AHS Presentation

"Revitalizing Research for the Next Generation of Advanced Rotorcraft and . . . Reconsidering the Compound"

by

Robert Ormiston
Emeritus Scientist, Army Aviation Development Directorate (AFDD)

2015 AHS Alexander A. Nikolsky Honorary Lectureship
cited for "Dedicating over 40 years to analyzing and understanding critically important rotary wing aeromechanics phenomena."

Synopsis of Presentation:
The presentation will consider ideas for revitalizing research to advance the rotorcraft state of the art. It will encompass selected areas of research, development, technology, and engineering to identify future research for rotorcraft in general and for the compound helicopter in particular. It will begin with a brief review of compounds, tiltrotors, and hingeless rotor development history to show that the neglect of R&D for over three decades was largely a quirk of history. The mission performance potential of the compound will be examined based on fundamental aerodynamic principles and by surveying recent NASA and Army mission design studies. It is suggested that a rational case can be made that the compound is well suited for intermediate-speed missions and that it can be a worthy complement to the helicopter and tiltrotor. Past U.S. Army Aeroflightdynamics Directorate (AFDD) aeromechanics research in aeroelastic stability and prediction methodology is reviewed in support of advancing both conventional and compound rotorcraft.

Dr. Ormiston received his B. Aero. E. from Rensselaer Polytechnic Institute and received an MSE, MA and PhD from Princeton University. He also was a research associate at Princeton and associate research engineer at the Boeing Airplane Company. Dr. Ormiston joined the US Army Aeronautical Research Laboratory at Moffett Field, CA in 1968 as a research scientist in aerodynamics. He then became rotorcraft dynamics team leader and led analytical and experimental investigations of rotor aeroelastic stability, and hingeless rotor dynamics. In 1975 he was temporarily assigned to ONERA in France. Dr. Ormiston has served as Chief of the Rotorcraft Dynamics Division and led research in rotorcraft aeroelastic stability, structural dynamics, rotor loads and vibration, and advanced design concepts including hingeless and bearingless rotors, variable geometry airfoils, and smart structures. He then became Project Manager for the development of the US Army 2GCHAS for helicopter modeling. He also helped conceive and manage the Army/NASA Integrated Technology Rotor/Flight Research Rotor (ITR/FRR) Project. In 1997 he became Chief Scientist, Aeromechanics Branch, of the Army/NASA Rotorcraft Division and, in 2005, the Aeromechanics Chief Scientist of the Aerodynamics Directorate, AMRDEC. He served as Principal Investigator for RCAS (successor of 2GCHAS), helped initiate the UH-60A Airloads Workshop in 2001, and collaborated in research on CFD/CSD coupling for maneuver loads and aeroelastic stability in addition to research on rotor induced power and compound helicopters. Dr. Ormiston retired in 2014 and has since served as a volunteer emeritus scientist with the Aviation Development Directorate (AFDD). He has published over 100 technical reports, conference papers, and journal articles and holds several patents. Dr. Ormiston has served on numerous DOD, NASA and AHS technical panels and committees. Dr. Ormiston is the recipient of numerous commendations and awards including the Royal Aeronautical Society 18th Henson and Stringfellow Memorial Lectureship, the AHS Howard Hughes Award, and is a Fellow of the AIAA and a Technical Fellow of the AHS. He was awarded the Dept. of the Army’s Meritorious Civilian Service Award and is a three-time recipient of the Army Research and Development Achievement Award.

When: 2pm, Monday, November 16th, 2015
Where: NASA Ames Research Center, Building 3 (NASA Ames Conference Center)
Light refreshments will be served

For visitor pass requests (US Citizens only): contact Robert Scott at: 650-604-3919
or email at Robert.c.scott154.civ@mail.mil