Harvard Research Aircraft

The Harvard Mark IV (T-6) Research Aircraft at the NRC Institute for Aerospace Research (NRC Aerospace) is an ex-RCAF trainer aircraft that has been upgraded to serve as an experimental platform for avionics and systems research involving human factors and display performance. The fully aerobatic aircraft is equipped with an easily and rapidly re-programmable glass cockpit that enables realistic in-flight evaluations of new display concepts and formats. This glass cockpit consis ts of a daylight-readable LCD that provides flexibility to quickly change display formats.

NRC Harvard

Capabilities

The NRC Harvard offers distinct advantages for in-flight research. For less than the cost of simulation, new display concepts can be tested under real flight conditions, with all of the real physical sensations. The flat panel display and computer system in its rear cockpit can be programmed to any configuration of instruments desired, and NRC Aerospace can evaluate anything from standard flight instruments and moving map displays to infra-red imagery for approach guidance.

An unusual attitude recovery study was carried out in 2002 for Defence Research and Development Canada involving a novel asymmetric attitude indicator symbol that enabled pilots to recover from unusual attitudes in less time and with fewer errors than when using a standard indicator. NRC Aerospace engineers and scientists have also evaluated and compared existing head-down symbologies with innovative and more intuitive displays.

Harvard glass cockpit

Expert support

The NRC Harvard is supported by a research team experienced in designing and implementing airborne field experiments of an international calibre. Clients can count on the knowledge and expertise provided by NRC Aerospace for responsive and focussed research that meets all their needs.

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Technical specifications

Research aircraft:	• Harvard Mark IV
On-board installations:	• Rear cockpit LCD display 1024 x 768 resolution powered by a SGI computer interfaced with data acquisition system • Data acquisition system based on a National Instruments PXI data acquisition system with compact flash recording medium • System programmed using LabVIEW • Honeywell inertial navigation system and Novatel GPS system • Configurable LCD touch panel for input and system configuration
Project power:	• 28V dc 50 A • 115V ac 60Hz 1Ph 1KVA
Data analysis:	• VAX-based data playback and analysis system (including software for time and frequency analyses)
Measurement capabilities:	• 3-axis accelerations and rates • Aircraft attitude and heading • 3-D positions and velocities • Static and dynamic pressures • 32 channel A/D capability • 32 channel digital input ports
Special configurations:	• As required

CONTACT:

Mr. Tim Leslie
Flight Research Laboratory
NRC Institute for Aerospace Research
Ottawa, Ontario, Canada K1A OR6
Tel: (613) 998-3230 Fax: (613) 952-1704
E mail: tim.leslie@nrc.gc.ca

Mr. Jeff Mackwood
Marketing and Contracts Office
NRC Institute for Aerospace Research
Ottawa, Ontario, Canada K1A 0R6
Tel: (613) 990-0765 Fax: (613) 952-7214
E mail: jeff.mackwood@nrc.gc.ca

Or visit our Web site at: www.nrcaerospace.com

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