

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 14-124
25 NOVEMBER 2008**



Intelligence

PREDICTIVE BATTLESPACE AWARENESS (PBA)

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RELEASABILITY: There are no releasability restrictions on this publication.

OPR: HQ USAF/A2CP

Certified by: HQ USAF/A2C (Brig Gen Blair E. Hansen)

Pages: 16

This instruction implements Air Force Policy Directive (AFPD) 14-1, *Intelligence, Surveillance, And Reconnaissance (ISR) Planning, Resources and Operations*, 02 April 2004. This instruction is to be used in conjunction with higher headquarters (HHQ) directives and local guidance. It establishes responsibilities and guidance for implementing PBA as the core skill set for all Air Force ISR personnel. This Air Force Instruction (AFI) also applies to Air Force Reserve Command and Air National Guard units. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, *Recommendations for Change of Publication*; route AF IMT 847s from the field through the appropriate chain of command. Field activities must send implementing publications to the higher headquarters functional OPR for review and coordination before publishing. HQ USAF/A2 must approve any deviations from this instruction.

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Chapter 1

MISSION AND SOURCE DOCUMENTS

1.1. Mission. Air Force intelligence and operations personnel achieve and maintain PBA through the integration of Target Development, Intelligence Preparation of the Operational Environment (IPOE), ISR Strategy and Planning, ISR Employment, and Assessment processes into a coherent framework. The integration of these components into an efficient framework enables commanders to predict and pre-empt adversary actions when and where they choose. PBA

reinforces the Air Force's core competencies and enables Effects Based Approach to Operations (EBAO). The basic premise of EBAO is that all military operations are designed to produce certain desired effects (outcomes) and to avoid effects that are undesirable. Effects encompass all the outcomes of actions, not just those we desire or can easily anticipate. It is also an essential capability for waging the Global War on Terror (GWOT) given the asymmetric threats which characterize the Operational Environment. Achieving PBA is critical to reaching the Air Force's Strategic goal of persistent situational awareness.

1.2. Source Documents. Air Force Doctrine Document (AFDD) 2, *Operations and Organization*, highlights PBA as one of the capabilities that has made possible effects that have not been possible before. PBA is fundamental to successful air, space, and information operations as underscored in AFDD 2-5 *Information Operations*. To this end, AFPD 14-1 directs that the Air Force will ensure that PBA is the core skill set for all Air Force ISR personnel. Intelligence and Operations functions essential to achieving PBA are explained in Air Force Pamphlets (AFPAMS): 14-114 (Target Development); 14-118 (Air and Space Intelligence Preparation of the Operational Environment); 14-121 (ISR Strategy and Planning); 14-122 (ISR Employment); and 14-123 (Assessment). Attachment 2 to this AFI is a synopsis of PBA concepts espoused in these source documents.

Chapter 2

RESPONSIBILITIES

2.1 HQ USAF/A2C:

2.1.1. Prepares, coordinates, and recommends HQ USAF ISR policy on Air Force PBA. HQ USAF/A2C also reviews Major Command (MAJCOM), Field Operating Agency (FOA), and Numbered Air Force (NAF) PBA guidance and advises as necessary.

2.1.2 Coordinates AF policy with respect to Joint policies and programs affecting PBA.

2.2 HQ USAF/A2D:

2.2.1. Provides guidance for PBA-related intelligence Initial Qualification Training (IQT), Mission Qualification Training (MQT) and Continuation Training in AFI 14-202 and AFI 14-2 series instructions.

2.2.2. Coordinates PBA requirements for intelligence initial skills and supplemental training/education courses (e.g., Intelligence Master Skills Course {IMSC} and Analysis, Correlation, and Fusion Course {ACF Course}) curricula to enhance understanding of PBA.

2.3. HQ Air Education and Training Command (AETC):

2.3.1 Acts as the Lead MAJCOM for executing PBA training and education for the Air Force.

2.3.2. Develops and integrates PBA training and education into appropriate initial skills and supplemental training programs, IAW AFI 36-2201, to satisfy validated MAJCOM and AFSC Functional Manager requirements. This will:

2.3.2.1 Addresses interrelationships of the five elements of PBA (Target Development, IPOE, ISR Strategy and Planning, ISR Employment, and Assessment.) It will also be aligned with Air Force PBA concepts espoused in: AFPAM 14-114 (Target Development); AFPAM 14-118 (Air and Space Intelligence Preparation of the Operational Environment); AFPAM 14-121 (ISR Strategy and Planning); AFPAM 14-122 (ISR Employment); and AFPAM 14-123 (Assessment).

