and aeronautical geospatial information respectively. DIGO provides GEOINT support to Australia's defense interests and other national objectives. DIGO is responsible for the collection, processing, analysis, and dissemination of imagery and geospatial products, and for determining the standards for imagery and geospatial information within the Australian Defence Organisation.

c. **Canada.** The responsibility for geospatial imagery meteorology and oceanography support to the Canadian forces and the Department of National Defence (DND) rests with J-2 geomatics and imagery (GI) organization. J-2 GI organization provides geospatial imagery meteorology and oceanography support to DND with a focus on the operational and training requirements of the Canadian forces. Canada is pursuing the merging of geospatial, imagery, meteorology, and oceanography support functions into a GEOINT capability in the near future. The J-2 GI organization is located at the National Defence HQ within the J-2 intelligence branch.

meteorology and oceanography support to DND with a focus on the operational and training requirements of the Canadian forces. Canada is pursuing the merging of geospatial, imagery, meteorology, and oceanography support functions into a GEOINT capability in the near future. The J-2 GI organization is located at the National Defence HQ within the J-2 intelligence branch.

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## CHAPTER III

### THE GEOSPATIAL INTELLIGENCE OPERATIONS PROCESS

*“The commander must acquaint himself beforehand with the maps so that he knows dangerous places for chariots and carts, where the water is too deep for wagons; passes in famous mountains, the principal rivers, the locations of highlands and hills; where rushes, forests, and reeds are luxuriant; the road distances; the size of cities and towns; well-known cities and abandoned ones; and where there are flourishing orchards. All this must be known as well as the way boundaries run in and out.”*

Tu Mu, 803-852, Wei Liao

#### 1. Introduction

The GEOINT operations process utilizes the intelligence process (see Figure III-1). This chapter provides an overview of each of the GEOINT operations phases, and in some cases, refer to appendices with more detailed information for the GEOINT cell.

#### 2. Planning and Direction

a. The GEOINT planning function includes planning for both GI&S and imagery support. Direction refers to the process of shaping and prioritizing the actions identified during planning to create a balanced GEOINT collection requirement strategy. The combatant command GEOINT cell coordinates closely with NGA throughout the planning process. The DNI’s Operations Committee (OPSCOM) for imagery management requirements prioritizes requirements developed during the GEOINT planning and direction phase. One of NGA’s key OPSCOM responsibilities is to manage and task national imagery collection operations on DNI’s behalf. The NSG coordinates to integrate national, commercially licensed and Service-provided collection requirements. Military imagery collection requirements are validated and managed at the national level by the DIA, which serves as an interface between theater users and national-level organizations. Military GI&S requirements are consolidated and prioritized by the Joint Staff in coordination with the NGA and its customers.

b. The GEOINT cell conducts both GI&S and imagery-related planning activities for the combatant command. The GEOINT cell supports the intelligence planning process through the development of functional support plans for geospatial intelligence analysis and production.

c. To ensure CJCS has a current focus and macro-level assessment of the military’s readiness, to include “readiness” risk assessment from a GI&S perspective, NGA will coordinate with the combatant commands and the Services to assess GI&S readiness levels for each mission assessed in the Joint Quarterly Readiness Review. GI&S readiness is the assessment of NGA’s ability to satisfy priority requirements on schedule. GI&S readiness will be used when determining the overall GEOINT readiness for designated missions.

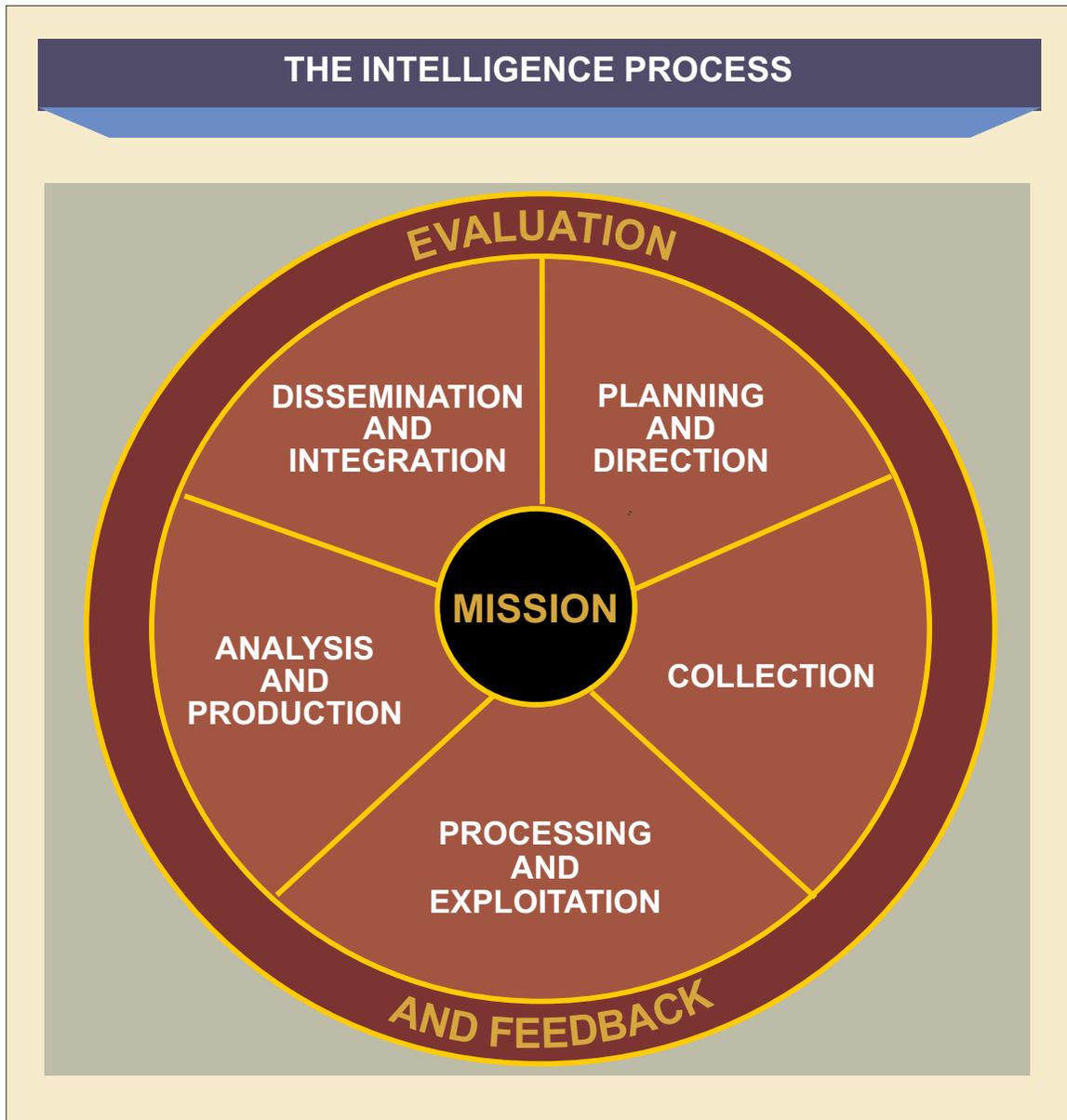


Figure III-1. The Intelligence Process

### 3. Collection

a. Information needs drive collection operations. The GEOINT process requires the tasking and collection of both imagery and geospatial data. Two major categories of collection systems used by NGA are satellite and airborne.

#### (1) Satellite Systems

(a) The national systems are a primary source of collection for imagery used to produce geospatial information. The NRO, in collaboration with the Services and other government agencies, designs, builds, and operates the nation's reconnaissance satellites.

(b) Commercial systems collect electro-optical (EO), multispectral, and radar data, but have a more narrow scope of operations than national systems. Commercial systems and commercial producers increasingly contribute geospatial information and products for NSG requirements. These systems can also provide unclassified versions of intelligence that, under certain circumstances, may be shared with allies or coalition partners. Private companies operate commercial systems.

## (2) Airborne Systems

(a) Government airborne systems at the theater and tactical level provide ISR assets operated and managed by the GCC through subordinate components. Airborne systems are neither tasked nor managed by the GEOINT process, although NGA may submit collection requests to the appropriate combatant command. The full spectrum of airborne ISR sources includes all manned and unmanned platforms that collect still and motion imagery using visible, thermal, multiband, multispectral, hyperspectral, laser-based or radar-based imaging sensors. This capability is being enhanced by DCGS and is a major driver of the Community Airborne Library Architecture (CALA) program.

(b) Commercial airborne systems provide yet another source of GEOINT. Due to their flexibility and resolution capabilities, commercial airborne collectors are increasingly relied upon to augment satellite collection.

b. The GEOINT cell is responsible for determining whether command requirements can be met by using existing data and/or products. If the cell determines new collection is required, it will send tasking requests to the combatant command or JTF intelligence collection manager in a format defined by the receiving command. At this point, the collection processes for GI&S and imagery diverge, as outlined below:

(1) Most GI&S collection is fulfilled by national and commercial systems. The combatant command intelligence collection manager conveys prioritized, validated requests to its designated NST reachback office to deconflict with and prioritize among other combatant commands, the Services, and national agency requirements. The NST is NGA's first-line representative for providing timely, relevant, and accurate GEOINT to its customers. By embedding an on-site cadre of experienced professionals at external locations worldwide, NGA provides a "push-forward" GEOINT capability that can reach back into NGA's extensive resources to ensure responsive and tailored support to customers.

(2) Imagery requirements for national and commercial systems follow a slightly different path. The combatant command intelligence collection manager conveys prioritized, validated requests to DIA's departmental requirements office (DRO) to deconflict with and prioritize among other combatant commands, the Services, and national agency requirements. DRO then coordinates with national agencies to determine the request's prioritization and collection method.

(3) Airborne collection requirements are approved by the collection management authority (CMA). CMA constitutes the authority to establish, prioritize, and validate theater collection requirements, establish sensor tasking guidance, and develop theater collection plans. Although CMA normally resides at the combatant command, it can be delegated to a subordinate task force as required.

c. The GEOINT cell will coordinate with the meteorological and oceanographic (METOC) cell to acquire climatology and real-time meteorology, oceanography, and space weather information to support GEOINT collection and dissemination. JP 3-59, *Meteorological and Oceanographic Operations* contains detailed information on joint METOC operations.

d. Taskings may be sent up to national level through a variety of tasking systems. At the national level, the specific tasking systems described below are used to manage requirements for each collection system.

(1) The system used to task national systems is the Requirements Management System.

(2) The tasking system used for commercial systems is the Production Management Alternative Architecture (PMAA). PMAA provides an integrated geospatial view of NGA production operations and source holdings with the ability to manage the acquisition and use of national and commercial imagery.

(3) The tasking system used for airborne assets is called the Planning Tool for Resource, Integration, Synchronization, and Management (PRISM). PRISM is the core mission-planning tool in collection management mission applications. It is a web-based application that provides users, at the theater level and below, with the ability to integrate all intelligence discipline assets with all theater collection requirements.

*More specific information on military collection operations is provided in JP 2-01, Joint and National Intelligence Support to Military Operations.*

#### **4. Processing and Exploitation**

a. While NGA performs GEOINT exploitation and analysis, including standard and imagery extraction requirements, the Services and joint forces also possess exploitation capabilities for airborne, overhead, and commercial imagery and AGI to support operational requirements.

b. After being processed, geospatial data is distributed, archived, and made accessible for users. The user can manipulate data from available libraries or databases to create tailored products or data sets for specific mission purposes or military applications (see Appendix G, “Geospatial Intelligence Products and Services”). Available libraries or databases provide the foundation for a DOD-wide distributed network of geospatial information that includes, but is not limited to: topographic, air, space, and other geospatial information, as well as imagery, geographic names, and boundary data.

c. Imagery exploitation involves the evaluation, manipulation, and analysis of one or more images to extract information related to a list of essential elements of information. A report on the results is normally part of exploitation and the way in which the information is disseminated. Imagery exploitation is managed through the Imagery Exploitation Support System for DOD organizations and by the National Exploitation System for NGA. Both systems perform numerous functions including: target management, requirement management, imagery ordering management, and exploitation management.

d. There are three phases of imagery exploitation: first phase, also known as time-dominant, and second and third phase, which are non-time dominant.

(1) Time-dominant exploitation (also referred to as First-Phase exploitation): The exploitation of newly-acquired imagery within a specified time from receipt of imagery. The purpose of time-dominant exploitation is to satisfy priority requirements of immediate need and/or to identify changes or activity of immediate significance. Time-dominant exploitation and reporting is accomplished as soon as possible according to validated intelligence requirements, but not later than 24 hours after receipt of imagery.

(2) Non-time-dominant exploitation (also referred to as Second and Third Phase exploitation).

(a) Second Phase Exploitation. The detailed non-time dominant exploitation of imagery scheduled within the bounds of analytic requirements and timelines of need (typically within one week after receipt of imagery). The purpose of second phase exploitation is to provide an organized and comprehensive account of the intelligence derived from validated intelligence requirements tasking.

(b) Third Phase Exploitation. In depth, long-range analysis that includes all available sources of imagery. It is in this phase that detailed, authoritative reports on specified installations, objects, and activities are prepared by the agencies participating in the exploitation effort. Third phase exploitation timelines are not bounded and typically exceed one week after receipt of imagery.

## 5. Analysis and Production

a. GEOINT products include traditional GI&S and imagery products as well as more advanced products created by combining GI&S and imagery data into a single, multidimensional product. This advanced method provides the battlefield commander with comprehensive, highly detailed, and precise GEOINT products.

b. Once data has been processed, a variety of users can exploit it and produce either general intelligence or mission-specific products. Data can also be combined in a variety of ways to develop tailored products for specific mission requirements. Users and/or requesters of the intelligence should coordinate with the producers to ensure the products meet mission needs. The main producers include Service exploitation and production centers, NGA, DIA, and the combatant commands. At the combatant command and Service levels, hydrographic and geospatial

engineering units or sections provide the ability to analyze integrated databases for specific applications, add valuable information or update features and attributes within the database, and strengthen the database content to meet the commander's tailored mission requirements.

*For further information see CJCS Instruction (CJCSI) 3901.01B, Requirements for Geospatial Information and Services.*

c. Categories of GEOINT products and related services and support are listed below:

(1) Standard GEOINT products are developed from EO, radar, infrared, and multispectral sensor data. These may be simple products such as imagery read-outs, reports, maps (e.g., topographic line map [TLM]), and charts or may be more complex products containing many layers of data ranging from geographic to intelligence information. Traditional products are usually two-dimensional (2-D) but can be created in three dimensions in certain circumstances.

(2) Specialized products use standard products as a foundation but provide added capabilities. These products may be developed by using data from multiple sources and multiple intelligence disciplines, and data from advanced sensors. They may also include a fourth dimension — time — that provides motion to create dynamic, interactive products. These products can include realistic mission simulations that help determine the effects of currents, tides, wind, daylight, etc., on a mission or intelligence problem. Customized products also include products such as: two color multi-view; change detection; interactive maps to visually depict patterns and trends; and a visual picture to provide a common reference and rapid situational awareness for all personnel and organizations involved in the same mission.

(3) Value added process. GEOINT products are often developed through a process, known as “value added,” in which both the producer and the user of GEOINT update a database or product with current information. New roads, obstacles, and seismic activity are examples of activities that require updating due to frequent changes. Organic assets (such as special forces and terrain teams or cells) take NGA products and add tactical data of special interest for use by local commanders and operators. This specialized data shall be centrally stored and catalogued.

(4) GEOINT services. GEOINT services support the generation, management, and use of GEOINT data and products. These include tools that enable both users and producers to access and manipulate data. Examples are instruction, training, laboratory support, and guidance for the use of geospatial data. Geodetic surveys, software development, tailored geodetic and geophysical products and services to support weapons systems, the calculation of precise locations for targeting of precision guided munitions, and on-site technical support are all types of GEOINT services.

*For further information see Appendix G, “Geospatial Intelligence Products and Services,” and JP 2-01, Joint and National Intelligence Support to Military Operations.*

d. Analytic Methodology. The primary analytic method used to develop GEOINT is called GPE.

(1) As discussed in Chapter I, “The Role of Geospatial Intelligence in Joint Operations,” GPE is a process aligned with, and used to support, the military’s JIPOE process. The same four steps are used, but the information considered within each step has been modified so that GPE can be understood by both civilian and military personnel and used for both combat and noncombat situations, such as natural disaster relief.

(2) GPE provides a template to ensure all available data is considered during GEOINT analysis and product development. Although methodical, the process does not inhibit critical thinking. In fact, it requires development of several analytic alternatives. The four steps used for GPE are summarized in Figure III-2.

## 6. Dissemination and Integration

**FOUR STEPS OF GEOSPATIAL INTELLIGENCE PREPARATION OF THE ENVIRONMENT**

The geospatial intelligence (GEOINT) preparation of the environment analytic method is based on, and provides GEOINT support to, the joint intelligence preparation of the operational environment process.

**Step 1. Define the Environment:** Gather basic facts needed to outline the exact location of the mission or area of interest. Physical, political, and ethnic boundaries must be determined. The data might include grid coordinates, latitude and longitude, vectors, altitudes, natural boundaries (mountain ranges, rivers, shorelines), etc. This data serves as the foundation for the GEOINT product.

**Step 2. Describe Influences of the Environment:** Provide descriptive information about the area defined in Step 1. Identify existing natural conditions, infrastructure, and cultural factors. Consider all details that may affect a potential operation in the area: weather, vegetation, roads, facilities, population, languages, social, ethnic, religious, and political factors. Layer this information onto the foundation developed in Step 1.

**Step 3. Assess Threats and Hazards:** Add intelligence and threat data, drawn from multiple intelligence disciplines, onto the foundation and descriptive information layers (the environment established in the first two steps). This information includes: order-of-battle; size and strength of enemy or threat; enemy doctrine; the nature, strength, capabilities and intent of area insurgent groups; effects of possible chemical/biological threats. Step 3 requires collaboration with national security community counterparts.

**Step 4. Develop Analytic Conclusions:** Integrate all information from Steps 1-3 to develop analytic conclusions. The emphasis is on developing predictive analysis. In Step 4, the analyst may create models to examine and assess the likely next actions of the threat, the impact of those actions, and the feasibility and impact of countermeasures to threat actions.

Figure III-2. Four Steps of Geospatial Intelligence Preparation of the Environment

a. Dissemination is the timely conveyance of GEOINT products in an appropriate form and by any suitable means, whether in hard copy or electronic form. Dissemination is accomplished through both the “pull” and “push” principles. The “pull” principle provides intelligence organizations at all levels with direct reachback capability via electronic access to central databases, intelligence files, or other repositories containing GEOINT data and products. The “push” principle allows the producers to transmit GEOINT to the requestors along with other relevant information. Typically, the intelligence staff element at each echelon manages the dissemination of GEOINT.

b. Current GEOINT-focused processes disseminate GI&S, imagery, and/or imagery-related products. Single dissemination processes are becoming increasingly common as GEOINT evolves. This publication primarily addresses the more common processes used for separate dissemination of GI&S and imagery-derived products.

(1) Physical delivery: DLA distributes products from NGA to the combatant commands and Services utilizing DSCR and DDMA. MSOs are established in theater to facilitate GI&S product distribution. The nine current MSOs will be used first, and the determination to create an expeditionary capability will be conducted during the contingency or crisis action planning processes. Requirements identified in support of Joint Strategic Capabilities Plan (JSCP) or other contingency planning will be identified and coordinated ahead of time in order to ensure the WRS is maintained at a high level of readiness.

(2) Electronic delivery: NGA provides GEOINT data/products online via the NGA portals, which are accessible via the Non-Secure Internet Protocol Router Network (NIPRNET), SECRET Internet Protocol Router Network (SIPRNET), and Joint Worldwide Intelligence Communications System (JWICS). It is also available to Australia, Canada, and the UK via STONEGHOST and to other international partners via national and combatant command electronic transmission systems. NGA can also support immediate deployment of personnel and equipment to any part of the world at any time through remote GEOINT services (RGS). The RGS team compiles custom GEOINT solutions for military and civilian missions through direct customer interface. RGS has a worldwide presence with 13 land-based sites, eight shipboard systems, and two deployable systems. NGA sites in Maryland and Missouri serve as reachback centers. The RGS technical support team maintains the robust RGS equipment including multiple large-format plotters for mass quantity printing. Software includes a full suite of high-end GI&S tools and image manipulation capability. The RGS analytical team is comprised of employees with a unique combination of backgrounds and skills, including imagery analysts, cartographers, regional analysts, and geospatial analysts. The Services have also developed dissemination capabilities that support standard NGA digital maps and charts (USAF Geospatial Product Library [GPL]) as well as attributed feature data (USA Theater Geospatial Database). The integration of both of these complementary Service capabilities in a forward theater location provides a robust theater data center that can support the requirements generated at the tactical level. Another system used for the dissemination of intelligence and other intelligence related information is the integrated broadcast service (IBS). IBS disseminates a combined near-real-time combat intelligence picture derived from intelligence sources to operational and intelligence customers at all levels. Another dissemination system is the Global Broadcast Service (GBS). GBS can disseminate

large amounts of data in near-real-time to a group of users or each user can pull a large file from web-based access and retrieval portal (WARP) via GBS.

c. There are differences in dissemination methods for national, commercial, and airborne systems. The Image Product Library and the USAF GPL provide standard GEOINT and USAF produced GI&S data that might have been derived from all three sources. Separate systems exist as the primary dissemination method for each collection system.

(1) National: The National Information Library (NIL) is the primary on-line system for storage of information derived from national imagery systems. The command information library (CIL) is a system that allows higher echelons to make their GEOINT data available to and accessible by lower echelons. Both systems are capable of “push” and “pull” dissemination.

(2) Commercial: There are several dissemination systems used to distribute information derived from commercial overhead systems. Data for NSG-member use is stored in the Commercial Satellite Imagery Library, an imagery archive that stores commercial imagery purchased by NGA. The WARP system electronically receives NGA-purchased imagery from commercial data providers and provides it to users via WARP query and download tools. WARP can also be used to access national source material. The WARP is part of the NGA portal, and the portal will assume these functions. The Commercial Satellite Imagery Library is another online geospatial search tool that allows users to identify and download commercial imagery. NGA has created a system known as the unclassified national information library (UNIL) for commercial imagery dissemination. The WARP-UNIL can be accessed at: <https://warp.nga.mil>. Appendix G, “Geospatial Intelligence Products and Services,” gives a listing of other Service portals and producer sites.

(3) Airborne: The DCGS is a family of systems connected through designated points of interoperability designed to provide airborne system derived, multi-intelligence discipline, ISR task, post, process and use capabilities at the JTF level and below through a combination of reachback, forward support, and collaboration. DOD and Service architectures are integrated components of this net-centric joint force intelligence processing and dissemination system. Data collected through DCGS are also available on WARP and CALA and can be stored on the NIL and CILs.

