



FREQUENT FLYER

American Institute of Aeronautics and Astronautics
Northern Ohio Section

Newsletter - March 2016

Distinguished Lecture with Marianne Dyson on NASA Mission Control Experience

Ms. Marianne Dyson, award-winning author and former NASA flight controller, captivated an audience of nearly 50 attendees on how a team of flight controllers prepared, identified, and dealt with problems encountered during the early days of NASA's Space Shuttle flights. Her fascinating lecture, held on February 18, 2016 at the Ohio Aerospace Institute, was a joint event with the Cleveland Section of the American Society of Mechanical Engineers and the Ohio Aerospace Institute.

Ms. Dyson spoke from the perspective of an integral flight controller team member, and her talk, "Mission Control: Solving Problems in Realtime", highlighted the organizational, management, and communication lessons we might take from these experiences in planning for future missions to the Moon and Mars.



Ms. Marianne Dyson provided a unique perspective on identifying & solving problems encountered during NASA's first Shuttle flights.



Nearly fifty attendees arrived at the Ohio Aerospace Institute's beautiful glass-enclosed facility to hear Ms. Dyson's Distinguished Lecture.

An Ohio native, she has a degree in physics and was a Flight Activities Officer specializing in contingency crew procedures and development of crew activity planning tools during the early Space Shuttle Program. She has won the Golden Kite and the American Institute of Physics Science Writing Awards for her books for children, and her latest, *Welcome to Mars*, coauthored with Apollo 11 Astronaut Buzz Aldrin, was named a 2016 Outstanding Trade Book by the National Science Teachers Association.

Following her well-received lecture, which lasted over an hour, the attentive audience engaged Ms. Dyson with a variety of questions—from those that reached back to the early and historical Shuttle Program experience to those that promote the settlement of space through investment in science and exploration.



From left to right: Paul Penko (ASME), Jim Gilland (NOS Chair), Ms. Dyson, and Peggy Cornell (NOS Vice Chair).

Young Professionals Luncheon with Ms. Dyson

In addition to attending Ms. Marianne Dyson's Distinguished Lecture on the evening of Thursday, February 18th, Young Professionals from the AIAA Northern Ohio Section (NOS) and the Ohio Aerospace Institute (OAI) had the opportunity to attend a luncheon and career discussion with her earlier in the day. The event took place in the President's Room at OAI. Following an informal lunch, Ms. Dyson shared some of her background as an award-winning author and as one of NASA's first female flight controllers.



She also fielded questions from participants about career decisions. Following the discussion, participants purchased signed copies of Ms. Dyson's books, which included her memoirs, children's books, and science fiction collection. The ten enthusiastic attendees actively engaged Ms. Dyson over a lunch comprising sandwich wraps, chips, cookies, and soft drinks.



Northern Ohio Section Judged and Sponsored Special Awards for Area Science Fairs

AIAA NOS continued its annual support of the Northern Ohio regional science fairs this year, offering \$400 in prizes for Aerospace related projects. The overall winners of these regional science fair competitions go on to the Intel International Science and Engineering Fair.

The Northwest Ohio District Science Day (NWSDS) took place on March 5, 2016 at the University of Toledo. Justin Elchert (NASA GRC) and Andrew Yatsko (Teledyne Turbine Engines) judged the prizes with 3 awards going to the 5-8th grade age group and 3 awards to the 9-12th grade group. Subjects of the projects included non-Newtonian fluids, wind turbines, aerodynamics, and turbulent flow in a tube.

The Northeastern Ohio Science and Engineering Fair (NEOSEF) took place March 15, 2016 at Cleveland State University. The judges awarded 6 prizes, totaling \$200, to students in grades 7-12th.

The judges were: Julie Kleinhenz (NASA GRC), Stephen Helland (NASA GRC), Al Juhasz (NASA GRC), Paul Penko

(Baldwin Wallace University), and Max DiFilippo (Cleveland State University).

The winners of the first place awards of \$50 were both in the 9-10th grade category: Rahul Jagetia, University School, "Effects of Empennages on Aircraft Drag and Efficiency," and Daniel Anand, home schooled, "Value Driven Microgravity Simulator for Animal Experiments in Interplanetary Space Travel."

The second place awards of \$25 went to: Ammar Lone, Hawken School (11-12th grade), "Raman Spectral Classification of Mineral and Collagen Bound Water in Bone as a Novel Predictor of Bone Strength"; Zach Hazard, St Mary of Falls Elementary (7-8th grade), "How Much Mass Will Different Bridge Designs Hold"; Lina Zein, Hathaway Brown (7-8th grade) for "The Effect of Blade Size and Mass on Turbine Efficiency"; Greta Noeth, St. Joseph Academy (11-12th grade) "Harvesting Thermoelectricity in Cellphone Batteries."