2.3.2.2: Develops and integrates ISR/PBA doctrine, education and war gaming into appropriate levels of Professional Military Education and Continuing Education (PME/PCE) in resident and non-resident programs through the Air University (AU) and the LeMay Center.

2.4 LEAD-MAJCOM A2, COMPONENT-MAJCOM A2, and FOA (AFIAA and AFISRA) A2 Responsibilities:

2.4.1 Planning and Direction:

2.4.1.1 Coordinate on all MAJCOM and HHQ policies affecting PBA.

2.4.1.2. Ensure assigned intelligence personnel are cognizant of PBA concepts and application to their particular mission.

2.4.1.3. Ensure Air Reserve Component (ARC) elements as well as assigned Individual Mobilization Augmentees (IMAs) are knowledgeable of PBA concepts and applications.

2.4.1.4. Develop actions and implement a comprehensive PBA program in compliance with doctrine and this Air Force Instruction. Processes and procedures must be documented in the form of Operating Instructions (OIs), Tactics, Techniques and Procedures (TTPs), or AF Publications.

2.4.1.5. Establish procedures (as appropriate to Lead or Component MAJCOM role IAW HQ USAF PAD 07-13, Annex B, "ISR") to identify PBA requirements and program for resources to meet requirements, including identifying intelligence manpower, training, security clearance, systems, facilities and information/production requirements.

2.4.1.6. Incorporate PBA requirements into intelligence architecture and contingency planning as appropriate to Lead or Component MAJCOM role IAW HQ USAF PAD 07-13, Annex B, "ISR."

2.4.1.7 Oversee, inspect, exercise, and assess intelligence support to PBA within the command, based on the standards set forth in this document.

2.4.2. Employment and Deployment:

2.4.2.1. Senior Intelligence Officers (SIO) will serve as the OPR responsible for ensuring PBA is achieved for the command.

2.4.2.1.1. Ensure any unit deploying as part of an exercise, training or operational mission has their intelligence personnel indoctrinated in the procedures and TTPs for incorporating PBA concepts into current and planned operations. This includes appropriate IMA and ARC personnel assigned to support PBA.

2.4.2.1.2 Develop OIs to implement PBA supporting assigned missions.

2.4.2.1.3. Ensure procedures, systems and/or databases are in place to incorporate real world and exercise lessons learned and best practices into PBA policies and procedures

2.4.3 Training and Education Support:

2.4.3.1 Lead-MAJCOM/FOA Intelligence is responsible for managing resources and ensuring PBA training and education required by that command and associated CAF/MAF C-MAJCOMs is available to subordinate intelligence organizations.

2.4.3.2. Program Guidance Letters (PGL). Lead MAJCOM Functional managers, in coordination with user MAJCOMs, will determine total force training and education requirements across the Future Years Defense Plan (FYDP). MAJCOM functionals will forward validated training requirements to MAJCOM Training Requester Quota Identifier (TRQI) Managers. Based on Mission Readiness Training (MRT) PGL baselines, MAJCOM TRQI Managers will input validated training requirements into the Oracle Training Administrator (OTA) to be included in course/class schedules. Quota management for MAJCOM unique programs will be conducted by the sponsoring MAJCOM.

2.5. Component NAF (C-NAF)/ HQ Intelligence Responsibilities: Responsible for providing intelligence professionals to support PBA for in-garrison, in-transit, and deployed units.

2.5.1. Requirements Management: Identify and submit requirements that relate to PBA IAW HHQ directives. These requirements will be derived using the Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities (DOTMLPF) framework.

2.5.2. Employment/Deployment:

2.5.2.1. Provide PBA support to commanders and their staffs through integrated IPOE, Target Development, ISR Planning and Employment, and Assessment processes.

