

Flight Test and Evaluation Services

The Flight Research Laboratory of the NRC Institute for Aerospace Research (NRC Aerospace) is NRC's centre for flight test expertise. Since 1946, NRC Aerospace staff have conducted flight test activities for a wide range of objectives, from the evaluation of system concepts through to the gathering of certification data.

Flight test and evaluation

NRC Aerospace is involved in several programs that assess rotorcraft handling qualities and cockpit systems in cooperation with government, industry, and educational institutions. It has the expertise to assess how new or modified equipment, new control augmentation laws/theories, or degraded flight conditions, can affect the performance of the pilot and the aircraft. In many cases, these assessments require the development of novel test procedures and equipment as well as the instruction of evaluators in flight test techniques and evaluation methods.

Flight test pilot and crew training

NRC Aerospace has recognized world-class experience in flight test pilot and crew training, and a unique asset for that training with the Airborne Flight Simulator, a highly modified Bell 205 helicopter.

The training includes both classroom instruction and flights on the Bell 205 Airborne Flight Simulator and/or the Bell 412 Airborne Systems Research Aircraft.



Bell 205 airborne flight simulator

The use of this aircraft for instruction has increased NRC Aerospace exposure to the international community and its understanding of fly-by-wire technology. These programs



Instrument racks inside the NRC Convair 580

involve the demonstration of different aircraft response characteristics and the use of different control inceptors, such as conventional centre stick models and a side arm controller.

NRC Aerospace currently provides courses to test pilots and flight test engineers for the École du Personnel Navigant d'Essais et de Réception (l'EPNER), the International Test Pilot School (ITPS), the Empire Test Pilot School (ETPS), and the National Test Pilot School (NTPS). It also provides courses for flight test engineers and university students.

Development of flight test techniques and technology
NRC Aerospace has developed a number of novel flight test techniques in conjunction with other flight test agencies to evaluate new or modified aircraft, to develop precise mathematical models of aircraft performance, and/or to evaluate new equipment. Particular attention is given to

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developments that will reduce the cost and/or improve the accuracy of flight test. Recent examples include the use of wireless technology to distribute flight test data around the aircraft without the burden of large wire bundles, the development of an inexpensive integrated navigation suite that measures aircraft state parameters at 600 Hz to very high levels of accuracy, and specific flight test techniques to accurately calibrate air data systems without the need for additional installations or ground-based equipment.

Flight test data gathering

NRC Aerospace provides flight test data gathering services for clients who need aircraft or helicopter data to support flight simulation, system certification or aircraft certification purposes. While NRC Aerospace does not serve as a Transport Canada Designated Airworthiness Representative, our staff can provide the consultation and data gathering services required to develop “certifiable data packages” and to assist in the development of certification compliance plans.

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