Abstract
Flight testing is the art and science of gathering and analyzing aeronautical data to evaluate the flight characteristics of an aerospace vehicle. While done for a variety of purposes, flight testing is generally performed: (1) In the developmental phase to hone the aircraft design; and (2) In the acceptance/certification phase to document the vehicle’s capabilities and to identify shortfalls to established standards and regulations. This presentation will focus on the second category, applying a novel paradigm articulated by the late astronomer Carl Sagan. Dr. Sagan introduced his “Baloney Detection Kit” as a set of cognitive tools and techniques to help the mind separate physical reality from falsehoods. Among these cognitive tools are: (1) Wherever possible there must be independent confirmation of the “facts”; (2) Encourage substantive debate on the evidence by knowledgeable proponents of all points of view; and (3) Arguments from authority carry little weight – “authorities” have made mistakes in the past. Though not explicitly taught in flight test curricula, I find that these cognitive tools are directly applicable to the field of flight testing, where we attempt to distill the underlying nature of an aerospace vehicle from test data, especially with ever-present schedule, budget, managerial and political pressures. In this presentation I introduce a sample of these cognitive tools, then highlight some of them with specific recent examples from the field of flight testing. I leave ample time and opportunity for audience discussion, Socratic dialogue and a robust exchange of ideas.

Bio
Karl Garman received his M.S.E in Aeronautics & Astronautics and his Ph.D. in Earth & Atmospheric Sciences, both from Purdue University. While at Purdue, he was an assistant coach on the 2003 Purdue Flight Team that won the Loening Trophy, the most prestigious award in collegiate aviation. He was also a research pilot for Purdue’s Airborne Laboratory for Atmospheric Research and served as president of Purdue Graduate Student Government. His Flight Test experience in industry and government spans from light helicopters to heavy transports, including Robinson R44 and R66, MH-60M Blackhawk, CH-47F/MH-47G Chinook helicopters, Boeing 787 and 747-8F, and numerous additional makes and models. These projects have involved a diverse range of systems and test objectives, including special operations systems, terrain following radar, electronic countermeasures, GPS WAAS precision approach for flight management systems, performance, handling, system function and reliability testing. In addition, he completed the Civil Flight Test course at the National Test Pilot School in Mojave, CA. Dr. Garman was recently elected an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA). His other AIAA service and achievements include Chair of the Flight Testing Technical Committee, 1st Place Precollege Outreach Award (2008) and Section Chair (2009-10). He served in industry at Rockwell Collins before becoming a Flight Test Engineer for the Federal Aviation Administration.