2.5.2.2. Analyze incoming intelligence for applicability to PBA-enabling processes and impact on unit mission, current/planned operations, and exercises. Rapidly disseminate actionable, predictive information and intelligence to the JFACC, aircrews, mission-

planners, subordinate and lateral units, higher headquarters, other agencies and sister services as needed. Examples of predictive information include estimates of adversary actions (most or least likely courses of action) and refined collection areas and tasking.

2.5.2.3. Ensure analysis contributing to PBA is addressed in current intelligence briefings, pre-mission and pre-deployment briefings.

2.5.2.4. Ensure continuity books are developed and maintained for PBA functions.

2.5.2.5. Establish formal procedures (i.e., OIs, TTPs, checklists) which result in processes fostering ability to include predictive analysis into intelligence products for the local commander and staff as appropriate.

2.5.2.6. Document PBA lessons learned and forward to MAJCOM for action (as required) and entry into lessons learned databases.

2.6. Training Support:

2.6.1. The C-NAF HQ will establish an internal intelligence-training program addressing PBA concepts and constituent elements and develop an OI detailing how the program will be conducted. This program will follow MAJCOM guidance and standards for PBA training at the AOC-level. Establish qualifications for intelligence personnel to certify as base-level trainers prior to conducting training. C-NAF A2s will ensure all intelligence professionals performing PBA functions receive appropriate training.

2.6.2. The C-NAF HQ PBA training program should incorporate accepted PBA doctrine and concepts detailed in Air Force Departmental Publications.

2.6.3. The unit's IQT, MQT, and Continuation Training programs should include training on how to achieve PBA through application of the five PBA elements.

2.6.4. Individual training records shall be updated to reflect PBA concepts training IAW MAJCOM policy.

2.6.5. Locally established PBA training programs should address the following:

2.6.5.1. Understanding the purpose of the PBA construct and interrelationships of its constituent elements.

2.6.5.2. How to conduct predictive analysis using IPOE methods and tools as delineated in AFPAM 14-118 and in Joint Publication (JP) 2-01.3 *Joint Tactics, Techniques, and Procedures for Joint IPOE*.

2.6.5.3. Organization, training, and responsibilities of AOC divisions tasked with enabling PBA IAW AFI 13-1AOCV1-3 and command TTPs.

2.6.5.4. Applying C-NAF resources and TTPs to operations aimed at achieving PBA for the JFACC and staff.

DAVID A. DEPTULA, Lt Gen, USAF
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Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION****References**

AFDD 1-2, *Air Force Glossary*

AFDD 2, *Operations and Organization*

AFDD 2-5, *Information Operations*

AFI 13-1AOCV1, *Ground Environment Training-Air and Space Operations Center*

AFI 13-1AOCV2, *Standardization/Evaluation Program -Air and Space Operations Center*

AFI 13-1AOCV3, *Operational Procedures-Air and Space Operations Center*

AFMAN 33-363, *Management of Records*

AFPD 14-1, *Intelligence, Surveillance, and Reconnaissance (ISR) Planning, Resources and Operations*

AFPAM 14-114, *Predictive Battlespace Awareness: Target Development*

AFPAM 14-118, *Predictive Battlespace Awareness: Air and Space Intelligence Preparation of the Operational Environment*

AFPAM 14-121, *Predictive Battlespace Awareness: ISR Strategy and Planning*

AFPAM 14-122, *Predictive Battlespace Awareness: ISR Employment*

AFPAM 14-123, *Predictive Battlespace Awareness: Assessment*

AFI 36-2201V1, *Training Development, Delivery and Evaluation*

Air Force Strategic Plan, 2006-2008

JP 2-01.3, *Joint Tactics, Techniques, and Procedures for Joint Intelligence Preparation of the Operational Environment.*

HQ USAF Program Action Directive (PAD) 07-09, *Air Force Intelligence Transformation*

HQ USAF PAD 07-13, *Implementation of the CSAF Direction to Transform and Consolidate Headquarters Management Functions*

