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**GEOSPATIAL INTELLIGENCE
(GEOINT)**

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This publication implements Air Force Policy Directive (AFPD) 14-1, *Intelligence, Surveillance, and Reconnaissance (ISR) Planning, Resources, and Operations* and the guidance portions of Department of Defense (DoD) Directive (DoDD) 5105.60, *National Geospatial-Intelligence Agency (NGA)*; DoDD 5250.01, *Management of Intelligence Mission Data (IMD) in DoD Acquisition*; DoD Instruction (DoDI) 5000.56, *Programming Geospatial-Intelligence (GEOINT), Geospatial Information and Services (GI&S), and Geodesy Requirements for Developing Systems*; DoDI 5030.59, *National Geospatial-Intelligence Agency (NGA) LIMITED DISTRIBUTION Geospatial Intelligence (GEOINT)*; Chairman, Joint Chiefs of Staff Instruction (CJCSI) 3901.01D, *Requirements for Geospatial Information & Services*; CJCSI 3900.01D, *Position (Point and Area) Reference Procedures*; Joint Publication (JP) 2-03, *Geospatial-Intelligence Support to Joint Operations*; and National System for Geospatial Intelligence Directive (NSGD) 1100, *Geospatial Intelligence (GEOINT) Functional Management*. This publication is consistent with Air Force Instruction (AFI) 63-101/20-101, *Integrated Lifecycle Management*; AFI 14-117, *Air Force Targeting*; AFI 14-133, *Intelligence Analysis*; AFI 14-134, *Intelligence Analysis Production and Requirements Management*; and AFI 14-111, *Intelligence Support to the Acquisition Life-Cycle*. This publication provides procedures for identifying GI&S functional and area requirements and the provision and use of GI&S data and products. This publication applies to Regular Air Force (RegAF), Air Force Reserve (AFR), Air National Guard (ANG), and Department of the Air Force (AF) Civilians. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW the Air Force Records Disposition Schedule (RDS) in the Air Force Records Information Management

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SUMMARY OF CHANGES

This revision merges guidance from the previous AFI 14-132 and AFI 14-205, *Geospatial Information and Services (GI&S)*. Changes include new organizational structure and updated roles and responsibilities that resulted from the 2014 ISR transformation. Air Combat Command (ACC) is identified as the lead MAJCOM/command for GEOINT operations. The roles and responsibilities of the Targeting and GEOINT Division (AF/A2CG) and those of the AF GEOINT Office (AFGO) are consolidated. The roles and responsibilities of the National Air and Space Intelligence Center (NASIC) associated with GEOINT time- and content-dominant analyses and Overhead Persistent Infrared (OPIR) research and development are documented. New paragraphs address AF GEOINT Enterprise (AFGE) Governance, forums, committees, and working groups. Responsibilities pertaining to the GEOINT Functional Manager (FM)’s Standards Assessment (GFMSA) Program are new and the GI&S requirements process is clarified. Roles derived from the 2016 AF OPIR ISR Flight Plan are also new.

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Chapter 1

OVERVIEW.

1.1. This instruction addresses the AF GI&S and imagery disciplines, collectively known as GEOINT. GEOINT enables area familiarization and monitoring, feasibility assessments, target development, weapon effectiveness and collateral damage estimation (CDE) assessment, formulation of courses of action and estimation of consequences of execution, and strategic, operational, and tactical planning for all missions. It also supports training, mission planning, mission rehearsal, navigation, modeling/simulation, and all weapon system development required to execute the aforementioned capabilities. Air Force (AF) GEOINT capabilities encompass all imagery (excluding ground-based, hand-held), Imagery Intelligence (IMINT), and geospatial information and related products, tools, processes, resources, and systems supporting AF missions see Figure A4.1, *Air Force GEOINT Capabilities*. AF GEOINT also includes the ancillary data and associated capabilities needed for collection management, data processing, exploitation, archiving, and dissemination.

1.1.1. The Air Force Targeting and GEOINT Division (AF/A2CG) provides oversight and authoritative guidance on GEOINT issues. However, additional organizations maintain functional responsibilities for other geospatial products and services. For example, the AF Flight Standards Agency (AFFSA) has functional responsibility for DoD Flight Information Publications (FLIP), Digital Aeronautical Flight Information File (DAFIF), and other materials; the Director of Civil Engineers (AF/A4C) has policy authority for the AF Installation GI&S (IGI&S) program, known as GeoBase; and the Joint Personnel Recovery Agency (JPRA) is responsible for Evasion Charts. Consequently, the AF GEOINT Vision and Strategy are developed across AF directorates and functions to maximize efficiency through common AF GEOINT requirements.

1.1.2. GEOINT is collected, produced, and consumed across a broad range of AF missions and capabilities. Its subject matter equities and dependencies coexist in multiple functional areas (*e.g.*, intelligence, operations, civil engineering, security forces, etc.). To enable these diverse areas to operate efficiently and effectively, they interface with the National System for Geospatial-Intelligence (NSG) and Allied System for Geospatial Intelligence (ASG) Communities. The Director, NGA is the DoD GEOINT Functional Manager (FM) IAW DoDD 5105.60 with authority to provide GEOINT functional guidance to the NSG. The director also coordinates the ASG. These two systems for GEOINT are the policies, doctrine, people, capabilities, activities, and technology used to produce GEOINT in an integrated, multi-intelligence environment. The NSG community consists of members of the United States (US) intelligence community (IC), military departments, Combatant Commands (CCMD), and elements of the civil community. In contrast, the ASG is an integrated, US and Commonwealth partnership of GEOINT professionals working together to meet collective operational and intelligence needs, while providing each other with global, regional, and civil GEOINT support. The NSG advances the GEOINT enterprise to make the best GEOINT available to partners, customers, and decision makers through better-informed decisions, improved alignment, and harmonized efforts across the NSG. Through increased GEOINT integration, the NSG intends to exercise better stewardship of GEOINT resources,

improve coordination, and where appropriate, apply unified solutions to increase the scope and utility of GEOINT.

1.2. Air Force GEOINT Enterprise Governance. AF/A2CG represents the AFGE. The AFGE is an integrated system of people, organizations, technology, policies, capabilities, doctrine, processes, and data necessary to provide GEOINT effectively across AF core mission areas to support Joint Capability Areas in a multi-domain environment. The AFGE spans the full cross-functional nature of GEOINT (both GI&S and ISR) and involves AF/A2, MAJCOM, Direct Reporting Units (DRU), Field Operating Agencies (FOA), and a broad and collaborative community across the DoD. AFGE strategy, goals, and objectives are aligned with strategies and roadmaps across the Air Force and the NSG/ASG. The AFGE ensures AF GEOINT core services, applications, products, and data comply with published IC, DoD, and NSG standards and synchronizes AF GEOINT operations with the NSG/ASG to enable decisive action. Air Force producers, providers, and/or consumers of GEOINT ensure that data and data services are compliant with DoD, IC, and NSG policies specified in NSG Directive (NSGD) 3201, *The GEOINT Functional Manager Standards Assessment (GFMSA) Program*.

1.3. Forums, Committees, and Working Groups. The AFGE aligns mission-driven AF GEOINT producers, consumers, and staff elements (positioned at tactical, theater, and strategic levels) to perform requirements management, education and training, unit readiness, systems acquisition, production and technology modernization, and advocacy tasks to integrate cross-functional capabilities ensuring joint capability and core mission area effectiveness. The AFGE implements collaborative business practices to ensure data integrity standards and cross-security domain dissemination. Forums, committees, meetings, and working groups are routinely held to ensure incorporation of geospatial requirements into the formal requirements process of acquisition initiatives and programs and eliminate duplication of effort include:

1.3.1. NSG Senior Management Council (NSMC). NSMC is chaired by the GEOINT FM. It is the senior, flag-level functional management forum for the global GEOINT community. NSMC meets semiannually to allow senior leadership of NSG organizations an opportunity to discuss the strategic, community-wide issues facing the GEOINT community and outline NSG future priorities. AF/A2 or designee is the AF representative to the NSMC.

1.3.2. National GEOINT Committee (GEOCOM). The GEOCOM and subcommittees meet to provide GEOINT consumers and producers opportunities to collaborate, coordinate, and exchange information about GEOINT issues and build consensus on matters associated with GEOINT across the NSG. The GEOCOM provides strategic perspective on GEOINT-related activities and maintains advocacy for mission threads of strategic value to the GEOINT FM to include promotion of cross-discipline and cross-functional integration. It is the key forum to review and recommend long-term GEOINT strategies, and to assess and advise the GEOINT FM on plans, programs, activities, policies and guidance that could have a significant impact on current or future GEOINT capabilities. Additionally, the GEOCOM provides opportunities to conduct independent evaluations, studies, and assessments of GEOINT products, services, capabilities, stakeholder equities and other GEOINT issues and topics. The AF/A2C (or his/her designee) is the AF representative to the GEOCOM.

1.3.3. GEOINT Capability Team (GCT). The GCT provides a forum to corporately prioritize and plan AF airborne GEOINT capability solutions utilizing Research, Development, Test and Evaluation (RDT&E) investments. It strives to provide AF decision-

makers a comprehensive capabilities-based, architecturally supportable investment strategy for AF airborne GEOINT systems consistent with prioritized AF, Joint, and National users' requirements. The GCT does not authorize movement of resources across program elements (PEs); rather, it enables synchronization across PEs within a common planning and prioritization framework. The GCT is co-led by Air Combat Command, ISR Weapon Systems Division (ACC/A5I) and the Assistant Secretary of the Air Force for Acquisition, Information Dominance (SAF/AQI).

1.3.4. Intelligence Support Working Group (ISWG). An ISWG brings together functional representatives from the intelligence, logistics, operations and acquisition communities to assess their collaborative ability to adequately support each effort at a level that enables mission success. Responsibilities of an ISWG derive requirements and verify their traceability; identify, and assess deficiencies and shortfalls; research and develop potential solutions to the deficiencies; create action plans to accomplish those solutions; estimate solution costs; and document results. The frequency of face-to-face or virtual ISWG meetings vary, depending on the intelligence sensitivity of the effort, the visibility of the effort, congressional oversight, etc. ISWG meetings are held annually; however, the ISWG team members continually interact between formal meetings to identify, refine, clarify requirements, and discuss potential solutions. ISWG meetings occur more frequently as an effort matures, particularly prior to major acquisition life cycle milestones, or when directed by the Program Manager (PM).

1.3.5. Aeronautical Safety of Navigation (SoN) Working Groups. The various SoN working groups (e.g., Flight Information Publications (FLIP), Data Aeronautical Working Group (DAWG), Digital Aeronautical Transformation Working Group (DATWG), Digital Working Group (DWG), and the Vertical Obstruction Working Group (VOWG)) are in-residence working-level forums held every six months. These working groups, the O-6 Executive Steering Group and the Flag/General Officer Steering Group are attended by military, civilians, contractors, and industry partners from the US and commonwealth partners with the express purpose of maintaining the most current information and highest quality services for US military forces and global transport networks.

