STATEMENT BY
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Hearing on "The Future of Aeronautics at NASA"
House Committee on Science
Subcommittee on Space & Aeronautics

Introduction

Chairman Calvert, on behalf of the Aerospace Industries Association of America, or AIA, I wish to thank you, Representative Udall, and members of the Space & Aeronautics Subcommittee for the opportunity to testify on the enduring connection between aeronautics research and American national interests. AIA represents more than 100 regular and 170 associate member companies, and we operate as the largest aerospace manufacturing trade association in the United States. With more than 607,000 engineering and production workers, we also have a long history in the management of aeronautics issues.

I will begin with a summary of both the strategic benefits and the resource deficiencies in the aeronautics programs of NASA. After this overview, I will discuss two key policy challenges in the aeronautics arena: the need for equity in the support of mid-term and breakthrough aviation technologies and the critical project of air traffic management modernization. My testimony will then turn to an assessment of the aggressive aeronautics programs of America's main civil aviation competitor abroad: the European Union. Finally, I will close with a few suggestions on the focus of a potential United States Aeronautics Policy.

The National Value of Aeronautics Investment

The November 2002 bipartisan report of *The Commission on the Future of the United States Aerospace Industry* concluded that continued public investment in aeronautical research and development remained vital to America's leadership in the global aviation industry (one which generated a $31 billion trade surplus in 2004) as well as our national security. In cultivating new generations of safe, high-performance aircraft, aeronautics programs strengthen the country's commercial and military power by stimulating innovations in:

- information technology;
- air traffic management;
- climate and terrain analysis;
- aerial navigation and surveillance;
- clean energy sources;
- new materials;
- advanced technologies for design and manufacturing development; and

- aircraft noise and emissions control.

Aeronautics research subsequently reduces the cost of doing business in a globally-integrated economy while supporting the Defense Department's requirement for forces that can deploy to any point on the planet or track our enemies from distant command centers. Recent budget decisions, however, do not reflect the strategic importance of aeronautics to the nation.

During the last two decades, NASA's budget has doubled from approximately eight billion dollars to a proposed $16.5 billion for FY 2006. In contrast to this steady top line growth, the agency's aeronautics funding has declined from a FY 1994 high point of $1.5 billion to less than $853 million today. NASA expenditures already claim a modest 0.7% of all federal government spending, with aeronautics receiving only 6% of that amount, or $717.6 million, by 2010 if the current plan remains unchanged.

Complicating these trends, NASA's transition to a full cost accounting system in FY03 significantly reduced direct aeronautics research spending by transferring administrative costs previously absorbed in the agency's headquarters budget to each one of the mission directorates (please refer to Appendix A). Even before the adoption of full cost accounting, the Aeronautics Research Mission Directorate (ARMD), with its single-digit share of the budget, employed only 15 percent of agency personnel yet sustained 40 percent of the agency's facilities and infrastructure and therefore pays a disproportionate share of NASA's administrative costs.

The ability of NASA to intensify the research and testing of advanced aeronautics concepts -- and to reduce its overhead -- ultimately depends on congressional leadership. AIA recommends, Mr. Chairman, that Congress restore NASA's funding available for aeronautics research to the levels seen prior to the 2003 move to full cost accounting (please refer to Appendix B for historical aeronautics funding trends). In doing so, Congress should instruct the Administration to report each year on efforts to ensure that full cost accounting does not divert a disproportionate share of resources from research to administrative functions.

It is critical that Congress also direct the administration to provide NASA with increases without jeopardizing space exploration programs. In 2004, when NASA submitted its first four-year budget incorporating the nation's new Vision for Space Exploration (VSE), officials proposed aeronautics expenditures of $942 million for FY2009. Barely one year later, the FY2009 figure now stands at $727.6 million. This reversal indicates that judgments of policy, not a presumed financial trade-off between aeronautics and exploration, underlie the decisions about NASA's long-term budget. It also signals that the Administration has yet to recognize the full socio-economic value of progress in aeronautics.

Striking the Right Balance Between Near-Term and Breakthrough Research

An expansion of aeronautics research capabilities, Mr. Chairman, must occur for NASA to continue the development of both mid-term and breakthrough aeronautics and air transportation technologies.

NASA's FY2006 proposal responds to the 2004 recommendation of the National Research Council that the government sponsor basic research on "high-risk, high-payoff" aviation initiatives. Towards this end, NASA's Vehicle Systems, Airspace Systems and Aviation Safety Programs each embrace the goal of tripling aviation system capacity and reducing passenger travel times by one-half during the next twenty years.

At the same time, NASA continues to support future industry needs. Durable, low-cost composite materials, lower fuel consumption, and automated safety and maintenance monitors, all supported in their initial phases by government aeronautics research, will become standard features of most jetliners by 2015.

But to enhance its industry support mission, the agency should revitalize its turbine development programs. AIA regrets that NASA recently had to cancel its Ultra Efficient Engine Technology (UEET) work since this project centered directly on the improvement of engine efficiency and the reduction of fuel burn. The agency should strongly consider the restoration of UEET since our successful experience in the 1980s with its predecessor, Energy Efficient Engines, demonstrates industry's ability to turn NASA's basic turbine research into working technology that conserves fuel and reduces emissions.

Administration officials have paid a similar lack of attention to rotorcraft technology. In the past 25 years, the United States has developed one new medium-lift helicopter while Europe has deployed three. More importantly, the lack of a vigorous NASA rotorcraft program means that the nation continues to miss opportunities to test vertical lift applications for new modes of public transportation.

