

Manufacturing Technology for Ballistically Tolerant Aviation Fuel Bladders

OBJECTIVE/SOLUTION:

Legacy materials and manufacturing processes used to produce aviation fuel bladders are greater than 50 years old and are incapable of meeting the performance requirements of modern combat aircraft. This project will result in improved bladder materials and manufacturing processes that will utilize advanced materials and modeling/simulation techniques resulting in improved fibers, adhesives and self-sealing materials used in the manufacture of aviation fuel bladders, while also strengthening the industrial base.



Notional improved aviation fuel bladder



CH-47 Chinook Block II



1 tank per side total, 2 per aircraft

Achievements:

- Phase 1B – Initial ballistic testing complete, follow on ballistic and slosh/vibe testing scheduled 3Q-4QFY16
 - New bio-fuel capable inner liner
 - New lighter weight outer coating
 - New manufacturing process that reduces build time
 - Passed 24 hour stand test post ballistic testing
- Phase II – Full Scale Bladder Mfg. Optimization: FY17 planning in process

Benefits:

- Reduce cost (goal of 8% acquisition and O&S benefits)
- Reduce weight (goal of 15% per aircraft)

Benefits (cont):

- Reduction in lead time (goal of 3–5 month reduction)
- Self-sealing capability
- Increased manufacturing sources and aircraft readiness
- Environmentally acceptable/approved materials

Transition and Weapon Systems/Secondary Items Impacted:

- Initial application – CH-47 Block II
- Future applications – Future Vertical Lift (FVL) – Medium and Heavy platforms
- Upon completion of this effort, results will be shared across services for possible implementation on other platforms

Point of Contact: Army ManTech Manager, U.S. Army Research, Development and Engineering Command (RDECOM), Aviation Missile Research, Development and Engineering Center (AMRDEC), Manufacturing Science & Technology Division, ATTN:RDMR-SEM, 5400 Fowler Road, Redstone Arsenal, AL 35898-5000