

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

AIR FORCE POLICY DIRECTIVE 90-16

31 AUGUST 2011

Special Management



**STUDIES AND ANALYSES, ASSESSMENTS
AND LESSONS LEARNED**

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RELEASABILITY: There are no releasability restrictions on this publication.

OPR: AF/A9R

Certified by: AF/A9
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Supersedes: AFPD90-16, 4 June 2008

Pages: 9

This Directive implements and supports DOD Instruction DODI 8260.01 *Support for Strategic Analysis*, and DOD Instruction DODI 8260.2 *Implementation of Data Collection, Development, and Management for Strategic Analyses*. It describes the specific responsibilities of the Director of Studies & Analyses, Assessments, and Lessons Learned (AF/A9) and identifies principles and policies to enable all organizations with analytic functions to integrate and support staff decision making processes. This publication applies to all Department of the Air Force military and civilian personnel, including members of the Air Force Reserve and Air National Guard (NGB). This publication will be applied to contractors or other persons through the contract or other legally binding agreement with the Department of the Air Force. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule located at <https://www.my.af.mil/afirms/afirms/afirms/rims.cfm>. Send all recommendations for changes or comments to HQ USAF/A9E, 1570 AF Pentagon, Washington DC 20330-1570, email: af.a9e@pentagon.af.mil using most current version of AF Form 847, *Recommendation for Change of Publication*; route requests from the field through the appropriate functional chain of command.

SUMMARY OF CHANGES

This revision clarifies policy roles and responsibilities, updates policy on use of analyses and assessment principles, and consolidates a number of administrative corrections.

1. Overview. This Directive describes Air Force policies for development, management, conduct, and integration of studies, analyses, assessments, and lessons learned processes supporting Air Force, Joint, and Coalition leadership decisions. Studies, analyses, assessments,

and lessons learned underpin strategic planning, operational and developmental planning, requirements assessments, modernization and recapitalization of systems and programs, and the Planning, Programming, Budgeting, and Execution decision processes. The goal of this Policy Directive is to enable a comprehensive framework that will standardize and integrate Air Force studies, analyses, assessments, and lessons learned in order to support defensible, cost-effective, and operationally relevant decision-making while leveraging the Air Force's distinctive air, space, and cyberspace capabilities in a Joint warfighting environment. This Directive outlines a management structure for Air Force-level representation in analyses, assessments, and lessons learned as decision support for Joint Staff and DOD level analysis, planning, and processes.

2. Policy.

2.1. **Analyses and Assessments Principles.** Air Force studies, analyses, assessments, and their associated methodologies will adhere to sound, disciplined, and logical management and scientific principles to enable first-rate resource and planning decision processes. While analytic methods will vary in response to problem types, environments, applications, and technologies, Air Force study or analysis teams will apply the following universal principles:

2.1.1. **Transparency.** Air Force organizations should be able to explain analytic methods, data, assumptions, and results to stakeholders and Air Force leadership when supporting Air Force decision making. AF/A9 or an appropriate functional authority will be used to identify and validate the source and characteristics of data used in analyses. In keeping with the Open Government Act of 2007 and balanced against operational security, proprietary restrictions, and other limiting factors, consideration should be given in making data sets available to the general public through venues such as the website data.gov (<http://www.data.gov/>).

2.1.2. **Consistency.** Organizations should ensure analyses, source data, and results are traceable, repeatable, and based on validated data in approved analytic frameworks, models, applications, or processes.

2.1.3. **Integration.** The Support to Strategic Analysis (SSA) process forms the common, joint starting point for integrating Air Force-level analyses, methodologies, data, scenarios, and assumptions within higher level Service, Joint, and DOD studies. Integrated analyses will enable effective reachback across multiple major commands (MAJCOM) and agency activities. Studies and analyses will provide major resource and strategy decision inputs within the context of a joint environment whenever practicable. These supporting analyses, data, standards, and tools will be based on analytical baselines developed under the SSA process and will match resources to platforms to capabilities to threats. Deviations in data or methodology will be accounted for and documented.

2.1.4. **Standardized Methodology.** Analyses and assessments should follow the most appropriate scientific methods and frameworks available. Analytic methods will be standardized to the maximum extent possible for similar problems to enhance potential for integration and efficient support to decision and management processes. Commensurate with the decision at hand, organizations conducting analyses will designate proper authorities to validate methodologies and associated tools whenever appropriate. These validation authorities may include decision stakeholders, AF/A9, Field Analytic Support Agencies (FASAs), and functional offices.

