



## VISTA IN-FLIGHT SIMULATOR

*The United States Air Force Variable-Stability In-Flight Simulator Test Aircraft (VISTA) NF-16D. VISTA is used as a research and training tool by the USAF Test Pilot School and customers worldwide.*

*Engineering, pilot training and maintenance support to the VISTA program are provided by the Flight Research Group of Calspan Corporation (Calspan).*



*VISTA is efficient in both the test and training roles. High-fidelity simulations for developmental and operational testing can quickly be hosted and flight tested. A trainee flying VISTA can experience the characteristics of several aircraft on a single sortie.*

- All-Attitude Simulation Capability
- Programmable Controls and Displays
- Fully Instrumented
- Automatic Safety Monitoring System
- Easily Reconfigurable
- Five Degrees of Freedom
  - Pitch
  - Roll
  - Yaw
  - X and Z forces

VISTA is a highly capable research and development tool for airborne systems integration, flight control systems, and cockpit displays. Evaluating a design on VISTA is equivalent to flying the prototype, but at a fraction of the cost and with an added margin of safety.

VISTA has played an integral part in the development of many leading-edge designs. Most recently, VISTA simulated the JSF, India's LCA and NASA's X-38.

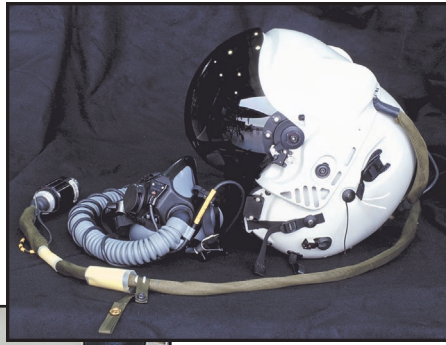
Since it is a first-line fighter aircraft, VISTA can integrate the weapon systems and tactical display concepts into the simulation. Wing hard-points, the APG-68 targeting radar and rapid maneuver capability allow VISTA to act as a full-mission surrogate to the actual test vehicle.

The pilot flying the simulation from the front cockpit need not be qualified in the airplane. All controls and displays for the pilot-in-command function have been relocated to the aft cockpit.

The simulation system is flexible and easily programmed. This makes hosting and checkout of customer software very efficient. Since the simulation system is not safety-of-flight critical, quick changes can be made without extensive Verification and Validation (V&V) testing.

VISTA is a useful tool for rapid prototyping, allowing quick turn-around of system changes. The heart of the simulation system is a





suite of high-speed digital computers that are interconnected with two dedicated 1553 data buses.

The system supports Ada, FORTRAN and C, and can run MATLAB-generated auto-code. All needed aircraft parameters are sensed and recorded digitally and can be transmitted in real-time via a telemetry downlink.

The safety pilot, backed up by a quad-redundant automatic VISTA Integrity Monitor (VIM), provides protection against exceeding the limitations of the simulation system or the airplane.



*The VISTA evaluation cockpit is flexible and includes the important elements of the pilot-vehicle interface. The fully programmable center stick and side stick give the correct control stick feel characteristics. The programmable head-up and helmet-mounted displays replicate the display formats of the tactical environment.*

#### Simulation System

- Three additional digital computers
- 200-channel digital recorder
- Telemetry
- Data link
- GPS

#### In-Flight Refueling

#### Space for Customer Equipment

#### Evaluation Pilot Cockpit

- Variable-feel center and side stick
- Fully programmable helmet-mounted and head-up display
- Voice recognition system



#### Upgraded Systems

- High-rate hydraulic controls
- High-capacity generator
- Heavy-weight landing gear
- Full complement of instrumentation and sensors

#### Safety Pilot Cockpit

- Pilot-in-command functions
- Configuration management
- Repeater displays



### Flight Research Group

4455 Genesee Street | Buffalo, New York 14225

Tel: 716.631.6764 | Fax: 716.631.6990 | [www.calspan.com](http://www.calspan.com)



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