JOINT STRIKE FIGHTER PROGRAM
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From: Program Executive Officer, Joint Strike Fighter Program
To: Commander, Air Force Research Laboratory
Chief of Naval Research

SUBJ: LETTER OF APPRECIATION FOR MANUFACTURING TECHNOLOGY PROGRAMS

Encl: (1) ManTech Investments for F-35 Lightning II

1. I wish to express my sincere appreciation to the Air Force, Navy and OSD Manufacturing Technology (ManTech) programs for their outstanding support to the Joint Strike Fighter (JSF) program. Their partnership has helped produce a series of affordable and producible technologies that have yielded significant savings for both F-35 production and sustainment.

2. The enclosure lists four specific ManTech efforts that have directly impacted F-35 affordability. With a combined investment of $14.5M, these initiatives are projected to reduce F-35 program costs by $1.1B over 30 years of production. More importantly, these technology advances can be leveraged by current and future defense programs to reduce costs and bolster US manufacturing capabilities.

3. ManTech's charter gives it the ability to take on technical challenges beyond the normal risk accepted by industry. The savings highlighted above are a signature of these high-risk, high-reward endeavors as well as testament to the talented scientists and engineers in the ManTech workforce.

4. The JSF program has benefited from ManTech's unique mission, and our continued partnership and collaboration stands to further reduce acquisition and life cycle costs for the F-35 Lightning II.

David J. Venlet

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Vice Admiral, U.S. Navy

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MANTECH INVESTMENTS FOR
F-35 LIGHTNING II

1. USAF ManTech developed a new thermoplastic extrusion process for aircraft door edge seals, which are vital to achieving the JSF's low observable characteristics. Each aircraft requires approximately 3,000 linear feet of this product to cover all exterior panels. Previously, the seals were manufactured by hand-mixing resin with filler material and casting them using matched metal tooling. As a result of ManTech's efforts, the seals are now extruded into standard shapes, which has reduced the amount of touch labor to produce each seal and slashed the amount of tooling required by 97%. This program is being implemented in LRIP 4 and is expected to reduce JSF production and spares costs by $650M based on a $3M investment. This program is also applicable to the F-22, for a total estimated cost avoidance of $881M between the two programs.

2. A recently completed Navy ManTech project on F-35 wing skin BMI fiber placement. Working with the entire composite supply chain (material supplier, machine supplier, composite fabricator, and prime contractor), the team optimize the fiber placement processing parameter, dramatically reducing placement errors. The supplier is now delivering parts on schedule and has the capacity to ramp up production to meet the F-35 aircraft production profile. The project's $3.1M investment is expected to return over $100M in cost avoidance while doubling throughput. Information from this project will be shared with all of the suppliers performing BMI fiber placement on the program to achieve further savings across the supply base.

3. Early during the SDD program, USAF ManTech invested nearly $10M to develop several alternative manufacturing processes for key cost drivers of the APQ-81 AESA radar. Changes to radiator masking, circuit board manufacturing, and the transmit/receive module significantly reduced the amount of touch labor, processing, and the number of parts required to manufacture these components. URF reduction has been estimated at $582K per aircraft, with the various changes cutting into production between LRIP 1 and LRIP 4.

4. Navy ManTech supported a "rapid response" project to improve F-35 bull-noses, which provide thermal protection and improved LO performance near the F135 engine nozzle. The previous design used a composite resin that was difficult to process, causing increased scrap rate and span time. Working with the subtier supplier, Navy ManTech explored and later implemented use a controlled volume molding (CVM) process as opposed to the traditional hand-laying. This project, which only took six months and $172K, will return a $3K URF savings per ship based on LRIP 4 pricing. ManTech is exploring the applicability of this process to other component to further reduce F-35 production costs.