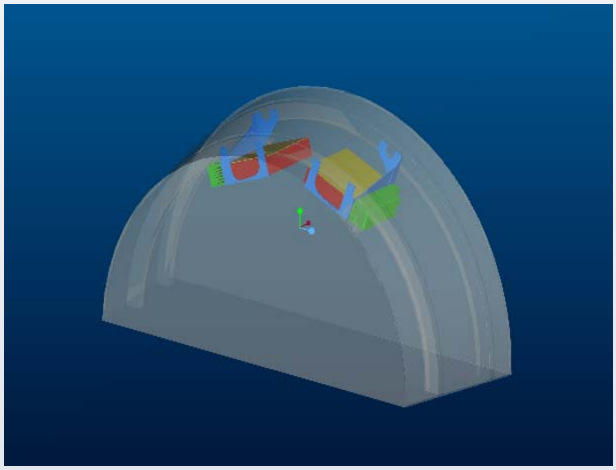
AMMTIAC Provides Engineering and Testing Support to the US Air Force's First All-Digital Radar Warning Receiver

The Advanced Materials, Manufacturing, and Testing Information Analysis Center (AMMTIAC) provided technical expertise in support of a program involved in the development of the world's first all-digital radar warning receiver (RWR). The AN/ALR-69A is a new-state-of-the-art Radar Warning Receiver being developed for the US Air Force and is intended to remedy operational shortfalls of the legacy system. The system will provide the warfighter with enhanced situational awareness (SA) and operational flexibility by utilizing precision location and identification of radio frequency threat emitters.

The AN/ALR-69A will initially be installed on the Air Force Special Operations Command (AFSOC) C-130 variants by Boeing located in Fort Walton Beach, FL. The system is also slated for installation on select F-16 Weapons Platforms, and its design is compatible with nearly all military aircraft. The 542nd Combat Sustainment Group (CBSG) is responsible for the acquisition and integration of the AN/ALR-69A to meet the needs of AFSOC, the Air Mobility Command and Air Combat Command.

AMMTIAC's ultimate role was to assist in the optimal acquisition and fielding of a system utilized by the warfighter. More specifically, they provided logistical and technical oversight for providers of hardware, analysis and planning to assist Initial Operational Test and Evaluation preparations, technical evaluations of deliverables, thermal design and analysis required for F-16 integration of the system, and attended technical and program meetings. AMMTIAC also facilitated the use of commercial-off-the-shelf (COTS) items, chaired the radio frequency interference (RFI) and compatibility team, and authored technical papers.



Pro E Model Depicting Relative ACD Mounting Position

Aft ACD Cooling Fins

AMMTIAC analyzed and summarized test event data reports to provide system performance metrics to the program office in an effort to help determine system software stability since the start of developmental testing. AMMTIAC also worked extensively to design and conduct thermal and stress analyses on the Auxiliary Cooling Device (ACD) prototypes, which provide cooling as well as mounting capabilities for the ALR-69A Radar Receivers (RRs). This was done to support ALR-69A integration into the F-16 aircraft. AMMTIAC engineers utilized Pro-E software to design the ACD prototypes. The engineers then built intricate computational fluid dynamics (CFD) models for the ACDs.

The AN/ALR-69A uses cutting-edge electronics to replace the seventies-era technology of the legacy system and eliminates many line-replaceable units (LRUs). The new LRUs share form and fit with those they replace in the legacy system. This RWR system is unique as it will provide the user with a digital receiver located at each antenna site on the aircraft. Electronic data is then transferred via fiber optic cabling to a central location for target recognition, electronic warfare interface and ultimately precision location.

Please email questions to Chris Grethlein, AMMTIAC's Deputy Director, at: cgrethlein@alionscience.com