PRESENTATIONS

The Honorable Ken Calvert
Remarks Before the Aerospace States Association
on America's Competitiveness in Aerospace Research & Development

Wednesday, June 7, 2006
Washington, DC

- Pleasure to be here. I apologize for not being able to join you at 1:00 p.m. with Mark Udall as originally planned, but between the time I committed to appear before you several weeks ago, and today, my schedule has turned upside down! I appreciate your willingness to accommodate this change.

- At the risk of stating the obvious, NASA's aeronautics research program has undergone significant changes since I last appeared before you a year ago. Change, it seems, continues to be a hallmark of NASA aeronautics programs. But one thing hasn't changed, and that's the decreasing budget profile for aeronautics research and development. More on that in just a minute.

- Since last appearing –
    - The Aeronautics Research Mission Directorate has gotten a new leader, Dr. Lisa Porter, who's been serving as associate administrator since October 2005.

    - At the very end of 2005, Congress passed, and the President signed, legislation reauthorizing NASA through fiscal year 2008. Our authorization bill envisioned higher spending numbers for aeronautics than was proposed by the Administration – we authorized $962 million for FY07 and the Administration requested only $724 million – about 25% less than our authorized level.

    - The bill also requires the Administration to produce, by the end of this calendar year, a National Aeronautics Policy to guide federal aeronautics R&D programs, including those for both the military and civilian needs.

    - In early 2006, NASA announced a major restructuring of its aeronautics program that emphasizes a return to fundamental research in lieu of conducting selected

"demonstration" projects. NASA is confident that this new initiative will make the agency a stronger, more agile, and more capable repository of cutting-edge research and science. I recognize that some members of the aeronautics community are concerned with a move that wipes out NASA's demonstration projects completely so I intend to monitor this restructuring closely.

- And, just two days ago -- as General Hoover explained earlier this afternoon -- the National Academy of Sciences released its "Decadal Survey" for aeronautics, a comprehensive list of priority challenges and eight programmatic recommendations -- meant to guide NASA's aeronautics program for the next ten years.

- I fully expect NASA to embrace the survey's recommendations – including the recommendation to keep a stable aeronautic R&T program. The recommendations are well-grounded and represent a strong consensus across a wide breadth of leading experts from industry, academia, and government-funded R&D laboratories.

- To complement the Decadal Survey, our bill had a requirement for the President to develop a National Aeronautics Policy, which was designed to clarify the roles and responsibilities of federal agencies' roles that play in the aeronautics arena.

- The policy provision in our bill was not focused on NASA alone. A national aeronautics policy would permit NASA to better target its limited resources, as well as to execute a more stable set of research projects and activities.

- The same authorization provision directed the Administration - in carrying out development of the policy - to include the following two premises: (1) -- "the Federal Government has an established interest in conducting research and development programs for improving the usefulness, performance, speed, safety and efficiency of aeronautical vehicles…" and,
- (2)"…in conducting research and development programs that help preserve the role of the United States as a global leader in aeronautics technologies and in their application…"

- As a result of this guidance, The Executive Branch, led by NASA and the Office of Science and Technology Policy, are seeking input and consensus from all federal agencies and are optimistic a final policy will be unveiled before the end of this year.

- Within NASA, aeronautics will not have the financial resources it once enjoyed. The President's Vision for Space Exploration has clearly made a priority of developing new capabilities for Americans to reach beyond low-Earth orbit. Absent a new infusion of funds, which I think is unlikely in the present budget environment, I'm not sure what Administrator Griffin could do any differently.

- NASA has an aeronautics heritage that is unequaled. Over the years, it has contributed greatly to our global competitiveness. Its research made possible our domestic air transportation system, which is the largest, most efficient, and most innovative in the world.

- While I am concerned about advances that other nations are achieving in this arena, I remain guardedly optimistic that NASA's research will continue to ensure that American industry innovates and leads the world in designing and producing the most advanced and efficient products, provided that aeronautics funding is not further reduced, and that NASA takes to heart the recommendations of the decadal survey.

- Thank you for having me today. This is an important topic to many sectors of our economy – government, industry, and academia. Thank you for the work you do.

Honorable Mark Udall
Remarks Before the Aerospace States Association
on America's Competitiveness in Aerospace Research & Development

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Good afternoon. I would like to commend the Aerospace States Association for organizing this hearing on a national policy for aeronautics research and development.

In addition, I want to thank you for the opportunity to appear before you in person today to talk about something that I care deeply about—the health and future direction of aeronautics R&D in the United States.

I know that I don't need to tell any of you that progress in aeronautics is crucial to the health of the nation's air transportation industry, which in turn is crucial both to the continued strength of our domestic economy and to our international competitiveness. In addition, aeronautical goods and services have long provided a major positive input to our balance of trade.

Yet progress in aeronautics is important for reasons beyond simply helping our trade balance. Aeronautics R&D can enable advances in the capability of America's air transportation system to handle the enormous increases in air travel projected over the next twenty years.

Aeronautics R&D can enable more environmentally compatible commercial aircraft, with significantly lower noise, emissions, and energy consumption relative to aircraft in commercial service today.

Such new aircraft would not only improve the quality of life but would also open new markets. Finally, aeronautics R&D can lead to new concepts for protecting our nation.

All of this will only be possible if we are committed to making the investments in aeronautics R&D that are necessary to achieving our research goals. However, the unfortunate reality is that America currently is *not* investing enough in NASA's aeronautics research program.

Moreover, if nothing is done to correct the situation, NASA will suffer cuts that jeopardize the long-term viability of our national aeronautics R&D capabilities.

Of course, you don't have to take my word for it—there have been a series of reports by independent committees and commissions over the last five years that have expressed deep concern over the state of the U.S. aeronautics R&D enterprise.

In addition, the House Science Committee as well as other congressional committees have held hearings that have included sobering testimony on the extent to which aeronautics R&D in America is at risk.

As you know, Congress last year—in both the NASA FY 2006 appropriations provisions and the NASA Authorization Act of 2005—added money to the President's budget request for aeronautics.

In addition, both pieces of legislation directed the Administration to develop a national aeronautics R&D policy and plan. By all accounts that effort is well underway, and I understand that you will be getting a status report on the policy from the Administration today.

Preparing a meaningful and enduring aeronautics R&D policy and plan is an *especially* challenging task in the current environment—and I fear that some may be tempted to craft a policy that simply legitimizes the projected—and in my opinion ill-advised—five-year cuts to NASA's aeronautics program.

I hope that those in charge of the effort will resist that temptation, because the policy that would result is unlikely to prove either durable or commensurate with the need.

It should be noted that the U.S. Congress has already articulated an aeronautics R&D policy for the nation in the NASA Authorization Act of 2005. To quote Section 411 of the Act:

"Congress reaffirms the national commitment to aeronautics research made in the National Aeronautics and Space Act of 1958. Aeronautics research and development remains a core mission of NASA. Further, the government of the United States shall promote aeronautics research and development that will expand the capacity, ensure the safety, and increase the efficiency of the Nation's air transportation system, promote the security of the Nation, protect the environment, and retain the leadership of the United States in global aviation."