1.3.6. Technical Exchange Meeting (TEM). TEMs are the most common working-level forum for face-to-face, fact-finding, problem-solving, and coordination of acquisition initiative or program action items. A typical TEM could be squadron-level mission planners meeting with software developers to clarify system compatibility issues or it could be a meeting of acquisition and intelligence community subject matter experts to seek solutions for the gap between geospatial data needed to fully support the mission, and the data the provider can supply. TEMs may also be held to discuss intelligence supportability of one specific derived geospatial requirement versus an ISWG where all of the effort's derived requirements are identified and discussed. TEMs are held as needed throughout the effort.

1.3.7. Cross-Program Analysis (CPA) Meeting. The goal of CPA is to identify requirements of a similar nature that are shared among acquisition initiatives or programs. This effort is valuable to the programs involved because it provides some shielding for a specific program from paying for new solutions as a sole requirements holder. Identification of common requirements also raises the priority and visibility of deficiencies gained by tying multiple AF and joint capabilities to the same requirement. If a solution to a shared requirement has

already been produced by another program or initiative, the effort in question could potentially avoid associated costs entirely.

1.4. Intelligence Oversight Compliance. Although missions deriving GEOINT data do not usually risk divulging US person information, some capabilities employed in the US during RDT&E and training may. Regardless, all personnel involved in the conduct of GEOINT activities must comply with intelligence oversight procedures IAW AFI 14-104, Oversight of Intelligence Activities.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Deputy Chief of Staff (DCS) of the Air Force, Intelligence, Surveillance, and Reconnaissance (ISR) (AF/A2). IAW Headquarters Air Force Mission Directive (HAFMD) 1-33, *Deputy Chief of Staff of the Air Force, Intelligence, Surveillance & Reconnaissance*, AF/A2 is the AF GEOINT FM and responsible for developing GEOINT policy. The AF/A2 serves as the AF point of contact for GEOINT and coordinates all GEOINT issues with NGA, the other Services, the joint staff, and the intelligence community. The AF/A2 will:

2.1.1. Serve as the Service GEOINT Element to perform the duties listed in DoDD 5105.60 and appoints the Director of ISR Capabilities (AF/A2C) and the “Service” GEOINT Office to implement GEOINT policy and represent AF/A2 interests at NSG senior management councils and GEOINT committees.

2.1.2. Prepares and coordinates the AF positions on joint actions and documents that affect GEOINT.

2.1.3. In coordination with SAF/AQI, serves as the AF voting representative to the GEOINT standards working group.

2.1.4. Coordinates and develops official AF positions for Air Force Service geographic area requirements for GI&S products to support training, exercises, system development, and deployment readiness, excluding requirements managed by the CCMDs to support operational needs.

2.1.5. Oversees development and implementation of AF ISR requirements to ensure compliance with Office of the Director of National Intelligence (ODNI) and Undersecretary of Defense (Intelligence) (USD(I)) policy and guidance.

2.1.6. Monitors performance and effectiveness of fielded AF ISR assets.

2.1.7. Directs implementation of plans and procedures to enhance the collection, processing, exploitation, and dissemination of ISR data.

2.1.8. Provides expertise, feedback, and advice on execution of modification requirements.

2.2. Director of Intelligence, Surveillance, and Reconnaissance Capabilities (AF/A2C). AF/A2C serves as the AF GEOINT central manager and is the focal point for the development of policy and guidance, and the planning, and implementation of GEOINT. In this capacity, AF/A2C coordinates, assesses, and synchronizes AF policy and guidance, and standardizes requirements for geospatial information.

2.3. Chief, Targeting and Geospatial Intelligence Division (AF/A2CG). AF/A2CG provides guidance to the AFGCE and is the primary AF interface with NGA, the CCMDs, Under Secretary of Defense for Intelligence, and other Services on GEOINT matters. AF/A2CG will:

2.3.1. Represent AF at HQ NGA; provide integrated and coordinated GEOINT engagement among Air Staff and NSG, ASG, and NGA Key Component and Portfolio Managers and assist in integrating AF GEOINT policy and guidance, plans, programs, resources, capabilities, and RDT&E initiatives into the NSG.

2.3.2. Lead AF participation in the NSG Unified GEOINT Operations (UGO) and GEOINT Mission Management processes, and advocate and track AF requirements at NSG and Functional Management reviews and deliberations. Reconcile UGO with AF GEOINT developmental planning.

2.3.3. Direct, oversee, and support AF GEOINT modernization efforts, to include GEOINT collection, processing and production, and use of GEOINT information to ensure that AF GEOINT capabilities match the needs of the NSG.

2.3.4. Represent the AF/A2 in national, theater, and tactical forums and interface with national agencies, Joint Staff, and the Office of the Secretary of Defense (OSD) for AF equities in space-based GEOINT ISR collection systems capabilities. Provide subject-matter expertise for National Security (DoD-IC), Military, Civil government, and commercial space GEOINT systems. Provide Subject-Matter Expert (SME) inputs for integrated IC space-based GEOINT ISR collection capabilities documents, including system CONOPS, analysis of alternatives, functional solutions analysis, position/background papers, mission utility assessments/summaries, Joint Capabilities Integration and Development System (JCIDS) documentation and Congressional responses.

2.3.5. Participate in NSG planning, programming, and evaluation processes to advocate AF GEOINT Military Intelligence Program (MIP)/National Intelligence Program (NIP) programs and requirements to NGA FMs and facilitate engagement between AF and NGA PM.

2.3.6. Integrate AF GEOINT operations and capabilities into the NSG and facilitate resolution of AF GEOINT mission issues.

2.3.7. Serve as the AF representative to the VOWG.

2.3.8. Serve as the AF lead on all issues concerning Navigation Planning charts (NAVPLAN).

2.3.9. Coordinate with the Director of NGA on any requirements for acquisition or exchange of commercial or foreign government-owned imagery-related remote sensing data and services IAW DoDI 3115.15.

2.3.10. Provide subject-matter expertise and representation with NGA and Director of Intelligence, Surveillance, and Reconnaissance Strategy, Plans, Policy and Force Development (AF/A2D) to facilitate, advocate, and track technology innovation and NGA and AF Acquisition/RDT&E processes, activities, and investments.

2.3.11. Represent AF/A2 equities and AF GEOINT capabilities and TTPs in NSG governance forums and to NGA Key Components and Portfolio Managers; and advocate AF policy and guidance, operations, system, and TTP requirements for inclusion in NSG/NGA policies and standards guidelines, processes, and procedures.

2.3.12. Advocate AF GEOINT analysis and production capabilities to NGA and ensure these are documented in relevant policy or programming guidance.

2.3.13. Represent AF collection capabilities at NGA/Source integration forums and facilitate Air Combat Command (ACC)/NGA developmental planning discussions to enhance planning and to resolve issues.

2.3.14. Advise Assistant Secretary of the Air Force (Acquisition) (SAF/AQ), AF/A2D, MAJCOMs, Air Force Research Laboratory (AFRL), and Air Force Materiel Command/ Life Cycle Management Center (LCMC) on NGA-sponsored future GEOINT technology initiatives to facilitate tracking and coordination on NGA architectures, systems, sensors and tools acquisitions, and integration, enhancements, sustainment, and support efforts.

2.3.15. Provide subject matter expertise to AF/A5/8 on GEOINT issues impacting current and future AF capabilities as they are coordinated through the AF corporate structure.

2.3.16. Validate GI&S requirements and advocate to NGA the satisfaction of those requirements and validate and advocate GEOINT capability needs (e.g. manpower, IT, GEOINT technology solutions, etc.) via the NSG request management capability.

2.3.17. Serve as the validation authority for AF area GI&S requirements over the Continental United States (CONUS), Hawaii, and Alaska and for AF training ranges world-wide; maintain awareness of requirements, such as those submitted by geographic MAJCOMs, the Air Force Director of Civil Engineers (AF/A4C), and AFFSA to eliminate duplication of effort. Ensure prioritization methodology is promulgated with the requirements data call. Validate and prioritize AF GEOINT capability requirements submitted to NGA.

2.3.18. Consolidate, prioritize, and submit all AF GI&S production.

2.3.19. Participate in AF programming forums to assist in validation and prioritization of AF GEOINT requirements.

2.3.20. Serve as the focal point for all Air Staff, MAJCOM, FOA, and DRU customers who need routine assistance with any GI&S product or service.

2.3.21. Serve as the AF lead for coordinating the sunseting of AF and other NSG GEOINT products and services IAW NSGD 1501, *Termination or Change of Geospatial Intelligence (GEOINT) Products and Services*.

2.3.22. Validate requirements destined for the Air Force Geospatial Production Cell (AFGPC).

2.3.23. Coordinate and lead AF review of NSG policy documents; facilitate AF GEOINT FM approval of final recommendation.

2.3.24. Establish policies and procedures to ensure processed data originating from AF managed collection and production systems is compliant with NSG-established standards for interoperability.

2.3.25. Develop AF GEOINT policy and guidance that codifies roles, responsibilities, and dependencies, coordinating with other Services, Joint Staff, NGA, USD(I), and ODNI as necessary. Where possible, ensure synchronization with NSG and Joint instructions.

2.3.26. Serve as the AF SME on GEOINT Professional Certification.

2.3.27. Ensure that GEOINT requirements submitted through appropriate GEOCOM venues are coordinated with IMD/ Life-cycle Mission Data Plan (LMDP) stakeholders identified in AFI 14-111 and support Acquisition Intelligence processes by providing NGA cost and production estimates to AF stakeholders.

2.4. Chief, Space, Cyber, and Signals Intelligence ISR Capabilities Division (AF/A2CS). AF/A2CS leads AF efforts to advance and normalize space-based GEOINT ISR capabilities in support of AF missions. In conjunction with AF/A2CG, AF/A2CS represents AF equities to the DoD and IC regarding space-based GEOINT ISR capabilities. This includes representing the AF in space-based GEOINT ISR capability forums and providing subject-matter expertise supporting integrated DoD and IC space-based GEOINT ISR capability documents and processes. AF/A2CS will:

2.4.1. Serve as the AF OPIR ISR Portfolio Manager, providing consolidated advocacy across OPIR ISR capability efforts, representing ISR capability and resource needs and issues through AFGE and NSG processes, and providing AF OPIR ISR representation to appropriate forums.

2.4.2. Chair the AF OPIR ISR Working Group.

2.4.3. Provide consolidated advocacy regarding NSG collection management processes and issues through the AF Departmental Requirements Office.

2.4.4. Establish and oversee roles and policy for the OPIR Three-Capability Processing and Exploitation, Analysis and Production, and Dissemination (PAD) Model described in the AF OPIR ISR Flight Plan, consisting of the OPIR Battlespace Awareness Center (OBAC), AF Multi-Intelligence (Multi-INT) organizations, and the National Air and Space Intelligence Center.