2.1.5. Quantitative and Qualitative Factors. Analyses will identify both quantitative and qualitative decision factors to senior decision makers. When applying the scientific method, and when numerical data exists, analysts frequently will use quantitative methods to measure and analyze problems and to report results. Similarly, analysts often use qualitative variables to identify assumptions and other key variables in the problem environment and solution set. The influences of both quantitative and qualitative factors merit the attention of decision makers.

2.1.6. Assumptions and Constraints. Analysts should appropriately identify and document assumptions that must be made to simplify the approach or to account for unknown variables. As studies, analyses, and assessments mature, analysts should strive to convert these assumptions to facts. In addition, policies, environmental factors, leadership decisions, and political realities will often impose constraints on analyses. Like assumptions, these constraints should be clearly identified and documented as they add context for decision makers.

2.1.7. Collaboration. Air Force Organizations may require internal studies, analyses, and assessments as part of their unique technical or functional responsibilities. By maintaining consistency under this guidance in partnership with AF/A9 and other analytic units, Air Force organizations can improve or maintain the quality, consistency, and defensibility of their analytic products. Organizational analytic efforts will include, whenever possible, collaboration with Air Force and DoD units engaged in similar studies.

2.2. Analytic Support Policies for Studies, Analyses, Assessments, and Lessons Learned. Air Force analysts will use common frameworks, developed through the SSA process or leadership approved alternatives, as baselines and document excursions to quantify performance of Air Force programs and operational concepts. Additionally, analysts will specify appropriate cost measures that allow for integration and comparison of alternatives in advance of resource decisions. These common frameworks support, at a minimum, the following areas:

2.2.1. Strategic Planning Analyses. Air Force analysts will develop, integrate, and establish assumptions, constraints, data sets, and analytic frameworks as appropriate to inform strategic plans, goals, and processes at the Service, DOD, and national level. These baselines support the conduct of wargaming, exercises, experimentation, and examination of alternative force structures in terms of strategic level goals, effects, risks, and measurements to support senior leadership decisions. Air Force analyses will be structured to synchronize and align strategic guidance, resources, operational planning activities, and near and long-term force structure planning.

2.2.2. Capabilities-Based Analyses. These analyses will provide the working foundation for identifying requirements and initiatives to modernize or enhance Air Force capabilities that benefit the Joint warfighter. AF/A9 and other Air Force analytic organizations will work within the Air Force Capability-Based Planning (CBP) framework to integrate analytic inputs from the requirements development, planning, and capabilities review and risk assessment processes into the Air Force program. Additionally, Air Force analysts will integrate their analytic efforts with those of all departments, services, and agencies to deliver optimum Joint capabilities. Air Force

analysts will use standardized capabilities-based analysis and assessment methodologies to inform decisions in the context of operational effects, capability gaps or priority identification, trade space analysis and alternatives, and measures of effectiveness of fielded and future capabilities in terms of risk, cost, and sustainment consistent with Joint Capabilities Integration and Development System (JCIDS) processes. Capabilities-based analyses will be based on Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPF&P) solutions with an initial emphasis on non-materiel solutions prior to consideration of materiel solutions.

2.2.3. Force Structure Analyses. The National Defense Strategy directs the Secretary of the Air Force, Chief of Staff, and other key leaders to employ resource planning processes, strategies, and concepts of operations to prepare for the full-spectrum of military operations against both potential state and non-state adversaries, all while striving to maximize Joint combat capability through greater Service-wide efficiencies and effectiveness. These processes and strategies, coupled with resource constraints, shape current and future force structure requirements. Force requirements are defined and modified through mission and campaign analyses using planned, programmed, and alternate force structures. Analysts will develop and use a suitable quantitative-based risk assessment framework to inform force structure decision processes. However, insights derived from other approaches (of a more qualitative nature) and frameworks can be useful when supported by defensible evidence. When feasible, frameworks that incorporate qualitative measures should also support quantitative analyses to inform the force structure decision processes. The force structure analysis framework described above will be compatible for use by HQ USAF, NGB, MAJCOMs, Air Force components of joint task forces, component commands, and combatant commands in their short and long-term planning activities.

2.2.4. Resources, Recapitalization, Modernization, and Investment Analyses. As with all governmental organizations, the Air Force needs to account for resource investments, system and program effectiveness, and operational impacts of weapon systems in an enterprise environment. Supporting Air Force analyses will integrate performance measures and other measures of effectiveness with appropriate cost data to provide assessments, make resource recommendations, and provide decision support to the Air Force Corporate Structure during Program Objective Memorandum deliberations as well as during program and budget reviews, system effectiveness studies, analyses of alternatives, cost benefit analyses, and other program analyses that support Air Force corporate decisions. As the Air Force and DOD force structure continue to evolve, use of capabilities-based methodologies for evaluating Joint warfighting analyses will increasingly center on system-of-systems portfolio evaluation rather than platform-centric or single program analysis.