It is clear from the language I just quoted that Congress envisions the need for a robust and broad program of R&D in aeronautics for the foreseeable future.

Furthermore, despite NASA's understandable interest in its new exploration initiative, it is clear from the legislative record that Congress believes that *NASA* needs to remain substantively involved in aeronautics research—indeed that aeronautics R&D should remain a *"core mission"* of NASA.

I was gratified that the NASA Authorization Act of 2005 wound up incorporating many of the provisions that I had first developed for the Aeronautics Research and Development Revitalization Act of 2005.

Those provisions included revitalization of NASA's fundamental research program, a sensible policy for maintaining our national aeronautical test facilities, a challenging set of aircraft R&D initiatives, as well as initiatives in aviation safety and security and in airspace systems.

With respect to airspace systems in particular, I think it is critical that NASA continue to play a significant role in the development of the Next Generation Air Transportation System [NGATS] as part of the multi-agency Joint Planning and Development Office [JPDO].

If the nation is to maintain a safe and effective air traffic management system into the future, it is essential that the JPDO succeed—and NASA's research can play an important role in ensuring that success.

A just-released report from the National Academies echoes Congress's view that there are no lack of important R&D challenges remaining in the field of aeronautics.

I note that the co-chair of the National Academies' Decadal Survey of Civil Aeronautics committee is testifying before you today, so I will not attempt to describe their report in any detail. However, it appears to be a very thoughtful and comprehensive effort, and I would commend it to you.

It addresses important issues related to workforce, government-university-industry research partnerships, and how far NASA should take its research before letting industry pick it up if appropriate.

I would also like to concur with the written statement by Dr. Kaminski at the front of the report in which he notes the projected *32 percent decrease* in NASA's aeronautics budget in just three years, and states that *"This budgetary trend will make it increasingly difficult for NASA to build a solid foundation for the future."*

I am very concerned about that budgetary trend, and I think it needs to be reversed.

Moreover, I would also encourage you to review another recently released National Academies' report, entitled Aeronautics Innovation: NASA's Challenges and Opportunities. That report argued persuasively that:

"Refocusing the NASA aeronautics program exclusively on fundamental research may appear to be a reasonable strategy given the current outlook for funding, but it risks losing the support of industry stakeholders, without which the program cannot compete effectively for resources in a constrained budget environment.

Moreover, the areas of public good in which the argument for government involvement is strongest—safe, efficient air traffic management and environmentally benign aviation operations—are arguably the areas in which users are more dependent on outside suppliers to deliver fairly well-proven technologies and in which NASA's technical capabilities are in some respects superior. There are also areas where the market is unlikely to produce the optimum level of innovations."

The National Academies' panel went to conclude that: *"to sustain its relevance and support [NASA's aeronautics program] should have a portfolio quite diversified in terms of the stage of technology being developed…"*

I think that those tasked with developing an aeronautics R&D policy for the Executive Branch would do well to heed those insights.

While there is concern in some quarters about the potential competitive threat posed by the European Union's plans for a significant and sustained thrust in aeronautics research, I have a somewhat different perspective.

Without minimizing the importance of ensuring that America's aviation industry remains a world leader, I would submit that we should be investing in aeronautics R&D *whether or not* there were an imminent competitiveness challenge from Europe or elsewhere.

I currently sit on the Armed Services, Science, and Resources committees. From those vantage points, I am well acquainted with the role that *past* investments in aeronautics R&D have played in enabling future military capabilities, improving the capabilities of the civil air transportation system, and reducing the adverse environmental impacts of aircraft operations.

That is, investments in aeronautics R&D have had a direct impact on both our quality of life and the security of our nation.

In sum, the return on the past federal investment in aeronautics R&D has been significant. I have no reason to believe that that won't continue to be the case.

We need to ensure that any national policy on aeronautics R&D that emerges properly recognizes the importance of investing in research and development that not only advances our fundamental knowledge, but that also is relevant to the needs of our society.

We should not allow perceived budgetary constraints to result in too narrow a vision of what aeronautics R&D is "appropriate" for the government to undertake, lest we wind up with a research portfolio that fails to address the future needs of the nation.

With that, I want to again thank you for allowing me to testify today, and I would be pleased to address any questions you might have.

Thank you.

William W. Hoover
Vice Chair
Decadal Survey of Civil Aeronautics Steering Committee

See separate attachment.

Jack J. Pelton
Chairman, President & CEO Cessna Aircraft
Chairman, General Aviation Manufacturers Assoc.
Remarks Before the Aerospace States Association
on America's Competitiveness in Aerospace Research & Development

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Washington, DC

Distinguished members of the Aerospace States Association, ladies and gentlemen. I am Jack Pelton, Chairman, President and CEO of the Cessna Aircraft Company, and also the current Chairman of the General Aviation Manufacturers Association, better known as GAMA. I have a long history in the aerospace industry, including increasingly responsible positions at Douglas Aircraft and head of the 728 airliner program at Fairchild Dornier in Germany. I joined Cessna in 2000 as senior vice president of engineering and product development and assumed my current position in 2003.

I am very happy to speak with you today about America's eroding position as the leading country in developing and fielding innovative and relevant aerospace products through a partnership between private sector and government sponsored research and development. The message I want to bring you today, is that if we do not turn around the trend of the last 10 years, relegating aeronautical research to a backwater position, with under funding and a lack of purpose, we will quickly relinquish our once foremost aeronautics superiority position to one of obscurity and irrelevance. And if this happens, we will not only lose worldwide prestige, but we also will lose generations of young people, who really wanted to be aerospace engineers, technicians or scientists.

While the issue of government sponsored research and development is very broad and covers many agencies, the position of the National Aeronautics and Space Administration is especially relevant in today's discussions. Many have questioned whether NASA has lost the meaning of the first A in its name. Aeronautics at NASA has been in a secondary position of its overall mission for many years.

The steady decline of the aeronautics budget to approximately $724 million in FY2007 can be attributed to relatively increased spending in other NASA programs. NASA also realizes that almost 70% of its overhead in people and facilities is attributed to aging infrastructure. With an austere budget, NASA is looking to reduce the number of people manning their facilities and is limiting its aerodynamic research projects.

This was not always the case. When you look at the history of NASA, and its predecessor, the National Advisory Committee for Aeronautics (NACA), there were monumental breakthroughs in aeronautical research, benefiting a wide range of aircraft and helicopters. Typical areas of accomplishment include drag reduction, icing, digital fly-by-wire, GPS navigation, weather applications and high-speed research. The research and development done by NACA and NASA was done in cooperation with the private sector and benefited commercial, military and general aviation aircraft.