2.5. Chief, Interoperability and Integration Division (AF/A2CJ). AF/A2CJ provides policy, oversight, and advocacy of the Air Force Distributed Common Ground System (AF DCGS) Weapon System. AF/A2CJ will:

2.5.1. Conduct Capability-Based Planning, Programming, Budgeting and Execution System (PPBES) functions.

2.5.2. Establish and maintain international agreements.

2.6. Director of Intelligence, Surveillance, and Reconnaissance Resources (AF/A2R). AF/A2R represents AF GEOINT funding and manpower billet equities in National IC, DoD, and AF resource forums and processes. Leads the development and oversees the execution of AF GEOINT program and budget in the MIP and NIP. Leads AF participation in NGA Chief Financial Officer-led planning, programming, budgeting, and evaluation processes for AF GEOINT MIP and NIP programs.

2.7. Director of Intelligence, Surveillance, and Reconnaissance Strategy, Plans, Policy, and Force Development (AF/A2D). AF/A2D is responsible for GEOINT personnel resource utilization, training, and certification issues, advocates for AF training needs (e.g., AF OPIR ISR Flight Plan), and serves as the AF GEOINT tradecraft, training and development advisor to the NGA staff. AF/A2D will:

2.7.1. Perform duties as AF Analytic Production Steward for overall intelligence analysis and production in accordance with Intelligence Community Directive (ICD) Number 501, *Discovery and Dissemination or Retrieval of Information within the Intelligence Community* and AFI 14-134, *Intelligence Analysis Production and Requirements Management*. Coordinate with AF/A2C on GEOINT-specific issues.

2.7.2. Coordinate with AF/A2C and ACC, as the lead MAJCOM for GEOINT operations, for reporting compliance with established analytic standards IAW ICD 203, *Analytic Standards* and AFI 14-133, *Intelligence Analysis*.

2.7.3. Coordinate with AF/A2CG on Acquisition Intelligence policy, requirements, and capability gaps as they relate to the GEOINT functional area.

2.8. Director of Intelligence, Surveillance, and Reconnaissance Innovations (AF/A2I). AF/A2I is responsible for the innovation program that includes use of Commercial Imagery and mission planning data to facilitate selected operations. AF/A2I provides close coordination and support to AF/A2CG concerning lessons learned from the operational use of geospatial data in crisis situations. All commercial imagery involved is primarily direct downlinked by the Air Force Eagle Vision systems. Some Commercial imagery might be acquired via NGA sources.

2.9. National Air and Space Intelligence Center (NASIC). NASIC will:

2.9.1. Provide GEOINT content-dominant (Phase III) data analysis of literal imagery from visible, synthetic aperture radar (SAR), spectral, and thermal imagery as required to support scientific and technical intelligence, acquisition programs, and general military intelligence requirements (T-1).

2.9.2. Perform Phase II (content-dominant, detailed) and Phase III (in-depth) analysis on data collected by all DoD and IC OPIR sensors, DoD space-borne sensors (to include TacSats and ORS), and airborne GEOINT sensors as required (T-1).

2.9.3. Perform Phase II and III analysis on non-literal SAR, Spectral, and Thermal (SST) imagery data from National Technical Means and DoD sensors as required (T-1).

2.9.4. Perform Phase II and III data analysis of non-literal SST data and Ground Moving Target Indicator (GMTI) forensics analysis for data collected by AF airborne (manned and remotely piloted aircraft), other services and coalition airborne, and TacSat sensors as required (T-1).

2.9.5. Perform operational Phase I (time-dominant) data analysis during R&D of operational sensors for transition to Phase 0-I units such as the OPIR Battlespace Awareness Center, AF DCGS, or other AF, DoD, and IC ISR Enterprise nodes. Perform Phase I data analysis as required to meet IC and DoD intelligence needs, including the provision of weather expertise to assist in Planning and direction, Collection, Processing and exploitation, Analysis and production, and Dissemination (PCPAD) planning and the development of strategies to better incorporate weather planning into operations (T-2).

2.9.6. Perform computer-aided design (CAD) modeling from literal imagery sources to support science and technical intelligence requirements (T-1).

2.9.7. Conduct advanced Research and Development (R&D) in collaboration with DoD and IC partners, leveraging Science and Technology (S&T) expertise in OPIR and non-literal SST. Assist with technology transfer into operational environments (T-2).

2.9.8. Support Phase 0 and I OPIR organizations, to include the OPIR Battlespace Awareness Center, with coordinated support to Phase 0-1 production, maintenance, and operation of Phase 0-1 capability prior to and during transition to the appropriate Phase 0-1

environment, and feedback to collection planning processes based on assessment of the collected data and its utility (T-2).

2.9.9. Lead AF OPIR ISR R&D activity for the AF, to include development and maintenance of the AF OPIR ISR R&D Portfolio; coordination of R&D needs and efforts across the AF and with government, scientific, and industry partners; identification of and coordination of proposed resolutions for capability gaps, redundancies, or inefficiencies; collaborative scientific review, validation, and verification of ISR solutions; and assistance with AF, DoD, and IC tech transition processes (T-2).

2.9.10. Provide tailored OPIR data processing, collaborative algorithm access, and information exposure to DoD and IC partners, to include the advancement, development, and maintenance of information layers, tools, apps, and services. Lead capability development and maintenance for the advanced processing and exploitation model to include manual, semi-automated, and automated processing techniques and capability across applicable networks (T-1).

2.9.11. Assist ACC and NGA with the maintenance and management of OPIR-specific training; provide expertise to OPIR training efforts (T-3).

2.9.12. Serve as the AF NGP Technology Transition Lead (TTL), managing and coordinating ISR tech transition efforts across the AF NIP OPIR portfolio to include efforts functionally managed by NGA or other agencies. Provide technical understanding and assessment of emerging capabilities, integration needs, and requirements. Coordinate AF NGP technology transition with the AF OPIR ISR Portfolio Manager, AF OPIR ISR Working Group, and other AF OPIR ISR TTLs (T-2).

2.9.13. Provide staff and technical assistance to the operation of the AF OPIR ISR Working Group (T-3).

2.9.14. Serve as the service GEOINT analysis/production lead for AF National Geospatial-Intelligence Program (NGP)-funded activities engaged in collection, processing, analysis, and intelligence reporting. Also engage with AF/A2 and ACC to ensure coordination/cooperation with AF MIP capabilities (T-1).

2.9.15. Execute service component responsibilities outlined in NSG Instruction (NSGI) Analysis and Production (AP) 3104, *Military Services Geospatial Intelligence (GEOINT) Analysis and Production (A&P) Program Mission Instruction (MI)*. (T-1).

2.9.16. Submit an annual production plan to the AF UGO Officer for inclusion in the AF production plan. Ensure GEOINT production priorities are integrated into the NASIC Program of Analysis IAW AFI 14-134 (T-2).

2.9.17. Coordinate with gained ANG and associated Air Force Reserve Command (AFRC) units that are engaged in the production and/or dissemination of GEOINT (T-3).

2.9.18. Assist ANG and AFRC units as appropriate to establish procedures and guidelines that ensure adherence to standards and continuity for production and dissemination (T-3).

2.9.19. Assist ANG and AFRC units as appropriate to establish and/or manage training programs that ensure a smooth transition to wartime posture for these units and their personnel (T-3).

2.9.20. Coordinate GEOINT professional certification criteria with AF/A2D, AF/A2CG, and the NGA GEOINT Certification Program Office to ensure GEOINT testing and certification in compliance with AF, DoD, NGA, and Director of National Intelligence standards (T-3).

2.10. Deputy Chief of Staff Strategic Plans and Programs (AF/A5/8). AF/A5/8 will:

2.10.1. Provide policy and guidance to MAJCOM A5/8 offices to develop, monitor, and assess GEOINT requirements to support all AF weapons and weapon system development and sustainment activities, as required.

2.10.2. Document, validate, and submit requirements to AF/A2C for new, modified, and existing GEOINT products needed to support weapon system RDT&E and sustainment.

2.10.3. Consider implications of shortfalls and changes in GEOINT products and/or services and assess their potential impact on performance of current and future weapons and weapon systems.

2.10.4. Participate in GEOINT supportability analysis for AF acquisition activities, as required.

2.10.5. Consolidate, prioritizes, and submits AF/A5/8 area and functional GI&S requirements through AF/A2CG via established processes.

2.11. Deputy Chief of Staff, Logistics, Engineering and Force Protection (AF/A4). AF/A4, through the Air Force Director of Civil Engineers (AF/A4C), establishes policy implementing guidance for implementation of the IGI&S Program.

2.12. Air Force Director of Civil Engineers (AF/A4C). AF/A4C is responsible for IGI&S policy and guidance which is executed through the GeoBase Program by the Geospatial Information Office (GIO) at the AF Civil Engineer Center (AFCEC). IGI&S is implemented at each AF installation through a corresponding GIO. It ensures the provision of and access to accurate and current geospatial information for all AF installations, ranges, and property. Geospatial services are the combination of Information Technology (IT) infrastructure, services, and architectures that enable access to geospatial information. The AFI 32-10112, *Installation Geospatial Information and Services* applies. AF/A4C consolidates, prioritizes, and submits area and functional GI&S requirements through AF/A2CG via established processes.

2.13. Assistant Secretary of the Air Force for Acquisition (SAF/AQ). SAF/AQ ensures, through consultation with the Director of NGA and AF/A2, which AF systems under development that use or produce GEOINT comply with interoperability standards established by NGA. Refer to NSGD 3201, *The Geospatial Intelligence (GEOINT) Functional Manager Standards Assessment (GFMSA) Program*. SAF/AQ ensures the GEOINT requirements needed by the programs and offices it oversees are provided to AF/A2CG.

2.14. Deputy Under Secretary of the Air Force for International Affairs (SAF/IA). SAF/IA coordinates with the NGA/Office of International Affairs and AF/A2CG when foreign military sales cases involve articles and services that require NGA GEOINT data IAW DoD 5105.38-M, *Security Assistance Management Manual (SAMM)*.

2.15. Chief of Information Dominance and Chief Information Officer (SAF/CIO A6). SAF/CIO A6 provides architectural standards and policies that ensure synchronization and integration of the geospatial-enterprise.

2.16. Office of the General Counsel (SAF/GC). SAF/GC provides legal review of GEOINT matters and operational proposals as required.

2.17. Air Force Judge Advocate General (AF/JA) . AF/JA provides functional oversight to legal offices responsible for advising the DoD intelligence components and legal reviews of GEOINT matters and operational proposals.

2.18. Air Combat Command (ACC) . ACC serves as the Core Function Lead Integrator for Global Integrated ISR and as the lead MAJCOM/command for GEOINT Operations. ACC organizes, trains, equips, and presents GEOINT forces and capabilities to conduct ISR operations for combatant commanders. ACC coordinates with Air Force Space Command/A2 on all GEOINT matters involving DoD Space-based ISR assets.

2.18.1. ACC Director of Intelligence (ACC/A2). ACC/A2:

2.18.1.1. Serves as the Lead Command for AF GEOINT developmental planning, intelligence supportability, sustainment, and intelligence integration.

2.18.1.2. Promulgates, in concert with AFMC and Air Education and Training Command (AETC), standards in Joint and Service TTPs and training programs for aircrews and Air Operation Centers and AF DCGS units.

