

TO: AESS Board of Governors

DATE: May 6, 2003

FROM: Cary R. Spitzer, AESS Representative to the IEEE-USA Committee on Aerospace and Transportation Policy (CTATP)

SUBJECT: Status Report

The CTATP has continued to address aerospace and transportation issues of interest to the AESS.

1. Through AESS leadership, IEEE-USA has participated in the Aviation Coalition (ASME (lead), AIAA, the NASA Aeronautics Support Team, *et al*) to develop an updated a statement urging the revitalization of aeronautics research in the U.S. (See attached Position Paper.) The recently published report by the Commission on the Future of Aerospace has been reviewed by the coalition and the coalition has participated in several follow up activities to ensure implementation of the recommendations in the report.
2. The CTATP is also examining magnetic levitation rail transportation and may prepare a position paper on the topic. An article on “mag lev” by Phil Holmer is scheduled to appear in *IEEE Spectrum* later this year.
2. Three AESS BoG members continue to actively participate on the CTATP: Russ Lefevre, Saj Durrani, and me.

Attachment

The Future of Flight



The Next 100 Years

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NASA Aeronautics Support
Team

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Aerospace

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Engineers

The Crisis in U.S. Aviation Research and Technology

As leaders in the nation's aerospace, aviation and aeronautics community, we are deeply concerned about the lack of a national commitment to sustain U.S. leadership in aviation research and technology (R&T). While public demand for aviation transportation services and the needs of national defense are expanding, federal funding for civil aviation research continues to decline and military aviation research has not yet been restored to the level required to ensure future air superiority. Since 1998, the combined National Aeronautics and Space Administration (NASA) and Department of Defense (DOD) investment in aeronautics research and technology programs has been reduced by nearly one-third.

Advanced technologies are needed to assure public safety and on-time flight schedules. In particular, the tragic events of September 11, 2001 have markedly increased the need for significant increases in Federal R&T applied to aviation and airport safety and security, both short- and long-term. Without continued investment in aviation R&T, our technological edge in meeting the challenges of a sustained war against global terrorism might diminish. The U.S. market share in aviation products and services, would also continue to decline, as will employment in the nation's aviation industry.

While U.S. government support for aviation research has declined, foreign government funding is increasing. The European community and Asian countries recognize the value of the aviation industry and its quality jobs to their economies. National will, available capital, and investments in leading edge technology determine the winners in this global competition.

Over the last decade U.S. aviation market share has dropped precipitously, and tens of thousands of skilled workers have left the industry. U.S. graduates at the bachelor and master degree levels in aerospace engineering and related disciplines have dropped by 47 percent and 39 percent, respectively, since 1990. The Presidential Commission on the Future of the United States Aerospace Industry's final report, released November 2002, states, "the industry is confronted with a graying workforce in science, engineering and manufacturing, with an estimated 26 percent available for retirement within the next five years." These facts suggest a potentially catastrophic loss of one of the nation's most important sources of societal benefits.

NASA, FAA and DOD have taken the first steps toward clearly articulated visions for aviation research and technology. These visions must now be supported by a national aviation research and technology strategy that ensures our national security, provides a continuing supply of qualified people to meet the nation's future aviation workforce needs, improves U.S. market share in aviation products and services, and creates an environment conducive to a healthy U.S. aviation industry.

According to a recent report, "The National Economic Impact of Civil Aviation," the total economic impact of civil aviation exceeded more than \$900 billion and 11 million jobs to the U.S. economy in the year 2000, roughly 9% of the total U.S. gross domestic product. NASA's budget should reflect this by striving for a strong national commitment to aeronautical research. If the American public expects the U.S. aviation industry to continue to be the largest positive contributor to U.S. balance of trade, then we must have the ability to develop the next generation of aircraft that will enable it to compete internationally.

Further, the November 2002 report of the Presidential Commission on the Future of the United States Aerospace Industry states, “The United States must maintain its preeminence in aerospace research and innovation to be a global aerospace leader in the 21st century,” and that “Government policies and investments in long-term research have not kept pace with the changing world.” The Commission recommends that “the federal government significantly increase its investment in basic aerospace research, which enhances U.S. national security, enables breakthrough capabilities, and fosters an efficient, secure and safe aerospace transportation system..”

The future of U.S. aviation, with respect to both global competition and societal benefits, depends on new technology and new concepts. Government research establishments have, in the past, conducted essential fundamental and applied research, which were high risk, high cost, and long term. The uncertainty and risk inherent in revolutionary concepts cannot be undertaken solely by the private sector. The future demands a clear statement of national policy, establishing U.S. leadership both in aircraft and rotorcraft technology development that assures national security and international leadership with additional societal benefits, including:

- Advanced vehicle technologies for civil and military applications;
- Increased safety and security for civil aviation;
- Efficient air traffic management systems to reduce delays;
- Reduced air transportation cost and travel time;
- Increased fuel efficiency; and
- More environmentally friendly aircraft.

Historically, the government’s support of aeronautics and rotorcraft research and technology (in collaboration with industry and universities) has been indispensable for attracting highly talented people whose contributions have made possible the societal benefits that we have seen to date. If America fails to support aviation R&T, it may well fail to provide an essential nucleus of next generation professionals for the nation's aviation future, thus jeopardizing our nation’s security and prosperity.

Recommended Actions:

- Robust and stable funding for NASA, FAA and DOD aviation and aeronautics R&T must be provided, not only with respect to the Fiscal Year 2004 budget, but also – and even more significantly – with respect to the preservation of U.S. capability and leadership in long-term aeronautics research and technology, as required by law. As stated by the Aerospace Commission, “a healthy aerospace industry is a national imperative.”
- The Administration and Congress should direct NASA and the DOD to coordinate R&T efforts in areas of common need.
- As recommended by the Commission, “The Administration and Congress must therefore create an interagency task force that develops a national strategy on the aerospace workforce to attract public attention to the importance and opportunities within the aerospace industry.”
- A new, secure, highly automated U.S. air traffic management system must be developed and implemented to meet the nation’s growing civil and military aviation needs.
- A National Aviation R&T policy must be established to plan and provide adequate resources that will ensure sustained U.S. world leadership in civil and military aviation well into the future.

In this centennial year of the Wright Brothers' first flight, it is more important than ever that

America renew its national commitment to leadership in aviation. In order to do so, we must ensure the strength and stability of the nation's aviation infrastructure by formulating and committing to a national aviation research and technology policy that incorporates adequate federal funding for visionary long-term aviation research.

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