## 7. Evaluation and Feedback

a. Many of the GEOINT operations are a combination of individual intelligence products, which are powerful capabilities in and unto themselves, that provide a much stronger capability when combined together. It is imperative that intelligence personnel and consumers at all levels provide honest, timely feedback, throughout the intelligence process, on how well the various intelligence operations perform to meet the commander’s requirements.

b. Military units can provide feedback up to the national level through their components, to the JTF and/or combatant command levels. This feedback is then fed to the national level. NGA also designates a GEOINT assessment activity (GAA) for each command and national-level agency. The GAA is proactive in reaching out to elicit feedback from its assigned command or agency. The GAA is

then responsible for providing an evaluation on current support to operations, including recommendations for improvement.

c. Services and combatant commands can also participate in NGA led forums to vet issues and communicate needs. The executive level forum is the NSG Senior Management Council, and the action officer level forum is the Geospatial Intelligence Board. There are also other councils for other issues such as production and standards.

## APPENDIX A

### GEOSPATIAL INTELLIGENCE CONTINGENCY PLANNING

This appendix serves as a guide for GEOINT contingency planning. The steps and activities described are aligned with JP 5-0, *Joint Operation Planning* (see Figure A-1).



Figure A-1. Geospatial Intelligence Planning Functions/Actions

## NARRATIVE DESCRIPTION OF GEOINT PLANNING STEPS AND ACTIVITIES

### Step 1. Strategic Guidance

The strategic guidance function is used to formulate politico military assessments at the strategic level; develop and evaluate military strategy and objectives; apportion and allocate forces and other resources; formulate concepts and strategic military options; and develop planning guidance leading to the preparation of COAs. The President, SecDef, and CJCS — with appropriate consultation with additional National Security Council members, other US Government agencies, and multinational partners — formulate suitable and feasible strategic objectives that reflect US national interests. The CCDR may provide input through one or more commander’s assessments. The CCDR crafts military objectives that support national strategic objectives with the advice and consent of the CJCS and SecDef. This process begins with an analysis of existing strategic guidance such as the JSCP and Contingency Planning Guidance for contingency planning or a CJCS warning order (WARNORD), planning order (PLANORD), or alert order (ALERTORD) in crisis action planning (CAP). It includes mission analysis, threat assessment, and development of assumptions, which as a minimum will be briefed to the SecDef during the mission analysis in-progress review (IPR). During this IPR, the CCDR should consider discussing strategic communication themes and messages. The primary end product of the strategic guidance function is the supported commander’s mission statement.

#### a. GEOINT Cell Responsibilities during Mission Analysis

- (1) In coordination with plans directorate of a joint staff, review the operational area of interest (latitude/longitude coordinates). Determine if datum issues exist; determine the level of foundation and mission-specific data sets available.
- (2) Identify deficiencies and request NGA assessment of geospatial coverage for the area.
- (3) Assist the J-2 in conducting JIPOE by providing available hydrography, terrain, and imagery products as required.
- (4) Identify the required GEOINT capabilities to support the CCDR’s initial mission analysis process.
- (5) Determine specified, implied, and essential GEOINT tasks required to support the commander’s proposed mission statement.

#### b. GEOINT Cell Role during IPR

- (1) Provide available geospatial and intelligence products, such as maps, charts, and digital data and IMINT to support the IPR briefing.

(2) Evaluate the GEOINT tasks, required capabilities, assumptions, and mission statement developed in the initial mission analysis based on the revised mission statement from the IPR.

## **Step 2. Concept Development**

In concept development during contingency planning, the supported commander develops a CONOPS for SecDef approval based on SecDef and CJCS planning guidance and resource apportionment provided in Global Force Management guidance and Service documents. In CAP, the supported commander develops, analyzes, and compares alternative COAs based on planning guidance, resource allocations from previously approved OPLANs, and a CJCS WARNORD. In time-sensitive situations, a WARNORD may not be issued and a PLANORD or ALERTORD might be the first strategic guidance received by the supported commander. Using the strategic guidance and the CCDR's mission statement, planners prepare evaluation request messages to solicit COA input from subordinate units and develop preliminary COAs based upon staff estimates. The supported commander recommends a COA in the commander's estimate for SecDef approval. The commander also requests the SecDef's guidance on interagency coordination and makes appropriate recommendations. Products from concept development include an approved COA and commander's estimate containing termination criteria, supportability estimates, and (if time allows) an integrated time-phased force and deployment data (TPFDD) of estimated force and logistic requirements by operation phase.

### **a. GEOINT Cell Responsibilities during COA Development**

(1) Act as the J-2's GEOINT advisor in the assessment process, outlining capabilities and issues.

(2) Provide available geospatial and intelligence products, such as maps, charts, and digital data and IMINT to support the COA process.

(3) Identify the required GEOINT capabilities to support the CCDR's COA analysis and construct the priorities and assumptions on their availability and use.

### **b. GEOINT Cell Guidance for Staff Estimates**

(1) Assist the production of or produce the GEOINT estimate to support each COA.

(a) Develop GEOINT tasks.

(b) Review assigned and/or apportioned GEOINT forces and capabilities to ensure they are adequate to support the mission statement for each COA.

(c) Review and evaluate the GEOINT tasks, required capabilities, and assumptions.

(d) Develop coordinating instructions.

(2) Ensure critical GEOINT issues, capabilities, and limitations are identified and communicated in each estimate.

**c. GEOINT Cell Role during Strategic Concept Development**

(1) Prior to submission, review the strategic concept to ensure GEOINT capabilities and level of support are correctly defined.

(2) Provide available geospatial and intelligence products, such as maps, charts, digital data, and IMINT to support the finished strategic concept.

**d. GEOINT Cell Role after COA Selection**

(1) Review the selected COA and determine if any GEOINT tasks, required capabilities, and assumptions require modification.

(2) Ensure that subordinate GEOINT assets receive notification of the approved COA and understand their responsibilities as outlined in the selected COA estimate.

**e. GEOINT Cell Role during Intelligence Plan Development**

(1) Develop the GEOINT portion of the intelligence plan.

(2) Ensure that required assigned and/or apportioned GEOINT forces and capabilities are identified in the intelligence plan.

(3) Review and evaluate the GEOINT tasks, required capabilities, and assumptions and document them in the intelligence plan.

(4) Review the GEOINT architecture; identify critical components and their status, both outside and within the command.

(5) Ensure that all products outlined in the estimate are available at the times and places required.

(6) Coordinate with all members of the GEOINT community to determine the structure and composition of required GEOINT products. Of critical importance is to ensure that product formats are compatible with all force participants.

**f. GEOINT Cell Role during IPR**

(1) Provide available geospatial and intelligence products, such as maps, charts, and digital data to support the IPR briefing to SecDef.

(2) After the IPR, evaluate the GEOINT tasks, required capabilities, assumptions, and mission statement to determine if modification is required based upon SecDef guidance.

### **Step 3. Plan Development**

This function is used to fully develop an OPLAN, concept plan (CONPLAN), or an operation order (OPORD) with applicable supporting annexes and to refine preliminary feasibility analysis. This function fully integrates mobilization, deployment, employment, sustainment, conflict termination, redeployment, and demobilization activities through the six-phase construct. Detailed planning begins with the SecDef's approval for further planning in a non-crisis environment or when the CJCS issues a WARNORD in a CAP situation. The primary product is an approved plan or order.

#### **a. GEOINT Cell Role during Resource Planning**

- (1) Develop GEOINT tasks.
- (2) Develop initial input for appendix 7 to annex B and annex M.
- (3) Review assigned and/or apportioned GEOINT forces and capabilities to ensure they are adequate to support the mission statement for each COA.
- (4) Review and evaluate the GEOINT tasks, required capabilities, and assumptions.

#### **b. GEOINT Cell Role in Developing Source Options**

- (1) Coordinate with all echelons of the source to ensure connectivity and interoperability.
- (2) Evaluate required products, identify issues, and make recommendations to the J-2 on how to resolve these issues.

c. **GEOINT Cell Role during Feasibility Analysis** is to provide evaluation and solutions as required for GEOINT issues.

#### **d. GEOINT Cell Role in Supporting Plan Review**

- (1) Provide available geospatial and intelligence products, such as maps, charts, digital data, and IMINT, to support the construction of the plan.
- (2) If annex B and annex M are required, the GEOINT cell prepares appendix 7 to annex B of plans and annex M of plans.

**e. GEOINT Cell Role during IPR**

(1) Provide available geospatial and intelligence products, such as maps, charts, digital data, and IMINT to support the IPR briefing to SecDef.

(2) After the IPR, evaluate the GEOINT tasks, required capabilities, assumptions, and mission statement to determine if modification is required based upon SecDef guidance.

**Step 4. Plan Assessment (Refine, Adapt, Terminate, Execute)**

During this function, the supported commander refines the complete plan while supporting and subordinate commanders, Services, and supporting agencies complete their plans for review and approval. In general, the supported commander will, when required, submit the plans for the SecDef's approval. All commanders continue to develop and analyze branches and sequels as required. The supported commander and the Joint Staff continue to evaluate the situation for any changes that would trigger plan refinement, adaptation, termination, or execution. The CCDR will brief the SecDef during the plan assessment IPR of any identified requirements to adapt, terminate, or execute an OPLAN.

**a. GEOINT Role in Preparing Final Plan**

(1) If not previously tasked, prepare appendix 7 of annex B and annex M.

(2) Ensure all commands have the necessary geospatial assets and expertise to prepare their command's geospatial portion of their plan.

(3) Coordinate with all geospatial assets within the command to ensure all plans are complementary and don't conflict.

(4) Identify any special or unique geospatial capabilities or products required in the plan and ensure that coordination is conducted, at all echelons, to facilitate their implementation.

(5) Identify all GEOINT cell resources/personnel needed to accomplish GEOINT tasks in all functional areas according to GEOINT CONOPS, commander's intent, and tasks to subordinate elements.

(6) Task Service components and supporting combatant commands to provide TPFDD GEOINT personnel and basic loads.

(7) Task Service components and supporting combatant commands to include war reserve in the TPFDD (if not already stored in-theater).

(8) Develop GEOINT sustainment flow and TPFDD in coordination with NGA and DLA.

(9) Task Service components and supporting combatant commands to develop automatic distribution (AD) accounts with DLA to support unit basic load and/or planning stock requirements.

(10) Develop AD listing to cover requirements of combatant command and/or JTF HQ.

(11) Assist staff target planning efforts by coordinating with NGA.

(12) Ensure Service components and supporting CCDR have agreements in place to support en route overflight and access of GEOINT assets and support requirements.

b. The **GEOINT cell role in developing options** is to be prepared to provide GEOINT estimates and capabilities to support plans and options.

**c. GEOINT Cell Role to Monitor and Assess**

(1) Monitor the GEOINT architecture to ensure it is operating as expected.

(2) Assess the performance of the GEOINT process in support of the planning process and advise the J-2 on issues requiring attention.

**d. GEOINT Cell Role during IPR**

(1) Provide available geospatial and intelligence products, such as maps, charts, digital data, and IMINT to support the IPR briefing to SecDef.

(2) After the IPR, evaluate the GEOINT tasks, required capabilities, assumptions, and mission statement to determine if modification is required based upon SecDef guidance.

| <b>GEOSPATIAL INTELLIGENCE PLANNING CHECKLIST</b> |   |  |
|---|---|--|
| <b>STEPS/ACTIONS</b>                              | <b>COMBATANT COMMAND and JTF ACTIONS</b>  | <b>GEOINT CELL ACTIONS</b>   |
| <b>Step 1. Strategic Guidance</b>                 |   |  |
| INITIATION  | CCDR receives strategic guidance  | -Review tasking document   |
| MISSION ANALYSIS                                  | Identify critical assumptions on which to base the plan   | -In coordination with J-5, review operational area of interest. Determine if datum issues exist; determine the level of foundation and mission-specific data sets available.   |
|   | Identify enemy situation and capabilities   | -Identify deficiencies and request NGA assessment of GEOINT coverage for the area<br>-Assist the J-2 in conducting joint intelligence preparation of the operational environment by providing available hydrography, terrain and imagery products as required<br>-Identify the required GEOINT capabilities to support the CCDR's initial mission analysis process |
|   | Develop list of specified, implied, and essential tasks to be accomplished                          | -Determine specified, implied, subsidiary, and essential GEOINT tasks required to support the CCDR's proposed mission statement  |
|   | Create proposed mission statement and desired strategic-operational end state                       | -Develop the draft GEOINT mission statement  |
|   | Identify major friendly capabilities and conditions needed for mission success                      |  |
|   | Develop key strategic planning factors and assumptions that may change during planning or execution | -Determine acceptable readiness level<br>-Coordinate w/NGA on production strategy to fill shortfalls   |

Figure A-2. Geospatial Intelligence Planning Checklist

| <b>GEOSPATIAL INTELLIGENCE PLANNING CHECKLIST (cont'd)</b> |   |  |
|--|---|--|
| <b>STEPS/ACTIONS</b>                                       | <b>COMBATANT COMMAND and JTF ACTIONS</b>  | <b>GEOINT CELL ACTIONS</b>   |
| <b>Step 1. Strategic Guidance (cont'd)</b>                 |   |  |
|  | Ensure associated scenarios for the plan contain contingencies or other options as required. To do so, analyze scenarios initially provided in strategic guidance statements, confirming them or proposing modifications. |  |
| IPR  | Incorporate results of SecDef IPRs  | -Provide available GEOINT products to support IPR briefing<br>-Evaluate GEOINT tasks, capabilities, assumptions and mission statement based on revised mission statement from the IPR  |
| <b>Step 2. Concept Development</b>                         |   |  |
| COA DEVELOPMENT  | Conduct COA analysis using wargaming, operational modeling, and initial feasibility assessments   | -Act as the J-2's GEOINT advisor in the assessment process, outlining capabilities and issues<br>-Provide available GEOINT products and data as required<br>-Identify GEOINT capabilities required to support the CDR's COA analysis and construct the assumptions on their availability/use |
|  | Evaluate COA comparisons developed during analysis  | -Compare results of COA analysis to provide best COA recommendation and options  |
|  | Select COA recommendation   | -Keep NGA informed on planning developments/decisions  |

Figure A-2. Geospatial Intelligence Planning Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE PLANNING CHECKLIST (cont'd)</b> |   |  |
|--|---|--|
| <b>STEPS/ACTIONS</b>                                       | <b>COMBATANT COMMAND and JTF ACTIONS</b>                          | <b>GEOINT CELL ACTIONS</b>   |
| <b>Step 2. Concept Development (cont'd)</b>                |   |  |
| STAFF ESTIMATES  | Develop estimate as narrative statement, with supporting graphics | <ul style="list-style-type: none"> <li>-Produce or assist in development of GEOINT estimate to support each COA</li> <li>-Develop GEOINT tasks</li> <li>-Review assigned and/or apportioned GEOINT forces and capabilities to ensure they are adequate to support the mission statement for each COA</li> <li>.-Review and evaluate GEOINT tasks, required capabilities, host nation agreements and assumptions</li> <li>-Ensure critical GEOINT issues, including legal issues, capabilities, and limitations are identified and communicated in each estimate</li> <li>- Keep NGA informed of plans</li> </ul> |
| STRATEGIC CONCEPT  | Submit strategic concept / COA recommendation                     | <ul style="list-style-type: none"> <li>-Prior to submission, review STRATCON to ensure GEOINT capabilities and level of support are correctly defined</li> <li>-Provide available GEOINT products to support finished STRATCON</li> </ul>  |
| COA SELECTION  | Communicate COA Selection to lower echelons                       | <ul style="list-style-type: none"> <li>-Review the selected COA and determine if any GEOINT tasks, required capabilities, and assumptions require modification</li> <li>-Ensure that subordinate GEOINT assets receive notification of the approved COA and understand their responsibilities as outlined in the selected COA estimate</li> </ul>  |

Figure A-2. Geospatial Intelligence Planning Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE PLANNING CHECKLIST (cont'd)</b> |   |  |
|--|---|--|
| <b>STEPS/ACTIONS</b>                                       | <b>COMBATANT COMMAND and JTF ACTIONS</b>  | <b>GEOINT CELL ACTIONS</b>   |
| <b>Step 2. Concept Development (cont'd)</b>                |   |  |
| INTELLIGENCE SUPPORT TO PLANNING                           | Develop the intelligence plan that supports the selected COA and associated options | <ul style="list-style-type: none"> <li>-Develop GEOINT Portion of the plan</li> <li>-Review and evaluate GEOINT tasks, required capabilities, and assumptions and document them in the plan</li> <li>-Review the GEOINT architecture; identify critical components and their status, both outside and within the command</li> <li>-Evaluate the architecture to ensure that all products outlined in the estimate are available at the times and places listed</li> <li>-Coordinate with all members of the IC to determine the structure and composition of required GEOINT products</li> <li>-Ensure product formats are compatible with force components</li> </ul> |
| IPR  | Incorporate results of SecDef IPRs  | <ul style="list-style-type: none"> <li>-Provide available GEOINT products to support the IPR briefing to the SecDef</li> <li>-After the IPR, evaluate GEOINT tasks, required capabilities, assumptions, and mission statement to determine if modification is required based upon SecDef guidance</li> </ul>   |

Figure A-2. Geospatial Intelligence Planning Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE PLANNING CHECKLIST (cont'd)</b> |  |  |
|--|--|--|
| <b>STEPS/ACTIONS</b>                                       | <b>COMBATANT COMMAND and JTF ACTIONS</b>                           | <b>GEOINT CELL ACTIONS</b>   |
| <b>Step 3. Plan Development</b>                            |  |  |
| RESOURCE PLANNING  | Complete employment, force, support and functional planning        | -Develop GEOINT tasks<br>-Develop initial input for appendix 7 to annex B and annex M<br>-Review assigned and/or apportioned GEOINT forces and capabilities to ensure they are adequate to support the mission statement for each COA<br>-Review and evaluate the GEOINT tasks, required capabilities, and assumptions |
| SOURCING   | Complete detailed sourcing   | -Coordinate with all echelons of source to ensure connectivity and interoperability<br>-Evaluate required products, identify issues, and make recommendations to the J-2 on how to resolve the issues  |
| FEASIBILITY ANALYSIS                                       | Complete feasibility analyses                                      | -Provide evaluation and solutions as required for GEOINT issues  |
| PLAN REVIEW  | Submit plan summary, basic plan, and required annexes for approval | -Provide available GEOINT products to support construction of the plan   |
| IN-PROGRESS REVIEW   | Resolve IPR issues   | -Provide available GEOINT products to support the IPR briefings to the SecDef<br>-After the IPR, evaluate the GEOINT tasks, required capabilities, assumptions, and mission statement to determine if modification is required based upon SecDef guidance  |

Figure A-2. Geospatial Intelligence Planning Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE PLANNING CHECKLIST (cont'd)</b>         |   |  |
|--|---|--|
| <b>STEPS/ACTIONS</b>   | <b>COMBATANT COMMAND and JTF ACTIONS</b>  | <b>GEOINT CELL ACTIONS</b>   |
| <b>Step 4. Plan Assessment (Refine, Adapt, Terminate, Execute)</b> |   |  |
| PREPARE FINAL PLAN   | Prepare complete plan while subordinate elements complete their plans for review & approval | <p>Prepare appendix 7 to annex B and annex M.</p> <ul style="list-style-type: none"> <li>-Ensure all commands have the necessary GEOINT assets and expertise to prepare their command's GEOINT portion of their plan</li> <li>-Coordinate with all GEOINT assets within the Command to ensure all plans are complementary and don't conflict</li> <li>-Identify any special or unique GEOINT capabilities or products required in the plan and ensure that coordination is conducted, at all echelons, to facilitate their implementation</li> <li>-Identify all GEOINT cell resources/personnel needed to accomplish GEOINT tasks in all functional areas according to GEOINT concept of operations, commander's intent, and tasks to subordinate elements</li> <li>-Task Service components and supporting combatant commands to TPFDD GEOINT basic loads</li> <li>-Task Service components and supporting combatant commands to include war reserve in the TPFDD (if not already stored in-theater)</li> <li>-Develop GEOINT sustainment flow and TPFDD in coordination with DLA and NGA</li> <li>-Task Service components and supporting combatant commands to develop AD accounts with DLA to support unit basic load and/or planning stock requirements</li> </ul> |

Figure A-2. Geospatial Intelligence Planning Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE PLANNING CHECKLIST (cont'd)</b>         |   |   |
|--|---|---|
| <b>STEPS/ACTIONS</b>   | <b>COMBATANT COMMAND and JTF ACTIONS</b>  | <b>GEOINT CELL ACTIONS</b>  |
| <b>Step 4. Plan Assessment (Refine, Adapt, Terminate, Execute)</b> |   |   |
| PREPARE FINAL PLAN (cont'd)  |   | <ul style="list-style-type: none"> <li>-Develop AD listing to cover requirements of combatant command and/or JTF headquarters</li> <li>-Assist staff target planning efforts by coordinating with NGA</li> <li>-Ensure coordination with the JFACC and the Department of State to have agreements in place to support en route overflight and access of GEOINT assets and support requirements</li> </ul> |
| DEVELOP OPTIONS  | Provide branch plans and other options as SecDef and President require  | -Be prepared to provide GEOINT estimates and capabilities to support plans and options  |
| MONITOR & ASSESS   | Monitor and assess current readiness and availability status to assess sourcing impacts and develop sourcing COAs | <ul style="list-style-type: none"> <li>-Monitor the GEOINT architecture to ensure it is operating as expected</li> <li>-Assess the performance of the GEOINT process in support of the planning process and advise the J-2 on issues requiring attention</li> </ul>   |
| IPR  | May conduct one or more IPRs with the SecDef during plan refinement   | <ul style="list-style-type: none"> <li>-Provide available GEOINT products to support the IPR briefing to the SecDef</li> <li>-After the IPR, evaluate GEOINT tasks, required capabilities, assumptions, and mission statement to determine if modification is required based upon SecDef guidance</li> </ul>  |

Figure A-2. Geospatial Intelligence Planning Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE PLANNING CHECKLIST (cont'd)</b> |   |
|--|---|
| Legend   |   |
| AD   | automatic distribution                    |
| CCDR   | combatant commander                       |
| COA  | course of action                          |
| DLA  | Defense Logistics Agency                  |
| GEOINT   | geospatial intelligence                   |
| IC   | intelligence community                    |
| IPR  | in-progress review                        |
| J-2  | intelligence directorate of a joint staff |
| J-5  | plans directorate of a joint staff        |
| JFACC  | joint force air component commander       |
| JTF  | joint task force                          |
| NGA  | National Geospatial-Intelligence Agency   |
| SecDef   | Secretary of Defense                      |
| STRATCON   | strategic concept                         |
| TPFDD  | time-phased force and deployment data     |

**Figure A-2. Geospatial Intelligence Planning Checklist (cont'd)**

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## APPENDIX B

### GEOSPATIAL INTELLIGENCE CELL CRISIS ACTION PLANNING GUIDE AND CHECKLIST

#### 1. Crisis Action Planning

CAP has three broad operational activities: situational awareness, planning, and execution. These activities are aligned with JP 5-0, *Joint Operation Planning*.