2.18.1.3. Validates and coordinates AF GEOINT operational requirements for fielded weapon systems. Coordinates with AFMC and other MAJCOMs as required.

2.18.1.4. Develops and prioritizes GEOINT system requirements, develops Program Objective Memorandum (POM) initiatives, and seeks additional funding as required for GEOINT System Program Office (SPO) acquisition.

2.18.1.5. Directs and coordinates with subordinate AF units and other stakeholders to ensure developmental planning and PCPAD integration operational acceptance procedures and modernization issues are addressed.

2.18.1.6. Participates in AF GEOINT Enterprise activities and planning; assesses effectiveness and evaluates shortfalls.

2.18.1.7. Provides Lead Command representation in development and funding of GEOINT support requirements.

2.18.1.8. Provides oversight of the Command's GEOINT PCPAD, production, and capability development; addresses airborne ISR tasking and collection issues.

2.18.1.9. Ensures appropriate representation at applicable technical and operational forums, as directed.

2.18.1.10. Manages analytic and training support to the OBAC from ACC organizations.

2.18.1.11. Leads the development and integration of OPIR training ranging from OPIR-specific training to integration of OPIR into standardized Multi-INT training. Coordinates OPIR training plans and policy with the AF OPIR ISR Portfolio Manager, AF OPIR ISR Working Group, and AF/A2D.

2.18.1.12. Supports AF/A2CS in providing resource advocacy for OPIR ISR integration and programming efforts, to include Global Integrated ISR coordination.

2.18.2. ACC Directorate of Plans, Programs, Requirements (ACC/A5/8/9). The Director, ACC/A5/8/9 delegates co-leadership (with SAF/AQI) of the GCT to ACC/A5I. ACC/A5/8/9 manages programmatic support to the OBAC from ACC organizations.

2.18.3. Commander, Twenty-Fifth Air Force (25 AF) (25 AF/CC). 25 AF/CC conducts GEOINT operations within the AFGE and is responsible for the GEOINT production of subordinate units. 25 AF/CC:

2.18.3.1. Serves as the GEOINT operations lead to NGA. Integrates subordinate unit GEOINT production and capability development into the NSG.

2.18.3.2. Ensures GEOINT data is distributed to appropriate NGA repositories in compliance with CJCSI 3340.02B, *Joint Enterprise Integration of Warfighter Intelligence*.

2.18.3.3. Assists in the management of AF GEOINT PED including production and capability development and the management of service-specific airborne ISR tasking and resolution of collection issues.

2.18.3.4. Ensures appropriate representation at applicable technical and operational forums, as directed.

2.18.3.5. Coordinates with gained ANG and associated AFRC units that are engaged in the production and/or dissemination of GEOINT.

2.18.3.6. Assists ANG and AFRC units as appropriate to establish procedures and guidelines that ensure adherence to standards and continuity for production and dissemination.

2.18.3.7. Assists ANG and AFRC units as appropriate to establish and/or manage training programs that ensure a smooth transition to wartime posture for these units and their personnel.

2.18.3.8. Leads Intelligence Planning Programming Budgeting Execution System (IPPBES) NGP development and participates in IPPBES NGP processes and data calls.

2.18.3.9. Validates and coordinates operational requirements with Operations Centers, IC, and Combat Support Agencies for possible satisfaction through use of NIP resources and capabilities.

2.18.3.10. Oversees, provides guidance, and requests funding associated with IC/NIP and GEOINT related activities.

2.18.3.11. 363d Intelligence, Surveillance, and Reconnaissance Wing (363 ISRW). The 363 ISRW, one of the AF production centers for GEOINT, is comprised of three active duty groups [361 Intelligence, Surveillance, and Reconnaissance Group (ISRG), 363 ISRG, and 365 ISRG] with multiple subordinate squadrons for production. Additional AFR and ANG forces provide surge production capacity. The 363 ISRW will:

2.18.3.11.1. Produce and deliver timely, tailored targeting and GEOINT products, and strategic analysis enabling the full spectrum of military operations (T-1).

2.18.3.11.2. Manage and produce a wide variety of geospatial products and services supporting AF operational and tactical missions (T-1). These products and services

- include: geospatial analysis, Controlled Image Base (CIB), Geospatial Product Library (GPL) content, Aim Point Graphics (APG), domestic range imagery, aerial demonstration support, battle damage assessment, and Target Materials (TMs). These TMs include, but are not limited to: Facility Outline Graphics, Installation Outline Graphics, Critical Element Graphics, Joint Desired Point of Impact Graphics, Joint Air-to-Surface Standoff Missile (JASSM) Terminal Area Models, and CDE graphics.
- 2.18.3.11.3. Direct the GEOINT production and dissemination efforts of subordinate ANG and AFRC units that support the AETC Enterprise (T-2).
- 2.18.3.11.4. Assist 363 ISRW-affiliated targeting Air Reserve Components (ARC) as appropriate to establish and manage geospatial procedures, guidelines, and training programs that ensure adherence to standards and continuity for production and dissemination. (T-2).
- 2.18.3.11.5. Through ACC/A2, provide targeting perspective to AF/A2CG to formulate AF GEOINT policies and procedures that ensure continuity and standardization across the AF GEOINT community (T-2).
- 2.18.3.12. 480th Intelligence, Surveillance, and Reconnaissance Wing (480 ISRW). The 480 ISRW is comprised of six active duty Groups, over 20 squadrons, and multiple ge-separated operating locations. In addition, ARC forces provide both steady state and surge production capacity. The 480 ISRW will:
- 2.18.3.12.1. Operate the AF DCGS Enterprise as a key exploiter and producer of AF GEOINT; articulate and formally codify requirements for consumable GEOINT products (T-1).
- 2.18.3.12.2. Submit production requirements to 25 AF (T-2).
- 2.18.3.12.3. Monitor, track, and provide feedback on products and other analyses provided to the wing (T-2). Produces and disseminates to 25 AF annual reports on utilization of GEOINT. Reports include analysis of quality and timeliness of GEOINT products and analyses with recommendations for improvement.
- 2.18.3.12.4. Participate in requisite AF GEOINT working groups and other forums that facilitate advancement of the discipline (T-2).
- 2.18.3.12.5. Submit subordinate units' GEOINT production requirements to 25 AF (T-2).
- 2.18.3.13. 70th Intelligence, Surveillance, and Reconnaissance Wing (70 ISRW). The 70 ISRW will:
- 2.18.3.13.1. Serve as a service force provider to National IC GEOINT missions (T-1).
- 2.18.3.13.2. Participate in requisite AF GEOINT working groups and other forums that facilitate advancement of the discipline (T-2).
- 2.18.3.13.3. Provide analytic support to the OBAC (T-1).

2.18.3.14. 557th Weather Wing. The 557 WW forecasts, monitors, and archives worldwide weather and environmental conditions in support of defense and intelligence planning and operations. This includes both traditional and non-traditional environmental parameters in the atmosphere and in space.

2.18.3.15. Other 25 AF Units. Other 25 AF units will:

2.18.3.15.1. Articulate and formally codify requirements for consumable GEOINT products (T-2).

2.18.3.15.2. Submit GEOINT production requirements to 25 AF (T-2).

2.18.3.15.3. Monitor, track, and provide feedback on products provided to the unit (T-2).

2.18.3.15.4. Produce and disseminate to 25 AF annual reports on GEOINT utilization, where applicable (T-2). Reports should include analysis of quality and timeliness of GEOINT products and analyses with recommendations for improvement.

2.18.3.15.5. As appropriate, participate in requisite AF GEOINT working groups and other forums which facilitate advancement of the discipline (T-2).

2.19. Air Force Flight Standards Agency (AFFSA) . AFFSA reports directly to the Air Force Director of Bases, Ranges and Airspace (AF/A3O-B). The AFFSA mission is to maximize effectiveness of AF global air operations and ensure AF access to worldwide airspace in all weather conditions. As outlined in AFI 11-201, *Flight Information Publication*, AFFSA investigates, defines, consolidates, assembles, validates, and lists, in order of priority, operational requirements for FLIP, DAFIF, and related aeronautical information. AFFSA is the AF point of contact with NGA on FLIP and DAFIF matters, to include nonprocedural discrepancies and is also the point of contact to the Federal Aviation Administration (FAA) and the Aeronautical Navigation Products (AJV-3) for aeronautical products. AFFSA coordinates with AF/A2CG on requirements submitted by AFFSA on behalf of the AF's aeronautical community via the Aeronautical Safety of Navigation General Officer Steering Group to NGA, to eliminate possible duplication of efforts. Further, AFFSA submits its area and functional GI&S requirements through AF/A2CG via established processes.

2.20. Air Force Materiel Command ISR Directorate (AFMC/A2). AFMC/A2 and subordinate organizations analyze weapon system performance requirements, tactics, techniques and procedures, concepts of employment, threat environments, and existing and planned GI&S technology. The purpose is to design and develop the most appropriate GI&S solutions for weapon systems and automated information systems (AIS) in basic development or undergoing block or spiral upgrades. These solutions address, but are not limited to, data requirements, data storage requirements, training requirements, facilities, and funding requirements.

2.20.1. ISR Plans and Programs Division (AFMC/A2X). AFMC/A2X will:

2.20.1.1. Developing requirements that relate to weapon system research, development, modification, test, and sustainment operations. AFMC/A2X assures that AF JCIDS documents, Life-cycle Mission Data Plans, and other documents reflect potential GI&S requirements IAW AFI 14-111, AFI 63-101/20-101, *Integrated Lifecycle Management*, AF/A5R Capability Development Guidebooks and CJCSI 3170.01I, *Joint Capabilities*

Integration and Development System (JCIDS). The final validation action for all GI&S requirements rests with AF/A2CG. AF/A2CG undertakes any policy-level coordination required by NGA. Non-policy-level coordination by AFMC/A2X with NGA and any command NGA liaison officer is encouraged.

2.20.1.2. Ensuring comprehensive analysis and documentation of GI&S functional requirements and provision of GI&S support to research, development, test, and sustainment activities under AFMC management.

2.20.1.3. Managing and directing command GI&S system-of-systems analysis to minimize system-specific, stove-piped GI&S solutions for the AF weapon system portfolio.

2.20.1.4. Managing the currency of an on-line database to track functional GI&S requirements of weapon systems under AFMC management. GI&S requirements identified through AFMC processes and the annual data call are managed by AFMC/A2X or their subordinate offices.

2.20.1.5. Consolidating, prioritizing, and submitting AFMC area and functional GI&S requirements through AF/A2CG via established processes.

2.20.1.6. Ensuring that AFMC systems/programs use standard NGA products in original format or submit requirements for new format/modification.

2.20.2. Air Force Geospatial Production Cell (AFGPC). AFGPC is hosted within AFMC. The AFGPC uses the best available geospatial source data to create high-priority geospatial datasets and products to meet the specific geospatial needs of AF users. With production directed by AF/A2CG, AFGPC produces all data and products to NGA specification. AFGPC is capable of producing all standard NGA products with the exception of APG, CIB®, and Digital Point Positioning Data Bases (DPPDB). All requirements destined for AFGPC are validated by AF/A2CG.

