

# STATEMENT FOR THE RECORD

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Before the

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Space and Aeronautics**

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Mr. Chairman, Members of the House Space and  
Aeronautics Subcommittee:

It is a pleasure to be here today to discuss the status of  
NASA's Aeronautics program.

By way of introduction, my name is Preston Henne and  
I am Senior VP of Programs, Engineering and Test at  
Gulfstream Aerospace. Gulfstream headquarters are in  
Savannah, GA and has roughly 9800 employees.  
Gulfstream is a \$5B annual revenue company that designs,  
builds and services premium business aircraft. Gulfstream  
proudly has facility sites in eight states within our continental  
borders. Our supply chain is extensive and accounts for  
supplier employees in literally every state, producing goods  
and services in support of our product line. Gulfstream has a

current product line of seven different models ranging in price from \$14M to \$59M. Our primary competitors are Canadian (Bombardier), French (Dassault), and Brazilian (Embraer).

In the 105 years of flight, aeronautics has become integral to the world's culture. Aeronautical products and services touch nearly everyone in the world in one way or another. The U.S. leadership in developing and applying aeronautical technology over the last 100 years is indisputable. This leadership has provided remarkable commercial growth and economic opportunity for millions and millions of people in the U.S. However, this aeronautical leadership and, more importantly, the opportunities associated with it, are being strongly challenged by foreign competition in the world market place.

Foreign countries and businesses recognize the huge value associated with a strong aeronautics enterprise, and are clearly willing to invest national as well as corporate treasuries to grow it. The U.S. on the other hand seems to take the aeronautics enterprise for granted. It is often described in political circles as a mature industry and able to fend for itself in terms of continuing R&D needs. I suspect, however, that we should not be ready to close the aeronautical patent office. As but one grand example, financially successful and environmentally acceptable civil supersonic transportation is still to be achieved. Yet, we see continually decreasing NASA Aeronautics R&D budgets. To illustrate this point, the downward federal budget trend of the past decade for this account continues for the current fiscal year. The President's FY '09 request for aeronautics research represents a 28% decline over the appropriated level of FY '08, which in turn was 30% lower than the previous year. Over the last ten years, funding for NASA

Aeronautics research has declined by some 48%, from \$1.2B in 1999 to \$622M in FY '08.

The U.S. is down to one large civil aircraft manufacturer and no longer even participates in the regional jet market as a manufacturer. Gulfstream used to be alone in the market for large cabin business jets. We now have three strong foreign competitors that are intent on capturing our market. More importantly, they are keen on capturing the engine for jobs and economic growth.

**So, why is it important for the federal government to invest in aeronautics R&D?** A strong aeronautics industrial base provides huge economic value. The aeronautics enterprise contribution to jobs, to tax revenues, to favorable balance of trade is massive. The recent Executive Order establishing a National Aeronautics R&D Policy states: “Continued progress in aeronautics, the science of flight, is essential to America’s economic success...” Congress, in the original creation of NASA in the

National Aeronautics and Space Act 1958, directs that:

“Government sponsored aeronautical activities be conducted to contribute materially to specific objectives, including the following:

- improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical . . . vehicles;
- preservation of the role of the United States as a leader in aeronautical . . . technology.”

The role of federal investment in aeronautics is to advance U.S. technological leadership, to lead innovation, and to develop advanced aeronautics concepts and technologies. It is the catalyst for progress.

In the past NASA Aeronautics served as a great source of aeronautical R&D efforts. NASA aeronautical technology has found its way into the market place in multiple forms and in numerous products. With ever decreasing budgets, however, this pipeline is drying up. In recent years, even vehicle technology demonstrations, a vital risk reduction link

between basic R&D and product application, have been terminated. This has been a substantial blow to maturing aeronautical technologies and for U.S. companies involved.

Clearly, our Nation's aeronautics program needs a revitalization effort to address our existing priorities and the insufficient aeronautics research funding.