#### 2. Situational Awareness

a. SA development is a dynamic process that evolves simultaneously with policy. Proper SA development demands that staffs be able to provide immediate advice to commanders, based on contingency planning. The combatant command GEOINT cell must be able to provide to the staff those products and data necessary for planning their assessments (see Figure B-1).

b. During this activity, a principle task of the GEOINT cell is to develop a commander's situation assessment for geospatial information support. The report must provide current and accurate assessments of the preparedness of the command to execute military operations in the joint operations area (JOA) and monitor the area of interest (AOI) from a GEOINT perspective. The GEOINT cell should make this assessment with input from the appropriate customer support team from NGA. The GEOINT cell's assessment must consider the following factors:

(1) The geographic "footprint" of the JOA and the AOI.

(2) The operational requirements for the GEOINT cell based on the mission and the force structure. The planning factors database can be used to determine what geospatial information is needed by specific weapons and C2 systems.

(3) The availability and currency of geospatial information — that is what products and data currently reside "on the shelf" at depots and servers to include available assets provided by the components in the area of responsibility (AOR) of interest that can be easily shared to reduce redundant movement/updating of large repositories of GEOINT data.

(4) A preliminary recommendation for what GEOINT cell forces should be included on the JTF composition.

(5) In conjunction with the communications system directorate of a joint staff (J-6), an initial estimate of the communications requirements needed to transmit digital geospatial data between forward-deployed units, United States production centers and digital data warehouses, theater-level computer data servers, and to multinational forces.

(6) The use of interim products such as satellite image maps as an initial deliverable, and meteorological data systems instead of more standard and more detailed digital data. What geospatial information can be developed or updated is a function of requirements and time available.

| <b>GEOSPATIAL INTELLIGENCE CELL CRISIS ACTION CHECKLIST</b> |  |   |
|---|--|---|
| <b>Activity</b>   | <b>Actions of Combatant Command/JTF Staff</b>  | <b>Actions of GEOINT Cell</b>   |
| <b>SITUATIONAL AWARENESS</b>                                | <p>Begin monitoring and reporting on the situation</p> <p>Establish a crisis action team to track the situation</p> <p>Begin the mission analysis process; defines the mission</p> <p>Identify available forces</p> <p>Identify major constraints</p> <p>Inform the CJCS of any actions or plans being taken (COA development)</p> | <p>Provide available planning maps, nautical and aeronautical charts, imagery, and digital data to the staff</p> <p>Understand enemy and friendly situations</p> <p>Understand the boundaries of the AOI and provide warning order to components, DLA, and NGA</p> <p>If required, request GEOINT cell staff augmentation from NGA or Service assets</p> <p>Review combatant commander guidance</p> <p>Assist the staff in the COA</p> <p>Determine what forces and weapons systems are being considered for employment</p> <p>Assist the J-2 with the JIPOE process</p> <p>In conjunction with components, determine area requirements for GEOINT cell support</p> <p>Coordinate with subordinate command and supporting combatant command GEOINT cell officers</p> <p>Develop GEOINT cell facts and assumptions</p> <p>Identify any datum issues in the AOI; make a preliminary recommendation to the J-5</p> |

Figure B-1. Geospatial Intelligence Cell Crisis Action Checklist

| <b>GEOSPATIAL INTELLIGENCE CELL CRISIS ACTION CHECKLIST (cont'd)</b> |   |   |
|--|---|---|
| <b>Activity</b>  | <b>Actions of Combatant Command/JTF Staff</b>   | <b>Actions of GEOINT Cell</b>   |
| <b>SITUATIONAL AWARENESS (cont'd)</b>                                | <p>Continue mission analysis and situation monitoring</p> <p>Review existing OPLANs and operation plans in concept format (CONPLANs) for applicability to the situation</p> <p>Evaluate disposition of assigned and available forces. Evaluate status of assigned theater transportation assets. Brief commander as necessary on the situation and ongoing planning actions</p> | <p>Direct all in-theater GEOINT cell activities to provide an immediate report (units, map depots)</p> <p>Assess the possibility of multinational operations; the potential for GEOINT cell requirements and/or productions capabilities</p> <p>Begin release and disclosure assessments</p> <p>Continue actions begun in Phase I</p> <p>Review appendix 7, (Imagery Intelligence), annex B, (Intelligence), and annex M, (GI&amp;S), of similar OPLANs and CONPLANs</p> <p>Provide guidance to DLA, subordinate and supporting GEOINT cell for product requisitioning (project codes, quantity limits, priority units, and other related areas)</p> <p>Evaluate most current status of GEOINT cell units and activities</p> <p>Receive NGA's initial assessment of product and data availability and suitability</p> <p>Determine geospatial and imagery data shortfalls</p> <p>In conjunction with components and NGA, determine priorities for crisis production</p> |

Figure B-1. Geospatial Intelligence Cell Crisis Action Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE CELL CRISIS ACTION CHECKLIST (cont'd)</b> |  |   |
|--|--|---|
| <b>Activity</b>  | <b>Actions of Combatant Command/JTF Staff</b>  | <b>Actions of GEOINT Cell</b>   |
| <b>SITUATIONAL AWARENESS (cont'd)</b>                                |  | <p>Consider substitute products or data production such as single color overprints, image maps, native edition maps, and charts</p> <p>Request DLA "freeze" issue of products that cover the AOI, except for small quantities for planning</p>  |
| <b>PLANNING</b>  | <p>Receive and evaluate CJCS warning order</p> <p>Develop and evaluate tentative COAs</p> <p>Develop TPFDD</p> <p>With US Transportation Command, conduct transportation feasibility analyses</p> <p>Prepare commander's estimate with analysis of all COAs</p> <p>Provide a recommended COA</p> | <p>Determine what organic or other available Service GEOINT cell assets can provide to the crisis production effort</p> <p>Keep GEOINT activities informed</p> <p>Review the CJCS warning order; ensure GEOINT activities have a copy</p> <p>Determine deadline for the submission of the commander's estimate; determine deadline for GEOINT cell estimate</p> <p>Assist the staff in the COA development and recommendation</p> <p>Develop a GEOINT cell concept of operations for each COA under consideration</p> <p>Determine need for map depots to be established in theater</p> <p>Determine GEOINT cell forces required for each COA</p> <p>Prepare a GEOINT cell estimate for each COA</p> <p>Provide a copy of the completed commander's estimate to GEOINT activities</p> |

Figure B-1. Geospatial Intelligence Cell Crisis Action Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE CELL CRISIS ACTION CHECKLIST (cont'd)</b> |   |   |
|--|---|---|
| <b>Activity</b>  | <b>Actions of Combatant Command/JTF Staff</b>   | <b>Actions of GEOINT Cell</b>   |
| <b>PLANNING (cont'd)</b>   | <p>Continue monitoring the situation and evaluating the impacts on the recommended COA</p> <p>Continue transportation planning</p> <p>Await receipt of the planning order or alert order from the CJCS</p> <p>Await SecDef decision on the selection of a COA</p> <p>Make adjustments to COA based on SecDef and/or CJCS guidance</p> <p>Prepare complete OPORD for the SecDef's selected COA</p> | <p>Coordinate with DLA and NGA to "push" essential GEOINT cell products to assigned units</p> <p>Begin preparation of appendix 7 to annex B and annex M</p> <p>When (if) JTF GEOINT cell is assigned, coordinate all actions to avoid duplication of effort</p> <p>Discuss CJCS planning order or alert order with GEOINT activities</p> <p>Complete draft appendix 7 of annex B and annex M; coordinate with GEOINT activities for comment</p> <p>Work with DLA, J-3, and J-4 for transportation planning of GEOINT cell products to deploying units and map depot(s)</p> <p>Work with J-6 to determine paths for distribution of digital geospatial information to units at both home station and forward-deployed sites</p> <p>Keep subordinate and supporting command GEOINT cell informed</p> <p>Monitor status of GEOINT cell products and units</p> <p>Assist subordinate and supporting command GEOINT cell to complete appendix 7 of annex B and annex M</p> |

Figure B-1. Geospatial Intelligence Cell Crisis Action Checklist (cont'd)

| <b>GEOSPATIAL INTELLIGENCE CELL CRISIS ACTION CHECKLIST (cont'd)</b>   |   |  |
|--|---|--|
| <b>Activity</b>  | <b>Actions of Combatant Command/JTF Staff</b>                               | <b>Actions of GEOINT Cell</b>  |
| <b>PLANNING (cont'd)</b>   |   | Maintain contact with GEOINT activities on crisis production, distribution of products, and the availability of information in geospatial data servers<br><br>Adjust GEOINT cell support in accordance with changes to the published OPORD<br><br>Coordinate with GEOINT activities on the anticipated levels of GEOINT cell sustainment |
| <b>EXECUTION</b>   | Receive CJCS execute order<br><br>Issue execute order to the designated JTF |  |
| <b>Legend</b><br>AOI area of interest<br>CJCS Chairman of the Joint Chiefs of Staff<br>COA course of action<br>CONPLAN concept plan<br>DLA Defense Logistics Agency<br>GI&S geospatial information and services<br>GEOINT geospatial intelligence<br>JIPOE joint intelligence preparation of the operational environment<br>JTF joint task force<br>NGA National Geospatial-Intelligence Agency<br>OPLAN operation plan<br>OPORD operation order<br>SecDef Secretary of Defense<br>TPFDD time-phased force and deployment data |   |  |

**Figure B-1. Geospatial Intelligence Cell Crisis Action Checklist (cont'd)**

c. The SecDef and the Joint Chiefs of Staff analyze the situation assessment and determine whether a military option should be prepared. The combatant command GEOINT cell continues to refine the GEOINT cell assessment and now begins to consider the strategic lift requirements for transporting required geospatial data of the operational area and the AOI.

d. The crisis assessment ends with a decision by the SecDef to return to the pre-crisis state or to have military options developed for consideration and possible use. The SecDef decision provides strategic guidance for joint operation planning and may include specific guidance on the COAs to be developed. The responsibilities of the GEOINT cell during Phase II are as follows:

(1) Coordinate with relevant GEOINT-community organizations to ensure that they are informed of the President and SecDef decision and the CJCS planning guidance directive.

(2) Provide a recommendation and receive CCDR guidance on the datum to be used for the operation.

(3) Coordinate with DLA to place a hold on distribution of any hardcopy products and digital media covering the AOI. This will allow the GEOINT cell officer to prioritize the distribution of the required data and products to the units involved in the immediate operation.

(4) Develop and provide guidance to subordinate and supporting GEOINT cell staffs, supporting GEOINT-community organizations, and appropriate forces regarding special procedures to be used when requisitioning products over the AOI. Information about distribution limits and unit priorities must be established early to prevent depletion of stocks.

(5) Coordinate with the logistics directorate of a joint staff (J-4) to determine the effect the transportation infrastructure status has on deployment planning for GEOINT cell products, data, and GEOINT cell production-capable units as early as possible in the planning effort.

(6) Coordinate with NGA and the Services for GEOINT cell staff augmentation, if required. NGA has crisis response teams specially trained in requirements planning, GEOINT cell production, distribution, and map depot warehousing operations that can be deployed in theater upon request by the CCDR. The command relationship of NST or NIST support to a JFC will be established in a deployment order. Typically, these teams will be supervised by the J-2 and integrated into the intelligence staff to provide the necessary coordination and support the campaign. The US Army Topographic Engineering Center, the Marine Corps Intelligence Activity, the Naval Meteorology and Oceanography Command, and other Service assets (i.e., USAF Expeditionary Site Mapping programs) may also provide assistance to joint forces as part of their Service components assigned to the operation. Information required by these DOD and Service activities includes justification for request, what expertise is needed, where support will be located, and approximately, when the support will need to be in place.

(7) Coordinate with J-6 to determine bandwidth requirements, impacts, and shortfalls to include all levels of networks. Determine impact and availability of on-line assets of GEOINT for usage, and updates. This includes determining availability and source integration of GBS or IBS to facilitate movement of large GEOINT data files.

(8) Coordinate the early geospatial information production and collection efforts of national and theater assets. The combatant command GEOINT cell officer must coordinate with all GEOINT cell producers, including subordinate GEOINT cell units, units from multinational forces, Service assets, and NGA, to eliminate duplication of effort.

(9) Identify, in coordination with the joint force staff, GEOINT cell requirements and/or requests from multinational forces. If required, begin coordinating requests for foreign disclosure and/or release with the GEOINT community.

(10) Establish POCs with multinational forces for supply and receipt of GEOINT cell products and data. Identify foreign disclosure and releasability process.

*For further details see DOD Directive 5230.11, Disclosure of Classified Military Information to Foreign Governments and International Organizations.*

### 3. Planning

a. At the beginning of the planning activity, a SecDef decision or CJCS planning directive to develop military options is issued. This directive (and required actions) is described in JP 5-0, *Joint Operation Planning*, and JP 3-33, *Joint Task Force Headquarters*.

b. The supported commander analyzes each COA and provides recommendations to the SecDef and CJCS. This planning activity ends with submission of the commander's estimate, which includes the GEOINT cell estimate.

(1) The GEOINT cell coordinates with NSG for analysis of all COAs, and determines the supportability of each.

(2) The GEOINT cell supports other staff elements with their planning effort by providing geospatial information or guidance.

c. The CJCS reviews and evaluates the CCDR's estimate and prepares recommendations and advice for the SecDef. The SecDef selects a COA and directs that execution planning be accomplished.

d. An alert order implements the SecDef decision and contains sufficient detail to allow the JFC to conduct detailed planning. A CJCS planning order could be issued to initiate execution planning before SecDef selects a COA. The focus of the GEOINT cell staff element shifts to the COA selected by SecDef. In addition, the GEOINT cell officer will complete the following tasks:

(1) Review the checklist found in Appendix A, "Geospatial Intelligence Planning Checklist," and Appendix B, "Geospatial Intelligence Cell Crisis Action Checklist," (see Figure B-1) for issues to consider.

(2) Ensure that all subordinate joint force GEOINT cell personnel understand the organizational structures, command, and multinational relationships established for the mission. Subordinate forces and supporting command GEOINT cell personnel should be briefed on key C2 relationships affecting their specific responsibilities.

(3) Coordinate with the J-3, J-4, and DLA to ensure adequate lift and priority is provided for the shipment of paper maps and charts as well as electronic media.

(4) In coordination with the J-6, finalize communications support for the subordinate force GEOINT cell element so that adequate communications bandwidth exists to transmit digital geospatial information from the United States to deployed units and data management centers. Develop backup procedures for maintaining support to units if primary communications are lost.

(5) Ensure that requests for theater and national augmentation (both personnel and equipment) are formally submitted and responses are tracked. Coordinate with the manpower and personnel officer to ensure that logistic preparations for locating and housing augmentees are underway. As directed, the NSG will provide support teams and analysts to theater joint intelligence/analysis centers to directly support the highest and most urgent intelligence needs.

(6) Coordinate final personnel, systems, supply, and equipment requirements with the subordinate GEOINT cell officer and ensure that these requirements are submitted to the Joint Operation Planning and Execution System and the TPFDD.

(7) Resolve foreign disclosure and/or release policies with respect to geospatial intelligence and imagery and inform subordinate GEOINT cell personnel of these procedures IAW US law. Requirements to share geospatial data must be finalized and specific products or data to be shared must be identified in annex M, in the OPORD. Coordinate with NGA for support being provided to multinational forces through the United Nations, North Atlantic Treaty Organization, or other intergovernmental organizations.

(8) Obtain a status from NGA on their crisis production plan to cover GEOINT cell shortfalls.

(9) Begin coordination with DLA and Services on in-theater regional map depot and manning requirements.

(10) Seek staff judge advocate review of the status of in-place bilateral and/or multilateral diplomatic agreements to support en route overflight and access of GEOINT assets and personnel.

e. The approved CJCS COA is transformed into an OPORD. Detailed planning occurs throughout the joint planning community. If required, the supported commander will initiate campaign planning or refine a campaign plan already developed.

f. The supported commander develops the OPORD and supporting TPFDD by modifying an existing OPLAN, expanding an existing CONPLAN, or developing a new plan. This phase ends with a SecDef decision to implement the OPORD. In those instances where the crisis does not progress to implementation, the CJCS provides guidance on continued planning using either contingency or CAP procedures.

(1) The planning emphasis shifts to transportation requirements and the building of movement schedules. The movement status of GEOINT cell forces, equipment, and geospatial data should be included in every status report and briefing prepared during the planning of joint operations. Emphasis

should be placed on ensuring required aircraft diplomatic clearance timelines outlined in DOD 4500.54G, *Department of Defense Foreign Clearance Guide*, are considered.

(2) GEOINT cell actions include the following:

(a) Brief subordinate GEOINT cell officers, DLA, NGA, and Service geospatial information support activities on the alert or planning order.

(b) Finalize any remaining planning or previous actions that were compressed due to the rapid development of the crisis.

(c) Refine appendix 7 (Geospatial Intelligence) to annex B (Intelligence) and annex M (GI&S) to the OPORD according to Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3122.03B, *Joint Operation Planning and Execution System, Vol II: (Planning Formats)* (see Appendix D, “Geospatial Information and Services Sample Annex M”).

(d) Ensure that all subordinate GEOINT cell personnel understand the GEOINT cell support operations concept.

(e) Ensure that C2 relationships have been defined for GEOINT cell support to major component forces of the subordinate joint force.

(f) Apprise the commander of the current status of GEOINT cell capabilities and limitations as well as the status of crisis production of geospatial information.

(g) Brief personnel on the complete OPORD.

#### 4. Execution

Execution begins when the President or SecDef decides to use a military option to resolve a crisis. Only the President or SecDef can authorize the CJCS to issue an execute order (EXORD). The EXORD directs the supported commander to initiate military operations, defines the time to initiate operations, and conveys guidance not provided earlier. The CJCS monitors the deployment and employment of forces, advises and makes recommendations to the President, the National Security Council, and the SecDef on the operation. USTRANSCOM manages common-user global air, land, and sea transportation, reporting the progress of deployments to the CJCS and the supported commander. Execution continues until the operation is terminated or the mission is accomplished or revised. The CAP process may be repeated continuously as circumstances and missions change. As soon as the deployment begins, the command GEOINT cell coordinates the deployment of requested GEOINT cell augmentation of personnel and/or equipment to the theater. The command GEOINT cell continues to provide production guidance to NSG and suggests GEOINT collection requirements to theater commands until the subordinate joint force GEOINT cell staff has reached operational status at the deployed location.

theater. The command GEOINT cell continues to provide production guidance to NSG and suggests GEOINT collection requirements to theater commands until the subordinate joint force GEOINT cell staff has reached operational status at the deployed location.

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## APPENDIX C GEOSPATIAL INTELLIGENCE ESTIMATE

The GEOINT estimate is an appraisal of available GEOINT for a specific situation in a certain region of the world. It is used to determine the supportability of a COA, depending upon the GEOINT requirements for planning and execution. The format for the GEOINT estimate is included below.

### SAMPLE GEOINT ESTIMATE FORMAT

### GEOSPATIAL INTELLIGENCE ESTIMATE

#### CLASSIFICATION

Originating Section Issuing Headquarters\*

(Note: When this estimate is distributed outside the issuing HQ, the first line of the heading is the official designation of the issuing command, and the ending of the estimate is modified to include authentication by the authorizing section, division, or other official according to local policy.)

Place of Issue

Day, Month, Year

GEOINT STAFF ESTIMATE NUMBER\*\*

(Note: Normally, these are numbered sequentially during a calendar year.)

- ( ) REFERENCES:
- a. GEOINT products and services
  - b. Other relevant documents.

1. ( ) Mission. State the assigned task and its purpose. The mission of the overall command is taken from the commander's mission analysis, planning guidance, or other statement.

2. ( ) Situation

a. Definition of the AOI. Describe the limits of the AOI both in terms of natural or cultural features and latitude and longitude coordinates. If the AOI limits are difficult to describe, a map with the appropriate boundaries should be appended. Appropriate imagery should also be used whenever possible.

b. Assigned or apportioned GEOINT assets. Identify those forces that can perform one or more of the following GEOINT functions:

- (1) Map and chart distribution.
- (2) Direct machine-to-machine access.
- (3) Digital dissemination of data and/or information.
- (4) Analysis of the operational environment.

CLASSIFICATION

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CLASSIFICATION

- (5) Paper map or chart production and reproduction.
- (6) Digital data production.
- (7) Geodetic surveying.
- (8) Command and control of GEOINT assets.
- (9) Geospatial database management.
- (10) Value-add to GI&S data sets.
- (11) Construction of modeling and/or simulation databases.
- (12) Mensurated point production.
- (13) Hydrographic surveying.
- (14) Imagery.
- (15) Imagery analysis.
- (16) Access to imagery libraries.

c. Facts and assumptions. Facts and assumptions are usually generated during the mission analysis process, and may include items pertaining to release and disclosure of GEOINT products to multinational forces, transportation availability, and digital communications availability.

d. GEOINT considerations. Example items are:

- (1) Datum determination.
- (2) Standard GI&S product and data availability.
- (3) Data currency.
- (4) Advanced GEOINT product availability.
- (5) Availability of national source imagery and commercial imagery.
- (6) GEOINT support to and from multinational forces.

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- (7) Existing GEOINT agreements with foreign countries.
- (8) WRS and basic load considerations.
- (9) Sustainment of geospatial data.
- (10) Sustainment of GEOINT assets and personnel.
- (11) Creation and manning of forward map depots.
- (12) Data requirements for mission rehearsal areas.
- (13) Availability of local digital on line GEOINT data and support structure.
- (14) Distribution of hardcopy products.
- (15) Supplemental manning of MSO.
- (16) Disclosure and release to coalition.

3. ( ) Analysis of COAs. The following are examples of factors the GEOINT cell can use to weigh COAs:

- a. GEOINT forces and functions: The COA employs forces to cover the greatest number of GEOINT functions.
- b. Datums and interoperability: Assesses each COA by comparing forces and/or systems to the actual geographic footprint of the AOI and its associated datum(s).
- c. Allied and/or coalition operations: Assessment of how each COA facilitates allied or coalition operations and what support is required of allies and other nations.
- d. Geospatial information coverage: Assessment of each COA for the geospatial data availability over the AOI (if COAs have somewhat different geographic boundaries).
- e. NGA supportability: An assessment by COA from a NGA supportability perspective.
- f. Simplicity of GEOINT distribution and digital dissemination: Assessment by COA of the probable scheme for distributing paper maps and charts and the digital dissemination of geospatial data.

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g. C2 of GEOINT assets: Assessment of the COA from a C2 perspective.

h. Unit basic loads and WRS: Assessment of the COA for requirements for operational forces for both paper and digital geospatial data.

4. ( ) Comparison of COAs. Using the factors stated above and others, the GEOINT cell compares the different COAs to determine if GEOINT supportability is a factor for execution.

5. ( ) Conclusions. Once the analysis is complete, the GEOINT cell should either make a recommendation for a single COA, or state that none of the COAs are adversely affected by the current GEOINT situation.