Congratulations to all the awardees and a big THANK YOU to the judges for volunteering their time.



The Northeast Ohio Science and Engineering Fair (NEOSEF) took place March 15, 2016 at Cleveland State University. AIAA Northern Ohio Section judged and awarded six special prizes, totaling \$200, for noteworthy Aerospace-themed projects.

AIAA Northern Ohio Section Awards the "Excellence in Aerospace" Student Award at Akron E-Week

The AIAA Northern Ohio Section (NOS) supported the Akron Engineers Week by recognizing a University of Akron student at the annual banquet. This year, the Akron E-week banquet was held on February 25, 2016, where Prof. Alex Povitsky presented the "Excellence in Aerospace" award to Kristopher Pierson. Mr. Pierson is an active member in the



AIAA student chapter, which is the newest official student chapter in the NOS service area. Mr. Pierson is a PhD student in the field of mechanical engineering; he specializes in heat transfer and fluid dynamics as well as computer simulation of the aforementioned phenomena. He completed his Bachelor's degree at Youngstown State University in May 2010 and began graduate study at The

University of Akron in August 2011, where he received his Master's degree in May 2014. He has authored three academic papers that were presented at AIAA conferences (one of the papers being presented at an AIAA student conference) on the topics of vorticity confinement and drag prediction. Professor Povitsky and Kristopher currently have a paper in review by an AIAA Journal on these topics. The research was funded by the Dayton Area Graduate Studies Institute (DAGSI) in conjunction with the Air Force Research Labs (AFRL); a separate award was offered by the Army Research Lab (ARL) for a portion of Mr. Pierson's Master's degree work. In addition to his AIAA papers, Mr. Pierson is author of a journal paper written for Tribology International, which has been accepted for publication; the paper's topic is cavitation, which is an area of research for his PhD work.

AIAA Northern Ohio Section Provides Tour of NASA Glenn Research Center to Area College Students

The AIAA Northern Ohio Section (NOS) supported a tour of NASA Glenn Research Center facilities for area AIAA college members on March 14th, 2016. The tour was organized by Joseph Connolly (University Chair) with support from Kevin Melcher (Past Chair) and serves as one of the primary recruiting events for new chapter members. This year, approximately 40 students participated, representing Cleveland State University, Kent State University, and Baldwin Wallace University.

AIAA NOS worked with test engineers in the facilities directorate for a tour that included the Simulated Lunar Operations Lab, Aero-Acoustic Propulsion Lab, the 10x10 Abe Silverstein Supersonic Wind Tunnel, and the Graphics and Visualization Lab. These large facilities gave the students insight into the diverse research activities being conducted at NASA Glenn, and the importance of AIAA for publishing and dissemination technical knowledge.

To conclude the tour, George Williams, a senior scientist and former chair of NOS, provided a lecture on the future of propulsion, which was very well received. For the Cleveland State University student chapter, this event kicked off a week of AIAA activities including participation in Congressional Visits Day later that week.



University students representing Cleveland State University, Kent State University, and Baldwin Wallace University toured the wide range of facilities at NASA Glenn Research Center on March 14th, 2016.

Northern Ohio Section Lunchtime Discussion: AIAA Governance Modernization

AIAA Vice President for Standards and Northern Ohio Section member, Allen Arrington, gave an overview and held a Q&A session on the proposed changes to the AIAA governance model and Constitution. The event was sponsored by the NOS and held at the Berea Union Depot Tavern on 23 February as a lunchtime discussion. While the event was lightly attended, it did afford the NOS membership an opportunity to learn more about the planned governance changes from one of the volunteer leaders who is working the issue.

The primary message was that the current AIAA governance model is antiquated and in need of modernization so that AIAA can have the flexibility that it needs to evolve with the ever changing aerospace industry. The AIAA Board of Directors has chartered a Governance Working Group that has developed proposals for a modernized Constitution and By Laws. It has also proposed a new organization structure aimed at improving service to the membership and the industry, and fostering member engagement. A major point of the modernization effort is to create a governance model with a Board that is focused on the future of AIAA and that can provide the strategic vision for the Institute.