Abbreviations and Acronyms

A2— Staff Intelligence

AFDD – Air Force Doctrine Document

AFI—Air Force Instruction

AFISRA – Air Force Intelligence, Surveillance and Reconnaissance Agency

AFMAN – Air Force Manual

AFPD – Air Force Policy Directive

AFPAM—Air Force Pamphlet

AFRIMS – Air Force Records Information Management System

AFSC – Air Force Specialty Code

ARC - Air Reserve Component

DOTMLPF - Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities

EBAO - Effects-based Approach to Operations

ETCA - Air Force Education and Training Course Announcement

FYDP - Future Years Defense Plan

GWOT – Global War on Terror

HAF—Headquarters Air Force

HHQ—Higher Headquarters

IAW—In Accordance With

IMA—Individual Mobilization Augmentee

IMSC—Intelligence Master Skills Course

IPOE—Intelligence Preparation of the Operational Environment

IQT—Initial Qualification Training

ISR – Intelligence, Surveillance, and Reconnaissance

JFACC – Joint Forces Air Component Commander

JP – Joint Publication

JULL – Joint Universal Lessons Learned

MAJCOM—Major Command

MQT—Mission Qualification Training

MRT - Mission Readiness Training

NAF – Numbered Air Force

OI—Operating Instruction

OPR – Office of Primary Responsibility

PBA – Predictive Battlespace Awareness

PCE – Professional Continuing Education

PGL - Program Guidance Letters

PME – Professional Military Education

POC—Point of Contact

RDS – Records Disposition Schedule

SIDO – Senior Intelligence Duty Officer

SIO – Senior Intelligence Officer

TRQI - Training Requester Quota Identifier

TTP—Tactics, Techniques and Procedures

Terms

Assessment – PBA process that encompasses all efforts to evaluate effects and gauge progress toward accomplishment of actions, effects, and objectives.

Effects-based Approach to Operations (EBAO) - Actions taken against an adversary that are designed to achieve specific effects that contribute directly to desired military or political objectives.

Intelligence Preparation of the Operational Environment (IPOE) - The systematic, four-step analytical methodology employed to reduce uncertainties concerning the adversary and to allow friendly forces to exploit or minimize the undesirable effects of the Operational Environment. The four steps of IPOE are: Define the Operational Environment; describe the Operational Environment's effects; evaluate the adversary; and determine the adversary's course of action (COA).

Intelligence, Surveillance and Reconnaissance (ISR) Employment - Those actions taken for the rapid adjustment of collection tracks, sensors, and associated intelligence collection, processing and reporting in response to changes within the Operational Environment due to shifts in mission or priorities, environmental factors or emerging threats and targets.

ISR Strategy and Planning – PBA process consisting of four main tasks; understanding JFC/JFACC guidance, understanding ISR asset capabilities and availability, integrating ISR capabilities with operations, and synchronizing collection to requirements.

Predictive Battlespace Awareness - The situational awareness needed to develop patterns of behavior, constraints and opportunities of geography, topography, cultures, environment and forces that allow us to misdirect, predict, and pre-empt our adversaries.

Target Development – PBA process consisting of the focused, systematic analytical examination of potential target systems to determine the criticality, vulnerability, and suitability of each target as well as relationships between and within target systems in order to create the desired effects that achieve the commander's objectives.

Attachment 2

Synopsis of Predictive Battlespace Awareness (PBA)

A2.1. Synopsis of Predictive Battlespace Awareness (PBA). Predictive Battlespace Awareness (PBA) is a multidimensional understanding of the Operational Environment in time, space, and effect; it is the capability to correlate and fuse patterns of enemy activity and subsequent events to predict adversary intent and/or potential future enemy COA. PBA is achieved by the commander through the possession of relevant, comprehensive knowledge – including an accurate intelligence-based forecast of the pertinent influences in the Operational Environment. This knowledge of the operational environment, in concert with C2, permits commanders to anticipate future conditions, assess changing conditions, establish priorities, and exploit emerging opportunities. Our ability to act with a degree of speed and certainty not matched by our adversaries permits commanders to shape the Operational Environment to our advantage. To achieve this level of awareness requires the development and synchronization of five key elements: intelligence preparation of the Operational Environment (IPOE), target development (TD), intelligence, surveillance, and reconnaissance (ISR) strategy and planning, ISR employment, and assessment. Each of these elements is vital to the planning and conduct of EBAO, but is of limited utility if developed and refined individually. These elements are continuously refined, in parallel, to provide a comprehensive view of the operational environment which provides commanders with the capability to anticipate future conditions, assess changing conditions, establish priorities, and exploit emerging opportunities while mitigating the impact of unexpected adversary actions. Otherwise without sufficient PBA, operations can "devolve into blindly servicing a list of targets, with little or no strategy and little or no anticipation of enemy actions." (AFDD 2-0; *Operations and Organizations*).