(signed)

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(The staff division chief [J-2] signs the GEOINT cell estimate. If the estimate is to be distributed outside the HQ, the heading and signature block must be changed to reflect that fact.)

ANNEXES: (By letter and title) Annexes should be included where the information is in graphs (such as geospatial data coverage graphics) or is of such detail and volume that inclusion makes the body of the estimate cumbersome. They should be lettered sequentially as they occur throughout the estimate.

DISTRIBUTION: (According to procedures and policies of the issuing HQ)

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**APPENDIX D**  
**GEOSPATIAL INFORMATION AND SERVICES SAMPLE ANNEX M**

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(U) References:

(a) List JTF, other components, theater and national intelligence and counterintelligence plans, orders and tactics, techniques, and procedures, as well as multinational agreements pertinent to the operation.

(b) List those NGA maps, nautical and aeronautical charts, and related products, and other forms of GI&S data references required for an understanding of this Annex.

(c) List other relevant documents that provide guidance required for the necessary planning functions relevant to GI&S and supporting operations.

1. (U) SITUATION

a. (U) GI&S Requirements. Operations will require aeronautical, hydrographic, and topographic paper and digital products. Area coverage requirements are shown in Appendix 1 - Geospatial Information and Services Requirements List:

- (1) (U) City Graphics.
- (2) (U) 1:25,000 Topographic Line Maps.
- (3) (U) 1:50,000 Topographic Line Maps.
- (4) (U) 1:100,000 Topographic Line Maps.
- (5) (U) 1:250,000 Joint Operations Graphics.
- (6) (U) 1:500,000 Tactical Pilotage Charts.
- (7) (U) 1:1,000,000 Operational Navigation Charts.
- (8) (U) 1:2,000,000 Jet Navigation Charts.

- (9) (U) 1:5,000,000 Global Navigation and Planning Charts.
- (10) (U) Coastal Charts.
- (11) (U) Pilot Charts.
- (12) (U) Sailing Charts.
- (13) (U) 1:50,000 Combat Charts.
- (14) (U) Approach Charts.
- (15) (U) Harbor/Approach Charts.
- (16) (U) Digital Nautical Chart (DNC).
- (17) (U) Geospatial Contingency Packages (GCPs).
- (18) (U) Digital Terrain Elevation Data (DTED) Levels 1-2.
- (19) (U) Interim Terrain Data (format independent).
- (20) (U) High Resolution Terrain Elevation 3-5.
- (21) (U) Feature Foundation Data.
- (22) (U) Foreign Produced Tourist Maps.
- (23) (U) Escape and Evasion Charts.
- (24) (U) Controlled Image Base 1 and 5 Meter.
- (25) (U) Digital Point Positioning Database (DPPDB).
- (26) (U) Vector Map (VMap) Series.
- (27) (U) Shuttle Radar Topography Mission DTED.
- (28) (U) Various Scales, Image City Map (after City Graphics line).
- (29) (U) Image map for each of the TLM scales.
- (30) (U) Compressed ARC digitized raster graphic.

b. (U) Enemy. Refer to Annex B (Intelligence) of the OPORD for the basic enemy situation.

c. (U) Friendly Support. Refer to Annex C of the OPORD. List the GI&S forces or agencies that are not assigned or attached to the unit but that will be required to provide GI&S support for the implementation of this order. Specify the type of command relationship desired for each agency or command and the type and duration of support required.

(1) (U) NGA.

(2) (U) Commander, X Engineer Battalion.

(3) (U) CIA.

(4) (U) DIA.

(5) (U) NGA Remote Geospatial Intelligence Services.

(6) (U) Combatant command's JIOC.

(7) (U) Service geospatial centers.

(8) (U) Department of State/US.

d. (U) Assumptions. List any assumptions on which this annex is based. State expected conditions pertinent to GI&S support over which the commander has no control. Describe planning and early deployment assumptions concerning the availability of basic loads and DLA's and NGA's ability to meet crisis demand.

(1) (U) GI&S requirements represent classified and unclassified aeronautical, hydrographic, topographic, and air target materials.

(2) (U) The CCDR will coordinate all requirements for out-of-theater support, including aircraft diplomatic clearances and generation of precise points for targeting support.

(3) (U) The CCDR's GI&S officer will appoint the theater database manager and will publish requirements for reports, generation, information requests, and tasking authority.

(4) (U) Component commanders and planning staffs will have required operational quantities of maps, charts, and digital data to conduct operational-level planning.

(5) (U) Rapidly generated maps, charts, and digital data at the tactical scales will be available within 6 hours for a 90 by 90 kilometer product and 24 hours for a 300 by 300 kilometer product. Untasked, mission-specific products will be available within 72 hours.

(6) (U) Sufficient warning prior to execution will allow NGA to meet increased requirements through crisis support systems.

e. (U) Available Products. Provide a general statement regarding the availability and adequacy of the listed GI&S data, products, and related material required to support the OPORD. For example: complete coverage consisting of topographic, hydrographic, and aeronautical products exists to support this OPORD. In some areas 1:100,000 scale imagery may be used to support operations.

f. (U) Available Services. Describe any special geospatial services that will be provided for the operation, e.g., precise production, data transformations, commercial imagery purchase and orthorectification and surveying. Identify those GI&S units assigned or attached in theater. List information concerning other forces or agencies outside theater that may affect the provision of GI&S products.

g. (U) Capabilities. List those GI&S forces organic, assigned, or attached to the unit. Show latest arrival date at point of departure for each GI&S unit and list information concerning other forces or agencies that may affect the provisions of GI&S products required to support the OPORD.

2. (U) MISSION. Provide a clear, concise statement of the GI&S mission in support of the OPORD.

3. (U) EXECUTION

a. (U) Concept of GI&S Operations.

(1) (U) General. Provide a broad statement of how the command will provide the GI&S support necessary to meet the commander's overall mission requirement. Include the organic units and supporting units involved; the time-phasing of operations; the general nature and purpose of GI&S operations to be conducted; the interrelated or cross-Service support; and support provided by agreements, coordination, and cooperation necessary for the successful implementation of the OPORD. Describe the scope and extent of host nation support available to enhance operations in support of the OPORD.

(a) (U) Forces deploying in support of this OPORD are required to arrive with a 30-day basic load of GI&S products.

(b) (U) Resupply or sustainment stocks and follow-on supplies of maps and charts will be provided via normal supply channels.

(c) (U) Substitute products and interim products may be provided by NGA and other Service agencies to supplement available coverage.

(d) (U) Subordinate units with GI&S assets retain primary responsibility for their own quick response products.

(e) (U) Supporting plans will specify the required maps, nautical and aeronautical charts, and digital databases; terrain analysis requirements; cartographic and geodetic survey requirements; procedures for requesting standard and/or nonstandard topographic production support; and guidance for hard-copy and digital distribution. Requirements for special products and materials will also be included in supporting plans.

(2) (U) Deployment. Summarize the requirements for deploying organic GI&S forces and necessary depot activities from their normal peacetime locations to the operational area. Pay particular attention to the time-phasing of these deployments in order to effect an orderly transition from current to planned organizational configurations.

(a) (U) Subordinate units will ensure communications connectivity for attached units.

(b) (U) Subordinate units will maintain and deploy with a 30-day basic load of GI&S stocks.

(c) (U) Automatic distribution change requests and updates for validation will be forwarded to the JTF.

(d) (U) All subordinate units will update the list of deployment and GI&S basic load requirements and submit these to the appropriate unit.

(e) (U) Basic load airlift or sealift transportation from the United States to the port of entry will be arranged per requirements outlined in the current DOD Foreign Clearance Guide, established time-phased force and deployment list procedures, and established transportation priorities.

(3) (U) Transportation and movement of WRS or sustainment stocks to subordinate units will be coordinated with JTF supply and MSO.

(4) (U) Employment. Describe in general terms how the GI&S forces are to be employed in the conduct of operations.

(a) (U) Commanders will employ GI&S units to accomplish tasks assigned. Outside theater units will push GI&S products forward. Standard GI&S products will go to unit XYZ, which will establish a map depot within the supply support activity (SSA). Special GI&S products will go to the requesting unit. This paragraph must explain how each unit will be employed to execute the GI&S plan. It must also be time phased to fit into the TPFDD and OPLAN.

(5) (U) Interoperability. Provide specific technical guidance and procedures to ensure interoperability of GI&S operations and materials, particularly the proper sources, datum

documentation, and use of coordinates derived from GI&S products. Provide guidance to ensure that sources, methods, and procedures deliver the required accuracy.

b. (U) Tasks. In separate numbered subparagraphs, list the GI&S tasks assigned to each element of the JTF and to those supporting external units or agencies. For each of the tasks, provide a concise mission statement to be performed in further planning or execution of the JTF OPOD. Provide sufficient details in these task assignments to ensure that essential elements to the concept of operation are described properly.

(1) (U) Commander, XXX Unit.

(a) (U) Act as the POC for all xxx component GI&S issues.

(b) (U) Coordinate all validated GI&S collection, production, and dissemination requirements with the JTF. Forward all requirements to combatant command GEOINT cell for consolidation and submission to NGA or other GEOINT Activity for action.

(2) (U) Commander, YYY Unit.

(a) (U) Ensure that sufficient GI&S standard products are available for all units at deployment locations.

(b) (U) Provide resupply of GI&S standard products as requested.

(3) (U) GI&S Unit ZZZ.

(a) (U) Provide a single POC for GI&S planning and support.

(b) (U) Provide GI&S nonstandard product support.

(c) (U) Coordinate with combatant command for GI&S support.

c. (U) Coordinating Instructions. List in separate numbered subparagraphs the instructions applicable to two or more elements of the JTF and supporting units/agencies that are necessary for proper coordination of the GI&S support. Specify the POCs within the command that can authorize the release of WRS held or that can resolve command GI&S problems. Also, include a brief description of how notification of forces and agencies will be accomplished and time sequencing of notifications.

(1) (U) Subordinate units will review the OPLAN for GI&S requirements and identify errors or shortfalls through their chain of command to the JTF GEOINT cell no later than 5 days following receipt of OPLAN.

(2) (U) Ensure basic load, as determined by the unit, of required maps, charts, geodetic data and related materials accompanying deploying units are identified, and stocked at supporting components depots, along with a distribution plan to meet the needs of assigned forces.

(3) (U) Units with print/reproduction capabilities. Be prepared to reproduce limited quantities of existing maps of operational areas if required. Reproduction may include overlaying/overprinting lines of communications, helicopter landing zones, staging/assembly areas or other information significant to the tactical commander.

(4) (U) Provide transportation to move maps, nautical and aeronautical charts, and related materials with deploying forces. Within theater of operations, map, chart, geodetic data transfer is a supply point operation.

(5) (U) Positions will be referenced to the World Geodetic System 1984. Ground units and ground combat operations will be serviced with military grid reference system (MGRS). In aviation and nautical operations, latitude and longitude positions will be given in degrees/minutes-decimal-minutes format. However, different platforms may require different formats such as degrees, minutes, seconds, decimal seconds to import data directly into required mission planning/execution equipment. Decimal minutes is the most common but not the only required format.

4. (U) Administration and Logistics

a. (U) Supply and Storage. Provide instructions regarding GI&S supply and storage procedures and responsibilities. Include the planned locations of command and non-command storage sites and facilities. Refer to the command GI&S WRS plan to define detailed packaging and activation instructions at storage facilities. Specify the types and quantities of products or timeframe required to be held by the supporting command's units or agencies. Outline the inter-theater distribution plan to be implemented by unit logistic organizations.

| DEPOT TYPE | LOCATION                          | POINT OF CONTACT | DATE ESTABLISHED | STOCKAGE LEVELS |
|------------|-----------------------------------|------------------|------------------|-----------------|
| SSA        | TBP                               | CDR, 289 QM CO   | TBP              |                 |
| REGIONAL   | CAMP HIALEAH, BLUELAND, 45SXT4791 | CDR, 19TH TAACOM | ON-GOING         |                 |
| MSO        | ATSUGI, JAPAN                     | Mr. SID IKEHARA  | ON-GOING         |                 |

b. (U) Transportation. Provide general instructions regarding GI&S material transportation requirements. Use a separate appendix to list detailed transportation requirements and procedures.

(1) (U) DLA will ship maps to authorized customers and its regional MSOs/SSAs. Major subordinate units are responsible for transporting maps and charts to/from depots within the theater. (Which units are responsible for which depots? Transportation responsibilities need to be coordinated with the overall logistics plan. Without this coordination, maps will be forgotten in the overall plan.)

(2) (U) The JTF mission drives the number of materials needed for support. For example, the JTF will require approximately 940,000 paper maps, weighing approximately 115,000 lbs., within 60 days after D-Day. Approximately eight standard 463L pallets will be required.

(3) (U) Detailed transportation information is included in Appendix X.

c. (U) Support. Provide instructions and procedures for obtaining logistics in support of GI&S missions. Identify priorities, times required, and other necessary information.

(1) (U) External Support Procedures. This paragraph is the procedure to request crisis support from DLA or additional stockage of standard products.

(2) (U) Priority Determination. This paragraph should contain the guidance for determining support requirement priority.

| UNIT | PRIORITY | DURATION | REASON |
|------|----------|----------|--------|
|------|----------|----------|--------|

5. (U) Command and Control

a. (U) Priorities. Provide guidance for establishing command and GI&S support priorities.

b. (U) Command Relationships. Include primary and alternate locations of organic GI&S units and specify the C2 relationships among the JTF GI&S support structure and external GI&S units or agencies if not previously addressed. Refer to Annex B (Intelligence) and Annex J (Command Relationships) of the JTF OPORD.

c. (U) Communications and Information Systems. Reference Annex K (Command, Control, Communications, and Computer Systems) of the JTF OPORD. Identify communications information system requirements, priorities, and other pertinent information to support unit GI&S operations.

d. (U) Reports. Specify organizations and elements responsible for GI&S reports. Include the format for preparation and times, methods, and classification of submission. Add necessary

instructions for updating maps, nautical and aeronautical charts, and digital databases. This information can be added here or in Appendix Y of this Annex.

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**SAMPLE Appendix 7 to ANNEX B  
(GEOINT (Imagery) Input to Intelligence Annex)**

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APPENDIX 7 TO ANNEX B TO OPLAN ( ) GEOSPATIAL INTELLIGENCE (IMAGERY)

( ) References: List applicable Director of Central Intelligence (DCI), DIA, NGA, Service, and command regulations, directives, collateral or supporting plans, studies, manuals, and estimates.

1. ( ) General

a. ( ) Purpose. Provide general objectives and guidance necessary for accomplishing the mission.

b. ( ) Responsibilities. Provide statement of command responsibilities, applicability and scope, and chain of command for reporting. Outline specific responsibilities of all supporting organizations and agencies. Identify IMINT roles in an all-source fusion and production environment.

2. ( ) IMINT Organizations. Identify the IMINT organizations and approximate strengths of units required.

3. ( ) Collection Activities, Functions, and Plans. For each activity or IMINT discrete function applicable to the operation, identify the staff, element, or unit responsible and the type of collection plans and approving authority required.

4. ( ) CONOPS for Imagery Collection, Processing, and Production.

a. ( ) Refer to Appendix 1 (Priority Intelligence Requirements) and Appendix 4 (Targeting) to Annex B (Intelligence), Appendixes 1 and 9 to Annex C (Operations), and others, if applicable.

b. ( ) Identify targets and other collection requirements to be fulfilled by IMINT operations.

c. ( ) Identify both theater and national collection assets and supporting systems and how and when employed.

d. ( ) Identify allied or coalition foreign interface accesses and capabilities, as appropriate.

e. ( ) Identify tasking procedures for standing and ad hoc IMINT requirements. Establish procedures (as required) for development, maintenance, and implementation of contingency collection problem sets or collection requirements.

f. ( ) Identify unique logistic requirements or processes.

g. ( ) Describe processing, exploitation, production, and dissemination operations, as well as backup procedures. Include pertinent comments on conducting imagery operations while collocated with allied or coalition forces.

h. ( ) Summarize imagery communications requirements or reference paragraph in Annex K that states requirements.

i. ( ) Summarize imagery systems/automated data processing requirements or reference paragraph in Annex K that states the requirements.

#### 5. ( ) Reporting

a. ( ) Identify reporting and dissemination needs regarding product types, timeliness for IMINT applications, capacities, and transmission media.

b. ( ) Establish reporting dissemination procedures. Include pertinent comments on releasability and dissemination to allied or coalition forces.

#### 6. ( ) Coordination

a. ( ) Identify coordination requirements unique to IMINT operations such as requirements identification and tasking. Refer to activities listed in paragraph 3 above, if applicable.

b. ( ) Identify coordination requirements for support.

(1) ( ) From and to other US Government and allied or coalition agencies.

(2) ( ) For technical, communications, logistic, or security support.

(3) ( ) For mutual support to satisfy collection requirements. (See paragraph 3 above.)

c. ( ) Identify and/or cross-reference other imagery collection portions of the plan. For example, Annex M identifies geospatial information requirements needed to support all contemplated operations. This section should establish organizations, POCs, and procedures to ensure IMINT requirements are prioritized and tasked to support those planning and execution functions not directly related to intelligence activities.

7. ( ) Miscellaneous. Include other items not previously mentioned

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## APPENDIX E

### GEOSPATIAL INTELLIGENCE REQUIREMENTS PROCESS

1. Identify the combatant command's or JTF's GEOINT POCs. Notify subordinate forces of correct requisition procedures for predeployment topographic maps, hydrographic, aeronautical paper, and digital products.
2. Notify combatant command GEOINT cell of the GEOINT support POC in the subordinate joint force.
3. Identify subordinate joint staff GEOINT requirements to the combatant command GEOINT cell with respect to forces deploying and the operational area. Include GEOINT production quantities, personnel and equipment to operate a map depot or digital dissemination capabilities and staff support personnel.
4. Request the following from the combatant command GEOINT cell: the production schedule; status of products and digital data required and date of first shipment; status of host-nation support for GEOINT products, digital data and capabilities; and the status on disclosure and/or release of GEOINT to coalition forces.
5. Verify and/or submit OPORD to appendix 7 (Geospatial Intelligence), of annex B (Intelligence), and annex M, (Geospatial Information and Services) of OPORD to J-2.
6. Request that supporting forces provide a GEOINT distribution plan. Ensure that combatant command and joint force GEOINT cells are provided a copy of all distribution plans.
7. Send a message reminding forces about accuracies, datum, and coordinates of GEOINT products and digital data. (See Appendix A, "Joint Force J-2 Quick Reaction Checklist," in JP 2-01, *Joint and National Intelligence Support to Military Operations*.)
8. Coordinate shipment of deployment stock to the map depot. Obtain weight, cubic feet, number of pallets and ready-for-shipment date from DLA. Also obtain requirements for digital map hard drives and software. Forward unit line number to the combatant command GEOINT cell.
9. Identify and describe access to digital GEOINT dissemination sources.
10. Establish map depot inventory quantities to include reorder levels. Report results to the combatant command GEOINT cell via a Defense Messaging System message, electronic mail, or joint deployable intelligence support system.
11. Request that the combatant command GEOINT cell have NGA publish a special operation catalog.

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**APPENDIX F**  
**GEOSPATIAL INTELLIGENCE ROLES AND RESPONSIBILITIES**  
**AND SPECIFIC GUIDANCE**

**1. Supported Combatant Commands**

- a. Maintain, within their HQ, the staff capability to direct GEOINT cell activities.
- b. Develop appendix 7 (Geospatial Intelligence), of annex B (Intelligence), and annex M (Geospatial Information and Services), IAW planning guidance contained in Appendix D of this publication, “Geospatial Information and Services Sample Annex M.”
- c. Submit requirements for GEOINT products and services IAW guidance contained in reference CJCSM 3122.03B, *Joint Operation Planning and Execution System, Vol II: (Planning Formats)*.
- d. Task components with mission-specific GEOINT tasks consistent with assessed capabilities; e.g., intratheater distribution, lift planning, and requirements.
- e. Establish responsibilities, requirements, and procedures for the storage and maintenance of WRSs, crises or contingency stocks, and/or directed unit holdings and allowances of geospatial information products.
- f. Assess the need for and, as appropriate, request Service or NGA contingency response teams and/or NSTs to assist with GEOINT planning and operations.
- g. Assess the need for, and, as appropriate, request DLA contingency support teams to assist with GEOINT planning.
- h. Assess the capabilities of NSG to support operational needs. Include NSG in exercises to assess this capability. Assess NSG responsiveness to supported CCDR’s needs and respond via NSG customer support teams or customer surveys.
- i. Ensure intratheater connectivity exists to receive, store, and disseminate digital data.
- j. Assess GEOINT readiness through the Joint Staff Quarterly Readiness Review.

**2. Supporting Combatant Commands**

- a. Identify requirements for GEOINT products and services to supported CCDRs IAW guidance contained in CJCSM 3122.03B, *Joint Operation Planning and Execution System, Vol II: (Planning Formats)* and DOD 4160.21-M, *Defense Materiel Disposition Manual*.
- b. Ensure that requirements for GEOINT products and services are included in the supported CCDR’s appendix 7 (Geospatial Intelligence), to annex B (Intelligence), and annex M (Geospatial Information and Services).

c. Assess the need for and, as appropriate, request Services and/or NGA contingency response teams and/or customer support teams to assist with GEOINT planning and operations.

d. Assess the need for and, as appropriate, request DLA contingency support teams and/or customer support teams to assist with GEOINT planning.

e. Assess the capability of NGA to support operational needs IAW CJCSI 3900.01B, *Position Reference Procedures*. Include NGA in exercises to assess this capability. Assess NGA responsiveness to supporting combatant command needs and respond via NSTs and customer surveys.

f. Assess the capability of DLA to support operational needs. Include DLA in exercises to assess this capability. Assess DLA responsiveness to supporting combatant command needs and respond via DLA customer support teams and customer surveys.

### 3. Services Chiefs

a. Provide the supported CCDR with GEOINT planning factors for weapons, systems, and forces apportioned for planning. Factors include products and services, information content, format, and media.

b. Ensure forces train with the appropriate range of GEOINT products and services.

c. Ensure that new systems are designed to use DOD standard GEOINT products (including feature data and mission-specific data when available) and services where possible. Identify and submit requirements for new and unique GEOINT products and services IAW guidance in CJCSI 3141.01, *Responsibilities for the Management and Review of Contingency Plans*.

d. Ensure that logistic systems are capable of managing or requisitioning GEOINT products.

e. Assess the capability of NGA to support operational needs. Include NGA in exercises to assess this capability. Assess NGA responsiveness to Service needs and respond via NSTs and customer surveys.

f. Assess the capability of DLA to support operational needs. Include DLA in exercises to assess this capability. Assess DLA responsiveness to Service needs and respond via DLA contingency support teams and customer surveys.

g. Provide information on Service availability of digital NGA source GEOINT data and support requirements to meet tasked objectives.

