# TIFS IN-FLIGHT SIMULATOR

- **Independent Simulation Cockpit**
- **Easily Reconfigured**
- **Precise Model-Following Simulation Architecture**
- **Fully Instrumented**
- **Ample Space for Additional Hardware and Systems**

***TIFS is used extensively for aircraft development and first flight preparation. Design teams use TIFS to develop the flight control systems, displays, improve flying qualities, and to prepare the test pilots for first-flight. It is shown here simulating NASA's High Speed Civil Transport.***


***TIFS Simulation Cockpit***

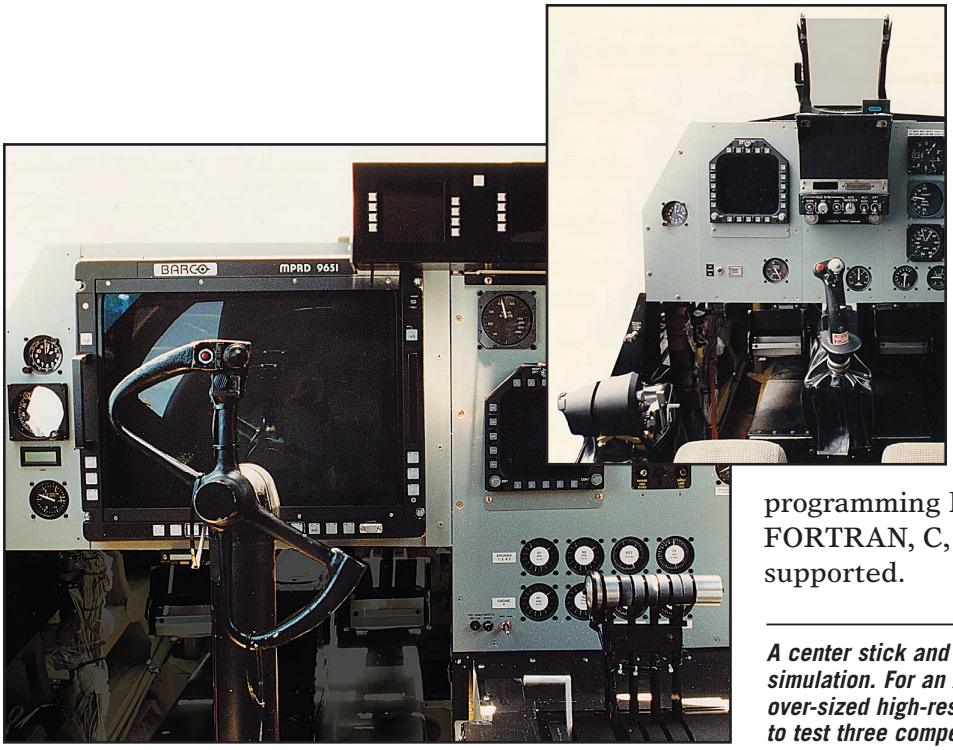
***TIFS is easily converted to a systems test aircraft. Modular design, a spacious cabin, and ample power make TIFS an ideal test-bed for prototype systems.***

The Total In-Flight Simulator (TIFS) NC-131H has been continually upgraded throughout its 30-year history as an In-Flight Simulator (IFS) to keep it at the leading edge of IFS technology. It is still one of the world's most capable IFS aircraft.

TIFS has been used extensively to develop and improve many aircraft designs. It has simulated military and NASA aircraft including the B-1, X-40, Tacit Blue, Space Shuttle, B-2, YF-23, C-17, and HSCT. Civilian aircraft development projects include the Boeing SST and 7J7, MD-12X, and Indonesian N-250. Designs with large cockpit displays, like the HSCT prototype external vision system, took advantage of TIFS inherent flexibility and large independent simulation cockpit to replicate nearly the entire pilot-vehicle interface.

With its spacious cabin and replaceable nose, TIFS is a cost effective and efficient test-bed aircraft, especially for programs that have large equipment needs. For example, during a Martin Marietta Smart Weapons program, TIFS was configured to replicate an intelligent cruise missile. The breadboard system came straight out of the lab, including the entire sensor suite.