That same level of accomplishment is not being seen today at NASA, although there are some good joint projects, such as SATS, the small air transportation system, synthetic vision and free flight to benefit general aviation. NASA, the FAA and industry also are working on NGATS, the next generation air transportation system, intended to improve air traffic control to meet the demands of 2020. However, even the NGATS program requires a caveat; that NASA must provide continued support for the project to ensure that research is developed to a level to be of use to its government and industry partners.

Will the level of innovation and cooperation between NASA and industry in aeronautics research and development ever return to earlier years? Not likely in the present environment, both for political and budgetary reasons. Aeronautics research and development has not held a high priority in recent administrations, and that lack of focus has been seen in the declining related budgets for more than a decade.

Can something be done at this time to stop the slide in America's competition with Europe in aeronautics research and development? As a poignant example, both Boeing and Gulfstream Aerospace are using wind tunnel facilities in Toulouse, the home of Airbus, to test new designs. With the attention, focus and action on the essential issues by groups, such as the Aerospace States Association and industry organizations, such as GAMA, a significant difference can be achieved. The National Academies of Science, Aeronautics Decadal Study, discussed earlier this afternoon, provides an excellent roadmap for NASA to follow in making aeronautics research once again an important priority in government organizations, such as NASA and the FAA.

Establishing this priority within NASA and the FAA is essential. The general aviation industry cannot replicate the basic pre-competitive research done by the government agencies in the past. The risk is too great and the cost for Cessna, Raytheon and other general aircraft manufacturers is some 10 times greater to put a new beneficial safety product into operation. But, it is this research that is needed to insure safety improvements of general aviation aircraft in the years ahead.

One very important factor, often overlooked, in discussing the value of a strong and vibrant government aeronautics research program is the human capital. A large percentage of the engineers, technicians and scientists currently working in the aerospace field are expected to retire in the next several years, and there has not been sufficient emphasis on the challenges and rewards of a job in aerospace to attract new talent. The U.S. educational system is not motivating younger people to take math and science courses, and fewer students are pursuing undergraduate and graduate degrees in science and engineering disciplines. The lack of a properly trained and motivated workforce in America's aerospace pipeline will ultimately lead to more aerospace jobs going overseas, and America losing its rich aeronautics heritage. This exodus will be accelerated by a lack of innovative and technically challenging aerospace projects for the workforce to pursue.

What NASA, the FAA and other government agencies need to do is to develop a national aeronautics policy and then translate that policy into a strategic mission focus, best aligned with available and planned resources. This has to be a realistic national policy, and not just a "pie in the sky" hope. There also needs to be clear cut communications between the research centers

and the general aviation industry, and other aerospace companies, on establishing priorities of individual projects, the scope of these programs and expected results. Only then, can a true partnership exist between NASA, the FAA and the customers and users.

Our aeronautics vision should ensure the U.S. air transportation system leads the world in security, safety, capacity and efficiency, and that U.S. aerospace companies continue as major employers and contributors to the U.S. economy. To achieve this vision, significant investments by both government and private sector will be required, although the investments by the private sector will be much greater. It is not enough in this vision to preserve our national test facilities, we have to improve them to meet the expanding worldwide competition.

This is beyond the time that the issue of America's competitiveness in aeronautics research and development should have been addressed. The European Union's Vision 2020 is accelerating in strength and scope, and we are seeing increasing market threats from countries such as Brazil where subsidies have been the norm for many years. America can not afford to sit back and wait to see what happens. We must act now. As head of GAMA and Cessna, I am ready to do whatever I can to see that any lead we may have is not squandered. But we need our government on our side.

John Borghese
Vice President of the Advanced Technology Center
Rockwell Collins, Inc.
Remarks Before the Aerospace States Association
on America's Competitiveness in Aerospace Research & Development

Wednesday, June 7, 2006
Washington, DC

Good afternoon. I am John Borghese, Vice President of the Advanced Technology Center of Rockwell Collins, Inc. Rockwell Collins, headquartered in Cedar Rapids, IA, is a global company engaged in the design and production of communication and aviation electronics for commercial and government customers. Our 17,000 employees in 27 countries deliver industry-leading communication, navigation, display, flight control, in-flight entertainment, information management, maintenance and simulation solutions to the industry. Thank you for inviting me to speak today at this important Aerospace States Association Hearing on the United States' National Aeronautics Policy initiative being co-chaired by NASA and the Office of Science and Technology Policy (OSTP). While I recognize that this policy will have several aspects to consider, I would like to address a key policy area, which is The Next Generation Air Transportation System (NGATS) and the nation's global leadership in air traffic management and systems. My colleagues will discuss other aspects of the Policy.

World leadership in aeronautics is widely viewed as a cornerstone of U.S. economic welfare and national security. Recent indications are that the U.S. is losing its leadership with resulting impacts on the national economy, aviation safety and security, industrial competitiveness and military superiority. This loss of leadership is a great concern to industry and aviation experts and has lead to the publication of numerous reports and recommendations; for example, The Commission on the Future of the U.S. Aerospace Industry, the National Institute of Aeronautics, the National Academy of Sciences, to name a few. These reports have all called for adequate government funding for aeronautics R&D programs, coordination of aeronautics R&D and a national aeronautics vision or policy with input from industry and academia. The Policy now under development must provide for secure and adequate funding for aeronautics research and development in air traffic management and related avionics systems capabilities – R&D critical to the successful development of the NGATS and our continued leadership in aeronautics.

Both Secretary of Transportation Mineta, and FAA Administrator Blakey, have in numerous venues discussed the projected growth in air passenger traffic and have stated that the increase in traffic over the next 20 years is expected to double or even triple the current demand on our air traffic system. This is significantly more traffic than the current air traffic system was designed to handle. This traffic increase drives the requirement for a Next Generation Air Transportation System. I would like to discuss some of the concerns with regard to implementing this NextGen System and then offer some suggestions for improving the success of NGATS development and implementation.

As you know, the NGATS effort is led by the Joint Planning and Development Office (JPDO). Oversight for the JPDO is provided by an inter-agency Senior Policy Committee (SPC) made up

of leadership from the Departments of Commerce, Defense, Homeland Security, and Transportation, the FAA, NASA and the OSTP. While the entire inter-governmental JPDO is currently chartered with the development of the NGATS, NASA will be the primary agency associated with necessary R&D and the FAA will be the primary agency associated with its implementation. This bifurcation of effort calls for close cooperation and collaboration to assure success.