#### 4. Component Commands

- a. Identify requirements for GEOINT products and services to supported CCDRs IAW guidance contained in CJCSM 3122.03B, *Joint Operation Planning and Execution System, Vol II: (Planning Formats)*.
- b. Ensure that requirements for GEOINT products and services are included in the supported CCDR's appendix 7 to annex B and annex M.
- c. Develop and submit plans for intratheater distribution and stockage using the available Service logistics and communication systems.
- d. Develop and submit storage and lift requirements for GEOINT products to be incorporated in the plan's TPFDD requirements.
- e. Assess NGA responsiveness to component needs and respond via the operational chain-of-command. Assist the NGA combatant command NSTs and respond to customer surveys.
- f. Assess DLA responsiveness to component needs and respond via the operational chain-of-command. Assist the DLA contingency support teams and respond to customer surveys.

#### 5. National Geospatial-Intelligence Agency

- a. Assist in development of GEOINT requirements to be included in appendix 8 of annex B and annex M for appropriate plans.
- b. Develop support plans for all designated plans.
- c. Coordinate planned production of DOD standard GEOINT products with DLA to ensure that CCDR and Service requirements are considered when stock levels are established.
- d. Train and maintain an internal crisis management team to respond to CCDR requirements.
- e. Equip and train a deployable crisis action team task-organized to augment the CCDR's staffs when requested.
- f. Equip and train a deployable contingency response team task-organized to augment the CCDR's staff when requested. This team will deploy either with the NIST or separately upon combatant command request.
- g. Produce, maintain, and participate in the distribution of maps, charts (nautical and aeronautical), target graphics, terrain analysis databases, digital products, and related materials to support military operations and safety of navigation.
- h. Lead in developing interoperable GEOINT software and standardized products within DOD.

i. Disseminate or ensure the dissemination of GEOINT by the most efficient and expeditious means consistent with DOD security requirements.

j. Continue to explore the most effective means to enhance exploitation of “just in time” delivery of NGA digital information to customers to include software manipulation and remote replication capabilities.

k. Assess agency responsiveness and readiness to support operational forces IAW CJCSI 3900.01B, *Position Reference Procedures*.

l. Participate in appropriate DOD requirements and acquisition forums to ensure digital GEOINT dissemination requirements are properly identified so that DOD communications networks and infrastructures are sufficient for customer needs.

m. Develop procedures and processes to collect, archive, and disseminate user-generated geospatial data.

### **6. Defense Logistics Agency**

a. Serve as the DOD integrated material manager for standard GEOINT products.

b. Coordinate reprint requirements of standard GEOINT products with NGA to ensure CCDR and Service requirements can be filled in a timely manner.

c. Equip and maintain a deployable DLA contingency support team organized to support the CCDR’s staff, if requested. The team’s capability will include the ability to support the GEOINT mission forward IAW DLA-CCDR performance based agreement and other regional support agreements.

d. Acquire, maintain inventories of, and participate in the distribution of standard maps, charts (nautical and aeronautical), air target materials, terrain analysis databases, digital products, and related materials to support military operations and safety of navigation in compliance with DOD 4160.21-M, *Defense Materiel Disposition Manual*.

e. DLA will maintain sufficient stocks of standard GI&S products to support pre-positioned war reserve requirements and sustained crisis operation requirements IAW theater OPLAN/CONPLAN. It is incumbent for the combatant command GI&S officers to coordinate their standard GI&S requirements to ensure that DLA can have the product on the shelf. This is especially important when plans call for storing and distributing maps at one or more of DDMA’s nine retail MSOs since they have limited storage capacity and personnel.

## APPENDIX G

### GEOSPATIAL INTELLIGENCE PRODUCTS AND SERVICES

This appendix contains a description of standard products and organizes them into categories (see Figure G-5). At the end of this appendix, uniform resource locators are listed that contain access to GEOINT products and services. Some acronyms are provided for clarity. The outline below summarizes primary products produced by NGA, which have been organized into seven categories: aeronautical; nautical/hydrographic; topographical/terrestrial; precise positioning and targeting; geodesy and geophysics; geographic names; and GEOINT analysis.

#### 1. Aeronautical Products

a. **Aim Point Graphic.** This database contains radar, infrared, and visually significant navigation and training points (see Figure G-1). It is used daily by air wings to do mission

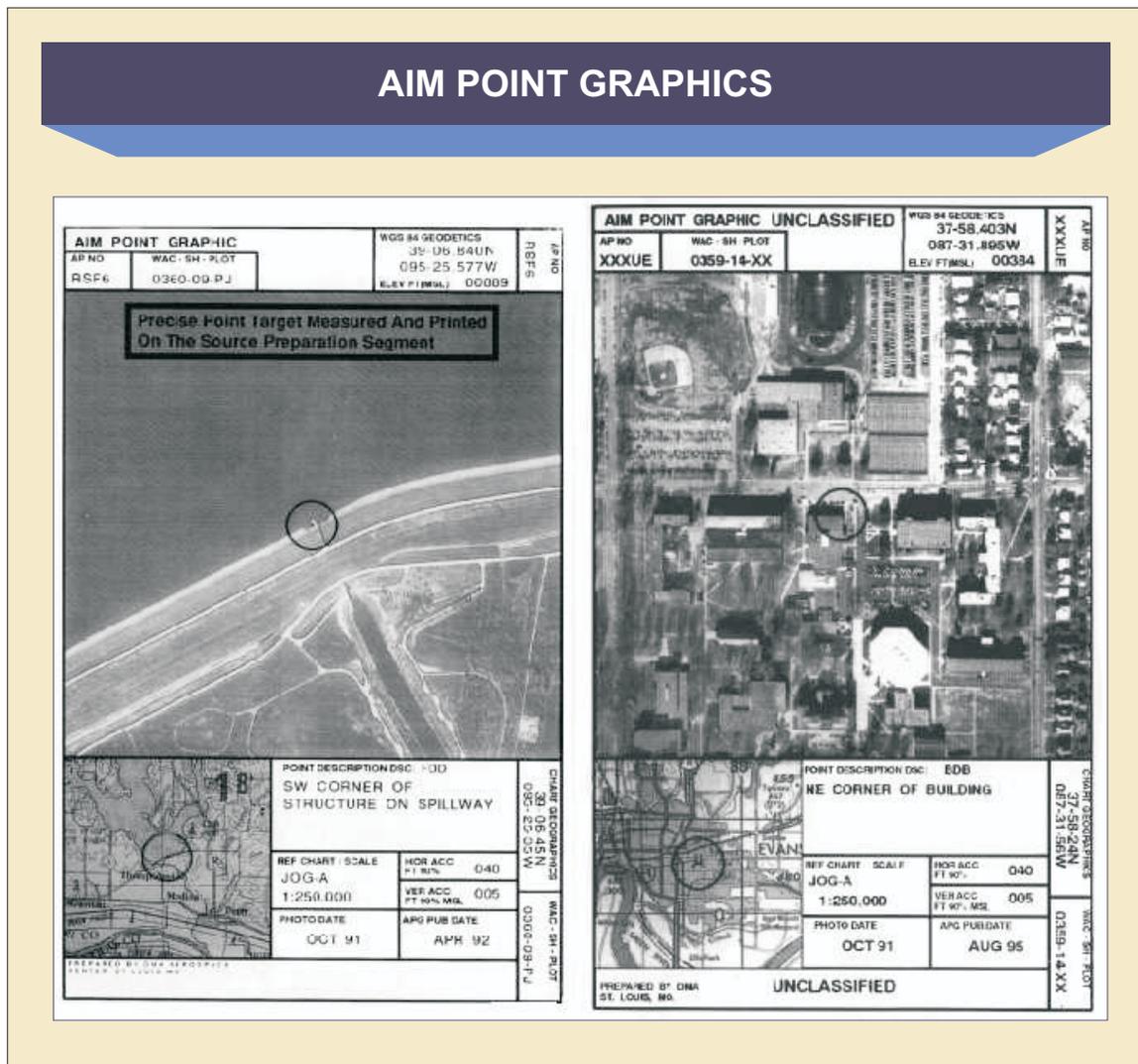


Figure G-1. Aim Point Graphics

planning and operations. The Air Intelligence Agency is a co-producer of aim point data and has the responsibility for all photographic reproductions after initial distribution.

b. **Automated Air Facilities Information File.** A database on the physical characteristics of airfields, both foreign and domestic.

c. **Aeronautical Charts and Graphics.** Global, operational, tactical, and joint operations graphics.

d. **Airfield Products.** Include airfield line drawing, force protection graphics, special aeronautical information request graphic, and force protection graphic slides and airfield reports.

e. **Digital Aeronautical Flight Information File.** Consists of airports, heliports, navigation aids, waypoints, air traffic system routes, airspace boundaries, special use airspace, military training routes, parachute jump areas and preferred routes. Used for flight planning and the programming of automated aircraft flight management systems.

f. **Digital Vertical Obstruction File.** A file consisting of man-made point features on the Earth's surface which could pose a potential hazard to flight.

g. **Electronic Chart Updating Manual.** Used for manual amendment of selected aeronautical charts with updated or corrected information pertaining to safety of air navigation.

h. **Evasion Chart (EVC).** Is designed to assist isolated personnel to evade capture and survive in hostile territory and to provide evaders with a means of navigating to a selected area for evasion or other recovery point. The EVC program supports operational force requirements with a series of charts that cover geographic areas specifically identified by combatant commands. The EVC is a derivative of a standard product, the joint operations graphic (JOG), and is made up of approximately eight 1:250,000 scale JOG charts, usually four on each side.

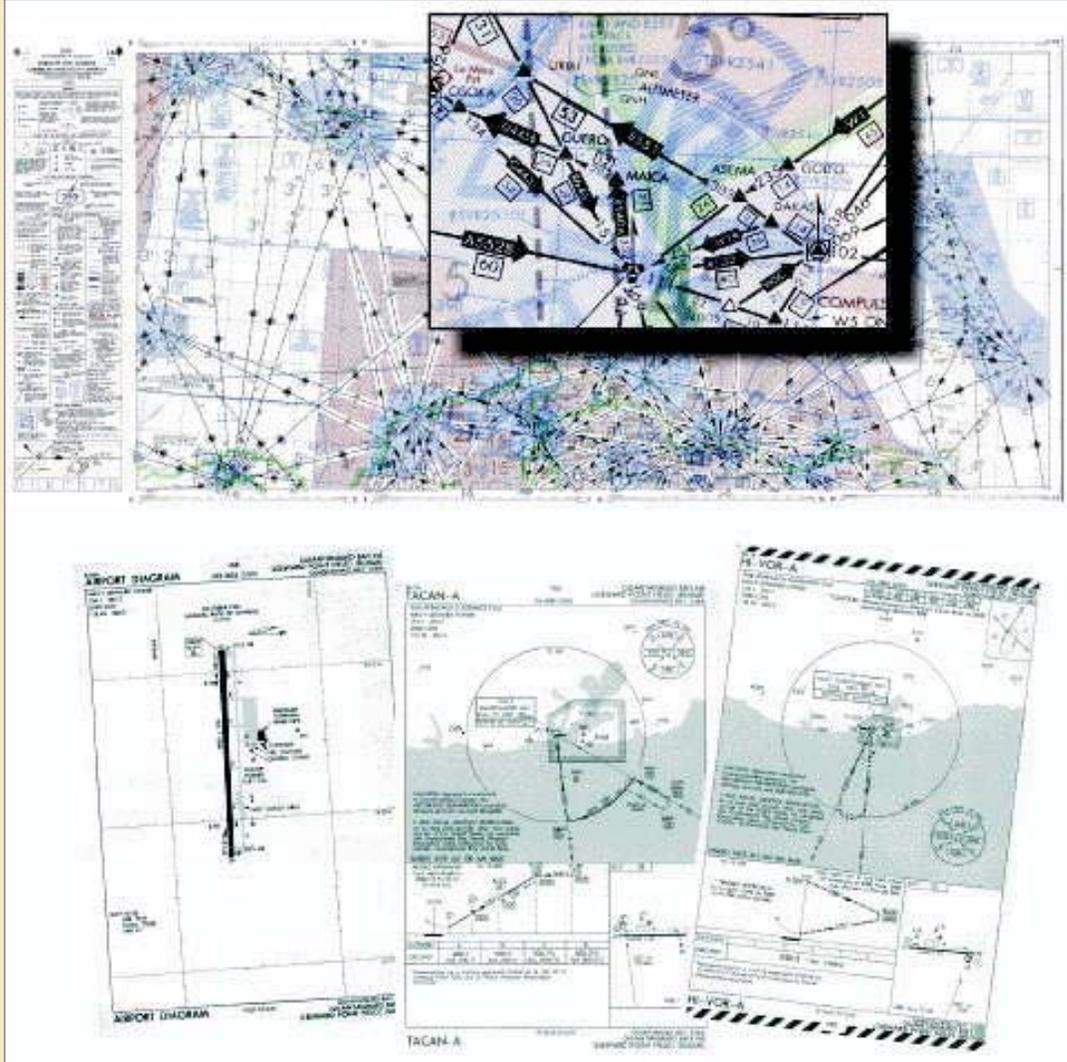
i. **Notice to Airmen.** Contains information concerning the establishment, condition, or change in any aeronautical facility, service, procedures, or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

j. **Flight Information Publication.** DOD planning documents, en route supplements, and terminal instrument procedures (see Figure G-2).

## 2. Nautical/Hydrographic

a. **Digital Nautical Charts.** The DNC will provide worldwide databases of nautical information in vector product format. These databases will be contained on 29 compact disks read-only memory (CD-ROMs) with each CD-ROM covering a specific geographic area of the world. The data content and coverage are intended to closely replicate NGA's harbor, approach, coastal, and general chart series. The DNCs consist of data partitioned into harbor, approach, coastal, and general libraries based upon the scale of the source chart.

## FLIGHT INFORMATION PUBLICATION CHART



**Figure G-2. Flight Information Publication Chart**

b. **Digital Bathymetric Database.** A gridded bathymetric database developed by the Naval Oceanographic Office. Depths are given in not tidally corrected meters for each five minutes of latitude and longitude worldwide. A classified version is also available covering the northern hemisphere at a higher data density.

c. **Fleet Guides.** Provide port information unique to the Navy that is not available elsewhere. Port commands contribute to the overall effectiveness by providing information related to the facilities and services available.



*Digital nautical charts provide global nautical information.*

d. **Hydrographic Charts.** Coastal; approach; and harbor charts.

e. **Maritime Safety Information.** Additional information and products like bathymetric navigation planning charts, nautical chart symbols and abbreviations, and publications for mariners can be found on the World Wide Web at <http://pollux.nss.nga.mil/>.

f. **Notice to Mariners.** Contains corrections to unclassified hardcopy hydrographic products produced by NGA, the National Ocean Service, and the USCG.

g. **Port Graphics.** The primary assessment tool for USTRANSCOM to determine required antiterrorism/force protection measures.

h. **Sailing Directions.** Provide the informational arm to the DNC and/or standard nautical chart. Each publication gives the mariner a unique perspective by bringing to life the information graphically represented by the chart.

### 3. Topographical/Terrestrial

a. **Compressed ARC [Equal Arc Second Raster Chart/Map] Digitized Raster Graphic.** Used in any application requiring rapid display of map image or manipulation of the image of a map in raster form.

b. **Controlled Image Base (CIB).** An unclassified seamless dataset of orthophotos, made from rectified grayscale aerial images. CIB supports various weapons, theater battle management, mission

planning, digital moving map, terrain analysis, simulation and intelligence systems. CIB data is produced from digital source images and is compressed and reformatted to conform to the raster product format standard. CIB files are physically formatted within a National Imagery Transmission Format message. CIB may be derived from a grayscale image, from one band of a multispectral product, or from an arithmetic combination of several multispectral bands. Applications for CIB include rapid overview of areas of operations, map substitutes for emergencies and crises, metric foundation for anchoring other data in communications systems or image exploitation, positionally-correct images for draping in terrain visualization, and image backgrounds for mission planning and rehearsal.

c. **DTED.** A uniform matrix of terrain elevation values which provides basic quantitative data for all military systems that require terrain elevation, slope, and/or surface roughness information.

d. **Mission-Specific Data Set.** Include planning and reference maps, precise orthorectified image datasets, gridded products, image city maps/graphics and photomaps, digital feature data, NGA point targets, and hard deeply buried targets.

e. **Tactical Terrain Data (TTD).** Provides terrain information that is critical to planning and executing joint operations including close air support (CAS) missions, amphibious operations and land combat operations. TTD supports such diverse tasks as terrain visualization, mobility, countermobility planning, site and route selection, reconnaissance planning, communications planning, navigation, and munitions guidance.

f. **Topographic Line Map.** Portrays the greatest detail of topographic and cultural information in a standard view (see Figure G-3). The map is a true representation of terrain detail with relief shown by contours and spot elevations.

g. **Shuttle Radar Topography Mission Elevation Data.** Describe the radar reflective surface of landmasses down to 30-meter post spacing. DTED is useful in intervisibility computations and three-dimensional (3-D) fly-throughs.

h. **VMap.** Designed to provide vector-based geospatial data at various resolutions, generally from cartographic sources. Data is separated into ten thematic layers consistent throughout the VMap program.

i. **World Mean Elevation Data.** A database of minimum, maximum, and mean terrain elevations. The preferred source is DTED. In areas with no DTED coverage, the best medium or small-scale cartographic source is used. Data collected for each 12 by 18 nautical mile cell include minimum and maximum elevation value, arithmetic mean elevation, standard deviation, source and absolute vertical accuracy.

j. **World Vector Shoreline Plus.** A digital data file containing the shorelines, international boundaries and country names of the world. These geographic features are required for many of the digital databases being used to support geographic information systems and weapons systems.

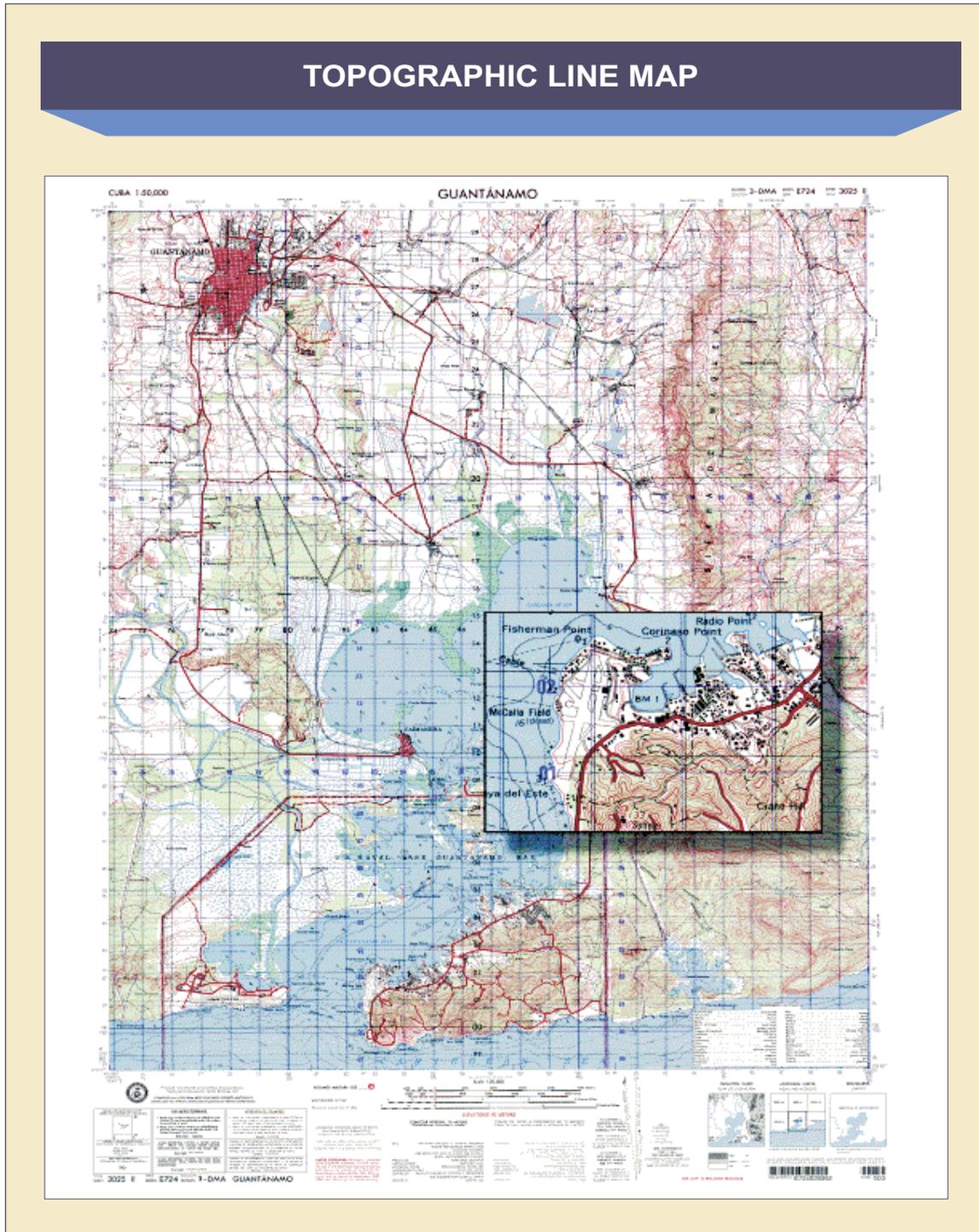


Figure G-3. Topographic Line Map

k. **Image City Maps (ICMs).** Scanned images in Joint Photographic Experts Group and Portable Document Format of paper ICM products at various scales from 1:5,000 to 1:35,000.

1. **City Graphic.** A large-scale map of populated places and environs portraying streets and through-route information. It contains a numbered guide to important buildings and street names in the margin (see Figure G-4).

