

# Aerospace Electronics and Information Technology



D1M014771

SwRI engineers recently began a multi-year effort to design a new chaff-flare dispenser system used by the A-10 aircraft fleet during close-air support missions.



2

D017196-9966



1

D017224



3

Southwest Research Institute provides products and engineering services to the domestic and foreign aerospace industry, offering particular expertise in aerospace propulsion and electronic systems and components.

Staff members are continuing to assist the U.S. Air Force with design modifications and upgrades to critical aircraft and engine monitoring subsystems and support equipment to expand the capabilities of the A-10 Thunderbolt. These upgrades are part of the most extensive modification effort in the history of the aircraft, designed to extend its service to 2028 ([aircraftsystems.swri.org](http://aircraftsystems.swri.org)).

We led upgrades to the A-10 head-up display unit to improve reliability and maintainability. Four units are being field tested at Nellis Air Force Base, Nev. We also are supporting aircraft maintenance and diagnostic processes, including ground-based automatic test equipment and on-board test systems.

SwRI operates engineering support offices for Air Logistics Centers in Oklahoma City; Warner Robins, Ga.; and Layton and Ogden, Utah. Our Oklahoma staff is assisting the Air Force and Army with all aspects of turbine engine test cell design, installation, calibration, documentation and correlation. We are developing new technologies to reduce maintenance and downtime as well as new systems to recover and convert large amounts of energy previously wasted to electrical power.

SwRI invests in promising technologies through internal research programs designed to jump-start client-funded research. To reduce maintenance costs and improve reliability of aircraft engines, SwRI has developed multivariate statistical analysis techniques that provide significantly earlier detection and diagnosis of excessive wear and failure events in turbine engines. This technology can be applied to other machinery in various industries.

At Warner Robins, SwRI performs updates to electronic warfare systems, modifying software, upgrading automated test systems and validating system changes. SwRI is the primary support contractor for the Electronic Attack Pod program, a critical system that protects Air Force aircraft from ground and air missile attacks. We verify and validate attack pod software products to ensure the operational fidelity of system updates. Using high-fidelity simulation and emulation systems, our engineers “fly” the pod in a simulated environment to measure its effectiveness against enemy threats, significantly reducing flight test costs and updating turnaround times.

SwRI developed and now hosts and maintains the Air Force’s Joint Reliability Availability Management System. This integrated

information management system provides an extensive suite of analysis tools to support aircraft maintenance, supply, operations and availability management. J-RAMS helps equipment, system and aircraft managers effectively apply limited resources to broad mission responsibilities.

Our Utah staff continues its support of reliability and maintainability issues for avionics and related equipment at Hill Air Force Base.

To help users improve engineering and business practices, SwRI develops user-friendly software systems and tools that lower costs and improve efficiency by streamlining, automating and standardizing processes. For example, we applied this expertise to a vehicle database that law enforcement officials can use to identify vehicles involved in crimes.

Building on an ISO 9001:2000 international quality certification, our aerospace electronics and information technology efforts were certified to the AS9100 Quality Management System for the aerospace industry, which includes additional quality and safety requirements. ❖

Visit [aerospaceelectronics.swri.org](http://aerospaceelectronics.swri.org) for more information or contact Vice President Richard D. Somers at (210) 522-3188 or [richard.somers@swri.org](mailto:richard.somers@swri.org).

1. Our engineers developed a compact, low-power avionics board for real-time turbine engine monitoring. The Razorback-300 modernizes legacy aircraft systems while remaining compatible with previous generation support equipment ([rb300.swri.org](http://rb300.swri.org)).
2. We develop and maintain instrumentation for the thrust frames and adapter kits used to test B-2 and C-5 jet engines for the Air Force.
3. Our staff completed development of the Digital Automotive Image System, an investigative tool containing detailed vehicle images and technical specifications. Law enforcement personnel will use the system to gather vehicle data and to create “Be On the LookOut (BOLO) For” posters.