In addition, successful implementation of the NGATS requires that all government-funded aeronautics research supports the JPDO effort. For example, aeronautic research conducted by the Department of Defense and its related research arms should be made available to NASA and the FAA to avoid duplication of costly research endeavors. It is equally important that government-sponsored research be taken to a maturity level sufficient to allow industry to complete its development into marketable products. Further research is required, for example, to identify a back-up system for Automatic Dependent Surveillance-Broadcast (ADS-B). ADS-B, a satellite- based technology that provides both improved navigation and surveillance capabilities to aircraft, has been identified by the JPDO as the backbone of the NGATS. The FAA plans to retire its system of secondary radars once ADS-B is fully deployed and a back-up system for ABS-B will still be required. Several technologies have been identified, but adequate research into the best, most efficient and cost effective back-up system has not been undertaken nor has research been undertaken to determine the best and most effective way to transition ADS-B into the air traffic system. Further a next generation communication system – an important and essential element for the NGATS - has yet to be identified and no effort has been made on developing a transition plan for such a system

New technologies require development, testing and validation if they are to translate into commercially viable products that advance, safety, capacity and efficiency of the air traffic system. The FAA has traditionally relied upon the Aeronautics Research Mission Directorate (ARMD) of NASA for the development and testing of technology. Recent changes in leadership and philosophy put the ability and willingness of NASA to achieve this in doubt. NASA's ARMD has recently announced a change in its focus indicating that in the future it will concentrate its budget and efforts on internal, fundamental research. Fundamental research is only one aspect of what is necessary to advance technology development for the NGATS. The current NASA ARMD research plan departs from the development of demonstrator projects that have proved both highly valuable and inspiring. The abandonment of these R&D demonstrations will remove a major tool used to validate basic research projects and conduct research that cannot be performed in laboratories or on computers. Further troubling are indications that NASA is no longer interested in industry's participation and advice. An example is the elimination of the Aeronautics Research Advisory Committee (ARAC). This committee was a key conduit for technology and information flow between industry and NASA. If NASA is no longer going to do applied research or demonstrations and is no longer going to interface with industry, the successful implementation of NGATS is in jeopardy.

Successful implementation of the NGATS will require the integration of new technologies into the system as well as developing the concept of operations to define how the NGATS will operate in the 2025 timeframe envisioned by the JPDO effort. It is essential that the new system be thoroughly tested through a series of sequential demonstrations to insure that the high level of

safety our air traffic system currently enjoys is not jeopardized. These tests include not only the testing of several new technologies but also the testing of how current operators of the system will migrate to a different operational approach. These operators or stakeholders include all of the government agencies involved in the JPDO process as well as the men and women that make up the air traffic control system, define the safety standards, fly the airplanes, and control the budgets necessary to implement the system. It also importantly includes the aviation industry, both airlines and equipment manufacturers, that are essential and necessary partners in developing, testing and demonstrating the new technologies. Bringing this disparate group of stakeholders together in order to develop the concept of operations and implementation of the NGATS is a significant challenge and one with which the JPDO is charged

Adequate funding for the JPDO to carry out its mandate and for NASA and the FAA to conduct the necessary research and technology validation is essential if transformation of the airspace is to occur in a timely and orderly manner. Carrying this plan forward will require leadership from an agency with a clear charter for implementation along with the agency-wide authority and budget necessary to carry out the research, development and implementation of the NGATS.

Finally I would like to provide a historical perspective on airspace improvements. There are several examples of new technology that improve the safety and efficiency of our airspace that were developed long before their implementation. Some examples are the Traffic Collision Avoidance System (TCAS) and Ground Proximity Warning System (GPWS). Both of these systems were developed several years earlier than they were introduced into the system. They were implemented at the direction of Congress. Congress should continue its oversight of the NGATS activity as well to assure that its call for the development of the NGATS is moving forward.

Given the concerns I have outlined, I would like to offer the following recommendations for the National Aeronautics Policy:

1. Assure the development and implementation of a process whereby industry and U.S. government stakeholders are consulted on research roadmaps and are participants in federally funded research demonstration programs to test and validate technologies suitable for civil and military aeronautics applications.
2. Provide adequate and stable funding for all participating agencies in the JPDO NGATS activity and especially for NASA's Aeronautics Research Mission Directorate with specific direction to NASA to develop, integrate and test technologies relevant to NGATS
3. Assign responsibility for aeronautics research, the development of programs and the implementation of enhancements to appropriate government agencies with the adequate charter and budget to implement the NGATS.

The success of the NGATS is critical to the safety and efficiency of our airspace. Failure to address the aeronautics R&D necessary to properly develop and deploy the NGATS will have a serious economic impact on our country and be felt by all of us in the delays we experience in air travel. The National Aeronautics Policy should address the expressed concerns.

Thank you for allowing me the opportunity to present my views on this important undertaking. A copy of my statement is submitted for the record.

Preston A. Henne
Sr. Vice President, Programs, Engineering & Test
Gulfstream Aerospace
Remarks Before the Aerospace States Association on America's Competitiveness in Aerospace Research & Development

Wednesday, June 7, 2006
Washington, DC

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, Georgia and has roughly 9,000 employees. Gulfstream is a $4 billion 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 easily accounts for another 40,000 supplier employees producing goods and services in support of our product line. Gulfstream has a current product line of six different models ranging in price from $13 million to $45 million. Our primary competitors are Canadian (Bombardier,), French (Dassault), and now Brazilian (Embraer).

In the 100 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, successful civil supersonic transportation is not yet available. Yet, we see continually decreasing NASA Aeronautics R&D budgets. We see decreasing FAA budgets for Certification of new products. The U.S. is down to one large civil aircraft manufacturer and doesn't even participate in the regional jet market as a manufacturer. Gulfstream used to be alone in the market for large cabin business jets. We now have two strong foreign competitors, with an announced third, that are keen on capturing our market. More importantly, they are keen on capturing the engine for jobs and economic growth.

In March this year Gulfstream made a major facilities expansion announcement. Gulfstream announced it would spend $300 million over seven years to expand its facilities to address expected market growth. This expansion presumes steady and timely support by the FAA for new product certification and presumes a continuing and vigorous aeronautical R&D effort. If one or both of these fail to materialize, we will be hurt and our competition will succeed.

Competition, in itself, is good. It challenges the competitors to provide ever better products and services to maintain or gain market share. The customer wins as a result. Obviously, the key to ever better products and services is ever better technology. Ever better technology comes form continuous and robust R&D. The problem comes when the economic or business models of the competitors are different. When not only the full scope of R&D activities but even Product Development is paid for by government subsidy, that competitor has a huge advantage in the commercial market place. It becomes impossible to overcome that advantage in the long run. Some might be so bold to say that advantage can be overcome by the quality of our technical work force. Those carrying such beliefs need to examine Engineering degree production data and the course of foreign students that used to come to the U.S. for a degree and stayed because they were good.

In the past NASA Aeronautics served as a great source of aeronautic R&D efforts. NASA aeronautical technology has found its way into the market place in numerous forms and in numerous products. With ever decreasing budgets, however, this pipeline is drying up. Recently, even vehicle technology demonstrations, a vital risk reduction link between basic R&D and product application, were terminated. This was a substantial blow to maturing aeronautical technologies and for U.S. companies involved. It is clear the NASA budget dollars continue to migrate toward space exploration and the search for Martians. Funding reductions on the aeronautics side seem to be fair game in spite of congressional action to the contrary.

Obviously, U.S. national leadership priority for the future of aeronautics is misplaced. The establishment of a National Aeronautics R&D Policy is a needed goal sanctioned by congressional action. If the drafters of the policy listen to its customers and create a strong policy that re-invigorates aeronautics in the U.S., then the public will be well served. If instead the drafters squander the opportunity and use it to justify the current course, then the public is not served.