The TIFS simulation cockpit is separate and completely independent. Ample space and modular design supports installation of all required controls and displays. An aft-cabin crewstation can also be provided.




The computers onboard TIFS are easily programmed and allow rapid turnaround and system changes. This makes hosting and checkout of customer software very efficient. Since the simulation system is not critical to safety-of-flight, quick changes can be made without extensive Verification and Validation testing. Onboard flight test engineers can even reprogram the system in-flight if necessary. Virtually all commonly used programming languages including Ada, FORTRAN, C, and MATLAB Simulink are supported.

*A center stick and left-hand throttle were installed for the YF-23 simulation. For an Air Force transport cockpit upgrade study, an over-sized high-resolution display was installed and programmed to test three competing display formats.*

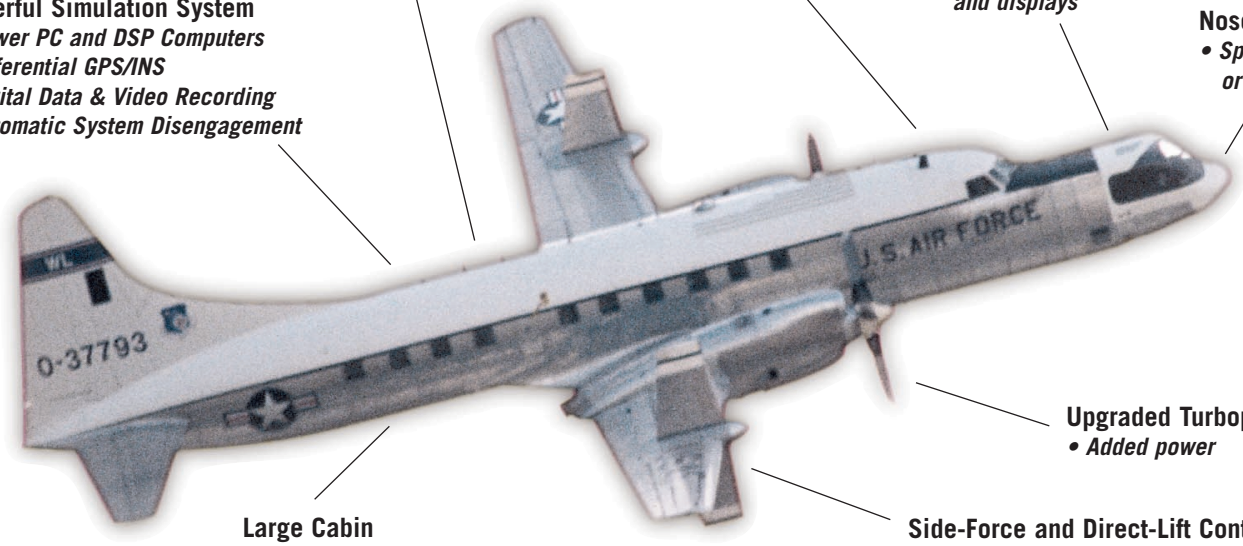
**Flight Test Engineers**
- *Monitor simulation*
- *Reconfigure in real-time*

**Two Safety Pilots**
- *Monitor simulation*
- *Ensure flight safety*

**Independent Simulation Cockpit**
- *Large field of view*
- *Reconfigurable controls and displays*

**Nose Radome**
- *Space for radar or other sensors*

**Powerful Simulation System**
- *Power PC and DSP Computers*
- *Differential GPS/INS*
- *Digital Data & Video Recording*
- *Automatic System Disengagement*




**Upgraded Turboprop Engines**
- *Added power*

**Large Cabin**
- *Room for additional equipment*
- *Alternate aft-cabin crewstation*

**Side-Force and Direct-Lift Controls**
- *Improved simulation accuracy*

Calspan

**Flight Research Group**

4455 Genesee Street | Buffalo, New York 14225
Tel: 716.631.6764 | Fax: 716.631.6990 | www.calspan.com



*Rev. 062705*