2.2.5. Lessons Learned. The Air Force Lessons Learned (L2) program (AFL2P) exists to enhance readiness and improve combat capability by capitalizing on the experiences of Airmen and organizations. A lesson learned is an observation that, when validated and resolved, results in an improvement in military operations or activities at the strategic, operational, or tactical level and in long-term, internalized change to an individual or an organization. Coupling L2 with past experiences should also assist senior leaders in programming, budgeting, and allocating resources as well as making changes to

DOTMLPF&P. A lesson is not a compliance “report card” nor is it automatically accepted and implemented without the scrutiny of functional experts. A lesson learned is also not “owned” by any one organization. Rather, the mandate for all organizations participating in the AFL2P is to coordinate activities and collaboratively exchange observations for the benefit of the total Air Force mission. L2 products will be stored in the Joint Lesson Learned Information System (JLLIS) and disseminated for maximum accessibility and visibility throughout the joint community and the AFL2P.

2.2.6. Operational Analyses and Assessments. Operational analyses and assessments will sharpen the warfighters’ edge by providing threat-based, combat, operational, and support assessments. By utilizing capabilities-based methodologies during operational and exercise support, operational analyses and assessments can help identify and mitigate risks. Analyses and assessments will integrate HQ USAF, MAJCOM, NGB, Numbered Air Force (NAF), and component command processes to provide insights to the Air Force component and Joint Force commanders regarding peacetime, contingency, and wartime operations. To be of value in assessment of joint effects, analyses must capture the impact on the Joint Force commander in achieving joint campaign objectives through changes in performance, force structure, and policy. Analyses at the campaign level provide appropriate vectors for AF investments within the context of joint effects.

3. Roles and Responsibilities.

3.1. Director, Air Force Studies & Analyses, Assessments, and Lessons Learned (AF/A9). AF/A9 is responsible for informing Air Force strategic decisions through the application of quality, independent and objective studies, analyses, assessments, and lessons learned. Areas addressed include strategic and developmental planning, force structure analysis, capabilities-based analysis, recapitalization and modernization, resource investments, lessons learned, and operational assessments. AF/A9 develops Air Force-wide policy and guidance for analytic baseline scenarios, models, toolkits, databases, analyst career management and development, and the AFL2P. AF/A9 also establishes frameworks for comprehensive and defensible Air Force studies, analyses, assessments, and lessons learned processes. In collaboration with other HQ USAF, MAJCOMs, NGB, NAFs, Direct Reporting Units, Field Operating Agency staffs, and FASAs, AF/A9 will provide reachback analytical expertise. AF/A9 is the Air Force focal point for resolving analytic integration issues with the Joint Staff and Office of the Secretary of Defense and develops traceable and integrated baselines in a joint, transparent, and collaborative manner to ensure they are in accordance with DODI 8260.01. To enhance oversight and implementation of study support and findings, AF/A9, as Air Force Chief Analyst representing the Secretary of the Air Force and the Chief of Staff of the Air Force, will coordinate HQ USAF participation in the review, prioritization, and integration of studies and analyses efforts to maximize results and minimize redundancy.

4. Summary. There is high demand for credible and timely studies, analyses, assessments, and lessons learned processes as DOD is challenged with building force capabilities within a constrained fiscal environment. While AF/A9 takes a leading role in ensuring independent and comprehensive analyses and assessments support leadership decisions, all Air Force organizations share a responsibility to ensure and support maintenance of analytically sound methods whenever possible.

MICHAEL B. DONLEY
Secretary of the Air Force

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

- AFPD 10-6, *Capabilities-Based Planning and Requirements Development*, 31 May 2006
- AFPD 90-11, *Strategic Planning System*, 26 March 2009
- AFPD 10-28, *Air Force Concept Development*, 15 September 2003
- AFI 10-604, *Capabilities Based Planning*, 10 May 2006
- AFI 10-2801, *Air Force Concept of Operations Development*, 24 October 2005
- AFI 16-1001, *Verification, Validation and Accreditation (VV&A)*, 1 June 1996
- AFI 16-1003, *Air Force Standard Analysis Toolkit*, 17 February 2006
- AFI 90-1601, *Air Force Lessons Learned Program*, 22 September 2010
- AFI 90-1602, *Data Collection, Development, and Management in Support of Strategic Analysis and the Analytic Agenda*, 18 August 2009
- AFMAN 33-363, *Management of Records*, 1 March 2008
- Air Force Forces Command and Control Enabling Concept (Change 2)*, 25 May 2006
- CJCSI 3150.25D, *Joint Lessons Learned Program*, 10 October 2008
- CJCSI 3170.01G, *Joint Capabilities Integration and Development System*, 1 March 2009
- DODD 5000.59, *DoD Modeling and Simulation Management*, 8 August 2007
- DODI 5000.61, *DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A)*, 9 December 2009
- DODI 8260.01, *Support for Strategic Analysis*, 11 January 2007
- DODI 8260.2, *Implementation of Data Collection, Development, and Management for Strategic Analyses*, 21 January 2003
- HAF MD 1-58, *Air Force Studies & Analyses, Assessments, and Lessons Learned*, 11 September 2007
- JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 8 November 2010