The National Aeronautics R&D Policy should address:

1. Aeronautics R&D as a high priority in the use of U.S. public funds.

2. U.S. Leadership in the Aeronautics worldwide is in the public good.

3. Growth in the U.S. Aeronautical Enterprise is in the public good.

4. Re-establishment of NASA Aeronautics as a vital R&D activity supporting a broad group of U.S. aeronautics companies.

5. U.S. government action to minimize foreign competitor advantages due to strong financial aid.

6. 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 Aerospace States Association, I thank you for the opportunity to voice our views on what we believe to be important to our future.

John J. Kopecky, Ph.D.
President, The Kopecky Group, LLC
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Wednesday, June 7, 2006
Washington, DC

Good afternoon, my name is John Kopecky, and I am president of The Kopecky Group, LLC, a consulting firm specializing in aerospace program and public policy issues. Prior to establishing my firm earlier this year, I had a thirty-six year career with Pratt & Whitney, most recently as their director of space and aero propulsion programs in Washington, DC. I would like to thank the Aerospace States Association for inviting me here today to represent the Aerospace Industries Association on the important issue of the research and development portion of the national aeronautics policy currently being developed by the Bush administration.

The Aerospace Industries Association, our member companies and industry partners, strongly support language included in the FY2006 Science, State, Justice, Commerce, and Related Agencies Appropriations Act calling for a ". . . national aeronautics policy to guide the aeronautics programs of the Administration through 2020." We believe this new policy must be consistent with the government's historic role of promoting the United States' leadership and competitiveness in both military and civil aeronautics.

While the new aeronautics policy will establish goals and directions for all aeronautics-related issues, today I am here to speak about one specific aspect of that policy; that of research and development. Aeronautics R&D in this country has historically had two major goals. The first is to provide the US with the best military aviation systems in the world as the backbone of our national defense. In this regard the Department of Defense, with support from other agencies, is responsible for the full range of R&D, from bench-level science and technology through to full-scale development and deployment of systems using those technologies. There is no argument regarding the government's paramount role in ensuring that this goal is met, and the new policy is expected to fully support continuation of those efforts.

The second historical goal has been to support the identification and maturation of aeronautics technologies that serve a public good by enhancing the safety, minimizing the environmental impact, and reducing the cost of commercial aviation. This effort has been led for decades by NASA, with assistance from the Federal Aviation Administration and other agencies, and resulted in a commercial aviation sector that was able to compete successfully worldwide. It is here that there are differences of opinion over the proper future role for the federal government, and how that role should be carried out.

As you may know, the United States' federal investment in aeronautics research is at a cross roads. Around the world, governments are taking aim at our commercial aeronautics industry -- increasing their investment and making commercially-relevant aeronautics R&D a top priority. Meanwhile the United States continues to deemphasize non-military aeronautics research. For example, while NASA continues to downsize and internalize its aeronautics program,

implementation of the European Union's R&D plan Vision 2020 is accelerating. This trend will have a serious impact on the nation's competitiveness, national security, and our position as the world's leader in aeronautics research. As a result, rather than leading the world in the development of next generation of aviation products, services and infrastructure, the United States will take a backseat to the products created by other nations: products supported by policies, rules and incentives designed to disadvantage United States' solutions.

Today I will focus on the importance of U.S. leadership and global competitiveness in aeronautics and the role that a national aeronautics R&D policy plays in attaining those goals.

Leadership

Since the earliest days of powered flight, the United States has been one of the world leaders in the development, manufacture and deployment of advanced airframes, propulsion systems, and air traffic management systems, due in no small part to our leadership in aeronautical research and development. Our successes in these sectors have greatly enhanced our positions in other economic areas, and the American public has been the general beneficiary of America's aeronautics leadership. Nearly a century in the making, our leadership position is now at risk from a decline in domestic public-sector investment and invigorated foreign investment in the aeronautical sciences. Surrender of our technological leadership in aeronautics would be a harbinger of our retreat from global competitive eminence, a retreat which will have both near-term and long-term effects.

NASA's Aeronautics Research Mission Directorate budget has seen consistent funding cuts over the last 13 years. Most recently, NASA's aeronautics funding has gone down 32% in the last three years to $724.4M in the FY2007 budget submission, while the agency's overall budget has risen 9% in the same time period. This excessive decline in funding and the dramatic change in NASA's research priorities endanger both the future of U.S. leadership in the global aviation industry and the benefits that accrue to the American taxpayer.

NASA plays a critical role in the way Americans' view – and benefit from – our place in the world: from the perspective of the world leader in space exploration, science programs, and aeronautics research. These programs are far too important to be pitted against one another in annual funding battles to the detriment of our position of global leadership and our domestic economy.

While leadership in aeronautics R&D is key to maintaining our preeminent military position, it is also necessary if we are to be able to compete in the commercial aviation sector, since it will provide the advances and advantages necessary to keep American products competitive in the international marketplace. However, just being a leader in R&D is not enough. Research only aids competitiveness if the advances that result from the healthy science and technology programs that make up the "R" in R&D get into products that are manufactured and sold, the "D" portion of R&D. Thus a major element of any R&D policy must be related to the successful implementation of the resulting technologies.

Competitiveness

The impact of a competitive aerospace industry on the domestic economy cannot be overstated. In 2005, the aerospace industry provided the largest trade surplus of any segment of the American economy – a trade surplus of $39.8 billion and a 28% increase from 2004. In 2004, the industry employed 539,000 workers and had an annual payroll of $31 billion. Thus R&D investment provides widespread, positive, secondary and tertiary impacts on regional, state, and local economic health – a multidimensional and expansive public return on investment of taxpayer dollars. If the U.S. surrenders leadership of aviation manufacturing, the adverse affects on trade, employment, high-technology industry, as well as local, regional, and national economies, will be dramatic.

Because of the importance of this sector to the US economy it is a critical that all of the stakeholders have an opportunity to influence the formation and implementation of a federal aeronautics research policy. This influence will ensure that federal research is relevant and benefits the U.S. taxpayer and U.S. global competitiveness. Relevant research that is eventually deployable to products and applications increases the American public's return-on-investment on several levels, such as job creation, increased tax revenue, new services and new technology application spin-offs. At this point an argument is often raised that it is role of the private sector to invest in commercially-relevant R&D not the government's. I agree with this argument and the record shows that in the past this has in fact been the case. For every dollar the federal government spends on the commercially-relevant S&T portion of its aeronautics research portfolio industry spends $10 to complete the process by developing products for the market that utilize those technologies. Thus while government-sponsored pre-competitive S&T primes the technology pump, the private sector funds the development part of the process where-by that technology pump results in usable output.