2.20.3. Intelligence Director, Air Force Life Cycle Management Center (AFLCMC/IN). AFLCMC/IN identifies and coordinates support for the GEOINT requirements of all AF Foreign Military Sales (FMS) programs. These programs are of high importance to US-Allied cooperation. Because FMS cases are based on a wide variety of circumstances, each is negotiated by NGA through AF/A2CG. Working in coordination with the Air Force Security Assistance and Cooperation Directorate (AFSAC) and FMS program offices, AFLCMC/IN requests release of NGA products to FMS programs in the form of a memorandum to AF/A2CG, a minimum of 90 days prior to required delivery date. Coordination is initiated upon receipt of a Letter of Request (LOR) from a nation for a GEOINT-sensitive capability by AFSAC. The memorandum contains, at a minimum, the following information elements: (1) FMS Program name, (2) FMS case number, (3) FMS program contract number, (4) Receiving country, (5) NGA products required (series, stock numbers), (6) Intended product usage, (7) Date products required, (8) Impact if products are not released, (9) FMS program office point of contact information (name, position, phone, email), and (10) data shipping information (name, phone, email, address). AFLCMC/IN will coordinate the memorandum with the AFMC NGA liaison prior to submission (T-2).

2.21. Commander, Air Education and Training Command (AETC). AETC/CC enables AF personnel to understand, produce, and use GEOINT. AETC/CC will:

- 2.21.1. Incorporate MAJCOM requirements into course development processes and provide formal and continuation training courses IAW AFI 36-2201, *Air Force Training Program*.
- 2.21.2. Evaluate student performance ex post facto to determine if training being provided is meeting established training standards and students are able to perform the tasks required.
- 2.21.3. Maintain and adjust formal training courses to meet evolving requirements as developed by MAJCOMs, Component Numbered Air Forces (C-NAFs), and CCMDs (where suitable).
- 2.21.4. Recommend changes to precision training based on course evaluations and student post-graduate reviews to better meet established training requirements.
- 2.21.5. Consolidate, prioritizes, and submits AETC area and functional GI&S requirements through AF/A2CG via established processes.

2.22. USAF Academy Institute for Information Technology Applications (IITA) Geospatial Technology Center (GTC). The USAF Academy IITA GTC will:

- 2.22.1. Test, evaluate, research, adapt, advance, and integrate new and existing geospatial technology solutions for the DoD (T-3).
- 2.22.2. Identify low-cost geospatial technology solutions through RDT&E, education and training (T-3).

2.23. Air Force Space Command (AFSPC) Director of Integrated Air, Space, Cyberspace, and ISR Operations (AFSPC/A2/3/6). AFSPC/A2/3/6 will:

- 2.23.1. Serve as the primary point of contact for all issues regarding DoD space-based ISR assets.
- 2.23.2. Ensure that data and data services are compliant with DoD, IC, and NSG policies specified in NSG Directive (NSGD) 3201, *The GEOINT Functional Manager Standards Assessment (GFMSA) Program*.
- 2.23.3. Maintain close coordination with AFMC, Space and Missile Command, 25 AF and ACC/A2, on DoD Space-based ISR standards and in joint and service TTPs and training programs involving DoD Space-based ISR platform's Planning and direction, Collection, Processing and exploitation, Analysis and production, and Dissemination (PCPAD), and overall command and control of each asset.
- 2.23.4. Develop and document functional GEOINT requirements. Functional requirements include requirements for new or modified GEOINT products, and requirements for existing GEOINT products to support weapon system research, development, test, initial fielding, and sustainment. Functional requirements are defined as an output of systems-level engineering analysis conducted on warfighter performance requirements. Implementing command assesses the availability of NGA resources against weapon system performance requirements and develops production requirements to address the capability gaps between development needs and NGA resources.
- 2.23.5. Consolidate, prioritizes, and submit AFSPC area and functional GI&S requirements through AF/A2CG via established processes.
- 2.23.6. Manage operations and training support to the OBAC from AFSPC organizations.

2.23.7. Coordinate with the AF OPIR ISR Portfolio Manager and AF OPIR ISR Working Group to ensure collaboration on ISR-capable or related sensors throughout the lifecycle, from initial planning through operations.

2.24. AFSPC Director of Strategic Plans, Programs, Requirements and Analysis (AFSPC/A5/8/9). AFSPC/A5/8/9 manages programmatic support to the OBAC from AFSPC organizations. The 460th Space Wing provides space operations and real-time processing support to the OBAC.

2.25. Space and Missile Systems Center (SMC). SMC will:

2.25.1. Serve as the AF Space-Based Infrared System (SBIRS) TTL, managing and coordinating ISR technology transition efforts across the AF SBIRS Program of Record (T-2). They provide technical understanding and assessment of emerging capabilities, integration needs, and requirements and coordinate SBIRS technology transition with the AF OPIR ISR Portfolio Manager, AF OPIR ISR Working Group, and other AF OPIR ISR TTLs.

2.25.2. Serve as the AF Joint OPIR Ground (JOG) TTL, managing and coordinating ISR technology transition efforts across the AF JOG portfolio to include efforts functionally managed by the NGA and other agencies (T-2). They provide technical understanding and assessment of emerging capabilities, integration needs, and requirements and coordinate JOG technology transition with the AF OPIR ISR Portfolio Manager, AF OPIR ISR Working Group, and other AF OPIR ISR TTLs.

2.26. General Geospatial Information & Services. In addition to the aforementioned, AF components of CCMDs, MAJCOMs, FOAs, DRUs, and Wing Commanders will:

2.26.1. Establish a GI&S Point of Contact (POC) trained sufficiently to conduct their assigned responsibilities (T-1). AF/A2CG endeavors to increase the understanding of the geospatial function and the need to further integrate GI&S with the other GEOINT, targeting and battlespace awareness functions. Failure to have a basic foundation of GI&S understanding among key personnel can impact operations and degrade mission effectiveness. Formal NGA training should be considered as a minimum. While in-residence training is preferred, training by NGA mobile training teams is acceptable.

2.26.2. Supply the name of a GI&S POC to AF/A2CG (T-1). This POC handles alerts or taskings in reference to GI&S requirements and consolidates and forwards responses to AF/A2CG.

2.26.3. Consolidate and prioritize area and functional GI&S requirement from their respective AORs for submission to AF/A2CG in response to annual data calls (T-1).

2.26.4. Ensure Program Management Offices (PMO) falling outside materiel command responsibilities (i.e., PMOs external to AFMC, Rapid Capabilities Office [RCO], Capability Development Management Office [CDMO], etc.) submit requirements for geospatial data and products through the MAJCOM/A2 to NGA using established NGA processes (T-0). This is accomplished in lieu of IC Production Requests in COLISEUM. **Note:** AFMC also documents these requirements in the LMDP for specific programs.

2.26.5. Ensure GI&S POCs at all levels establish and maintain GI&S distribution accounts, submit routine and Automatic Distribution (AD) requests to the Defense Logistics Agency, and manage all life-cycle needs of the GPL to ensure currency of the latest data and products

and coordinate with AF GeoBase GIO's as it pertains to installation data, site planning and bed-down missions (T-2).

2.26.6. Prepare GI&S Annexes to CCMDs Operation Plans (OPLANs) and Concept Plans (CONPLANs) IAW AFI 10-401, *Air Force Operations Planning and Execution* (T-3).

2.26.7. Identify, request, and maintain on GPL, appropriate GI&S stocks and data to support CCMD OPLAN, or CONPLAN tasking (T-1).

2.26.8. Conduct War Reserve Stocks (WRS) planning (T-3). The criticality of traditional WRS planning is decreasing because of increased use of digital data on GPL and the NGA Gateway. However, the following still applies to CCMD WRS planning. Where applicable, identify WRS requirements for movement in the Time Phased Force Deployment Documentation Listing and the OPLAN or CONPLAN logistics annexes and ensure hardcopy/optical media are available. If GPL and reproduction resources exist, reduce WRS quantities to reconciled MAJCOM-required levels. Digital materials are disseminated via the GPL or via DLA's Remote Replication Services (RRS) capability which supersede and replace traditional bulk hardcopy materials currently in WRS.

2.26.9. Establish procedures for subordinate units to ensure sufficient GI&S items are available to sustain routine operations and ensure adequate re-supply (T-1).

2.26.10. Actively coordinate with command operations, plans, training, logistics, requirements, inspection, and intelligence staffs to ensure doctrine, strategy, tactics, logistics, and RDT&E efforts adequately address GI&S functional requirements (T-1).

2.26.11. Assist in the origination and fielding of new procedures and techniques to facilitate AF-generated changes such as the GPL development (T-2).

2.26.12. Ensure GI&S programs are funded as applicable (T-2).

2.26.13. Ensure data/product reviews are accomplished and responses to all NGA GI&S product reviews are routed through the chain of command to AF/A2CG for the AF position (T-2).

2.26.14. Participate in annual AF GEOINT conferences, periodic special GI&S meetings, and the AFGE to address critical GI&S matters of mutual concern (T-2).

2.26.15. Ensure subordinate units are aware of, and comply with AF and Joint Chiefs of Staff (JCS) policy regarding use of World Geodetic System (WGS) and other datums as prescribed in this instruction. All organizations will use the most current geodetic model for all GI&S support to operations, unless otherwise directed by the cognizant joint combatant commander, and only use NGA-validated software for datum transformations (T-2).

2.26.16. Provide GI&S support to all gained ANG and associated AFR units IAW AFI 10-301, *Responsibilities of Air Reserve Component (ARC) Forces* (T-2).

2.26.17. Coordinate GPL installation, maintenance and information requests with the Intelligence Branch of AFLCMC's Operations Command and Control Division (AFLCMC/HBBI) and AF/A2CG (T-3).