Adopted Forms

- AF Form 847, *Recommendation for Change of Publication*, 22 September 2009

Abbreviations and Acronyms

- AFI**—Air Force Instruction
- AFMAN**—Air Force Manual
- AFL2P**—Air Force Lessons Learned Program
- AFPD**—Air Force Policy Directive

ARC—Air Reserve Component

CBP—Capability-Based Planning

CJCSI—Chairman of the Joint Chiefs of Staff Instruction

DODI—Department of Defense Instruction

DODD—Department of Defense Directive

DOTMLPF&P—Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel, Facilities, and Policy

FASAs—Field Analytic Support Agencies

HQ USAF—Headquarters United States Air Force

HAF MD—Headquarter Air Force Mission Directive

JCIDS—Joint Capabilities Integration and Development System

JP—Joint Publication

L2—Lessons Learned

NAF—Numbered Air Force

NGB—National Guard Bureau

SSA—Support to Strategic Analysis

Terms

Accreditation—The official determination by the accreditation authority that the M&S is acceptable for a specific purpose. (AFI 16-1001)

Analytic Baseline—A package comprising a scenario, concept of operations, and integrated data used by the DOD components as a foundation for strategic analyses. Analytical baselines shall be produced and reviewed in an open, collaborative, and transparent environment. (DODI 8260.01)

Capability—The combined capacity of personnel, materiel, equipment, and information in measured quantities, under specified conditions, that, acting together in a prescribed set of activities can be used to achieve a desired output. (AFI 10-604)

Capability—Based Planning—The planning process to provide capabilities suitable for a wide range of challenges and circumstances, all designed to achieve certain battlespace effects. (AFI 10-604)

Data—Representations of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by human or automatic means. Any representations, such as characters or analog quantities, to which meaning is or might be assigned. (AFI 16-1001)

Effect—The physical or behavioral state of a system that results from an action, a set of actions, or another effect. The result, outcome, or consequence of an action. A change to a condition, behavior, or degree of freedom. (JP 1-02)

Joint Capabilities Integration and Development System—A Joint concepts-centric process that supports the Joint Chiefs of Staff and the Joint Requirements Oversight Council in identifying, assessing and prioritizing joint military capability needs and identifying integrated DOTMLPF solutions (materiel and non-materiel) to fill those needs within the DOD CBP process. Additionally, JCIDS is a key element in the Chairman's effort to realize the initiatives directed in the Transformation Planning Guidance. (CJCSI 3170.01G)

Lesson Learned—An insight gained that improves military operations or activities at the strategic, operational, or tactical level and results in long-term, internalized change to an individual or an organization. (AFI 90-1601)

Model—A physical, mathematical, or logical representation of a system entity, phenomenon, or process. (AFI 16-1001)

Risk—The quantifiable level of exposure to an undesirable outcome based on probability of occurrence and consequence.

Scenario—An account or synopsis of a projected course of action or events. For the purpose of this Directive, the focus of scenarios is on strategic and operational levels of warfare. Scenarios include information such as threat and friendly politico-military contexts and/or backgrounds, assumptions, operational objectives, and other planning considerations. (DODI 8260.01)

Simulation—A method for implementing a model over time for the purpose of testing, analysis, or training.

Strategic Analysis—An analysis of force sufficiency and effectiveness conducted by the DOD Components to support the development and evaluation of the defense strategy. Such analyses address both forces and enablers (e.g., intertheater and intratheater lift capability, required language region and cultural skills). (DODI 8260.01)

Validation—The process of determining the degree to which a model is an accurate representation of the real world from the perspective of the intended uses of the model. (AFI 16-1001)

Verification—The process of determining that a model implementation accurately represents the developer's conceptual description and specifications. (AFI 16-1001)

Wargaming—Simulating, by whatever means, a military operation involving two or more opposing forces, using rules, data and procedures designed to depict an actual or assumed live situation. Wargaming is generally not carried out for the purpose of providing training but often explores emerging operational concepts or alternative force structures in a future scenario. (AFI 10-2305)