Aeronautics Research and Technology Roundtable

July 17 Meeting Summary

Presented to ASEB Meeting, October 22

ARTR Membership

John J. Tracy, *Chair*
Chief Technology Officer
Senior Vice President of Engineering, Operations and Technology
The Boeing Company

Michael B. Bragg
Dean, College of Engineering
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Chief Executive Officer
NextGen AeroSciences, LLC

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President
RTCA, Inc.

Nicholas D. Lappos
Senior Technical Fellow – Advanced Technology Sikorsky Aircraft Corp And Vertical Lift Consortium

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Executive Director of the Office of Environment and
Energy
Federal Aviation Administration

M. Granger Morgan
Lord Chair Professor in Engineering Professor and Department Head
Carnegie Mellon University (CMU)

Steven Pennington
Director of Bases, Ranges and Airspace, U.S. Air Force Executive Director, Policy Board on Federal Aviation
Department of Defense

Eli Reshotko
Kent H. Smith Professor Emeritus of Engineering
Case Western Reserve University

Thomas E. Romesser
(Retired Chief Technology Officer and Sector Vice President, Advanced Programs and Technology Division
Northrop Grumman Aerospace Systems)

Jaiwon Shin
Associate Administrator,
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Patricia G. Smith
Aerospace Consultant
Patti Grace Smith Consulting, L.L.C.

Ian A. Waitz
Dean of Engineering, and Jerome C. Hunsaker
Professor of Aeronautics and Astronautics
Massachusetts Institute of Technology

Robert Walters
Vice President for Research
Virginia Tech

David W. Yoel
Chief Executive Officer
American Aerospace Advisors, Inc. (AAAI)

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Statement of Task

"Define and explore critical issues related to NASA's aeronautics research agenda"

"Frame systems-level research issues"

"Explore options for public-private partnerships that could support rapid, high-confidence knowledge transfer"

"Facilitate candid dialogue among participants, to foster greater partnership among the NASA-related aeronautics community, and, where appropriate, carry awareness of consequences to the wider public"

NASA briefed the Roundtable about ARMD's plans for flight research

NASA will increase flight research in a number of areas as it ends some programs and can increase funding for flight research projects.

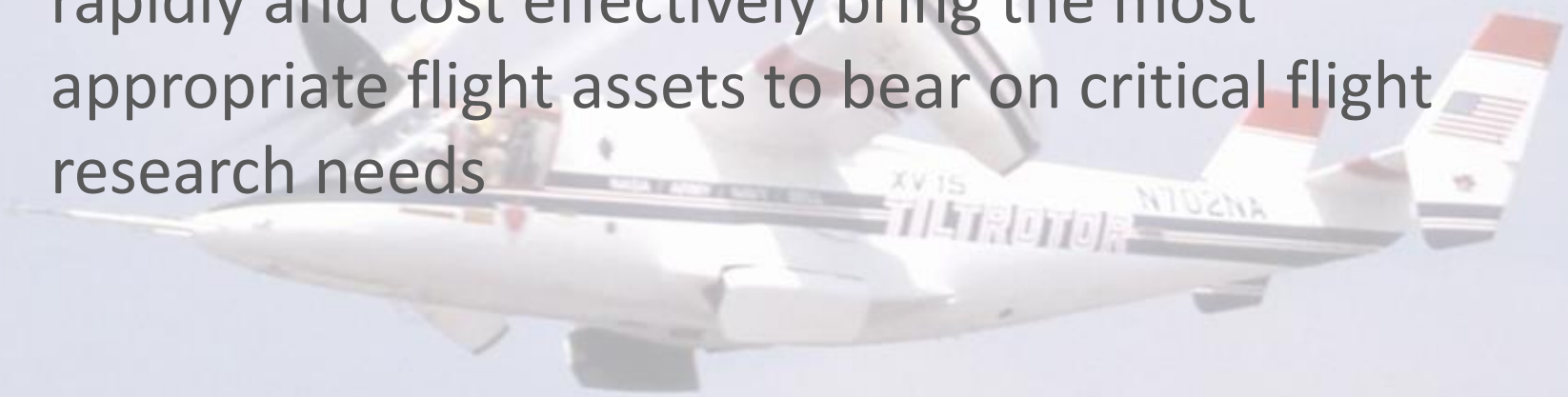
NASA is exploring new aircraft configurations.

Flight demonstration is a requirement for enabling overland commercial supersonic flight. (Focus is on data to change regulation, not developing a prototype.)

Providing autonomy capability for the community.

Vision

- Establish a National Flight Research Alliance
  - A flexible partnership across the aviation industry to rapidly and cost effectively bring the most appropriate flight assets to bear on critical flight research needs



NASA Slide

Future Flight Research Needs Point to a Broader Range of Aircraft and System Applications

Possible X-Aircraft and X-System Flight Experiments

Full TBO integration

Low Boom Demonstration

New Configurations & Integrated Technologies

Alternative Energy and New Propulsion Systems

Complex System-Wide Interactions among Flight & Ground Systems

UAS Integration & Autonomy Applications

Safe, Efficient Growth in Global Operations

- Enable full NextGen and develop technologies to substantially reduce aircraft safety risks

Innovation in Commercial Supersonic Aircraft

- Achieve a low-boom standard

Ultra-Efficient Commercial Vehicles

- Pioneer technologies for big leaps in efficiency and environmental performance

Transition to Low-Carbon Propulsion

- Characterize drop-in alternative fuels and pioneer low-carbon propulsion technology

Real-Time System-Wide Safety Assurance

- Develop an integrated prototype of a real-time safety monitoring and assurance system

Assured Autonomy for Aviation Transformation

- Develop high impact aviation autonomy applications

NASA Slide

Characteristics of A New Era of Experimental Flight?

- Partnership – Flight Experimentation has always had a strong emphasis on partnership
  - Enable an inclusive partnership among the aviation community
  - Expand to non-traditional partners
- Risk & Technology – Recapture ability to take risk and utilize emerging technologies to reduce cost of flight
- Assets – Expand the stable of available U.S. assets for flight experimentation
  - Utilize Live Virtual Constructive-Distributed Environment (LVC-DE) to establish a virtual test range for X-Systems type experiments
- Expanded Perspective – X-Aircraft and X-Systems
  - Enable evolution and transformation of the aviation system to meet future needs

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