A2.2. Air and Space Intelligence Preparation of the Operational Environment (IPOE). Air and Space Intelligence Preparation of the Operational Environment (IPOE) is a systematic, four-step analytical methodology employed to reduce uncertainties concerning the adversary and to allow friendly forces to exploit or minimize the undesirable effects of the operational environment. The four steps of IPOE are: Define the operational environment; describe the operational environment's effects; evaluate the adversary; and determine the adversary's COA.

A2.2.1. The intent of IPOE is to provide the planners with the information and assessments required to develop a campaign or operational plan that shapes the operational environment to friendly forces' advantage and achieves the commander's objectives. IPOE helps analysts to characterize the effect of the operational environment on friendly and enemy operations, evaluate the enemy forces, and determine potential enemy COAs.

A2.2.2. Strategic-level IPOE examines the elements of national power: economic, military, political, and informational.

A2.2.3. Operational-level IPOE is concerned with analyzing the operational area, facilitating the flow of friendly air and space forces to the operating area in a timely manner, sustaining those

forces once in place, then integrating tactical capabilities at the decisive time and place to achieve operational and strategic effects.

A2.2.4. The IPOE process is also used to support tactical operations. Tactical operations generally require a greater level of detail over a smaller segment of the operational environment than that required at the strategic and operational levels. In particular, the IPOE process should be used to support the force protection requirements of local commanders. At the tactical level the IPOE process is used to create threat situation awareness and understanding of how the adversary fights – all key to effective mission planning.

A2.2.5. IPOE drives targeting recommendations resulting from the development of adversary COAs, enemy centers of gravity (COG), and enemy high value targets (HVT) and critical vulnerabilities (CV). Finally, collection requirements may be generated during the IPOE process in order to track the execution of the potential enemy COAs.

A2.2.6. Air and Space Intelligence Preparation of the Operational Environment, as an element of PBA, is more thoroughly discussed in AFPAM 14-118.

A2.3. Target Development (TD). Targeting links strategy to tactical application of air and space power, helping to determine the most efficient and effective means of creating desired effects. Target development (TD) is a focused, systematic analytical examination of potential target systems to determine the criticality, vulnerability, and suitability of each target as well as relationships between and within target systems in order to create the desired effects that achieve the commander's objectives. By identifying those relationships and critical vulnerabilities, the commander's achievement of PBA is enhanced through a clear understanding of how the cumulative effects of his or her actions impact the adversary.

A2.3.1. While IPOE provides the context and supporting analysis for potential adversary actions, TD provides the context and supporting analysis for potential friendly COAs and the evaluation of both intended and unintended effects. TD provides the foundation for the commander to determine what Operational Environment effects need to be achieved.

A2.3.2. In the United States Air Force, targeting is conducted at all levels of warfare and operations. The functions are performed by officer, enlisted, civilian, and contract personnel. TD is conducted by USAF personnel assigned to Air Operations Centers (AOC), Joint Intelligence Operations Centers (JIOC) and within other segments of the intelligence community. USAF personnel performing TD functions should be cognizant of the fact that their actions can and often do have far reaching impacts in the operational environment. Often times, the analysis done by a USAF targeting professional will be only one or two steps removed from the employment of a weapon.

A2.3.3. USAF personnel assigned to units with strategic missions will play a vital role in the long term analysis of systems that the United States will plan strategic missions against. At this level, the macro-level analysis that is tasked to the intelligence community will come back to the

USAF targeting professional in the form of IPOE-type documents that are used in the development of strategic plans.