Finally, the importance of the commercial sector of the aeronautics industry goes beyond jobs and sales in the private sector. A healthy commercial aviation sector provides for a more efficient military sector as well. Since both the military and commercial aviation systems utilize the same components of the industrial base (i.e. human capital and manufacturing capacity) having a successful commercial sector stabilizes that base. In times of war, the U.S. has always had the ability to manufacture state-of-the-art weapons needed for victory. Having a healthy commercial aeronautics sector provides the surge capacity to meet such a challenge. Thus, sacrificing technological supremacy in commercial aviation will require a larger-than-necessary peace-time military production-base as insurance in case a surge is necessary. This will result in DoD expenditures that might be deployed in other ways.

What should an aeronautics policy include?

If one is convinced that having a health commercial aviation infrastructure that is based on successful R&D and results in competitive advantage for our commercial aviation manufacturers is important, the next step is to determine how such an end-point can be reached.

The AIA believes that for this to happen the new aeronautics policy must support federally funded research of technologies at a level leading to industry development of marketable product

applications, and to do so will require collaboration between the federal government and the private sector. A competitive commercial aviation sector is not only important to our economy but is a vital component of national security. Therefore, military and commercial government stakeholders (DoD, DoC, FAA, industry, etc.) must be involved in the development of research roadmaps. However, the private sector must also be a part of this dialogue. The scientists and engineers, in either government or private-sector labs are not it the best position to determine how, when and where the technologies they investigate will be utilized. It takes industry and government working together at the program management level to determine what research should be pursued and how and when such research will be utilized.

Thus all aeronautics stakeholders should have permanent standing in an institutionalized process for their continuous, substantive involvement in directing, monitoring and evaluating national aeronautics policy planning and implementation. To ensure that funding is appropriate to industry-approved strategic and tactical roadmap goals, regular government-stakeholder meetings to evaluate progress, goals, and means should be sponsored by each federal agency that funds aeronautics research. Additionally, establishment of coordinated Congressional oversight spanning all agencies' aeronautics research (or other government-wide oversight) would promote industry-agency collaboration on research needs and long-term goals.

A new government-industry partnership paradigm is needed to institute a mechanism that identifies and promotes federally funded research pursuing technology with transferable product applications and public benefit. Additionally, given the European community's accelerated, publicly funded product-oriented aeronautics research, there is an urgent need for federal focus on transferable research within shorter-term time constraints for the U.S. to maintain its leadership in this vitally important arena.

The American public, our national competitive standing, and industry are adversely affected by sudden dramatic redirection of research priorities. A national policy and a national research roadmap would minimize dramatic redirection of aeronautics research and would provide industry with confidence regarding future federal research priorities, confidence that is necessary for the future business investment determinations that will result carry the United States into the second 100 years of aviation.

Thank you for your attention. I am available to answer any questions.

Aaron J. Gellman, PhD
Professor, The Transportation Center Northwestern University
Remarks Before the Aerospace States Association
On America's Competitiveness in Aerospace Research & Development

Wednesday, June 7, 2006
Washington, D.C.

I appreciate this invitation to address your Association and other present on the timely and vital issue of aeronautics research policy.

In the US, historically, public support for an industrial area (such as "aeronautics") through government funding of basic research, and even a measure of applied research, has not been offensive as long as the research results are published broadly so as to become the basis for competitive innovation seeking to develop a product (or service) introduced into the market with the goal of broad market acceptance. This benefits those commercial enterprises which take the research results and successfully exploit them to produce attractive new or improved products (or services). It generates benefits for their customers and for the public as well. It is when the public pays for product development, for design, for production, testing or marketing that such policy becomes offensive.

It is important to view US aeronautics research policy against the background of what is going on in Europe. First, a public research policy that favors going beyond research into development (and even beyond), will sooner or later become linked to "competitiveness". This inexorably drives public resources to be allocated to make firms- even specific firms- more effective competitors in markets, especially those markets beyond European shores.

The likelihood that specific firms will benefit is highest where industrial concentration is also highest. That is, the fewer the firms serving a market from a region (or country), the more likely they will benefit from a public policy favoring a market they address. The biggest winner, of course, is the regional (or national) monopolist – a single seller of a product.

There is no surprise in the fact that there is a sharp contrast between the way civil aeronautics research is supported with public resources in the US (largely by NASA) and at the regional level in the EU through the EC's "framework programs." These programs allocate R&D funds to various areas, prominently including civil aeronautics. Each EC Euro must be matched by a Euro from one or a group of private firms. There are three levels of reports written for each completed EC-supported R&D project. The first is a very general description of the project and its outcome. It is made available to the EC which publishes it. Care is taken to ensure it discloses nothing of value, either scientifically or technologically.

The second report is produced by all the firms that contributed resources to the project outcome and, as such, is closely guarded. This is not shared with EC and EC expects the firms involved not to share these reports with any party outside the EU, regardless of the relationships that may otherwise exist.

A third report – actually several reports – is produced. This report is written by one on a subset of firms that supported the R&D project. It details the outcome of the project, focusing upon the proprietary value to the firm or firms. It is closely guarded even though public resources have been invested – often substantial resources – to enable the R&D result to be realized.

Turning now to NASA once again, while for a period of years, until a short time ago, its aeronautics R&D program did have a number of projects where US industry contributed resources alongside the public ones, currently NASA seems to be actively discouraging such research "partnerships". Almost certainly this is due to NASA's recently renewed stress on the earliest stages of R&D, basic and applied research -- in NASA parlance, TRLs 1,2, and 3. (TRL: Technology Readiness Level.) With the exception of R&D related to ATM (which will only be discussed generally here) this is a sensible policy for NASA since the US has been neglecting much of the early stage research in aeronautics that was reasonably – and justifiably – the focus of NACA from its formation in 1915 through the early years of the successor agency, NASA.

In the US, then, it is usually up to private industry to convert NASA research outcomes into viable products and services without public support for their efforts. It follows that in the US, enhanced "competitiveness" of firms in the civil aviation field is not a goal of public support for aeronautics research even though such support for basic and applied research outcomes is ultimately exploited by private firms to make themselves more effective market competitors.

Especially given the expanding "globalization" of aeronautics, it is past time when the US should have adjusted its aeronautics research policies to take account of how the playing field has changed. First, the US needs to consider if it remains prudent to be so forthcoming with aeronautics research results achieved through the expenditure of public resources. The private sector may generally do as it wishes with research results it alone has funded but the government need not supply, essentially without cost, its civil aeronautics research outcomes especially as it only serves to release public resources in other countries and regions to concentrate on those R&D efforts that enhance the market competitiveness of firms in their own countries and regions. A shift in US policy is warranted – at least until there is an appropriate adjustment in the aeronautics research policies of others.

Second, US policy should allow, indeed encourage, the establishment of "cooperative research ventures" (CRVs) to pursue research results in which a single firm cannot justify investing. This is because the single firm alone cannot appropriate sufficient net benefits for itself to make the requisite investment a sound business proposition. But where the same research results, when made available to other firms, generate sufficient "appropriability" to enable joint funding of the work, a CRV is attractive – for the participants and the nation. In the usual case, this will likely involve cooperation between final-market competitors; to avoid dulling competition—and more likely actually heightening it—the research cooperation must end right there—with research.