VERALINN JAMIESON, Maj Gen, USAF
Deputy Chief of Staff, Intelligence,
Surveillance, and Reconnaissance

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

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ICD 501, *Discovery and Dissemination or Retrieval of Information within the Intelligence Community*, 21 January 2009

JP 2-03, *Geospatial Intelligence Support in Joint Operations*, 31 October 2012

NSGD 1100, *Geospatial Intelligence (GEOINT) Functional Management*, 2 August 2014

NSGD 1501, *Termination or Change of Geospatial Intelligence (GEOINT) Products and Services*, 17 March 2016

NSGI AP 3104, *Military Services Geospatial Intelligence (GEOINT) Analysis and Production (A&P) Program Mission Instruction (MI)*, 27 March 2013

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

25 AF—Twenty-Fifth Air Force

25 AF/CC—Commander, Twenty-Fifth Air Force

363 ISRW—363rd Intelligence, Surveillance, and Reconnaissance Wing

480 ISRW—480th Intelligence, Surveillance, and Reconnaissance Wing

70 ISRW—70th Intelligence, Surveillance, and Reconnaissance Wing

ACC—Air Combat Command

ACC/A2—ACC Director of Intelligence (ACC/A2)

ACC/A5I—Air Combat Command, ISR Weapon Systems Division

AETC—Air Education and Training Command

AF—Air Force

AF/A2—Deputy Chief of Staff, Intelligence, Surveillance, and Reconnaissance

AF/A2C—Director, Intelligence, Surveillance and Reconnaissance Capabilities

AF/A2CG—Targeting and GEOINT Division

AF/A2CJ—Interoperability and Integration Division

AF/A2CS—Space, Cyber, and Signals Intelligence ISR Capabilities Division

AF/A2D—Director of ISR Strategy, Plans, Policy, and Force Development

AF/A2I—Director for Intelligence, Surveillance, and Reconnaissance Innovations
AF/A2R—Director, Intelligence, Surveillance, and Reconnaissance Resources
AF/A30-B—Air Force Director of Bases, Ranges and Airspace
AF/A4C—Air Force Director of Civil Engineers
AFCEC—Air Force Civil Engineering Center
AFFSA—Air Force Flight Standards Agency
AFGE—AF GEOINT Enterprise
AFGO—Air Force GEOINT Office
AFGPC—Air Force GEOINT Production Cell
AFI—Air Force Instruction
AF/JA—Air Force Judge Advocate General
AFLCMC—Air Force Life Cycle Management Center
AFMAN—Air Force Manual
AFMC—Air Force Materiel Command
AFMC/A2X—Intelligence, Surveillance, and Reconnaissance Plans and Programs Division
AFPD—Air Force Policy Directive
AFR—Air Force Reserve
AFRC—Air Force Reserve Command
AFRL—Air Force Research Laboratory
AFSAC—Air Force Security Assistance and Cooperation Directorate
AFSPC—Air Force Space Command
AFSPC/A2/3/6—AFSPC Director of Integrated Air, Space, Cyberspace, and ISR Operations
AIS—Automated Information System
ANG—Air National Guard
APG—Aim Point Graphics
ARC—Air Reserve Component
ASG—Allied System for Geospatial Intelligence
CAD—Computer-Aided Design
CADRG—Compressed Arc Digitized Raster Graphics
CCMD—Combatant Command
CDE—Collateral Damage Estimation
CIB—Controlled Image Base

CJCSI—Chairman, Joint Chiefs of Staff Instruction
CJMTK—Commercial Joint Mapping Toolkit
C-NAF—Component Numbered Air Force
CONPLAN—Concept Plan
CONUS—Continental United States
COP—Common Operational Picture
CPA—Cross-Program Analysis
CSW—Coordinate-Seeking Weapon
DAFIF—Digital Aeronautical Flight Information File
DAWG—Data Aeronautical Working Group
DATWG—Digital Aeronautical Transformation Working Group
DCGS—Distributed Common Ground System
DIA/J28—Defense Intelligence Agency Deputy Director for Battlespace Awareness
DoD—Department of Defense
DoDD—Department of Defense Directive
DoDI—Department of Defense Instruction
DOTMLPF—Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities
DPPDB—Digital Point Positioning Data Bases
DRU—Direct Reporting Unit
DWG—Digital Working Group
FAA—Federal Aviation Administration
FLIP—Flight Information Publications
FM—Functional Manager
FMS—Foreign Military Sales
FOA—Field Operating Agency
GCT—Geospatial-Intelligence (GEOINT) Capability Team
GEOCOM—National GEOINT Committee
GEOINT—Geospatial Intelligence
GI&S—Geospatial Information and Services
GIO—Geospatial Information Office
GMTI—Ground Moving Target Indicator
GPL—Geospatial Product Library

GTC—Geospatial Technology Center

HAF—Headquarters Air Force

IAW—In Accordance With

IC—Intelligence Community

ICD—Intelligence Community Directive

IGI&S—Installations Geospatial Information and Services

IITA—Institute for Information Technology Applications

IMINT—Imagery Intelligence

IPPBES—Intelligence Planning, Programming, and Budgeting Execution System

ISR—Intelligence, Surveillance, and Reconnaissance

ISRG—Intelligence, Surveillance, and Reconnaissance Group

ISWG—Intelligence Support Working Group

IT—Information Technology

JASSM—Joint Air-to-Surface Standoff Missile

JCIDS—Joint Capabilities Integration and Development System

JOG—Joint OPIR Ground

JPRA—Joint Personnel Recovery Activity

JWICS—Joint Worldwide Intelligence Communication System

LCMC—Life Cycle Management Center

LMDP—Life-cycle Mission Data Plan

MAJCOM—Major Command

MIP—Military Intelligence Program

Multi-INT—Multi Intelligence

NASIC—National Air and Space Intelligence Center

NAVPLAN—Navigation Plan

NGA—National Geospatial-Intelligence Agency

NGP—National Geospatial-Intelligence Program

NIP—National Intelligence Program

NSG—National System for Geospatial-Intelligence

NSGD—NSG Directive

NSGI—NSG Instruction

NSMC—NSG Senior Management Council

OBAC—OPIR Battlespace Awareness Center

ODNI—Office of the Director of National Intelligence

OPLAN—Operational Plan

OPIR—Overhead Persistent Infrared

OPR—Office of Primary Responsibility

OSD—Office of the Secretary of Defense

PAD—Processing and exploitation, Analysis and production, and Dissemination

PCPAD—Planning and direction, Collection, Processing and exploitation, Analysis and production, and Dissemination

PE—Program Element

PED—Processing, Exploitation, and Dissemination

PM—Program Manager

POC—Point of Contact

POM—Program Objective Memorandum

PPBES—Planning, Programming, Budgeting, and Execution System

R&D—Research and Development

RDS—Records Disposition Schedule

RDT&E—Research, Development, Test, and Evaluation

S&T—Scientific and Technology

SAF—Secretary of the Air Force

SAF/AQ—Assistant Secretary of the Air Force for Acquisition

SAF/AQI—Assistant Secretary of the Air Force for Acquisition, Information Dominance

SAR—Synthetic Aperture Radar

SBIRS—Space-Based Infrared System

SMC—Space and Missile Systems Center

SME—Subject-Matter Expert

SoN—Safety of Navigation

SPO—System Program Office

SST—SAR, Spectral, and Thermal

T-0—Tier 0

T-1—Tier 1

T-2—Tier 2

T-3—Tier 3

TEM—Technical Exchange Meeting

TM—Target Materials

TTL—Technology Transition Lead

TTP—Tactics, Techniques and Procedures

UGO—Unified GEOINT Operations

USAF—United States Air Force

VOWG—Vertical Obstruction Working Group

WGS—World Geodetic System

WGS84—WGS 1984

WRS—War Reserve Stock

Terms

Exploitation Imagery Phases—(1) Time-dominant exploitation (Phase 0-I exploitation) is 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, i.e., Indications and Warning. 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 (Phase II and Phase III exploitation). (a) Phase II 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) Phase III Exploitation. In depth, long-range analysis that includes all available sources of imagery and may include information from other sources (SIGINT, human intelligence, MASINT, etc.). It is in this phase that detailed, authoritative reports and strategic studies on specified installations, objects, and activities are prepared by the agencies participating in the exploitation effort. Phase III exploitation timelines are not bounded and typically exceed one week after receipt of imagery. JP 2-03, *Geospatial Intelligence Support in Joint Operations*.

GeoBase—GeoBase, commissioned July 2001 by the AF Director of Civil Engineers (AF/A4C), is the AF version of the DoD IGI&S program as established by DoDI 8130.01 IGI&S. It is a systematic cross-functional approach to visualize and assess built and natural infrastructure in support of business and operational missions. It provides a standard yet agile AF capability to support leaders' and warfighters' needs in both the garrison and expeditionary environments.

Georectify—The digital alignment of a satellite or aerial image with a map of the same area. In georectification, a number of corresponding control points, such as street intersections, are marked on both the image and the map. These locations become reference points in the subsequent processing of the image. ESRI GIS Dictionary

Geospatial Engineering—Geospatial engineering encompasses those tasks that provide geospatial information and services to enhance awareness, understanding, and effective use of the operational environment for commanders and staffs across the range of military operations.

Geospatial engineering provides the JFC with terrain analysis and visualization of the operational environment through the utilization and display of accurate terrain and other geospatially referenced information and derived actionable advice that is referenced to precise locations on the earth's surface. This geospatial data forms the foundation upon which all other information on the operational environment is layered to form the common operational picture (COP) for the JFC and is an element of GEOINT. Geospatial engineer units provide strategic, operational, and tactical terrain analysis; terrain visualization; digital terrain products; nonstandard or updated map products; and baseline survey data to combat, combat support, and CSS forces.

Geospatial Intelligence (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. Source: JP 2-03

Geospatial Information & Services (GI&S)—Is 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. JP 2-03

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). JP 2-03

Imagery Intelligence (IMINT)—The technical, geographic, and intelligence information derived through the interpretation or analysis of imagery and collateral materials. JP 2-03

Orthorectified—Aerial imagery typically provides a distorted representation of the Earth's surface due to such things as lens distortion and sensor tilt. An orthorectified image has been geometrically corrected such that the scale is uniform, meaning that the image has the same lack of distortion as a map or chart. Orthorectified images can be used to measure true distances, because they provide an accurate representation of the Earth's surface.

Attachment 2

FRAMEWORK FOR GI&S REQUIREMENTS DEVELOPMENT AND SUBMISSION

A2.1. Purpose and Background. This attachment may be used by the operations community to define operational and functional requirements during the requirements identification phase as defined in AFI 10-601, *Operational Capability Requirements Development*. Derived system level requirements are the responsibility of the program office and are addressed in AF Pamphlet 14-111, *Intelligence Support to Acquisition*. The use of this framework at AFMC and AFSPC is also critical to ensure that the proper design, development, delivery, and maintenance of GI&S products meet the complex GI&S exploitation requirements of the AFMC weapon system development community.

A2.1.1. This attachment may also be used to inform the systems engineering, risk assessment, cost/manpower estimate, and contract preparations processes. Further, the content of this attachment is intended for use during GI&S engineering analysis of warfighting capability requirements for the purpose of determining, developing and applying the most appropriate GI&S solutions to enable operational, functional capabilities. It has additional value when used to check existing system documentation or updating legacy systems with new technology. The systems used for requirements generation are generally used to pass and manage the requirements information. Questions raised during any of these reviews should be submitted through command intelligence channels to AF/A2CG for resolution and validation.

A2.1.2. Address operational capability and functional requirements early and update throughout the system life cycle process to ensure continued mission success. Systems of interest are defined as weapons, weapon systems, and automated information systems (AIS). The majority of requirements are provided by the operational community. ACC acts as advocate for funding, and works with the AFMC Targeting and GEOINT SPO for GI&S materials to support new and updated weapon systems. New GI&S functional requirements are forwarded from the relevant AFMC/A2X or AFSPC/A2 office to AF/A2CG for validation. Fully processed requirements are then sent to NGA for adoption, development, and production. GI&S Area requirements indicate coverage of standard products over specific geographic areas. The content that follows reflects the structure for developing standardized Geospatial Information & Services (GI&S) requirements systems developed in the framework of AFI 14-111. It also reflects the need for adequacy of GI&S critical requirements, as expressed by the Air Force Inspection Agency's Targeting Accuracy Requirements Allocation (TARA) Eagle Look, (EL) PN06-503. Defense Intelligence Agency Deputy Director for Battlespace Awareness (DIA/J28), within the Joint Staff Directorate of Intelligence (JCS/J2), oversees the Service and Combatant Command GI&S requirements process IAW CJCSI 3901.01D, *Requirements for Geospatial Information and Services*. GI&S requirements are also documented in the Life-cycle Mission Data Plan (LMDP) IAW DoDD 5250.01, Management of Intelligence Mission Data (IMD) in DoD Acquisition, and AFI 14-111.