A2.3.4. USAF personnel assigned to operational level of war units (i.e., AOCs, JIOCs) are active in TD in the current state of targeting in the DoD. It is often the USAF targeteer who writes the tasking that is turned into a target system analysis (TSA) or other document that is used for actual target selection. USAF targeteers from these operational level units are often called upon to make up the core of JFC or Joint Task Force (JTF) targeting teams. The volume and fidelity of information that USAF targeting professionals will receive and process is staggering, and the USAF representatives are often linchpins in combat operations and PBA in general.

A2.3.5. USAF personnel assigned to tactical units are the final link in the TD chain. Having an understanding of where targeting data comes from, how it is processed, and how it is translated into something selected for strike or other effects is critical for continuity of operations and confidence at the unit level.

A2.3.6. TD also supplements the process of identifying information gaps and shortfalls, which need to be filled via ISR operations. The gaps and shortfalls identified by the TD process help to refine those already identified during the IPOE process. Shortfalls identified during each of these processes help drive the development of the commander's critical information requirements (CCIR) as well as the priority intelligence requirements (PIR), all of which are used to develop the ISR strategy and subsequent plans.

A2.3.7. The TD process also begins to identify what information will be needed in order to determine whether or not we are achieving the commander's objectives. However, this is not the only kind of assessment that needs to be performed in the TD process. It is also necessary to perform TSA and system of systems analysis (SOSA) to determine how a particular target system will react or adapt. The results of this analysis contribute to the overall effects-based assessment (EBA) process, which is critical to the commander's ability to achieve and maintain PBA.

A2.3.8. Target Development, as an element of PBA, is more thoroughly discussed in AFPAM 14-114.

A2.4. Intelligence, Surveillance and Reconnaissance Strategy and Planning (ISR S&P).

USAF Intelligence, Surveillance and Reconnaissance (ISR) strategy and planning (S&P) consists of four main tasks; understanding Joint Force Commander and Joint Force Air Component Commander (JFC/JFACC) guidance, understanding ISR asset capabilities and availability, integrating ISR capabilities with operations, and synchronizing collection to requirements.

A2.4.1. ISR S&P resultant tasking enables the commander and his staff to visualize the full spectrum of adversary capabilities, potential COGs, and possible COAs across all dimensions of the Operational Environment.

A2.4.2. Carefully planned ISR collection assists intelligence analysts in confirming facts and assumptions about the operational environment and the adversary. The results of ISR S&P provide a comprehensive ISR plan used to employ ISR assets in the most efficient, effective manner to achieve JFC/JFACC objectives.

A2.4.3. USAF operational and intelligence planners, embedded at all levels from the national community to wing-level, provide all aspects of PBA. The role they play differs at each level; however, they play an integral role in the implementation of the Director of National Intelligence (DNI) National Intelligence Strategy (NIS). Headquarters Air Force (HAF) analysts and planners and AF officers assigned to joint and national agencies are ensuring that AF capabilities are integrated into the National ISR strategy. AF planners provide inputs on how the AF can bring forces to bear in support of the formulation of the strategy.

A2.4.4. AF ISR operations strategists and planners assist in both formulating the plan and in posturing the required ISR forces to implement the plan. AFISRA directly influences ISR Strategy and Planning by executing HAF/A2's responsibilities in intelligence collection, analysis, and production.

A2.4.5. USAF ISR strategists and planners' roles differ at the operational level of warfare. JFACC ISR operations strategists and planners are deployed to the JFC to support the commander in employing JFACC assets in support of either combat or humanitarian missions. ISR operations strategists support the AOC Strategy Division by integrating USAF assets into the theater J2 collection strategy. In the AOC Combat Plans Division, ISR operations planners help to plan the Reconnaissance, Surveillance, and Targeting Annex (RSTA) to the Air Tasking Order (ATO) to ensure that the assets are tasked to be on station to satisfy the synchronized informational needs of the JFC daily collection plan.

A2.4.6. Wing-level operations and intelligence personnel traditionally have been only involved in the execution phase of the ISR plan. Today, however intelligence collection capabilities are organic to fighter and bomber aircraft such as the F-22, F-15E, F-16CJ and B-1. These non-traditional ISR (NTISR) platforms possess systems that can gather relevant intelligence information. In order to exploit this capability without interfering with their primary mission, unit intelligence personnel carefully plan and brief potential targets of interest within the operating or target areas.