**How do we ensure NASA's aeronautics program is relevant?** In making NASA aeronautics more relevant to our Nation's needs, the following considerations are put forth:

- A tacit understanding that the status quo, with ever reducing budgets, isn't working
- NASA aeronautics needs to work beyond just "fundamentals" and needs to take a continuing role in technology demonstration
- Public-private funding participation needs to be balanced along more equitable conditions

As an example, a recent viewpoint article in a well-respected trade publication stated that government versus private expenditures for all U.S. R&D have virtually reversed themselves over the past 45 years. In 1964, the government funded 64% of all R&D - - by 2006, industry funded some 66% of the total, or roughly \$220B in R&D funding.

The following points offer some specifics:

- *NextGen Research Needs*

NASA and the Federal Aviation Administration (FAA) are coordinating research to help implement the Next Generation Air Traffic Control System, known as NextGen, which will use satellite technology to increase capacity and efficiency within the airspace. Since NextGen is scheduled for completion by 2020 - - when air traffic is expected to double - - it is essential that Congress provide NASA with adequate funding now so that it can meet its research obligations over the next ten years.



Specifically, NASA's Aeronautics budget should be increased to help fund research into:

- Airspace management
  - Reduced separation / vortex wake alleviation
  - High density arrival technology
  - Roles of air traffic controllers, automated decision making and conflict resolution
- *Environmental Research Needs*

NASA research has produced advances in engine and airframe performance that have helped reduce emissions and lower noise. These efforts need to be enhanced and expanded. NASA research should also be focused around the development of:

- Alternative low carbon life cycle aviation fuels
- Methods to make more efficient use of airspace that will help reduce emissions, including Continuous Descent Approaches and improved in-flight re-planning capabilities

- New methods to reduce noise, specifically with regard to supersonic flights

- *Aviation Safety Research Needs*

NASA plays a critical role in developing important safety enhancing technologies including infrastructure needed for FAA and industry aircraft certification. Key areas of focus should include complex hardware and software certification, human/automation interface, and aircraft separation management.

**How can NASA work most effectively with industry and the universities?** To work effectively with industry and universities NASA needs to play to their strengths and interests. NASA has repeatedly developed aeronautical technology plans and road maps for high priority research subjects of national interest. These road maps need to lead to companies and universities with appropriate interest and expertise. These roadmaps need to turn into aeronautical R&D Programs up to and including large scale

demonstrations. These programs need to satisfy both NASA and company or university objectives. ...and they need to be funded. NASA needs to provide significant funding to assure innovation, to assure risk reduction, and to assure broad dissemination of results. In order to enable broad participation of interested companies, enhanced contracting policies need to admit commercial practices.

**What role should NASA play in opening new flight regimes?** On the question of opening new flight regimes, NASA should be leading the way. Frankly, what more important leadership role can NASA Aeronautics have? As I mentioned earlier, we have not yet achieved successful civil supersonic transportation. Successful in this context means technically, environmentally, and economically successful. To make the leap to a substantial transportation speed increase, new environmental and safety standards are needed. Aeronautical technology improvements are needed.

Technology demonstrations are needed. This is what NASA Aeronautics has historically excelled in and should continue to excel in. The risk reduction and barrier removal R&D focused on new flight regimes is a strong inducement for commercial growth, jobs creation, and protecting the national aeronautics leadership position.

### **Recommendations and Closing Remarks**

As the subcommittee continues its very important work in producing a NASA Reauthorization Bill, I wish to leave you with the following recommendations:

- (1) That the budget for NASA's Aeronautics Directorate be increased for FY '09 to \$ 700M - - this would constitute nearly an \$80M increase over the approved FY '08 level. Further, this increase would support the 2005 National Academy of Sciences report, Rising Above the Gathering Storm, which recommended an increase by at

least ten percent annually to keep America's economy competitive

- (2) Re-establishment of NASA Aeronautics as a vital R&D activity supporting a broad group of U.S. aeronautics companies
- (3) Enhance NASA Aeronautics procurement policies to allow commercial contracting practices
- (4) U.S. government action to minimize foreign competitor advantages due to strong financial aid
- (5) Separation of the aeronautics activity out of the space agency as a means to implement a strong aeronautics R&D policy

Mr. Chairman, Members of the Space and Aeronautics Subcommittee, I thank you for the opportunity to express these views on what we believe to be important to our future. I look forward to your questions.