US policy towards civil aeronautics research has already changed of late. Some consider the change to be radical; except in one respect, I do not. The change is manifest at NASA, the principal public source of support for civil aeronautics research in the US. In many respects, NASA is returning to its roots. In 1915, when NASA's lineal ancestor was created, its charter was to pursue aeronautics science. There was no mandate related to development. Thus NASA's new stress on basic research and some early applied research is not new.

(The one area where NASA's changed policy is troublesome relates to air traffic management (ATM). Over recent years, FAA, the only US provider of such services, has come to rely on NASA for R&D outcomes substantially ready for deployment. This "reliance interest" is one encouraged by NASA under past "management" but that point pales in comparison with the fact that for some years to come, without NASA's technology outcomes, the US ATM system will be less able to meet the demands placed upon it).

Returning to a more global view, we should recognize that there is a very important downside in the long-run for those countries and regions that follow the course laid out by a R&D policy favoring a field such as aeronautics as a part of "industrial policy." Because such policy, inevitably with enhanced competitiveness as a goal, must stress 'D' more than 'R' (as in R&D), the reservoir of research results generated in those nations must decline and, with it, a significant measure of long-term "competitiveness".

There are only two ways the practitioners of such policy can avoid the "trap". First, they can re-allocate much of what is devoted to the 'D' side to the 'R' side. Certainly this is very difficult to do for many political and practical reasons. Consider that the European aeronautics industry has become used to public support for much of its proprietary R&D which, as noted (and not surprisingly), concentrates mostly on 'D'. Also, European labor quite reasonably cherishes the jobs made available through public support of their employers and would fight to preserve the status quo.

The second option is to find an external source of essentially free research results such as NASA has been over many years. And Europe has exploited this opportunity to a considerable degree. If NASA were to limit the availability of its research results or were to require Europe to disclose the entirety of the civil aeronautics R&D results achieved in whole or in part with public funds, this would make the issue of publicly funded enchantment of market competitiveness more tractable. (It would still not deal with state aid for aircraft program design and development which, admittedly, is a greater near-term problem.) But it is time to consider bulwarking NASA's civil aeronautics research results to US firms – at least for a time sufficient to determine what reaction such a policy shift would produce in countries and regions that are not forthcoming regarding research funded by the public treasury.

This, along with a policy to encourage cooperative research ventures between US firms, and an appropriate (and clearly warranted) enhancement of NASA's civil aeronautics research budget, will go a long way to keeping the US in the forefront of aviation – where it has every claim to be.

One last point – and it is triggered in part by some of Mr. Russell's earlier remarks. From a policy standpoint, some of what I believe and much of what he said strongly suggests that the US needs to consider enunciating a research policy and a technology policy – two policies that are compatible but different.

BIOGRAPHIES

Congressman Ken Calvert

Chairman -House Science Committee Subcommittee on Space and Aeronautics

Congressman Ken Calvert represents the 44th Congressional District of southern California. During his freshman term, Calvert served as an active Member of the Resources Committee and Science Committee. The next two years in office Calvert's ability to work in a bipartisan fashion was rewarded with the Chairmanship of the Energy and Mineral Subcommittee on the Resources Committee.

Calvert currently serves as the Chairman of the House Science Committee Subcommittee on Space and Aeronautics. He is also a member of the Committee on Armed Services and the Resources Committee.

Additional, his legislative work has received top ratings from the Americans for Tax Reform, Christian Coalition, League of Private Property Voters, National Federation of Independent Businesses, 60 Plus Association, U.S. Chamber of Commerce, Small Business Survival Committee and Citizens for a Sound Economy. He is also the California Republican Delegation's voice on the House Steering Committee, which decided what committees republican members would serve on the 109th Congress.

In the 109th Congress, Calvert's legislative plan includes: Supporting the President and our Military in the Global War on Terror, Strengthening our borders and reforming the immigration system, reinvigorating the Nation's Space Program, ensuring that local military installations fare well in the 2005 Base Realignment and Closure (BRAC) process, and more.

Congressman Mark Udall

Member of House Science Committee Subcommittee on Space and Aeronautics

Congressman Mark Udall is serving his fourth term representing Colorado's Second Congressional District. Having made his entrance into politics in 1997 as a representative in the Colorado State House, Udall is now a ranking member on the Committee on Science Space and Aeronautics Subcommittee. Additionally, he is a member of the House Armed Services Committee, the House Science Committee, and the House Resources Committee.

In addition, he is the co-chair of the House Renewable Energy and Energy Efficiency Caucus, and is a recognized national leader in promoting a balanced national energy plan. Udall is also a member of the Democratic Caucus Task Force on Defense and Military Issues and the NATO Parliamentary Assembly.

In describing Udall's work the *Denver Post* calls him "a tireless worker" and says he has "been effective largely because he puts the public's business ahead of partisan concern." *The Grand Junction Daily Sentinel* calls him "conscientious," "highly capable" and "energetic."

Richard M. Russell
Senior Director Technology and Telecommunications
National Economic Council

Richard M. Russell is the Senior Director for Technology and Telecommunications for the National Economic Council. In this post, he is President Bush's telecommunications advisor.

Russell concurrently holds the position of Associate Director with the Office of Science and Technology Policy. The U.S. Senate confirmed him in August 2002. As Associate Director he serves as OSTP Director Dr. John H. Marburger, III's deputy for technology. Prior to being chosen by the President for his current position, Russell served as OSTP's Chief of Staff. Russell also worked on the Presidential Transition Teams for the Department of Commerce, National Science Foundation and OSTP.

From 1995-2001, Russell worked for the House of Representatives Committee on Science and has a background in technology and environmental policy. The Committee has oversight responsibilities for all Federal civilian research and development and authorizing responsibilities for most civilian science programs.

During his time on the Committee, Russell helped draft a wide variety of legislation, including efforts to expand and improve coordination of federal information technology research, improve computer security, and authorize agencies such as the National Institute of Standards and Technology. He also was charged with overseeing the committee's technology policy, coordinating its oversight agenda, and helping manage the committee's majority staff.

Russell began his career in Washington, D.C. as a research fellow for the Conservation Foundation. He also worked for Congressman Curt Weldon (R-Penn.) and Senator John Seymour (R-CA). In 1988 he earned a bachelor's degree in biology from Yale University.

William W. Hoover
Vice Chair
Decadal Survey of Civil Aeronautics Steering Committee

William W. Hoover is currently a consultant for aviation, defense, and energy matters. He is the former Executive Vice President of the Air Transport Association of America, where he represented the interests of the U.S. major airlines industry, particularly related to technical, safety, and security issues.

Prior to holding this position, he served as the Assistant Secretary, Defense Programs, U.S. Department of Energy, where he was responsible for the U.S. nuclear weapons development program, including production, research, testing, safety, and security. He is also a Major General, USAF (retired) and held positions of responsibility within NATO, at the Pentagon with the Secretary of the Air Force, and in Vietnam, where he commanded a combat air wing and flew as a fighter pilot.

