

# Active Electronically Scanned Array (AESA) Radar

## PROBLEM/OBJECTIVE

Active Electronically Scanned Array (AESA) is a technology that dramatically improves the radar capability for all weapon systems. AESAs are extremely expensive and require an extensive amount of research and development. Demand for these systems is high and projected to increase in coming years.

The AESA ManTech program goals were to significantly reduce the production costs and cycle times as well as address sustainment issues for current generation AESA systems. This program focused on developing these benefits for the F-22A and F-35 weapon systems.

## ACCOMPLISHMENTS/PAYOFF

### **Process Improvement:**

Working with multiple customer programs and industry partners, the AESA ManTech program applied lean value stream analysis and integrated product and process development tools to identify cost drivers to reduce manufacturing cycle time and cost. Driving down production and life cycle costs makes it more affordable for existing platforms and also appealing to advanced unmanned systems.

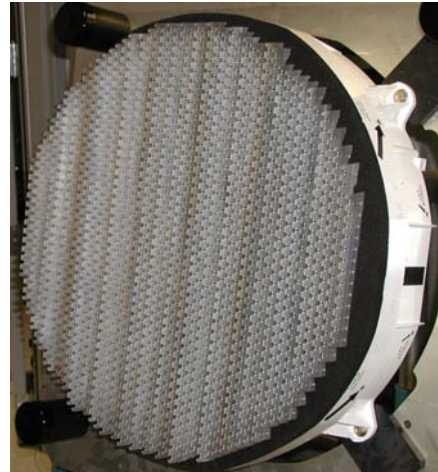
### **Implementation and Technology Transfer:**

The AESA program has transitioned two manufacturing process improvements into the production cycles of the F-22A and the F-35 antennas. To date, 89 F-22A antennas and 30 F-35 antennas have been assembled using a new masking/demasking process improvement implemented in early 2007. An additional 65 F-22A and 22 F-35 antennas have been assembled using a new population metric process implemented in 2008. Also, 30 F-35 T/R drain power supplies have been ordered with a new design and higher efficiency.

An improved RF manifold manufacturing design change is expected to transition in 2011. Northrop Grumman is preparing to complete their Design TryOut for the new RF manifold in an effort to qualify for implementation on the F-35.

### **Expected Benefits and Warfighter Impact:**

This program is reducing the cost and cycle time of select components and sub-assemblies of the array. The masking/demasking process improvement, population



metric process improvement, and power supply printed wiring board improvement have saved the Air Force over \$7.8M to date. These improvements will yield a production life cycle cost avoidance of more than \$240M for the F-22A and F-35 weapon systems. The improved RF manifold manufacturing design is planned to be implemented within the next year, which is expected to yield a production life cycle cost avoidance of more than \$140M for the F-35. This brings the AESA program anticipated total life cycle cost avoidance for the Air Force, Navy, and Marine Corps to over \$380M.

In addition to F-22A and F-35 benefits, the ManTech program manufacturing improvements also support the foundation for next generation AESA flat panel architecture which will be used on future systems.

## TIMELINE/MILESTONE

Start Date	April 2004
End Date	December 2009

## FUNDING

Air Force ManTech	\$10.5M
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## PARTICIPANTS

AFRL ManTech, WPAFB OH  
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