NASA must therefore plan investments in aeronautics technologies intended for system-wide transportation improvements while working with industry on aircraft innovations driven by safety and market factors. The current budget request outlines laudable objectives such as subsonic noise and supersonic boom reduction in addition to the testing of a high-endurance Unmanned Aerial Vehicle. But the decline in year-to-year ARMD budgets, unless reversed, will cripple NASA's ability to conduct basic research across the spectrum of aeronautics and confine the agency's work to only a handful of projects with the highest levels of financial and operational risk.

Air Traffic Management Modernization: Keystone of Mobility, Security, and Growth

Our greatest aeronautics challenge in the second century of flight centers on the effort to modernize the National Airspace System. American commercial aviation stands at an unprecedented point in history. Rising fuel prices, Internet-generated business, foreign trade, the September 11th attacks and the need for dramatically improved airport

security, have imposed new demands on an air transportation system designed more than 40 years ago. A 2004 report by the FAA revealed that in the next 20 years, 20 more U.S. airports will handle at least 500,000 arrivals and departures on an annual basis. Furthermore, aircraft now carry 27 percent of the nation's imports and exports.

Delays, however, follow insufficient capacity, and lost time in the aviation sector means lost money. In 1994, 81 percent of all domestic flights took off on time yet NASA reported that delays of 15 minutes or more still cost the aviation industry 2.3 billion dollars. By 2000, the on-time rate had deceased to 72 percent, and the *Aerospace Commission* estimated that the cost of delays to the entire economy could exceed $30 billion each year.

Economic and national security factors make it essential that the FAA-led Joint Planning and Development Office (JPDO), created by Public Law 108-176, succeed in its mission of building the Next Generation Air Transportation System.

The House Science Committee, as well as the House Transportation and Infrastructure and the Senate Commerce Committees, have the charge of overseeing this complex project. With several government organizations involved, Congress must require inter-agency cooperation and accountability, particularly between NASA and the Air Force, on JPDO technology sharing and personnel assignments. AIA urges the Administration to continue in proposing clear and adequate budgets for the JPDO to reduce the risk of program delays.

NASA's budget request wisely includes a $48 million increase in Airspace Systems -- the agency's office that supports the development of ATM situational awareness tools -- and directs $10 million to the JPDO. With ongoing support from Congress and JPDO agency stakeholders, AIA believes that a fully transformed air transportation system will become operational by 2025. Our public safety, mobility, and world economic leadership demand nothing less.

The Role of Aeronautics in the International Community

Based on the achievements of United States aerospace companies, the European Union (EU) and other foreign governments continue to develop aeronautics programs to build global economic and technological capabilities and to challenge the U.S. for leadership in the industry.

In January 2001, the European Commission approved the plan entitled *European Aeronautics: A Vision for 2020*. This document adopts the multilateral objective of "a world-class European aeronautics industry that leads in global markets for aircraft and engines." EU officials take an integrated, strategic view of aerospace and aeronautics. *Vision 2020* notes that trade, investment, tourism, and political ties to emerging markets all depend on a vibrant air transportation industry. The Europeans also have a clear sense of the business issues at stake; their plan states that "without European aeronautics, air travel would be almost completely dominated by U.S. aircraft."

Vision 2020 declares that the time and expense associated with airliner development goes "beyond the reach of one company and of the budgets of most single nations." As a result of this assessment, European leaders announced in March 2002 the goal of increasing total R&D spending to three percent of European GDP by 2010, with the aeronautics share claiming $2.6 billion. Fourteen years ago, the EU's aeronautics budget amounted to just $45 million.

NASA's current budget submission moves in the opposite direction of the Europeans, with cuts in aeronautics programs of almost 25% over the next four fiscal years even though the agency focuses on vital public interest research: initiatives that make air travel more quiet, secure, and reliable. EU companies and governments, unlike NASA, restrict international access to their aviation R&D and concentrate heavily on product-specific improvements to expand civil market share. The spending commitments of the EU, however, should remind us of the enduring public benefits of aeronautics -- from safe forms of transportation to the expansion of export industries -- and the corresponding need for Congress and the Administration to adequately fund government-wide aeronautics activities.

Conclusion: Envisioning a United States Aeronautics Policy

As it prepares to consider the FY2006 NASA Authorization Bill, Congress has a unique opportunity to frame a national aeronautics policy to guide the aviation investment and reform strategies of the federal government. The policy should confirm the multi-dimensional benefits of aeronautics research to the United States in this age of the information economy and expanding military air power. Future fleets of secure and efficient aircraft, enabled by new technologies, will stimulate higher volumes of travel and investment, as well as capital and cargo flows, in an aviation sector that already accounts for about 11 million American jobs. Furthermore, the JPDO, by relying on aeronautics communications technologies, has the challenge of improving the speed and precision of airborne operations for civil and military users alike.

For these reasons, a United States Aeronautics Policy would yield long-term benefits to the nation and should instruct the appropriate government agencies to develop comprehensive strategies for high risk, basic aviation research as well as energy, environmental, and navigational programs to support air vehicles in development. We believe that the policy, to ensure inter-agency coordination, should also require NASA, FAA, and the Defense Department to hold regular joint meetings on their common aeronautics research objectives.

The nation would be strengthened by such a policy since the instruments of aeronautics improve some of the basic elements that define American security and prosperity in the early 21st Century: cost-effective mobility over vast distances; geographical analysis for a safe landing or enemy surveillance; and an expanded air systems capacity for our growing international trade commitments.

Thank you, Mr. Chairman, for permitting AIA to submit these views for the record of the Subcommittee's hearing.