



Full Scale Fatigue Testing of Boeing Airplanes and Smarter Testing

Steven A. Chisholm
Director – Structures Engineering
Boeing Commercial Airplanes



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ABSTRACT

Boeing has conducted full-scale fatigue tests on all of its major models, ranging from the 707 fuselage pressure hydro-fatigue test nearly sixty years ago to the recently completed full-scale test of the 787. Full-scale fatigue testing has long been a major part of Boeing structural performance data development, for both new models and airplanes retired from service. We will discuss this testing and explore the results from the 787 specifically. We will then discuss Smarter Testing. How does Boeing ensure that the structure and systems on its aircraft meet regulatory requirements? A rigorous building block approach verifies and validates analysis by tests, from the component to the assembly level. Smart testing through simulation maximizes the benefit of necessary tests, augments understanding of performance within and beyond the envelope of test data and minimizes unplanned tests in attaining certification.

SPEAKER BIO

Steve Chisholm is the Boeing Commercial Airplanes (BCA) Director of Structures Engineering. In this capacity, Chisholm leads BCA Airplane Structures in support of Airplane Development, Airplane Programs, Product Development and Commercial Aviation Services.

He also is responsible for driving functional excellence for all Structures Design and Stress skills across BCA and is the Structures Engineering process and skill owner for BCA. He is a member of the Mechanical Engineering External Advisory Board for the University of Washington and the Industry Advisory Board for the American Society of Mechanical Engineers. Chisholm joined Boeing in 1986 as a structural stress analyst on the 747 and 767 programs. He holds a Bachelor of Science in mechanical engineering from the University of Washington and a Master in Business Administration from Seattle University.