A2.1.3. For new warfighting capabilities, every attempt should be made to identify new GI&S needs early in the acquisition process. This is necessary to allow the most comprehensive and effective integration of GI&S at the lowest cost to the program. The latest reasonable identification of GI&S requirements would be at Milestone B. Early

identification of GI&S requirements during system engineering analysis can have a profound impact on the design, development, testing, and performance of a weapon system. It can provide the intelligence production community adequate lead time to develop a new GI&S product or capability without negative impact to the program cost, schedule, and performance. It also permits comprehensive system-of-systems analysis to ensure GI&S data standardization and interoperability functionality across interfacing systems. The identification and documentation of GI&S requirements across the system life cycle may be reflected in a variety of program and planning documents, including the system specification, risk management plan, life-cycle mission data plan, test and evaluation master plan, cost and manpower estimates, requests for proposal (RFP), and statements of work (SOW).

A2.1.4. GEOINT-derived products and data result from the convergence of GI&S, imagery, and imagery intelligence. The term GI&S includes orthorectified imagery based geospatial products, [e.g., Controlled Image Base, (CIB®)], but not imagery intelligence and other intelligence. GI&S is the representation of accurate, attributed, geo-referenced data and information, arranged to describe, assess, and visually depict physical features and geographically referenced activities on earth in support of Air Force missions. It also includes the related Geodesy and Geophysical (G&G) disciplines.

A2.1.5. The following is an example of how this attachment could be used. The requirement drafter should use the checklist to make sure all applicable options are considered and ensure the requirement meets the standard for critical GI&S information, particularly if the capability could be dependent upon one or more GI&S data/product inputs. If questions arise, the writer consults the MAJCOM GI&S office and works through the chain-of-command to AF/A2CG, as necessary. Most GI&S requirements supporting capability/system development are generated during research, development, test, evaluation, and sustainment activities executed within AFMC. The final validation authority for all GI&S related capabilities and requirements rests with AF/A2CG.

A2.2. Highlights and Tenets of GI&S Requirements:

A2.2.1. Ensure all software used with standard NGA products and data is NGA-certified. Use of approved Government-Off-The-Shelf/Commercial-Off-The-Shelf (GOTS/COTS) is mandatory [e.g., Commercial Joint Mapping Tool Kit (CJMTK), Georgia Tech Research Institute (GTRI)-FalconView (FV), Geographic Translator (GEOTRANS), and other mission planning- or operational-related offerings].

A2.2.2. Ensure use of all geospatial products and data produced outside of NGA and AF is authorized by Air Staff or the appropriate Combatant Command (CCMD).

A2.2.3. Ensure systems are developed to the extent possible to use standard GI&S data that does not require transformation of data for both economy and interoperability. If transformations are not avoidable, ensure they do not impact data fidelity and are made using certified software.

A2.2.4. Ensure critical/precision measurements are only made from original GI&S products and not reproduced copy.

A2.2.5. Ensure geopositioning software usage is IAW this publication. If Digital Point Positioning Data Base (DPPDB) coverage does not exist, request support from NGA, through

organizational channels. Definitions and further information related to GI&S and targeting is available at NGA's Secret Internet Protocol Router Network (SIPRNET) site.

A2.2.6. Targeting data mensuration is available at NGA's SIPRNET GEOINT site.

A2.2.7. Ensure use of World Geodetic System 1984 (WGS84) as the standard DoD reference system datum. Refer to CJCSI 3900.01B, *Position Reference Procedures*. If WGS84 is not possible, NGA software is used to transform datums and grids. When operating in a CCMD area where WGS84 is not available, the CCMD commander prescribes the interoperable datum to be used. Additional information is available at the following WEB site: <http://www.nga.smil.mil/products/gandg/geotrans/>.

A2.2.8. The Navigation Plan (NAVPLAN) series charts used in mission planning are likely outdated. Actual cultural features may not look as they do on the Compressed Arc Digitized Raster Graphics (CADRG)-NAVPLAN charts. It is critical that any replacement for the NAVPLAN series not sacrifice current aeronautical specifications to the detriment of flight.

A2.2.9. Many current vertical obstructions are not considered accurate to Air Force specification or are missing. Make navigation allowances accordingly.

A2.2.10. State actual requirements to drive systems to maximum efficiency rather than requesting inferior data only because of availability.

A2.3. GI&S Requirements Submission.

A2.3.1. Area GI&S Requirements. Area GI&S requirements are requirements for existing GI&S products of a specific area (*e.g.*, Tactical Pilotage Chart G-18 that covers southern Nevada).

A2.3.2. Functional GI&S Requirements. Functional GI&S requirements include requirements for new or modified GI&S products and requirements for existing GI&S products to support weapon system research, development, test, initial fielding, and sustainment.

A2.3.3. Area GI&S Requirements Submission. IAW CJCSI 3901.01D, "Service and Combatant Command GI&S Officers will identify, coordinate, validate, and prioritize GI&S requirements for their respective organization." AF/A2CG performs this function for the AF. Annually, AF/A2CG consolidates, prioritizes, and submits all AF area GI&S production requirements to the Foundation GEOINT NSG Operations Executive using standardized requirements management tools and processes fielded by NGA (*e.g.*, Geospatial Requirements One-stOp Visualization Environment [GROOVE]).

A2.3.4. Functional GI&S Requirements Submission. Annually AF/A2CG generates a consolidated record identifying the AF's current and future functional GI&S requirements, in what formats, on what domains, and on what media. This record is reviewed by HAF, MAJCOM, and Program Offices and then submitted to NGA every spring.

A2.3.5. Request Management Capability. The National System for GEOINT Request Management Capability (formerly the National System for GEOINT [NSG] Needs Process) is an enterprise process for submission and adjudication of NSG GEOINT capability gaps and changes to programs of record. NSG Request Management addresses GEOINT shortfalls in Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF). AF GEOINT collectors, users, and producers may submit capability requests

for review, adjudication, and potential implementation by NGA. Any member may submit requests into the NSG request management capability on the Joint Worldwide Intelligence Communication System (JWICS) network <http://nsg.ic.gov/requirement>. The AF/A2CG validates submissions. Subsequently, an NGA Support Team member works with AF/A2CG to ensure understanding, impact, and linkage to NSG strategy. NGA/Xperience Customer Account Managers provide liaison throughout the adjudication process.

A2.4. GI&S requirements for new systems under development and existing systems being upgraded.

A2.4.1. Existing capability/functional requirement review: If the need arises to review an existing system and requirements documentation already exists in any approved form, such as Initial Capabilities Documents, Capabilities Development Documents (CDD), Capability Production Document (CPD), System Specification, LMDP, etc., the GI&S analysis should, as a minimum, address the following questions:

A2.4.1.1. Which subsystems require geospatial data?

A2.4.1.2. Are any GI&S terms used? To determine this, perform document word searches for: geospatial, geographic, Geographic Information System, GEOINT, GI&S, GIS, map, chart, geodesy, geodetic, geophysical, geophysics, NGA, point positioning, imagery, (for imagery-based geospatial) georectified, georeferenced, coordinates, datum, targeting, grid, elevation data, ellipsoid, gravity, WGS84, WGS, Universal Transverse Mercator, Inertial Navigation System, Flight Management System, Terrain Awareness Warning System (TAWS), Auto Ground Collision Avoidance System.

A2.4.1.3. Does the use of a GI&S term relate to a GI&S requirement? Analyze word search results for GI&S requirements. Understand the purpose and goals of the existing system. Correct and amplify requirement as necessary using the following questions to ensure all relevant information is included.

A2.4.2. To develop a new operational capability that involves GI&S, it is important to understand the purpose of the system being developed. Begin by reviewing the system's concept of operations (CONOPS), Analysis of Alternatives report, or similar documentation. Conduct a mission decomposition to determine key mission areas and any requisite geospatial inputs/outputs. Some early questions include:

A2.4.2.1. What is/are the key mission(s) supported by the system?

A2.4.2.2. What functions does the weapon, weapon system, or AIS support?

A2.4.2.3. Who are the end users?

A2.4.2.4. Must the system supply essential elements of information (EIs) derived from or related to the GI&S inputs?

A2.4.2.5. Is there an intelligence function or customer who receives input from the system?

A2.4.3. Ensure the program or initiative follows the guidance in AFI 14-111, and AFMC/A2 management of Acquisition Intelligence Processes (*e.g.*, Intelligence Support Working Groups [ISWG], Technical Exchange Meetings [TEM], and Cross- Program Analysis). Ensure the program is conducting GI&S analysis in other acquisition processes such as

systems engineering, risk analysis/management, test and evaluation planning, and cost and manpower estimates. Ensure that documented requirements are consistent with the baseline documents of the initiative or program.

A2.4.4. It is not essential that the requirement writer have an in-depth background in geospatial sciences. Assistance or clarification should be requested through GI&S channels whenever necessary.

A2.4.5. What are the GI&S inputs to the system (i.e., data, products, digital or hardcopy formats, various media)? Perform analysis to ensure the latest and best standard geospatial data and products are being used to support the functions served. Consider such facts as update cycles (timeliness), accuracy factors, readability related to colors and lighting, input availability/distribution at various levels of command and geographic areas in which coverage is needed, storage within the Geospatial Product Library (GPL) data structure, scales, resolution, and any other relevant factors that appear in this publication. Make sure that standard products selected for use by the program or initiatives are not on the NGA “Sunset” or “Soon to be obsolete” lists. Answer the following:

A2.4.5.1. Are data/product format(s) compatible with system interface requirements? If applicable, ensure that requirements specify all GI&S-related interfaces that are needed.

A2.4.5.2. Will system software properly manipulate geospatial information? Has software output been verified to ensure no change to basic accuracy is caused by the software? If necessary, request assistance through normal channels.

A2.4.5.3. Does the requirement indicate a need for transformation to new NGA map/chart environments? If so, state that future system changes will be necessary to go from legacy GI&S data/products to the new digital programs.

A2.4.5.4. What are the sources of the inputs (NGA, AF production, etc.)? If sources are other than NGA, such as native maps or Canadian maps and charts, secure Air Staff waivers.

A2.4.5.5. Are there any proprietary components that result from vendor actions to repackage and control standard products and data? When in doubt, seek assistance through normal channels, and ensure the use of standard, non-proprietary NGA data whenever possible.

A2.4.6. Are any GI&S-related materials, such as TMs or imagery, required? The term GEOINT covers materials outside of the AF definition of GI&S. GEOINT components such as imagery and imagery intelligence should be cross-referenced.