A2.4.7. ISR S&P is a continuous process that requires input from the other four functions that complete the PBA framework (IPOE, TD, ISR Employment, and Assessment) in order to be effective. Each of these elements is vital to the planning and conduct of combat operations, but is of limited utility if developed and refined individually. When developed in parallel, they present a comprehensive view of the operational environment, which provides commanders with the capability to act with a degree of speed and certainty not matched by the adversary and permits commanders to shape the operational environment to his or her advantage.

A2.4.8. ISR S&P resultant tasking enables the commander and his staff to visualize the full spectrum of adversary capabilities, potential COGs, and possible COAs across all dimensions of

the operational environment. ISR S&P is a critical component of the Air Force's efforts to achieve PBA.

A2.4.9. ISR Strategy and Planning, as an element of PBA, is more thoroughly discussed in AFPAM 14-121.

A2.5. Intelligence, Surveillance and Reconnaissance Operations (ISR Ops). Intelligence, Surveillance and Reconnaissance (ISR) employment supports integration of aircraft, unmanned sensors, ground- and space-based platforms, special operations, and commercial assets through the ISR collection plan to anticipate, confirm, monitor, and analyze adversary activity. At the same time, ISR employment must support targeting, dynamic maneuver, force insertion, force protection (FP), and combat assessment (CA) while confirming previous predictions and providing the raw data for continuous update of the predictive process. AF ISR operators are embedded at all levels of command, from the national Intelligence Community (IC) to the squadron level, providing all aspects of PBA.

A2.5.1. Overall, AF ISR operators perform multiple roles and missions in support of the execution of both the daily and long range ISR strategy and plans at all levels of command. The contribution ISR employment brings to AF PBA results in finer-grained knowledge-level awareness for the commander, thereby providing him with the information he needs to formulate friendly COAs that will achieve his objectives.

A2.5.2. The role AF ISR operators play differs at each level of command, depending upon the mission of the agency, joint force, or AF unit. In the ISR strategy and planning phase, the effort is primarily an intellectual look at the capabilities and limitations of our collection assets in order to formulate the plan. During employment, although a great deal of automation and technology is used to collect the data, the ability of ISR operator to interpret the data and react is the key.

A2.5.3. AF ISR operators at the strategic level of command during ISR employment are normally involved in three primary areas: command centers worldwide, national agencies and at National Technical Means (NTM) ground sites. The roles they perform at each of those locations are markedly different. AF ISR operators working in command centers are primarily collection managers ready to respond to changing events in the theater or national level. ISR operators at national agencies will be supporting the exploitation of the collected data from all the various intelligence collectors. AF operators at ground sites and airborne will be exploiting the raw data collected by the sensors.

A2.5.4. At the operational level of warfare, in the execution phase, the majority of ISR operators are assigned to AF units tasked to directly support the JFACC. ISR operators are assigned to the ISR Division (ISRD) and attached to the Combat Operations Division (COD) in the AOC. The ISRD and COD arguably perform the most critical operational support functions during ISR employment. Collection managers within the ISRD monitor AF collection assets during execution. On the combat operations floor, Senior Intelligence Duty Officers (SIDO) react to events unfolding during execution of all facets of the JFC daily campaign plan and the ATO. SIDOs advise the Chief of Combat Operations (CCO) on how to adjust collection operations to

address changing situations. These SIDOs, supported by intelligence technicians, also interpret the real-time feed into the AOC from ISR assets.

A2.5.5. Wing- and Squadron-level ISR operations traditionally occur at the platform mission ground sites. For traditional ISR assets, intelligence professionals at the Distributed Common Ground System (DCGS) perform tasking, processing, exploitation and dissemination (TPED) of the collected data and are critical in supporting Time Sensitive Targeting (TST) and rapid retasking of the ISR platforms. However, many modern fighter and bomber aircraft such as the F-22, F-15E, F-16CJ and B-1 also have significant intelligence collection capabilities. These non-traditional ISR (NTISR) platforms possess systems that can gather relevant intelligence information. In order to exploit this NTISR capability without interfering with their primary mission, unit intelligence personnel carefully plan and brief potential targets of interest within the operating or target areas.

