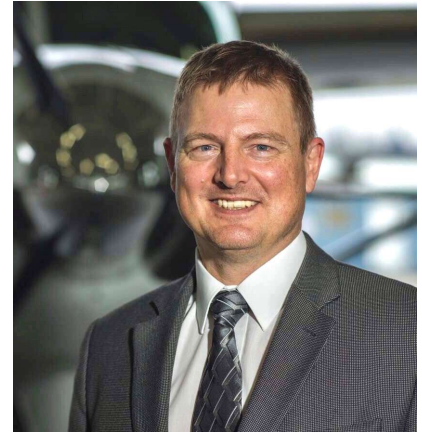


Boeing Test & Evaluation
P.O. Box 3707, MC 14-RE
Seattle, Washington 98124-2207
www.boeing.com

DR. KIRK VINING

**Boeing Test & Evaluation
Engineering, Test & Technology**



Dr. Vining is the Chief Pilot for Airplane Development, Boeing Commercial Aircraft. In this role, he is responsible for experimental flight test activities on commercial aircraft test beds, the ecoDemonstrator project, and research flight tests. His organization helps plan and execute research tests for a variety of new technologies including electric propulsion, new aerodynamic structures, new sensors, machine learning, and autonomy.

Vining was taught to fly by bush pilots in Alaska in 1986. He earned Bachelor of Science degree in aerospace engineering from Wichita State University, then began his career as a test pilot with Learjet in 1992, eventually joining Boeing as a test pilot in 2005. Vining earned a Master of Science degree in systems architecture and engineering from the University of Southern California, and PhD in international business from Northcentral University.

Vining has logged more than 7,700 flight hours, primarily conducting commercial jet flight testing, and is certified with 12 different jet type ratings. His flight test experience ranges from testing Learjets on gravel runways to dragging the tail of the 747-8 on the runway for Velocity Minimum Unstick testing. He flew all the Boeing model ecoDemonstrators, including the first regenerative hydrogen fuel cell providing power to a Boeing 737 electrical system in 2012.