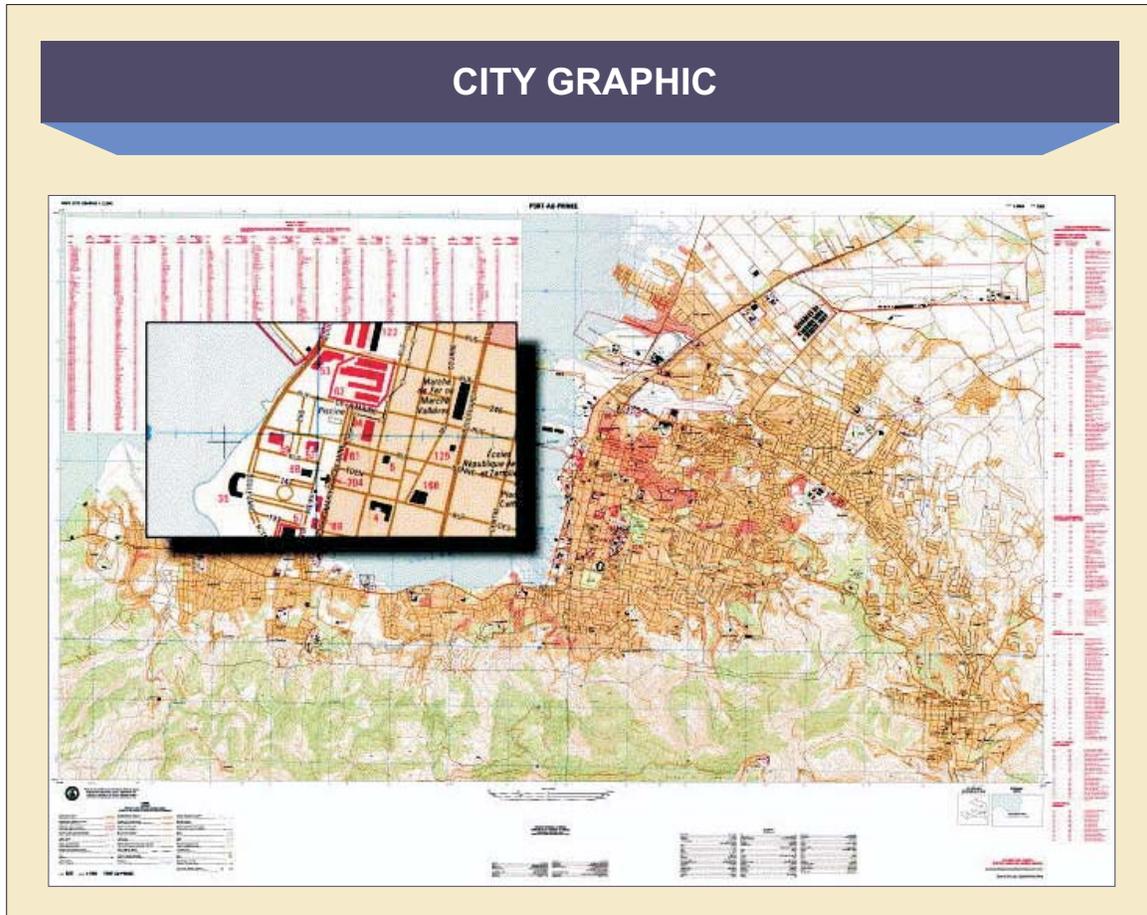


Figure G-4. City Graphic

m. **GCPs.** A collection of products providing coverage over specific areas designated as evacuation sites by both the State Department and/or the unified commands.

#### 4. Precise Positioning and Targeting

a. **Target Graphic Products.** Facility products, by country.

b. **Specialized Map Charts and Datasets.** Scene visualization, nominally attributed topographic example, country databases, mensurated port graphics, facility reference point graphics, and others.

c. **DPPDB.** Contains a series of stereo models covering a specified geographic area and an accompanying reference graphic with associated support data.

## 5. Geodesy

a. **Coordinate System Analysis.** Provides the foundation data and parameters to transition NGA products from local datums to World Geodetic System 1984 (WGS-84), and the geodetic analysis and information to DOD weapons/navigation systems.

b. **Datum Transformation Parameters Metadata.** A listing of transformation parameters, solved through the systematic determination of the discrepancies between a local non-earth centered datum and the Earth centered WGS-84 datum.

c. **Earth Orientation Prediction Parameters.** Weekly predictions of the Earth's polar position using observations from the US Naval Observatory. Predictions are published weekly for each of the seven days beginning with Sunday of each week.

d. **Geodetic Surveys.** NGA plans and executes field surveys worldwide in support of US national interests. State-of-the-art conventional, satellite, magnetic, and gravity surveying techniques are used to collect, process, and analyze data.

e. **Global Positioning System (GPS) Precise Ephemeris.** Metadata produced for GPS satellites.

f. **Landcover.** Geographic land cover data provides a medium-resolution land cover data set for the major landmasses of the world between 81 degrees North and 81 degrees South latitude.

g. **Mean Elevation Database Metadata.** Digital database containing mean elevations in meters. The data structure is based on a geographical coordinate reference system.

## 6. Geographic Names

a. **Federal Information Processing Standards Publication 10-4.** Provides a list of the basic geopolitical entities in the world, together with the principal administrative divisions to comprise each entity.

b. **Foreign Names Information Bulletin.** Provides up-to-date information regarding the place-name decisions of the Foreign Names Committee of the US Board on Geographic Names. The bulletin is issued electronically on a quarterly basis.

c. **US Board on Geographic Names.** The interagency board established by public law to standardize geographic name spellings for use in government publications.

d. **Geographic Net Names Server.** Provides access to NGA's and the US Board on Geographic Names' database of foreign geographic feature names.

## 7. Geospatial Intelligence Analysis

a. **Baseline Reports.** Intelligence products consisting of text and graphics and produced by image analysts to establish a snapshot of historic events of the region/facility of interest. These reports are then compared in the future by analysts to determine the progress of specific events or situations such as the construction of nuclear power plants or the effects of local strikes by the work force on an industrial facility.

b. **Cables.** Highlight and intelligence problem cables. Telegrams used to disseminate any high-interest or time-sensitive events/activities observed on imagery to the rest of the IC. The information contained in these cables is generally processed by image analyst within moments of the image being downloaded.

c. **Facility Products.** Collected intelligence related materials such as images, reference images, reports, text, maps, and sketches on a specific subject or facility.

d. **First Looks.** Annotated image graphics and text that present events/activity observed on imagery by the NGA current operations division-area. These products represent the first reporting of an observed activity and precede the NGA imagery intelligence brief (NIIB).

e. **Imagery Derived Products (IDPs).** The IDP program is managed by NGA on behalf of the DCI. The program is designed to manage and support the generation of IDPs for a wide range of user requirements.

f. **Intelligence Reports.** Cover a wide range of formats including intelligence summaries, intelligence information reports, research papers, reference aids, intelligence assessments, chronologies, blind memoranda, situation reports, tactical action reports, handbooks, sanctions monitoring reports, imagery maps, tabular material and graphics presentations.

g. **NIIB.** A set of annotated graphics of a current event with some attached explanatory text.

h. **NGA Morning Intelligence Summaries.** An executive style update intended for policymakers and senior IC officials. It provides a synopsis of significant imagery intelligence produced over the last 24 hours and highlights collection initiatives and relevant negative reporting on issues of high current interest.

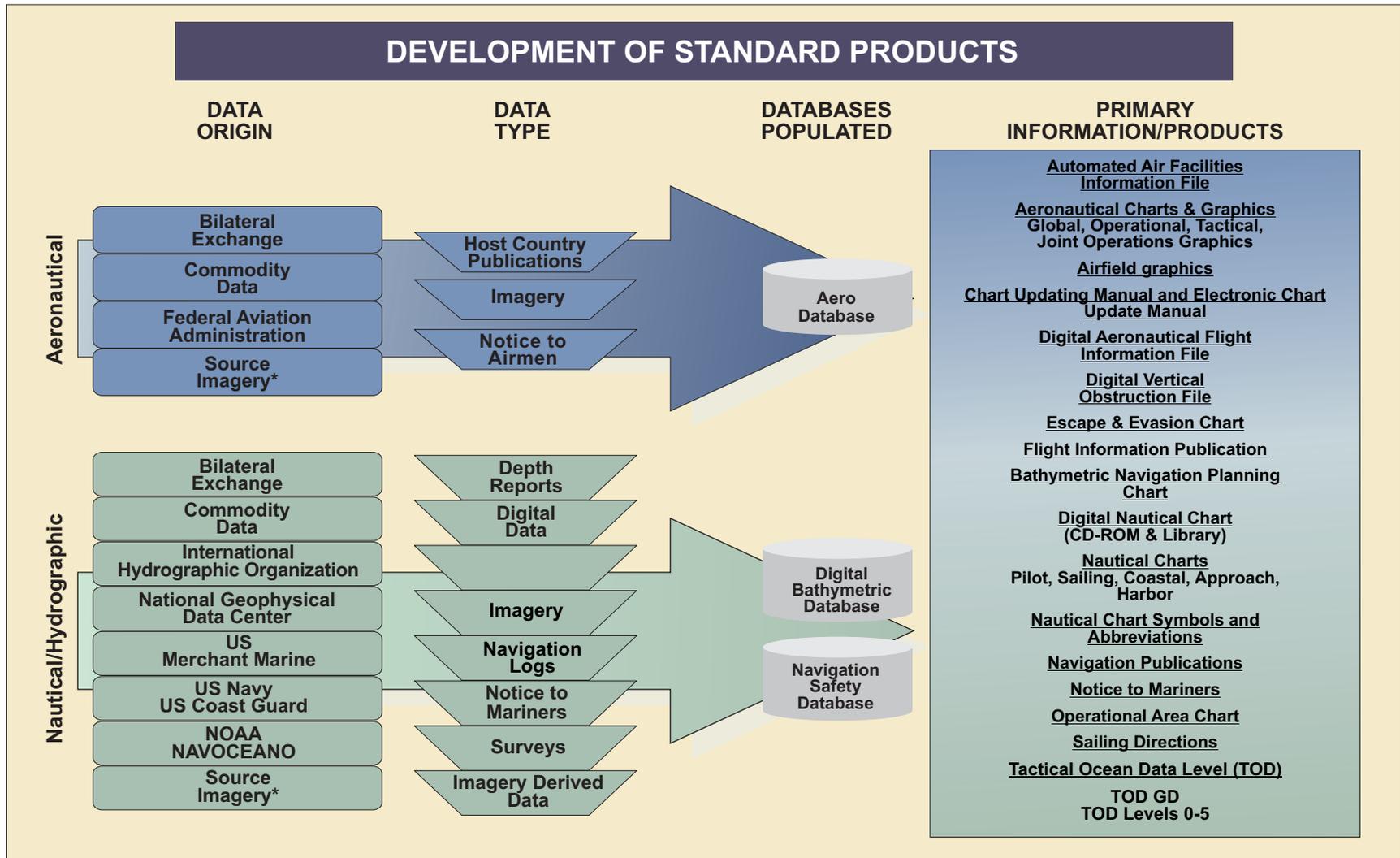


Figure G-5. Development of Standard Products

## DEVELOPMENT OF STANDARD PRODUCTS (cont'd)

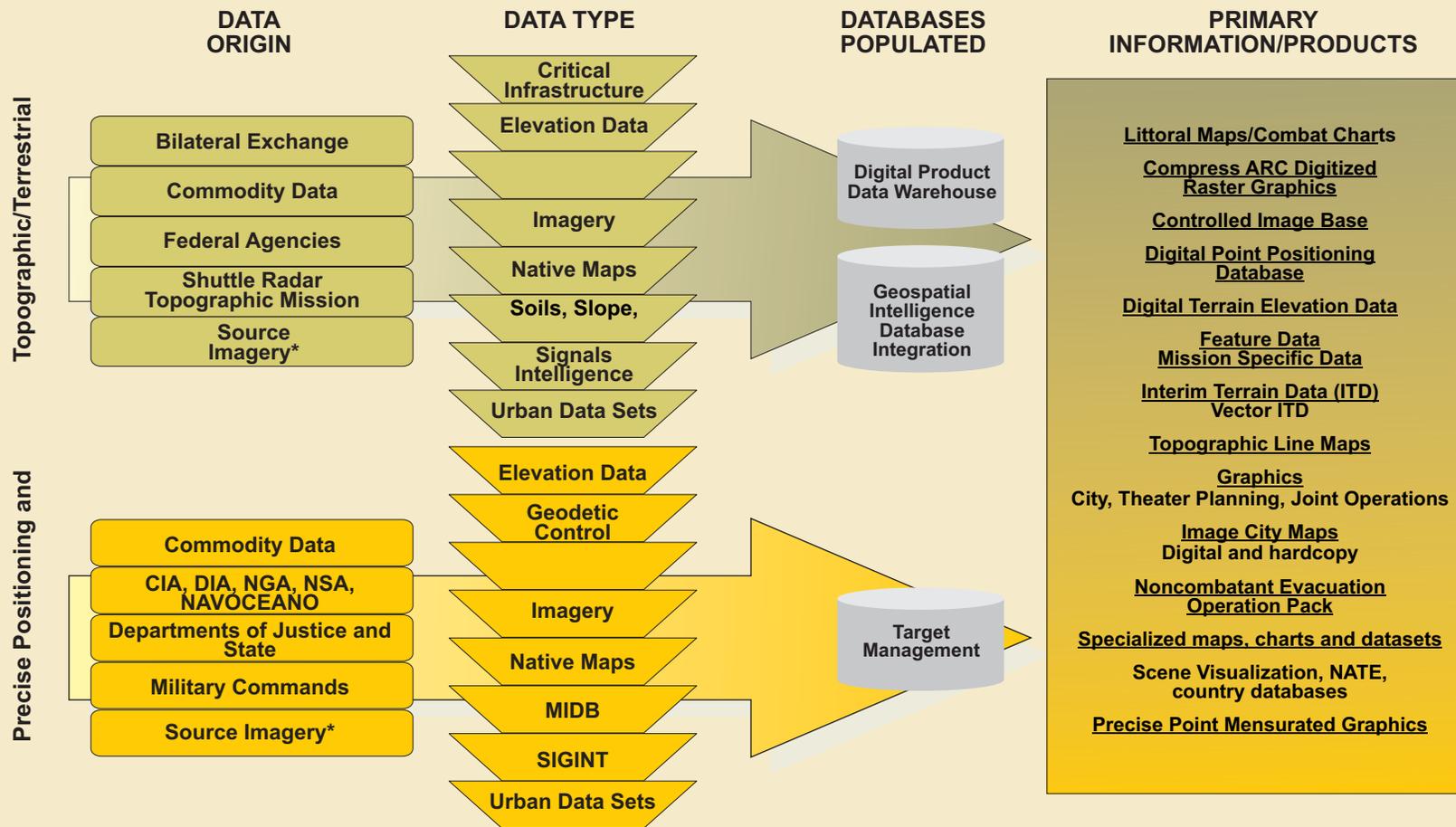


Figure G-5. Development of Standard Products (cont'd)

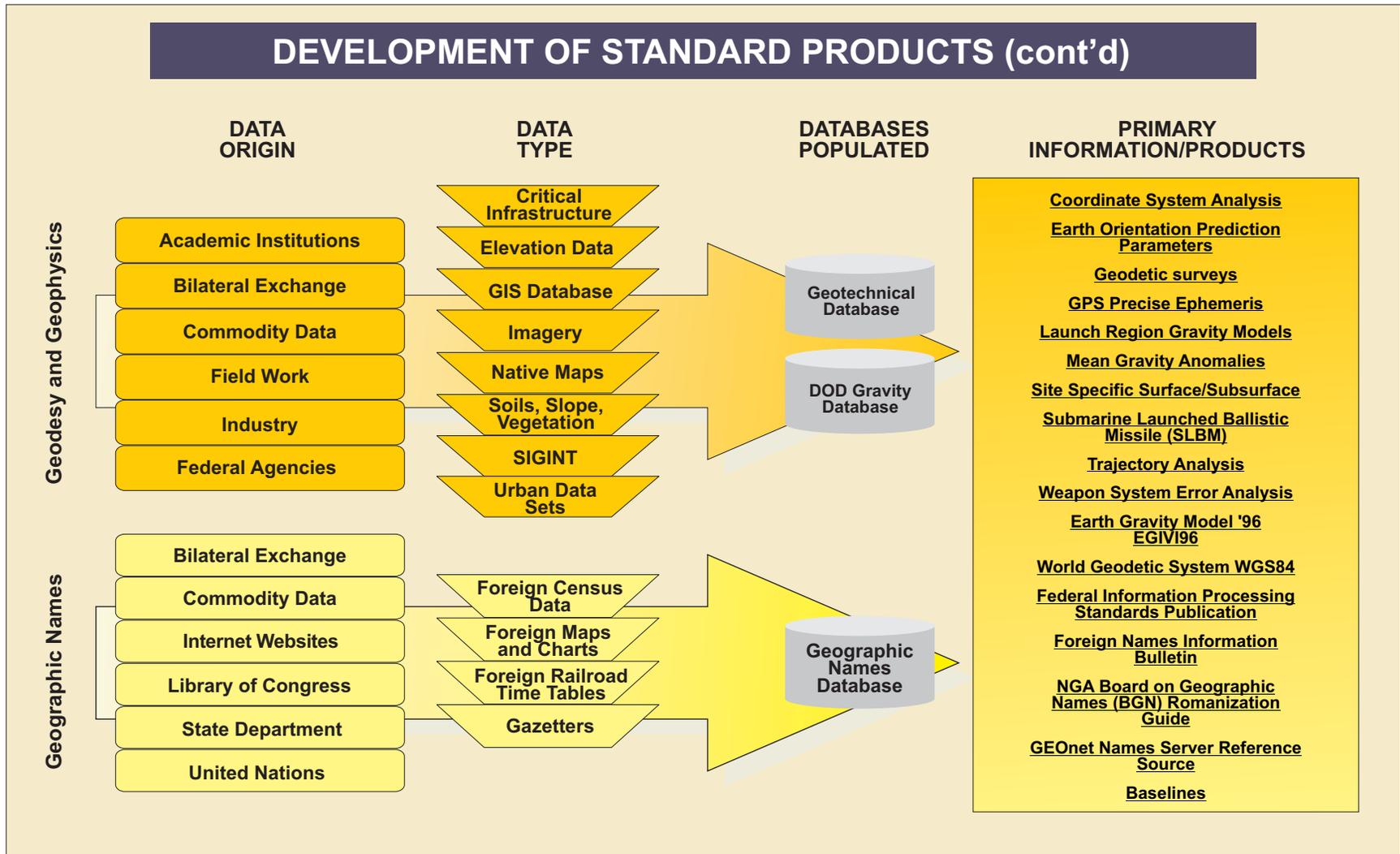
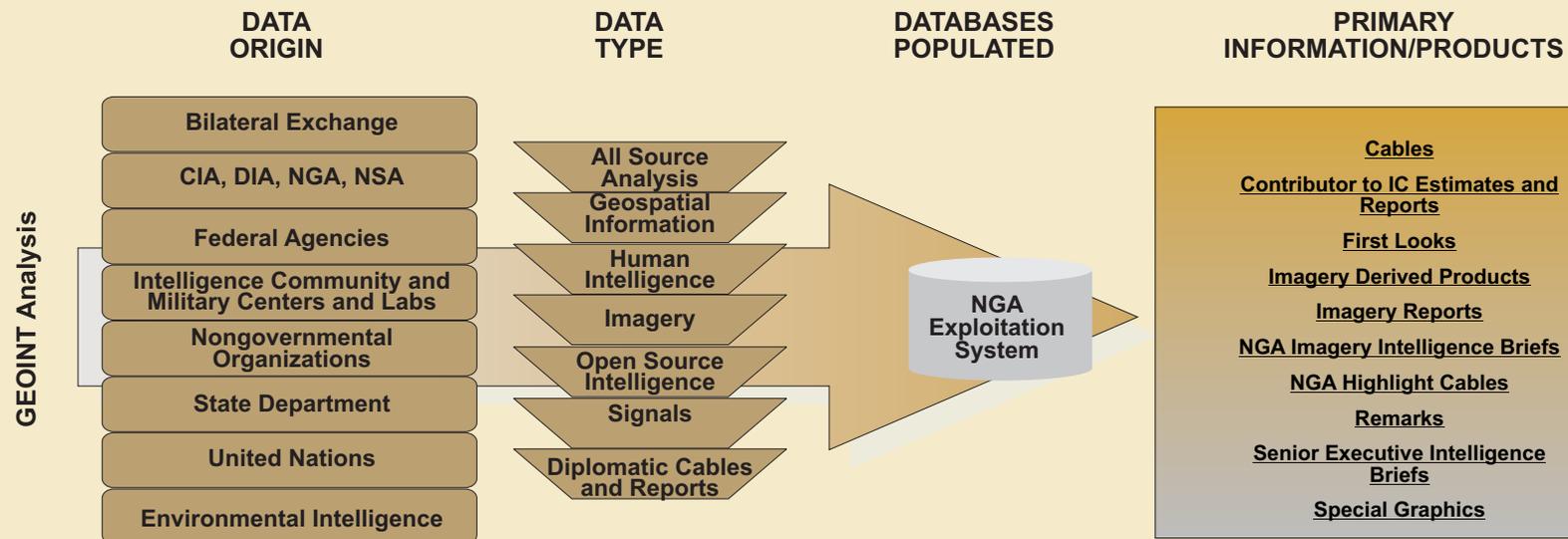


Figure G-5. Development of Standard Products (cont'd)

## DEVELOPMENT OF STANDARD PRODUCTS (cont'd)



### LEGEND

|           |  |        |   |
|-----------|--|--------|---|
| CIA       | Central Intelligence Agency              | NGA    | National Geospatial-Intelligence Agency         |
| DIA       | Defense Intelligence Agency              | NOAA   | National Oceanic and Atmospheric Administration |
| GIS       | Geospatial Information and Services      | NSA    | National Security Agency                        |
| MIDB      | Modernized Integrated Database           | SIGINT | Signals Intelligence                            |
| NATE      | Nominally Attributed Topographic Example |        |   |
| NAVOCEANO | Naval Oceanographic Office               |        |   |

\*Imagery is acquired from various sources (National, Commercial, Airborne) and from various repositories (CIL, NIL, MCGIL, NWIL, IPL, WARP, CSIL, NACDEF, EDS). The Front-end Processing Environment (FPE) prepares much of the imagery for data extraction and performs accuracy assessments.

