

# Integrated Composites Manufacturing



## PROBLEM / OBJECTIVE

The purpose of this ManTech effort was to develop and demonstrate advanced composite structure manufacturing technologies and applied efficient business practices / policies to impact manufacturing cost, schedule and product quality. The goal was to transition the state-of-the-art technologies developed into the production of select components of the Longbow Apache Fire Control Radar (FCR) Mast Mounted Assembly (MMA).

## ACCOMPLISHMENTS / PAYOFF

**Process Improvement:** A complex co-cure process was developed for production of the Longbow Apache MMA baseplate and aft dome which dramatically reduced the number of manufacturing operations and composite details. An advanced resin transfer molding (RTM) process was successfully demonstrated on the baseplate hub - a flight-safety part. A net weight saving of 3 pounds per aircraft was realized.

**Industry Acceptance:** This ManTech effort was initiated with an upfront commitment from the Longbow FCR program at Lockheed Martin to implement the resulting technology into production. This commitment encompassed budgeting for production tooling, process production implementation, and product/process qualification. This effort was performed in parallel with the technology development. As a result, the two processes developed and the three products demonstrated under ManTech have been implemented into full-scale production on the Longbow FCR program.

**Implementation/Technology Transfer:** Implementation was an integral part of the ManTech plan. The baseplate co-cure process was transitioned to the Longbow Apache production program during 1997 (Lot 1/Unit 1). The resin transfer molded (RTM) hub and co-cured aft dome processes were transitioned to Longbow Apache production during 1999.



**Longbow Apache MMA Components**

Technology transfer is already occurring. Units produced for the United Kingdom (UK) will employ these new processes. The Comanche is also a potential system for transfer of these advanced techniques.

**Expected Benefits:** The benefits include a projected \$10.7M cost avoidance to the Army for the Longbow Apache Fire Control MMA production program.

## TIMELINE / MILESTONES

Start Date: August, 1995  
End Date: October, 1998

## FUNDING

**ManTech Funding:**

Army MANTeCH investment: \$2.16M

**Cost Sharing:**

Longbow Apache Project Manager: \$500K

## PARTICIPANTS

Lockheed Martin  
GKN Westland Aerospace (UK)