The details of the proposal were discussed during the lunch, but all of that information is also found on the AIAA website at <http://www.aiaa.org/Governance/> which is a page set up specifically for the governance update work. The NOS event was part of an overall awareness effort by the Board and the Governance Working Group to inform the membership about the project as a vote by the members is required to approve the changes to the Constitution. This was another key element of Arrington's message, get out and vote! For a vote on a Constitutional change to count, 15% of the eligible membership must cast a vote and for the change to pass, two-thirds of those who vote must vote yes. So the action to all NOS members is to exercise your right as an AIAA member and VOTE. And in Arrington's opinion a **YES** vote is the way to go to ensure the future of AIAA.

Regarding the AIAA elections, which include the Constitution changes and election of Board of Directors members, the polls opened on March 21 and close on May 16. Voting is done through the AIAA website (<https://www.aiaa.org/BODvote/>). If you have any questions about the Constitutional changes or the proposed governance modernization, please feel free to contact Allen Arrington (e.allen.arrington@nasa.gov, 216-433-8507).

Photo Highlight: Ohio's Aerospace Future



Ohio Lieutenant Governor Mary Taylor (far left) discussed Ohio's future aerospace opportunities at a roundtable meeting at the Ohio Aerospace Institute on Tuesday, March 1, 2016. Earlier in the day, she toured the facilities at NASA Glenn Research Center.

Mid-term Events for AIAA Mentoring Program Pilot

The AIAA Mentoring Program pilot—which runs from November 2015 through April 2016—recently reached its mid-point. To highlight this juncture, the program's co-leads, Mr. Joseph Connolly (NOS University Chair) and Mr. Kevin Melcher (Past Chair) organized two special events.

First, a social was held at the Great Lakes Brewing Co. on January 27 to provide an informal opportunity for mentees to connect with mentors other than their formal mentor. Everyone in attendance enjoyed the camaraderie and conversation.

Subsequently, Mid-term Tag-ups were held on February 8 and 9, where Mr. Melcher provided an organizational status of the program, leading a discussion on the progress and challenges experienced during the first half of the mentoring program, and offering guidance on moving forward during the final half of the program. In addition, Mr. Connolly presented an overview of the book, "Stuff You Don't Learn in Engineering School." All of the participants were very engaged and provided good feedback regarding potential improvements to the program.

Upcoming Event

ASME History & Heritage Dinner & Lecture "Why Wilbur and Orville?"

Tom Crouch, Distinguished Lecturer and Senior Aeronautics
Curator with the Smithsonian Air and Space Museum

Tuesday, Apr. 26th, 2016
5:30 PM

Fenn Tower, Room 303, Cleveland State University,
1983 East 24th Street, Cleveland, OH 44115

The talk covers the Wright Brothers' family background and focuses on the engineering process that enabled them to work toward the invention of a practical airplane and set them apart from other aeronautical experimenters. The process that they developed enabled them to move forward through the identification and solution of technical problems that other experimenters scarcely realized existed. It began with a study of what had been achieved to date, followed by establishing a starting point in structures, aerodynamics and, especially, control. They worked their way through an evolutionary series of aircraft -- one kite (1899), three gliders (1900, 1901, 1902), and three powered aircraft (1903, 1904, 1905). In 1901, following a

disappointing glider season, they replaced suspect data with information they gathered in their own wind tunnel. The key to their success was a careful system of testing and application of new knowledge to improvements in their design.

About the Speaker:

Dr. Tom D. Crouch is an AIAA fellow and Senior Curator of Aeronautics at Smithsonian Institution's National Air and Space Museum, has been an active member of AIAA since 1999. He was appointed by President Clinton as Chairman of the First Flight Centennial Federal Advisory Board, where he helped organize the celebration of the first hundred years of powered flight, and he also made substantial contributions to AIAA's "Celebration of 100 Years of Flight" campaign as well.

In addition to his contributions to the Centennial of Flight, Crouch has helped preserve the history of AIAA, by authoring the definitive history: *Rocketeers and Gentlemen Engineers: A History of the American Institute of Aeronautics and Astronautics...and What Came Before*. Crouch is also the author or editor of fifteen books, including *The Bishop's Boys*, a work considered by most historians to be the definitive work on the Wright brothers.

Crouch holds a Doctorate in American History from The Ohio State University and an Honorary Doctorate of Humane Letters from Wright State University.

Schedule:

5:30 PM - Meet & Greet
6:15 PM - Dinner
6:45 PM - Awards & Presentation

Cost:

Students: \$10
ASME/AIAA Members: \$15
Guests: \$20

Please RSVP no later than April 19th to: Paul Penko
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pfpenko@yahoo.com (email preferred)

Make check payable to: ASME Cleveland Section.

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