A2.4.7. Are geodetic or precise coordinates used by the system?

A2.4.7.1. Is the source for coordinate derivation DPPDB? If another source is used, request Air Staff approval.

A2.4.7.2. Is NGA point positioning support needed? If so, contact AF/A2CG via the GI&S chain of command.

A2.4.7.3. Is specialized software required to obtain precise points? If so, this software must be NGA-approved.

A2.4.7.4. Is the new system used for Targeting? If so, document that fact in the requirement and perform analysis to ensure that system accuracies meet the specific targeting requirements.

A2.4.7.5. If Coordinate-Seeking Weapons (CSW) are to be supported, request assistance from AF/A2CG through the chain of command to ensure you have the current CSW checklists.

A2.4.7.6. Is GI&S data stored on airborne platforms used for coordinate derivation? If so, ensure entire data extraction and loading processes are outlined in detail as derived requirements.

A2.4.7.7. Has appropriate linkage between derived requirements and applicable sensor models been documented in the requirements verbiage?

A2.4.7.8. If coordinate transformation will be performed, ensure NGA GEOTRANS is used to conduct the transformation.

A2.4.7.9. Assess the relationships among this system and systems that acquire, process and pass intelligence information, (e.g., Distributed Ground System and Air and Space Operations Center (AOC) weapon systems)? Do these relationships lead to any derived requirements (e.g., tailoring data and information to better match the formats and requirements of other systems)?

A2.4.7.10. If known, identify the potential similarities between source data for this system and data for similar platforms, (e.g., the F-22A need for digital terrain elevation data that might be related to the same general need in the Joint Strike Fighter or C-130 programs). Are any economies of effort possible from cross-program analysis?

A2.4.7.11. Do any relationships exist between this set of requirements and the requirements of other weapons (e.g., Guided Bomb Unit, GBU-31)? Are there any derived requirements?

A2.4.7.12. Has a requirement for Height Above Ellipsoid (HAE) and/or Mean Sea Level (MSL) data been identified?

A2.4.7.13. What type of elevation data best serves this system? Have Shuttle Radar Topography Mission (SRTM), various Digital Terrain Elevation Data (DTED®), High Resolution Terrain Information (HRTI) levels, DPPDB and stereo-derived elevation data been considered?

A2.4.7.14. What type of controlled imagery best serves this system? Have commercial orthorectified or Controlled Image Base (CIB®) been considered? Include desired resolution, format and type (panchromatic, multispectral, pan-sharpened, etc.

A2.4.7.15. Does precise coordinate generation require training and certification? AFI 14-126, *Target Coordinate Mensuration Training, Qualification and Certification Program* can be used to help make this determination.

A2.4.8. Is WGS 84 specified in the requirement? If another datum is to be used, check the authorization and ensure NGA-validated GEOTRANS is used for any datum or grid transformations. No other methods are authorized. **Note:** The use of WGS 84 is strongly recommended by CJCSI 3900.01B and AF/A2CG.

A2.4.9. What scale or resolution levels are required by this system? Can they be met by existing data/product sources? Regardless of product/data availability, if the mission requires specific scales, state them in the requirement. Relate legacy products to feature data density levels.

A2.4.10. It is necessary to understand the accuracies and limitations of legacy products. If legacy products are outdated, and system/mission profile requires the latest data, including Vertical Obstructions, can the mission material be augmented by imagery sources such as special CIB® production and/or any future feature data available at the proper densities? Regardless of data and product availability, state actual requirements to drive the system to maximum efficiency.

A2.4.11. Is the age of information or specific timeliness required and specified in the requirement?

A2.4.12. Are there specialized mission planning system considerations? Describe relationships to mission planning (i.e., are mission planning systems that serve this system capable of ingesting all required data, including data from future NGA programs?).

A2.4.13. Are there any relationships to “standard” GI&S and GIS software applications for visualization and manipulation of GI&S data and products, (e.g., CJMTK)? Does the new system have a need to change or add requirements to specific software programs? Are other GI&S packages used with this system? Notify AF/A2CG of any new GIS application requirements.

A2.4.14. Are accuracy requirements for the GI&S data and products specified in the requirement? Specific accuracies are stated for most NGA and other products. If avionics or system components can use materials with greater accuracy to enhance performance, those accuracies should be stated in the requirement.

A2.4.15. If applicable, state special needs for information from new NGA chart production or other related new programs:

A2.4.15.1. 1:500K scale and smaller equivalent

A2.4.15.2. 1:250K scale equivalent.

A2.4.15.3. 1:100K to 1:50K scale equivalent.

A2.4.15.4. 1:25K scale and larger equivalent;

A2.4.16. Is the geographic area of systems operations specified for translation into geospatial Area Requirements when applicable? Ensure the area requirement is submitted through the chain of command to AF/A2CG for training and RDT&E purposes. When data is required for use in supporting Operational Plan (OPLAN) commitments, the requirements are submitted to the appropriate CCMD component.

A2.4.17. To assist end users, state any special classification or caveats associated with specific GI&S materials. This includes program restrictions for mission planning and related systems. It also includes any special distribution caveats, such as those required by NGA bilateral country agreements and NGA “LIMITED DISTRIBUTION” restrictions.

A2.4.18. Can the current AF or NGA GPL be used to supply the standard suite of materials or specialized materials?

- A2.4.18.1. What security restrictions exist for the GPL in the geographic/command environment of the system?
- A2.4.18.2. Can specialized communications such as Global Broadcast System (GBS) be used in this support?
- A2.4.18.3. Make note of frequency of updates required for GPL-based information and any other data sources.
- A2.4.18.4. Are there any systems/architectures outside of GPL that are required to store and disseminate inputs for this system, (*e.g.*, Joint Intelligence Virtual Architecture-Visualization (JIVA-V), etc.)?
- A2.4.19. If GPL is not used, are specialized distribution networks required for input of geospatial information, or will standard Defense Logistics Agency distribution support fulfill the need?
- A2.4.20. What are the digital data formats required by the system? Are these formats compatible with current NGA formats and projected future developments foreseen for this material? Every effort should be made to ensure the system uses standard NGA geospatial data to ensure interoperability and compatibility with operational architectures.
- A2.4.21. If the system produces GI&S data/updates for “upstream” dissemination are the specified formats compatible with current geospatial standards?
- A2.4.22. Is special seasonal coverage or any other special attribute to standard geospatial data and products specified? For example, is seasonal CIB® coverage required?
- A2.4.23. Are there any softcopy or special digital formats required, such as data compression?
- A2.4.24. Do any geodesy or geophysical relationships exist, such as those requiring specialized surveys to conduct operations? If so, contact AF/A2CG for additional information as needed.
- A2.4.25. Are there requirements for related geospatial materials outside of AF/A2CG responsibility, such as evasion charts, flight information publications or Common Installation Picture information? If so, they should be identified respectively to the Joint Personnel Recovery Agency, Air Force Flight Standards Agency or AF/A4C installation geospatial materials POC.
- A2.4.26. Is a reproduction policy needed? If so, has that been documented? Are there reproduction restrictions for system output?
- A2.4.27. Are special destruction procedures needed in addition to normal classification policy?
- A2.4.28. Will any specialized geospatial training be needed?
- A2.4.29. Do contractors need access to geospatial data or products?
- A2.4.30. Will the use of geospatial data by operating organizations necessitate manpower changes or generate additional training requirements?

Attachment 3**GEODETTIC SUPPORT WORKSHEET**

Use the recommended format below for submitting geodetic survey requirements. Examples of required information are included. Add more information as necessary, one worksheet for each request.

A3.1. User Identification Code. Command-generated alphanumeric code indicating the command making the request, the fiscal year (FY) the request is submitted and the numerical value of the request for the year. Example for an ACC request for FY 2014: User Identification Code: ACC 14-01 (second request would be ACC 14-02, etc.).

A3.2. Location of Survey. Identify the base, city, state, range, and country.

Base: Nellis AFB City/State: Las Vegas NV

Range: Nellis Range 65 Country: USA

A3.3. Suspense. Identify the date(s) the user would like to have the survey team on site and the date on which the user needs the final survey data. Please allow 60 days after completion of the field survey for reduction, quality control, etc.

Date Survey Required: DDMMYY

Date Final Survey Data Required: DDMMYY

A3.4. Support Required. Indicate as specifically as possible what needs to be done (*e.g.*, Inertial Navigation System [INS] update points, Precision Measurement Equipment Laboratory [PMEL] survey, range targets, radar sites, etc.). Also, indicate how many points or sites are involved.

Example: Support required: Position approximately 12 INS update points at Nellis AFB and 5 targets on Nellis Range 65.

A3.5. Justification. Indicate the system, program, or operation that needs support and impact if support is not provided.

Example: Justification: Survey required to test accuracy of the F/A-22 avionics system. Lack of support could result in delayed testing and/or degraded test results.

A3.6. Point of Contact/Requesting Office. Indicate a person for the survey team to contact for instructions, questions or assistance.

Example: POC/Requesting Office: 57 FW/DOO

Rank/Name: Captain Joe Smith

Msg Address: 57FW NELLIS AFB NV//DOO//

DSN: 329-0726 Commercial: (406) 789-3245

FAX: 329-1221 Secure: STU-III 767-3245

A3.7. Priority. Indicate the AF precedence rating as determined by the AF Program Installations, Units and Priorities document and the user's priority relative to other command requirements.

Air Force Precedence Rating: 03-08

User's Relative Priority: 3

A3.8. Mailing Address/es for Published Data. Indicate what office(s) should receive the published data.

Example: 57 FW/DOOQ HQ ACC/DIOT
Attn: Capt Smith 129 ANDREWS ST, STE 304
Nellis AFB NV 89191-5000 Langley AFB VA 23665-2767

A3.9. Required Data and Accuracies. Indicate the type of data needed (*e.g.*, coordinates, astronomic data, azimuths, gravity data, etc.); the datums (if other than WGS and National Geodetic Vertical Datum [NGVD]); and the form of the information (*e.g.*, Military Grid Reference System [MGRS], Universal Transverse Mercator [UTM], or geodetic coordinates).

Type of Data: INS update point and target positions.

Datums: The most current WGS and NGVD only.

Form of Data: Require all positions in both MGRS and geodetic forms.

Accuracies: Use standard Air Force accuracies for all points.

A3.10. Additional Remarks. Include anything that helps clarify the requirement, restrictions on the data, or the surveyors and any deadlines that could affect the survey.

Example: Additional Remarks: Survey must be accomplished by DDMMYR to support initial testing of the ATC avionics system. Range is inactive 08-19 Jan for cleanup. Range access is limited at any other time.

Attachment 4

AIR FORCE GEOINT CAPABILITIES

A4.1. Air Force GEOINT capabilities encompass all imagery (excluding ground-based, hand-held), Imagery Intelligence (IMINT), and geospatial information and related products, tools, processes, resources, and systems supporting AF missions. AF GEOINT also includes the ancillary data and associated capabilities needed for collection management, data processing, exploitation, archiving, and dissemination.

Figure A4.1. Air Force GEOINT Capabilities.