A2.5.6. ISR Operations, as an element of PBA, is more thoroughly discussed in AFPAM 14-122.

A2.6. Assessment. Joint Publication 3-30 *Command and Control for Joint Air Operations* assigns the air and space component commander with the responsibility to evaluate results of joint air operations. Therefore, the focus of assessment conducted by the air and space component should be on the operational level of war. Operational Assessment (OA) is the first assessment level where progress toward objectives is measured and where recommendations for the course of future operations are made.

A2.6.1. Assessment, as defined by AFDD 2-1.9 *Targeting*, "...encompasses all efforts to evaluate effects and gauge progress toward accomplishment of actions, effects, and objectives." Assessment of military actions, whether lethal or non-lethal, kinetic or non-kinetic, occurs at all levels, from national strategic planning and policy to tactical-level execution. It is not simply a "review" of actions to date; rather, assessment actions should, in addition to answering the question of "How is the conflict progressing?" look forward to answer "What needs to happen next?" Within this predictive framework it is clear that assessment is integral to all phases of a campaign, providing a foundation for recommending changes to strategy and execution or to staying with the existing course of action. Assessments regarding how the commander's actions are contributing to achieving overall objectives or enabling campaign success contribute to the commander's achievement of PBA.

A2.6.2. Primarily effects-based, OA includes an amalgamation of tactical assessments and responsibility typically resides with the components. Tactical ISR assessment with its primarily quantitative analysis sets the stage for operational ISR assessment with its heavy reliance on qualitative analysis.

A2.6.3. Tactical Assessment (TA) provides a determination of the effectiveness of kinetic and non-kinetic tactical military operations against assigned tactical tasks through empirical and objective methods. TA is primarily performance-based but has effects-based components as well. TA consists of several component elements: physical damage assessment, functional assessment, munitions effectiveness assessment and estimated damage analysis.

A2.6.4. Assessment uses measures of performance, i.e., objective or quantitative measures assigned to the actions of a tactical task and against which a tactical task's accomplishment, in operations or missions terms, is assessed.

A2.6.5. Assessment permeates all facets of the PBA process. Assessment products must measure effects achieved by military actions in terms of strategic, operational, and tactical objectives. Assessment must not only take note of the past, but focus on what comes next. The accuracy of that assessment depends on the JFC and his staff's professional skill in the military arts and judgment.

A2.6.6. Assessment, as an element of PBA, is more thoroughly discussed in AFPAM 14-123.

A2.7. Summary. PBA is refined continuously, with each of the five elements contributing to the other elements by laying a foundation for each. PBA often begins with IPOE, feeding TD and ISR S&P. Successful ISR S&P results in a sound ISR plan for execution. Once executed, results are fed to analysts and ISR operations personnel conducting assessments, triggering more IPOE and TD as well as changes to the ISR strategy for upcoming ATO cycles. ISR employment supports PBA by providing intelligence from multiple disciplines such as imagery intelligence (IMINT), and signals intelligence (SIGINT), measurement and signature intelligence (MASINT), human intelligence (HUMINT), and geospatial intelligence (GEOINT) to AOC analysts, other component analysts, national analysts, target developers and operators. Intelligence from collected data is used to target and engage the adversary, provide force protection and situational awareness, redirect collection, support personnel recovery, provide combat assessment (CA) confirmation, and confirm adversary COAs.

A2.7.1. Predictive Battlespace Awareness is a significant change to the way we approach ISR and its application to achieving the commander's desired effects. It is different. It is not Task, Produce, Evaluate, and Disseminate. It is neither Dynamic ISR Re-Tasking nor Time Sensitive Targeting. It is, however, elements of all of these with the added capability to produce awareness in advance of the event. PBA produces a plan requiring focused confirmation vice global discovery; it produces "action" vice "reaction." It requires a new mind-set and new training. Through PBA, we expect to leverage our people, our training, our technology and our processes in order to learn more about our adversary than he knows about himself and to know more about his options than he himself knows. Ultimately, PBA makes EBAO possible by building the foundation to influence adversary systems and capabilities in order to achieve desired outcomes.