Figure G-5. Development of Standard Products (cont'd)

## 8. Computer Uniform Resource Locators

Detailed information and descriptions on products and services can be found at the following uniform resource locators unless otherwise listed:

### a. Army/National Ground Intelligence Center (NGIC) Products

(1) Description: NGIC spectral mission to include but not limited to Army spectral MASINT capabilities: target detection, identification, and tracking; counter camouflage, concealment, and deception; detection and characterization of chemical weapons production facilities; military surveillance; terrain categorization. Link: <http://www.ngic.ic.gov/functionpgs/masint/spectral-wave/index.php>

(2) US Army Topographic Engineering Center link: <http://www.tec.ic.gov>

b. **Marine Corps Intelligence Activity.** Classified <http://www.mcia.usmc.smil.mil>

### c. Navy Products

(1) Unclassified: Naval Oceanographic Office (NAVOCEANO). NIPRNET home page. <http://www.navo.navy.mil>

(2) Classified: NAVOCEANO. SIPRNET home page contains links to products. <http://www.navo.navy.smil.mil>

### (3) JWICS

(a) Office of Naval Intelligence Maritime Intelligence Portal. [http://144.238.238.20/servlet/page?\\_pageid=80,86&\\_dad=portal30&\\_schema=PORTAL30](http://144.238.238.20/servlet/page?_pageid=80,86&_dad=portal30&_schema=PORTAL30)

(b) Office of Naval Intelligence Imagery Operations Department. <http://northstar.nmic.ic.gov/onihome/intelloperations/imageryoperations/index.htm>

(c) NAVOCEANO JWICS Home Page. <http://www.navo.ic.gov>

(d) NAVOCEANO Subject Matter Experts and Command Representatives. [http://www.navo.ic.gov/products/CalltheExperts\\_table.htm](http://www.navo.ic.gov/products/CalltheExperts_table.htm)

### d. Air Force/National Air and Space Intelligence Center (NASIC) Products

(1) **NASIC Imagery Products.** This site provides such products as: scene visualization files, imagery exploitation briefs, and 3-D geometry computer aided design files <http://www.naic.ic.gov/imagery/index.shtml>

(2) **NASIC MASINT Exploitation Overview/Products.** <http://www.naic.ic.gov/data/dx-handbook/masint.html>

(3) **480IW Geospatial Products.** This site provides such products as: Air Force CIB, drop zone graphics, and range imagery. <http://intelink.480iw.langleley.af.smil.mil>

**e. NGA Products**

(1) Maritime Safety & Navigation. Unclassified: <http://pollux.nss.nga.mil>

(2) Open Source Information System. <http://www.osis.nga.mil/products.html>

(3) NGA Homepage contains links/menus for GEOINT products & services. Classified: <http://www.nga.smil.mil/products.html>

(4) JWICS

(a) List of all NGA products with a description of each. <http://www.stl.nga.ic.gov/products/productdesc/listall.cfm>

(b) Alphabetical list of GEOINT services and products, with links. <http://www.nga.ic.gov>

**f. USNORTHCOM Products - JWICS**

(1) North American Aerospace Defense Command USNORTHCOM GEOINT Products. This is the USNORTHCOM home page, which provides information on homeland security and disaster relief. <http://www.northcom.ic.gov/DP04/geoint.html>

(2) This site provides information on a variety of links that contain GEOINT information and products related to North America. <http://www.northcom.ic.gov/geolinks.html>

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## APPENDIX H

### GEOSPATIAL REFERENCE SYSTEMS

*“An interesting incident occurred at Leyte, the existing maps of which were extremely inaccurate... To further confuse the situation, different units were issued maps with varying grid coordinates, which made giving locations difficult if not impossible by this method.”*

*Front Line Intelligence, by LTC Stedman Chandler  
and COL Robert W. Robb, 1946*

The first modern military use of grid coordinates to describe locations was by the French Army in World War I. The advent and convergence of telecommunications, aerial photography, and precision weapons resulted in the need for improved command and control by plane coordinates. The use of plane coordinates expanded after WWI. By WWII, most military ground forces had adopted similar, but different grid systems. In WWII multiple coordinate systems resulted in operational confusion and friction. To remedy this situation, the Universal Transverse Mercator coordinate system and complementary Military Grid Reference System (MGRS) were developed immediately after WWII and implemented in 1949 by free world forces. The recent advent of computers in mapping has again lead to use of multiple formats. During Operation IRAQI FREEDOM in 2003, the Combined Force Land Component Commander was compelled to issue a message reiterating that ground forces would be serviced by a single format, MGRS, to reduce operational friction and confusion.

#### 1. Position Reference Procedures

a. In unilateral operations, the US military force of the commander will use the WGS-84 geodetic latitude, longitude, and height (above ellipsoid), unless the commander determines that the use of other position reference systems (horizontal and/or vertical datum) is mission critical. Universal use of the WGS-84 position reference system (datum) will eliminate confusion regarding which system is being used in reporting positions.

b. In all joint operations, users will reference coordinates (horizontal and vertical) to WGS-84. Due to WGS-84's global 3-D datum characteristics, and because several vertical models are defined within WGS-84, users will report the vertical model referenced (e.g., Earth Gravity Model (EGM) 96, EGM 84), whenever a deviation of the policy stated becomes necessary. If some preexisting circumstance precludes using the WGS-84 datum or any of its components (horizontal, vertical, or both), CCDRs will coordinate on the position reference system(s) (horizontal and/or vertical datum) and procedures to be used.

c. Ground forces will use and be serviced with the MGRS and mean sea level (MSL) supported in the WGS-84 position reference system (datum). Ground forces will report ellipsoid height, when available, in lieu of MSL to support precision targeting and precise location of geographic features or military units.

d. For any operation, several local/regional horizontal and vertical datums may exist throughout the AOI and, under special circumstances, may be used by US military forces in lieu of WGS-84. In coordination with NGA, commanders will determine the appropriate local and/or regional horizontal and/or vertical reference system (datum) for use. Furthermore, due to the existence of several vertical datums worldwide from which to derive heights, with each height modeling a different surface (ellipsoid, geoid, and topographic), extreme care must be exercised when reporting the vertical coordinate of a 3-D position. As a result, users will report the height source and vertical datum IAW the procedures contained in enclosure (1) to CJCSI 3900.01B, *Position Reference Procedures*.

e. 2-D point positional information shall be represented as either geographic coordinates or grid coordinates. When reporting 2-D positional information using geographic coordinates, use the sexagesimal system, expressed or represented in degrees, minutes, and decimal minutes (DDMM.mmmm). When reporting 2-D point positional information using grid coordinates, and unless otherwise directed by the respective CCDR, use the universal transverse mercator or universal polar stereographic grid system, expressed in the grid reference alphanumeric position reporting system, MGRS.

f. Express the vertical component as either a positive (+), to indicate that the position is above the vertical datum, or a negative (-), to indicate that the position is below the vertical datum, and identify the unit of measure.

g. All graphical 2-D and 3-D positional data software shall simultaneously display geographic and MGRS coordinates IAW the above except where miniaturization of system displays renders this impractical.

## 2. Area Reference Procedures

a. In multinational and joint operations, CCDRs should direct the use of the global area reference system (GARS) unless the commander determines that the use of another area reference system (e.g., locally developed area reference systems such as the Korean common grid reference system) is mission critical. Universal use of the GARS area reference system will eliminate confusion regarding which system is being used in reporting areas.

b. The GARS reference system is primarily an operational-level administrative measure used to coordinate geographic areas rapidly for operational environment deconfliction and synchronization of operations. It provides a common language between the Services and components. GARS is not a replacement for position-reference procedures or systems described above. It is not used to describe exact geographic locations or to express precise positions for guided weapon employment, or to describe areas smaller than 5 minutes by 5 minutes.

c. GARS is a reference system, not a fire support coordination measure (FSCM) or airspace coordinating measure (ACM). It provides the 2-D construction from which control and coordination measures can be constructed. Such control measures include FSCMs, ACMs, joint special operations areas, no-fly areas, and maritime control measures to name several. The

area reference system can be used for a variety of purposes to include identification of littoral maritime warfare areas for antisubmarine warfare and antisurface warfare forces. The area reference system can be a tool for rapid deconfliction within the operational environment.

d. The GARS system uses three numbers followed by two letters to describe a unique 30 minute by 30 minute area. A graphical depiction of the proposed reference system is in Figure H-1. The origin point for the system is 90 degrees south (the southpole) and 180 degrees east/west. The areas described by GARS are coincident with even WGS-84 degree and minute lines. The areas are read right (west to east, 1-720) then up (south to north, AA-QZ). The 30 minute by 30 minute areas are subdivided by quadrant into 15 minute by 15 minute areas, then further subdivided by a keypad division into 5 minute by 5 minute areas (see Figure H-2).

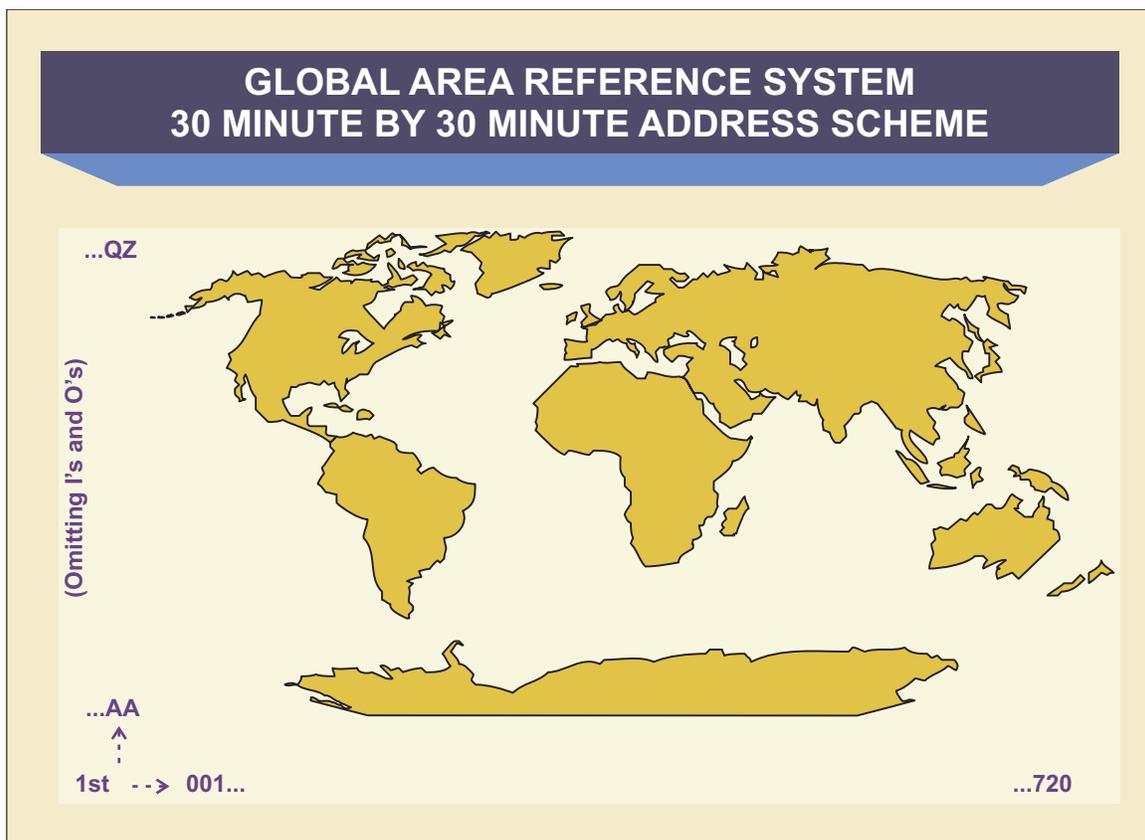
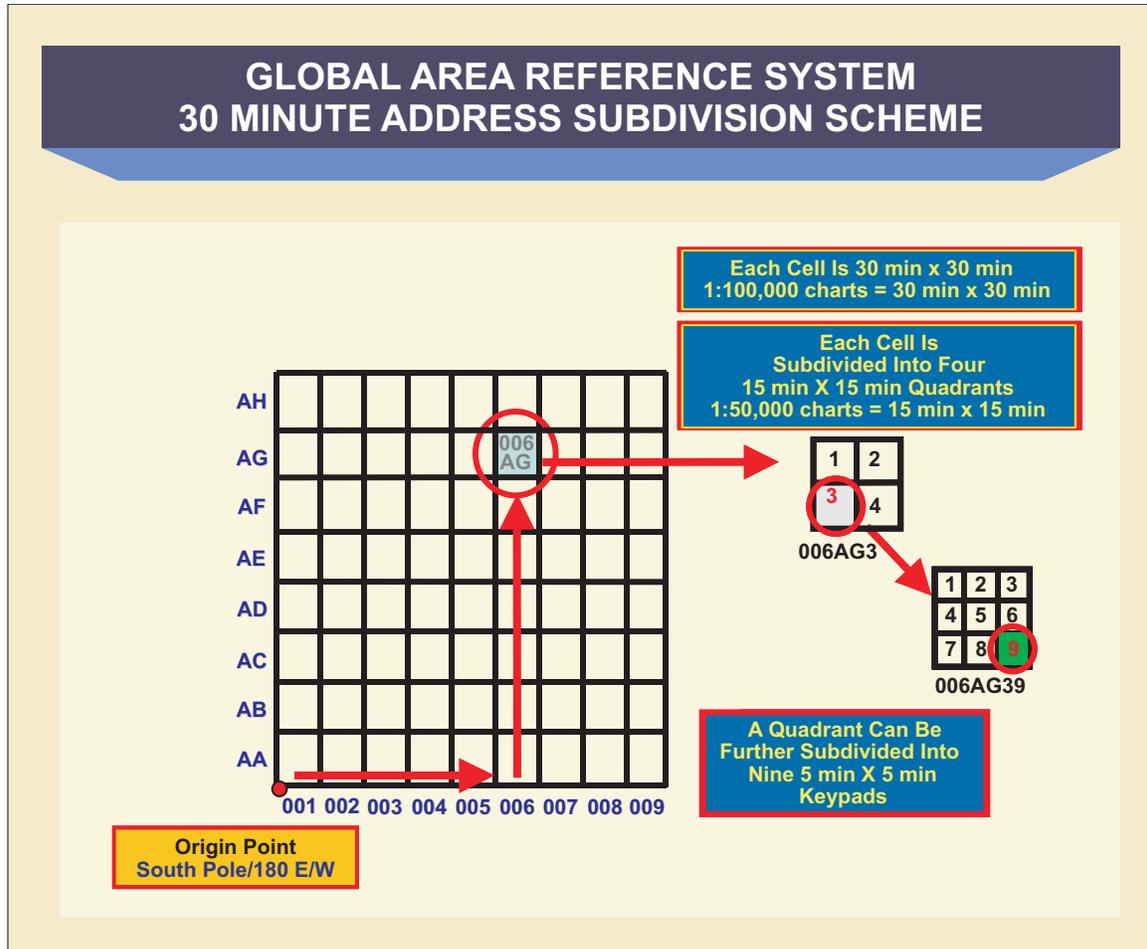


Figure H-1. Global Area Reference System 30 Minute By 30 Minute Address Scheme

### 3. Point Reference Systems

a. Point references complement area references by providing a multitude of common surface points to expedite coordination throughout the JOA. The point reference system is similar to the area reference system in that it can be used to provide components with a common perspective of the battlespace and allow for common identification of mutually accessible attack areas. In addition, it can be used to identify the center point for the establishment of an appropriate FSCM and/or ACM.



**Figure H-2. Global Area Reference System 30 Minute Address Subdivision Scheme**

(1) **Bullseye and Search and Rescue Point (SARDOT).** The bullseye reference system is normally used during counterair engagements for situational awareness on targeted and untargeted airborne threats and for other coordination. Normally, theaters will only establish a few bullseye reference points to ensure effectiveness. Bullseyes are not meant to provide detailed target guidance, but general reference information. SARDOTs, like bullseyes, are very few in number and provide general area reference for search and rescue operations.

(2) **Control Points (CPs) and Initial Points (IPs).** Theaters establish CPs and IPs to effect rapid and accurate geo-location information for joint operations. As opposed to only a few bullseye points, CPs and IPs are established throughout the theater and their effectiveness increases with promulgation. CPs and IPs provide the references for operations that require significant accuracy, such as targeting guidance. As such, they are the point reference system of choice for air-ground integration during CAS.

(3) **US Army Terrain Index Reference System and Target Reference Point.** These point reference systems are developed for surface component operations to quickly identify a target off a known geographic point. They differ from CPs and IPs in that they are primarily for surface unit coordination, not component coordination. As such, they are nominated and

distributed more rapidly among surface units without further promulgation and coordination of the joint force.

b. **Point Reference System Design.** The JFC or designated representative shall establish a CP and/or IP point system throughout the operational area by selecting geographic points of reference and encoding them with code words, or alphanumeric. These geographic points will be incorporated into operational graphics and overlays of component C2 systems, such as Advanced Field Artillery Tactical Data System, Theater Battle Management Core System, Airborne Element Tactical Air Control System databases, and the airspace control plan.

c. **Point Reference Execution.** When only general area reference is required, bullseyes may be referenced. Examples include air-to-air threat information and SARDOTs for combat search and rescue coordination. When accuracy is required for component integration, such as target identification, CPs and IPs should be referenced. A target’s azimuth and distance from a selected CP or IP can provide effective coordination.

#### 4. Summary

a. The Director, NGA will establish specifications and procedures for applying position reference systems to GEOINT. WGS-84 is the official DOD position reference system. NGA will assist its allied coproducers in using this system. When WGS-84 cannot be used, NGA will assist the CCDRs in determining an appropriate reference system. NGA will provide standard algorithms and parameters to perform datum transformation and coordinate conversion (e.g., as implemented in Geographic Translator). For existing products (e.g., maps, software, aircraft systems) not in compliance with this instruction, NGA will coordinate with the affected agency, CCDR, or Service on the feasibility of converting these products with regard to time, cost, and scheduling. NGA will coordinate with the Joint Staff, DOD agencies, combatant commands, and the Services in making all future products used for position reference in compliance with this instruction.

b. CCDRs will develop procedures for coordinating the use of the WGS-84 system of coordinates in all joint operations involving US military forces. CCDRs will coordinate with allied or coalition commands on position reference procedures to be followed within areas of multinational interest. In cases where conditions preclude the use of WGS-84, CCDRs will coordinate on the use of position reference procedures. Examples of the authorized reference system formats are provided in Figure H-3.

| EXAMPLES OF AUTHORIZED REFERENCE SYSTEM FORMATS |                        |
|---|------------------------|
| Geographic Coordinates                          | 3659.9390N 10902.7100W |
| Military Grid Reference System                  | 12SXF7394596545        |
| Global Area Reference System                    | 006AG39                |

Figure H-3. Examples of Authorized Reference System Formats

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## APPENDIX J

### METEOROLOGICAL AND OCEANOGRAPHIC SUPPORT TO GEOSPATIAL INTELLIGENCE

#### 1. Relationship of METOC to Geospatial Intelligence

As shown in NSG Basic Doctrine Publication 1-0, *Geospatial Intelligence (GEOINT) Basic Doctrine*, METOC data is considered an intelligence layer of the GEOINT information base. METOC conditions can affect other GEOINT activities, so a detailed understanding of the operational environment, both in the planning process and during ongoing operations, is critical to joint operations.

#### 2. METOC Doctrine

METOC operations are described in detail in JP 3-59, *Meteorological and Oceanographic Operations*, and CJCSI 3810.01B, *Meteorological and Oceanographic Operations*. METOC responsibility is normally assigned to J-3, but may be assigned to J-2 if the commander desires (typical where an Army organization is assigned as the lead element). The joint force METOC officer (JMO) is the primary METOC point of contact for obtaining METOC information. The JMO operates within theater guidance provided by the senior METOC officer.

#### 3. Theater METOC Guidance

The combatant command senior METOC officer (SMO) is responsible for setting METOC policy in their commander's AOR, normally through a METOC letter of instruction or an OPORD/OPLAN/CONPLAN annex H. All SMOs are currently assigned to J-3, but support all directorates and components. The combatant command METOC SIPRNET sites containing theater policy and standardized products for operational use are listed below:

- a. USCENTCOM: <http://hqsweb03.centcom.smil.mil/index.asp?division=ccj3-ow&stat=o/>
- b. USEUCOM: <http://www.eucom.smil.mil/subpage/metoc.htm/>
- c. USNORTHCOM: [https://www.noradnorthcom.smil.mil/j3/j33/wxpage/NORTHCOM%20METOC\\_files/slide0001.htm](https://www.noradnorthcom.smil.mil/j3/j33/wxpage/NORTHCOM%20METOC_files/slide0001.htm)
- d. USPACOM: <http://www2.hq.pacom.smil.mil/j3/j33/j331/metoc/>
- e. USSOUTHCOM: <http://www.southcom.smil.mil/scj32/metoc/>
- f. USSTRATCOM: [http://www.gccs.stratcom.smil.mil/metoc\\_j3/sipr2.html](http://www.gccs.stratcom.smil.mil/metoc_j3/sipr2.html)
- g. USTRANSCOM: [https://www.transcom.smil.mil/j3/mcc/wx/metoc\\_home.html](https://www.transcom.smil.mil/j3/mcc/wx/metoc_home.html)
- h. USJFCOM: <http://www.jfcom.smil.mil/j3/j33/j335/metochome.nsf/>

- i. CJCS: <http://c2www.af.pentagon.smil.mil/afog/wx/>

#### 4. Climatology Support for Planning

During the planning process, climatology or historical weather data for the AOI can be obtained through the JMO or staff weather officer. If no METOC officer is assigned, climatology data can be obtained from the Air Force Combat Climatology Center (AFCCC); Fleet Numerical METOC Detachment (FNMOD) Asheville; or the National Climatic Data Center (NCDC), all collocated in Asheville, NC. Historical and climatological oceanographic information can be obtained from the Naval Oceanographic Office, NIPRNET and SIPRNET links are:

- a. AFCCC: NIPRNET: <https://notus2.afccc.af.mil/SCIS/>  
SIPRNET: <http://pluto.asheville.af.smil.mil>
- b. FNMOD: NIPRNET: <https://navy.ncdc.noaa.gov/>  
SIPRNET: <http://navyclimatology.navy.smil.mil>
- c. NCDC : NIPRNET: <http://lwf.ncdc.noaa.gov/oa/ncdc.html>
- d. NAVOCEANO: NIPRNET: <http://www.navy.mil>  
SIPRNET: <http://www.navo.navy.smil.mil>

#### 5. Real-Time METOC Support

Real-time METOC support to the GEOINT process can be obtained through METOC applications on various systems, including Distributed Common Ground System – Army, Integrated Meteorological System, Global Command and Control System – Joint, Global Command and Control System Integrated Imagery and Intelligence, Meteorological Mobile Facility Replacement-Marine Corps, Naval Integrated Tactical Environmental Support System, Palanterra, and on numerous joint deployable intelligence support system/SIPRNET/NIPRNET sites. Soil moisture from weather satellites is relayed through these METOC systems for applications to trafficability and other intelligence preparation of the operational environment processes. METOC information from civilian and foreign sites is widely available, but non-DOD data is often suspect and not consistently available. Per CJCSI 3810.01B, *Meteorological and Oceanographic Operations*, civilian and foreign METOC sources should not be used for operational purposes without being approved by the SMO or JMO.

#### 6. Service Production Centers

Navy and Air Force METOC production centers and regional METOC agencies provide dynamic real-time support to operating forces. SIPRNET and NIPRNET web sites for support:

- a. Air Force Weather Agency, which hosts the Joint Air Force and Army Weather Information Network, is the main METOC production center for Army and Air Force weather and all service space

weather information. Links to Air Force regional METOC centers/operational weather squadrons can also be found here.

- (1) NIPRNET: <https://weather.afwa.af.mil>
- (2) SIPRNET: <http://safwin.offutt.af.smil.mil>
- (3) JWICS: <http://jafwin.afwa.ic.gov/>

b. Fleet Numerical METOC Center, Monterey, CA is the main METOC production center for Navy and Marine Corps weather information. Links to other Navy oceanography activities can also be found here.

- (1) NIPRNET: <https://www.fnmoc.navy.mil>
- (2) SIPRNET: <http://www.fnmoc.navy.smil.mil>
- (3) JWICS: <http://www.fnmoc.ic.gov>

c. NAVOCEANO, Stennis Space Center, MS, which hosts the Warfighting Support Center, is the main DOD production site for oceanographic and riverine METOC information. Links to Navy regional METOC centers can also be found here.