General Hoover served as Chairman of the National Research Council's Aeronautics and Space Engineering from the Air Force Institute of Technology, and is a distinguished graduate of the National War College.

Jack J. Pelton
Chairman, President and Chief Executive Officer
Cessna Aircraft Company

Jack J. Pelton is chairman, president and chief executive officer of Cessna Aircraft Company, the leading worldwide manufacturer of general aviation aircraft. Headquartered in Wichita, Kansas, Cessna has produced more than 187,000 aircraft since the company was founded in 1927, including the largest global fleet of more than 4,500 business jets.

Pelton has more than three decades of aviation experience. Prior to being named Cessna's chairman, president and CEO in 2003, he was senior vice president of engineering and oversaw Cessna's engineering and product development activities, including new aircraft development, design, experimental and production flight test, certification, and product improvements for all Cessna models.

Before joining Cessna in 2000, Pelton served as senior vice president of engineering and programs at Fairchild Dornier in Germany and was responsible for the company's 728JET aircraft family. Previously he held related executive positions of increasing responsibility during his 20 years at Douglas Aircraft Company.

An avid supporter of general aviation, Pelton is the Chairman for the General Aviation Manufacturers Association (GAMA) for 2006. He also holds a commercial pilot's license with instrument, multi-engine ratings and seaplane ratings. He also holds type ratings in several Cessna Citation business jets, including the Citation X, the world's fastest civil aviation airplane. He is a single engine aircraft owner and enjoys restoring legacy aircraft. In his free time, he is actively involved in numerous community non-profit organizations.

John W. Borghese
Vice President Advanced Technology Center
Rockwell Collins

J.W. (John) Borghese is Vice President of Rockwell Collins Advanced Technology Center, a position he as held since November of 2005. Before November, John served as General Manager of Display Systems for Rockwell Collins Government Systems.

Mr. Borghese's prior experience was in electronic systems in the areas of engineering, program management, business development, and general management. He was previously President of Kaiser Electronics. Prior to joining Kaiser, Mr. Borghese was Director of the Automatic Test Systems & Avionics Systems Business at Allied-Signal (Honeywell) Guidance and Control Systems. During his professional career, Mr. Borghese has been involved in the development of avionics, flight control and airborne sonar systems.

A native of Columbus, Ohio, Mr. Borghese earned a Bachelor of Science degree in electrical engineering from the University of Southern California and a master's degree in business administration from Boston University.

Mr. Borghese is a member of Tau Beta Pi and Sigma Kappa Epsilon.

Preston A. Henne
Senior Vice President Programs, Engineering and Test
Gulfstream Aerospace Corporation

Preston "Pres" Henne is Senior Vice President for Programs, Engineering and Test at Gulfstream. In this position, he is responsible for Gulfstream's product program management, engineering, and flight operations. He became Vice President of General Dynamics Corp. in July 1999 when it acquired Gulfstream.

Henne began his aerospace career in 1969 at McDonnell Douglas, where he managed several advanced programs in aerodynamics and acoustics for both military and commercial aircraft. Known for his work in advanced aerodynamic technology, he was responsible for the aerodynamic design of the wing on the c-17 – considered the most versatile aircraft in airlift history and winner of the 1994 Collier Trophy for aeronautical achievement. Henne later served as Chief Design Engineer for the MD-80 aircraft. In 1991, he became Vice President and General Manager of the MD-90 Program at McDonnell Douglas' Long Beach Douglas Aircraft facility, where he oversaw the aircraft's complete development and certification process.

Joining Gulfstream in 1994, Henne is credited with the design, development, test and certification of the Gulfstream V aircraft – which was awarded the Collier Trophy for greatest aeronautical achievement in America in 1997.

Henne earned a bachelor's degree in aeronautical and astronautical engineering with highest undergraduate honors from the University of Illinois in 1969 and a master's degree in engineering from California State University at Long Beach in 1974. He is a member of the Innovation leadership Advisory Board (ILAB) at the University of Illinois College of Engineering and of the Georgia Tech Research Corporation Board of Trustees. Henne is a Fellow of the American Institute for Aeronautics and Astronautics (AIAA) – the principal society for the aerospace engineer and scientist. In 1996 he received the AIAA Engineer of the Year Award and in 2001, the AIAA Hap Arnold Award for excellence in aeronautical program management. In 2004 he was elected to the National Academy of Engineering.

John J. Kopecky, Ph.D.
President
The Kopecky Group, LLC

Dr. Kopecky is founder and president of The Kopecky Group, LLC a consulting firm specializing in aerospace program and public policy issues.

Prior to establishing his firm, Dr. Kopecky had a thirty-six year career with Pratt & Whitney (P&W). Before his retirement in 2006, he was P&W's director of space and aero propulsion programs in Washington. He was responsible for liaison with government customers for gas turbine and rocket engine technologies. These included NASA, the armed services, the Defense Advanced Research Projects Agency (DARPA) and others. His responsibilities included monitoring program status, supporting development and passage of agency budgets consistent with company objectives and formulating R&D policy positions and business strategies.

Dr. Kopecky joined Pratt & Whitney in 1970 as an analytical engineer, and was responsible for computer analyses of existing and developmental gas turbine engines. In 1977, he transferred to P&W's commercial marketing department, where he prepared and presented financial analyses in support of domestic and international commercial gas turbine sales. He joined the P&W Washington staff in 1980.

Dr. Kopecky earned his Ph.D. in management from The George Washington University, specializing in science and technology management and public policy issues. He holds a B.S. in mechanical engineering from the Polytechnic Institute of Brooklyn, an M.S. in mechanical engineering from Rensselaer Polytechnic Institute and an M.B.A. from the University of Connecticut. He is a licensed professional engineer in the State of Connecticut. He is currently pursuing graduate studies at George Mason University.

Aaron J. Gellman
Professor, Northwestern University, Transportation Center
Full Professor of Management and Strategy

Dr. Aaron Gellman joined the faculty of the Kellogg School of Management in 1992 as a professor of management and strategy. He also holds an appointment as professor of industrial engineering at the Robert R. McCormick School of Engineering and Applied Science at Northwestern University. Dr. Gellman was the Director of the Transportation Center, Northwestern University, a position he assumed in January 1992 through August 2000. He founded and was formerly president of Gellman Research Associates, Inc. a consulting firm. He served 24 years as an adjunct professor at the University of Pennsylvania.

A noted transportation economist, Dr. Gellman's research and teaching include transportation economics and policy, the regulation of transportation, and the management and utilization of research and technology. He is the author of numerous published papers and has served on government panels and committees, as well as corporate boards.

Dr. Gellman is a member of the American Economic Association; Transportation Research Forum; Transportation Research Board; American Railway Engineering Association; and the Pennsylvania Conference of Economists. He is also a Fellow for the American Association for the Advancement of Science.