- (1) NIPRNET: <https://www.navo.navy.mil>
- (2) SIPRNET: <http://www.navo.navy.smil.mil>
- (3) JWICS: <http://www.navo.ic.gov/>

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## APPENDIX K REFERENCES

The development of JP 2-03 is based upon the following primary references:

### 1. Department of Defense Directive, Instruction, Manuals, and Guide

- a. DOD Directive 5105.60, *National Imagery and Mapping Agency (NIMA)*.
- b. DOD Directive 5230.11, *Disclosure of Classified Military Information to Foreign Governments and International Organizations*.
- c. DOD Instruction 5000.56, *Programming Unique Mapping, Charting, and Geodesy (MC&G) Requirements for Developing Systems*.
- d. DOD 4160.21-H, *Defense Material Disposition Manual*.
- e. DOD 5200.1-M, *DOD Handbook For Writing Security Classification Guidance*.
- f. DOD 4500.54-G, *DOD Foreign Clearance Guide*.

### 2. Chairman of the Joint Chiefs of Staff Instructions and Manuals

- a. CJCSI 3110.08C, *Geospatial Information and Services Supplemental Instruction to Joint Strategic Capabilities Plan*.
- b. CJCSI 3141.01B, *Responsibilities for the Management and Review of Contingency Plans*.
- c. CJCSI 3810.01B, *Meteorological and Oceanographic Operations*.
- d. CJCSI 3900.01B, *Position Reference Procedures*.
- e. CJCSI 3901.01B, *Requirements for Geospatial Information and Services*.
- f. CJCSI 5120.02, *Joint Doctrine Development System*.
- g. CJCSM 3122.03B, *Joint Operation Planning and Execution System, Vol II: (Planning Formats)*.

### 3. Joint Publications

- a. JP 1, *Doctrine for the Armed Forces of the United States*.
- b. JP 1-02, *DOD Dictionary of Military and Associated Terms*.

- c. JP 2-0, *Joint Intelligence*.
- d. JP 2-01, *Joint and National Intelligence Support to Military Operations*.
- e. JP 3-0, *Joint Operations*.
- f. JP 3-33, *Joint Task Force Headquarters*.
- g. JP 3-34, *Joint Engineer Operations*.
- h. JP 3-59, *Meteorological and Oceanographic Operations*.
- i. JP 4-0, *Logistic Support of Joint Operations*.
- j. JP 4-09, *Joint Doctrine for Global Distribution*.
- k. JP 5-0, *Joint Operation Planning*.
- l. JP 6-0, *Joint Communications System*.

#### **4. Other Publications**

- a. User's Guide for JOPES (*Joint Operation Planning and Execution System*).
- b. Military Handbook 850, *Glossary of Mapping, Charting, and Geodetic Terms*.
- c. NSG Publication 1-0, *Geospatial Intelligence (GEOINT) Basic Doctrine*.
- d. NGA Technical Manual 8358.1, *Datum, Ellipsoids, Grids, and Grid Reference Systems*.

## APPENDIX L ADMINISTRATIVE INSTRUCTIONS

### 1. User Comments

Users in the field are highly encouraged to submit comments on this publication to: Commander, United States Joint Forces Command, Joint Warfighting Center, ATTN: Joint Doctrine Group, 116 Lake View Parkway, Suffolk, VA 23435-2697. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

### 2. Authorship

The lead agent for this publication is the United States Joint Forces Command, and the primary review authority is the National Geospatial-Intelligence Agency. The Joint Staff doctrine sponsor for this publication is the Director for Intelligence (J-2).

### 3. Supersession

This publication supersedes JP 2-03, 31 March 1999, *Joint Tactics, Techniques, and Procedures for Geospatial Information and Services Support to Joint Operations*.

### 4. Change Recommendations

- a. Recommendations for urgent changes to this publication should be submitted:

TO: CDRUSJFCOM SUFFOLK VA//JT10//  
INFO: JOINT STAFF WASHINGTON DC//J7-JEDD//  
JOINT STAFF WASHINGTON DC//J-2//

Routine changes should be submitted electronically to Commander, Joint Warfighting Center, Joint Doctrine Group and info the Lead Agent and the Director for Operational Plans and Joint Force Development J-7/JEDD via the CJCS JEL at <http://www.dtic.mil/doctrine>.

- b. When a Joint Staff directorate submits a proposal to the Chairman of the Joint Chiefs of Staff that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Military Services and other organizations are requested to notify the Joint Staff/J-7 when changes to source documents reflected in this publication are initiated.

c. Record of Changes:

| CHANGE NUMBER | COPY NUMBER | DATE OF CHANGE | DATE ENTERED | POSTED BY | REMARKS |
|---------------|-------------|----------------|--------------|-----------|---------|
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**5. Distribution of Publications**

Local reproduction is authorized and access to unclassified publications is unrestricted. However, access to and reproduction authorization for classified joint publications must be in accordance with DOD 5200.1-R, *Information Security Program*.

**6. Distribution of Electronic Publications**

a. Joint Staff J-7 will not print copies of JPs for distribution. Electronic versions are available at [www.dtic.mil/doctrine](http://www.dtic.mil/doctrine) (NIPRNET), and <http://nmcc20a.nmcc.smil.mil/dj9j7ead/doctrine/> (SIPRNET), or on JDEIS at <https://jdeis.js.mil> (NIPRNET), and <https://jdeis.js.smil.mil> (SIPRNET).

b. Only approved joint publications and joint test publications are releasable outside the combatant commands, Services, and Joint Staff. Release of any classified joint publication to foreign governments or foreign nationals must be requested through the local embassy (Defense Attaché Office) to DIA Foreign Liaison Office, PO-FL, Room 1E811, 7400 Pentagon, Washington, DC 20301-7400.

c. JEL CD-ROM. Upon request of a JDDC member, the Joint Staff J-7 will produce and deliver one CD-ROM with current joint publications. This JEL CD-ROM will be updated not less than semiannually and when received can be locally reproduced for use within the combatant commands and Services.

## GLOSSARY

### PART I — ABBREVIATIONS AND ACRONYMS

|          |   |
|----------|---|
| 2-D      | two-dimensional                                   |
| 3-D      | three-dimensional                                 |
| ACM      | airspace coordinating measure                     |
| AD       | automatic distribution                            |
| AFCCC    | Air Force Combat Climatology Center               |
| AGI      | advanced geospatial intelligence                  |
| ALERTORD | alert order                                       |
| AOI      | area of interest                                  |
| AOR      | area of responsibility                            |
| C2       | command and control                               |
| CALA     | Community Airborne Library Architecture           |
| CAP      | crisis action planning                            |
| CAS      | close air support                                 |
| CCDR     | combatant commander                               |
| CD-ROM   | compact disk read-only memory                     |
| CIA      | Central Intelligence Agency                       |
| CIB      | controlled image base                             |
| CIL      | command information library                       |
| CJCS     | Chairman of the Joint Chiefs of Staff             |
| CJCSI    | Chairman of the Joint Chiefs of Staff instruction |
| CJCSM    | Chairman of the Joint Chiefs of Staff manual      |
| CMA      | collection management authority                   |
| COA      | course of action                                  |
| CONOPS   | concept of operations                             |
| CONPLAN  | concept plan                                      |
| COP      | common operational picture                        |
| CP       | control point                                     |
| CSA      | combat support agency                             |
| DCGS     | Distributed Common Ground System                  |
| DCI      | Director of Central Intelligence                  |
| DDMA     | Defense Distribution Mapping Activity             |
| DHS      | Department of Homeland Security                   |
| DIA      | Defense Intelligence Agency                       |
| DIGO     | Defence Imagery and Geospatial Organisation       |
| DIJE     | Defense Intelligence Joint Environment            |
| DJIOC    | Defense Joint Intelligence Operations Center      |
| DLA      | Defense Logistics Agency                          |
| DLIS     | Defense Logistics Information Service             |
| DNC      | digital nautical chart                            |

|        |   |
|--------|---|
| DND    | Department of National Defence                              |
| DNGA   | Director of National Geospatial-Intelligence Agency         |
| DNI    | Director of National Intelligence                           |
| DOD    | Department of Defense                                       |
| DPPDB  | digital point positioning database                          |
| DRO    | departmental requirements office                            |
| DSCR   | Defense Supply Center Richmond                              |
| DTED   | digital terrain elevation data                              |
|        |   |
| EED    | emergency-essential designation                             |
| EGM    | Earth Gravity Model   |
| EI     | environmental information                                   |
| EO     | electro-optical   |
| EVC    | evasion chart   |
| EXORD  | execute order   |
|        |   |
| FEMA   | Federal Emergency Management Agency                         |
| FNMOD  | Fleet Numerical Meteorological and Oceanographic Detachment |
| FSCM   | fire support coordination measure                           |
|        |   |
| GAA    | geospatial intelligence assessment activity                 |
| GARS   | global area reference system                                |
| GBS    | Global Broadcast Service                                    |
| GCC    | geographic combatant commander                              |
| GCP    | geospatial contingency package                              |
| GEOINT | geospatial intelligence                                     |
| GI&S   | geospatial information and services                         |
| GI     | geomatics and imagery                                       |
| GPE    | geospatial intelligence preparation of the environment      |
| GPL    | Geospatial Product Library                                  |
| GPS    | global positioning system                                   |
|        |   |
| HQ     | headquarters  |
|        |   |
| I&W    | indications and warning                                     |
| IAW    | in accordance with  |
| IBS    | integrated broadcast service                                |
| IC     | intelligence community                                      |
| ICC    | Intelligence Coordination Center                            |
| ICM    | image city map  |
| ICP    | inventory control point                                     |
| IDP    | imagery derived product                                     |
| IMINT  | imagery intelligence  |
| IP     | initial point   |

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|           |   |
|-----------|---|
| IPR       | in-progress review  |
| ISR       | intelligence, surveillance, and reconnaissance  |
| J-2       | intelligence directorate of a joint staff   |
| J-3       | operations directorate of a joint staff   |
| J-4       | logistics directorate of a joint staff  |
| J-6       | communications system directorate of a joint staff                                    |
| JFC       | joint force commander   |
| JFCC-ISR  | Joint Functional Component Command for Intelligence, Surveillance, and Reconnaissance |
| JIOC      | joint intelligence operations center  |
| JIPOE     | joint intelligence preparation of the operational environment                         |
| JMO       | joint force meteorological and oceanographic officer                                  |
| JOA       | joint operations area   |
| JOG       | joint operations graphic  |
| JP        | joint publication   |
| JSCP      | Joint Strategic Capabilities Plan   |
| JTF       | joint task force  |
| JWICS     | Joint Worldwide Intelligence Communications System                                    |
| MAGTF     | Marine air-ground task force  |
| MASINT    | measurement and signature intelligence  |
| MCO       | Mapping Customer Operations   |
| METOC     | meteorological and oceanographic  |
| MGRS      | military grid reference system  |
| MIP       | Military Intelligence Program   |
| MOD       | Ministry of Defence   |
| MSL       | mean sea level  |
| MSO       | map support office  |
| NASIC     | National Air and Space Intelligence Center  |
| NAVOCEANO | Naval Oceanographic Office  |
| NCDC      | National Climatic Data Center   |
| NGA       | National Geospatial-Intelligence Agency   |
| NGIC      | National Ground Intelligence Center   |
| NIIB      | National Geospatial Intelligence Agency imagery intelligence brief                    |
| NIL       | National Information Library  |
| NIPRNET   | Non-Secure Internet Protocol Router Network   |
| NIST      | national intelligence support team  |
| NRO       | National Reconnaissance Office  |
| NSA       | National Security Agency  |
| NSG       | National System for Geospatial Intelligence   |
| NST       | National Geospatial-Intelligence Agency support team                                  |

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## Glossary

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|            |  |
|------------|--|
| OPLAN      | operation plan   |
| OPORD      | operation order  |
| OPSCOM     | Operations Committee   |
| PLANORD    | planning order   |
| PMAA       | Production Management Alternative Architecture                           |
| POC        | point of contact   |
| PRISM      | Planning Tool for Resource, Integration, Synchronization, and Management |
| RGS        | remote geospatial intelligence services                                  |
| SA         | situational awareness  |
| SARDOT     | search and rescue point  |
| SecDef     | Secretary of Defense   |
| SIGINT     | signals intelligence   |
| SIPRNET    | SECRET Internet Protocol Router Network                                  |
| SMO        | senior meteorological and oceanographic officer                          |
| SSA        | supply support activity  |
| TLM        | topographic line map   |
| TPFDD      | time-phased force and deployment data                                    |
| TTD        | tactical terrain data  |
| UK         | United Kingdom   |
| UNIL       | unclassified national information library                                |
| USA        | United States Army   |
| USAF       | United States Air Force  |
| USC        | US Code  |
| USCG       | United States Coast Guard  |
| USD(I)     | Under Secretary of Defense (Intelligence)                                |
| USGS       | United States Geological Survey  |
| USJFCOM    | United States Joint Forces Command                                       |
| USMC       | United States Marine Corps   |
| USNORTHCOM | United States Northern Command   |
| USSOCOM    | United States Special Operations Command                                 |
| USSTRATCOM | United States Strategic Command  |
| USTRANSCOM | United States Transportation Command                                     |
| VMap       | vector map   |
| WARNORD    | warning order  |
| WARP       | web-based access and retrieval portal                                    |
| WGS-84     | World Geodetic System 1984   |
| WRS        | war reserve stock  |

## PART II — TERMS AND DEFINITIONS

**advanced geospatial intelligence.** Refers to the technical, geospatial, and intelligence information derived through interpretation or analysis using advanced processing of all data collected by imagery or imagery-related collection systems. Also known as imagery-derived measurement and signature intelligence. Also called AGI. (Approved for inclusion in the next edition of JP 1-02.)

**area of interest.** That area of concern to the commander, including the area of influence, areas adjacent thereto, and extending into enemy territory to the objectives of current or planned operations. This area also includes areas occupied by enemy forces who could jeopardize the accomplishment of the mission. Also called AOI. (JP 1-02)

**change detection.** An image enhancement technique that compares two images of the same area from different time periods. Identical picture elements are eliminated, leaving signatures that have undergone change. (Approved for inclusion in the next edition of JP 1-02.)

**common operational picture.** A single identical display of relevant information shared by more than one command. A common operational picture facilitates collaborative planning and assists all echelons to achieve situational awareness. Also called COP. (JP 1-02)

**database.** Information that is normally structured and indexed for user access and review. Databases may exist in the form of physical files (folders, documents, etc.) or formatted automated data processing system data files. (JP 1-02)

**datum (geodetic).** 1. A reference surface consisting of five quantities: the latitude and longitude of an initial point, the azimuth of a line from that point, and the parameters of the reference ellipsoid. 2. The mathematical model of the earth used to calculate the coordinates on any map. Different nations use different datum for printing coordinates on their maps. The datum is usually referenced in the marginal information of each map. (JP 1-02)

**Defense Information Systems Network.** Integrated network, centrally managed and configured to provide long-haul information transfer services for all Department of Defense activities. It is an information transfer utility designed to provide dedicated point-to-point, switched voice and data, imagery, and video teleconferencing services. Also called DISN. (JP 1-02)

**electro-optics.** The technology associated with those components, devices and systems which are designed to interact between the electromagnetic (optical) and the electric (electronic) state. (JP 1-02)

**foundation data.** Specific information on essential features that change rarely or slowly, such as point positioning data, topographic features, elevation data, geodetic information, and safety of navigation data. (Approved for inclusion in the next edition of JP 1-02.)

**geographic coordinates.** The quantities of latitude and longitude which define the position of a point on the surface of the Earth with respect to the reference spheroid. (JP 1-02)

**geospatial information.** Information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the Earth, including: statistical data and information derived from, among other things, remote sensing, mapping, and surveying technologies; and mapping, charting, geodetic data and related products. (Approved for inclusion in the next edition of JP 1-02.)

**geospatial information and services.** The collection, information extraction, storage, dissemination, and exploitation of geodetic, geomagnetic, imagery (both commercial and national source), gravimetric, aeronautical, topographic, hydrographic, littoral, cultural, and toponymic data accurately referenced to a precise location on the Earth's surface. Geospatial services include tools that enable users to access and manipulate data, and also include instruction, training, laboratory support, and guidance for the use of geospatial data. Also called GI&S. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of JP 1-02.)

**geospatial information and services priorities.** None. (Approved for removal from the next edition of JP 1-02.)

**geospatial intelligence.** The exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. Geospatial intelligence consists of imagery, imagery intelligence, and geospatial information. Also called GEOINT. (Approved for inclusion in the next edition of JP 1-02.)

**Global Command and Control System.** A deployable command and control system supporting forces for joint and multinational operations across the range of military operations with compatible, interoperable, and integrated communications systems. Also called GCCS. (JP 1-02)

**imagery.** A likeness or presentation of any natural or man-made feature or related object or activity, and the positional data acquired at the same time the likeness or representation was acquired, including: products produced by space-based national intelligence reconnaissance systems; and likeness and presentations produced by satellites, airborne platforms, unmanned aerial vehicles, or other similar means (except that such term does not include handheld or clandestine photography taken by or on behalf of human intelligence collection organizations). (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of JP 1-02.)

**imagery intelligence.** The technical, geographic, and intelligence information derived through the interpretation or analysis of imagery and collateral materials. Also called IMINT. (This term and its definition modify the existing term and its definition and are approved for inclusion in the next edition of JP 1-02.)

**infrared imagery.** That imagery produced as a result of sensing electromagnetic radiations emitted or reflected from a given target surface in the infrared portion of the electromagnetic spectrum (approximately 0.72 to 1,000 microns). (JP 1-02)

**intelligence discipline.** A well defined area of intelligence collection, processing, exploitation, and reporting using a specific category of technical or human resources. There are seven major disciplines: human intelligence, geospatial intelligence, measurement and signature intelligence, signals intelligence (communications intelligence, electronic intelligence, and foreign instrumentation signals intelligence), open-source intelligence, technical intelligence, and counterintelligence. (This term and its definition are provided for information and are proposed for inclusion in the next edition of JP 1-02 by JP 2-0.)

**interoperability.** 1. The ability to operate in synergy in the execution of assigned tasks. 2. The condition achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users. The degree of interoperability should be defined when referring to specific cases. (JP 1-02)

**joint force.** A general term applied to a force composed of significant elements, assigned or attached, of two or more Military Departments operating under a single joint force commander. (JP 1-02)

**joint force commander.** A general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called JFC. (JP 1-02)

**joint intelligence preparation of the operational environment.** The analytical process used by joint intelligence organizations to produce intelligence assessments, estimates, and other intelligence products in support of the joint force commander's decision making process. It is a continuous process that includes defining the operational environment, describing the effects of the operational environment, evaluating the adversary, and determining and describing adversary potential courses of action. Also called JIPOE. (This term and its definition are provided for information and are proposed for inclusion in the next edition of JP 1-02 by JP 2-01.3.)

**Joint Operation Planning and Execution System.** A system of joint policies, procedures, and reporting structures, supported by communications and computer systems, that is used by the joint planning and execution community to monitor, plan, and execute mobilization, deployment, employment, sustainment, redeployment, and demobilization activities associated with joint operations. Also called JOPEs. (JP 1-02)

**Joint Worldwide Intelligence Communications System.** The sensitive, compartmented information portion of the Defense Information Systems Network. It incorporates advanced networking technologies that permit point-to-point or multipoint information exchange involving voice, text, graphics, data, and video teleconferencing. Also called JWICS. (JP 1-02)

**measurement and signature intelligence.** Intelligence obtained by quantitative and qualitative analysis of data (metric, angle, spatial, wavelength, time dependence, modulation, plasma, and hydromagnetic) derived from specific technical sensors for the purpose of identifying any distinctive features associated with the emitter or sender, and to facilitate subsequent identification and/or measurement of the same. The detected feature may be either reflected or emitted. Also called MASINT. (This term and its definition are provided for information and are proposed for inclusion in the next edition of JP 1-02 by JP 2-0.)

**metadata.** None. (Approved for removal from the next edition of JP 1-02.)

**meteorological and oceanographic.** A term used to convey all meteorological (weather) and oceanographic (physical oceanography) factors as provided by Service components. These factors include the whole range of atmospheric and oceanographic phenomena, from the sub-bottom of the earth's oceans up to the space environment (space weather). Also called METOC. (JP 1-02)

**mission specific data sets.** Further densification of global geospatial foundation data. Information created to support specific operations, operation plans, training or system development. Information conforms to established Department of Defense data specifications. Also called MSDS. See also geospatial information and services. (JP 1-02)

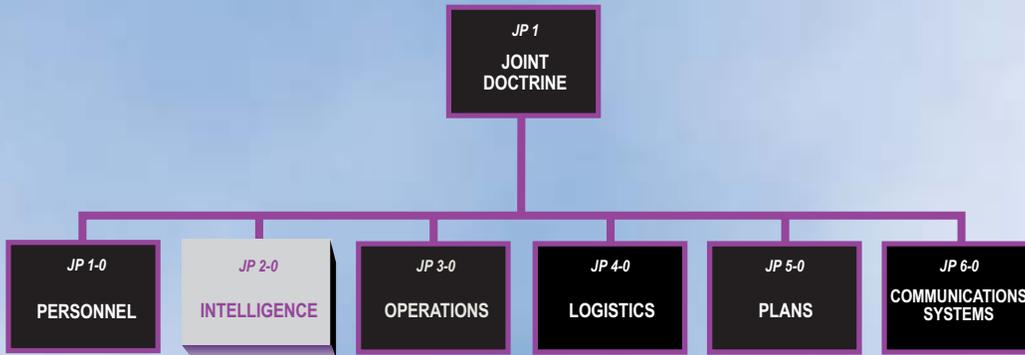
**National System for Geospatial Intelligence.** The combination of technology, policies, capabilities, doctrine, activities, people, data and communities necessary to produce geospatial intelligence in an integrated, multi-intelligence environment. Also called NSG (Approved for inclusion in the next edition of JP 1-02.)

**planning factors database.** Databases created and maintained by the Military Services for the purpose of identifying all geospatial information and services requirements for emerging and existing forces and systems. The database identifies: unit requirements, at the information content level, for geospatial data and services; system requirements for standard Department of Defense geospatial data and services; research, development, test, and evaluation requirements for developmental systems, identified by milestone; and initial operating capability and full operating capability for emerging systems. Also called PFDB. (JP 1-02)

**radar.** A radio detection device that provides information on range, azimuth, and/or elevation of objects. (JP 1-02)

**war reserve stock.** That portion of total materiel assets designated to satisfy the war reserve materiel requirement. Also called WRS. (JP 1-02)

# JOINT DOCTRINE PUBLICATIONS HIERARCHY



All joint doctrine and tactics, techniques, and procedures are organized into a comprehensive hierarchy as shown in the chart above. **Joint Publication (JP) 2-03** is in the **Intelligence** series of joint doctrine publications. The diagram below illustrates an overview of the development process:

