

Joint Strike Fighter Information

Myths v. Facts

MYTH: *Having an alternate engine will provide competition that will drive down costs.*

FACT: The alternate engine would still require a further investment of \$2.9 billion, and there is no guarantee that having two engines will create significant enough long-term savings to outweigh the additional costs and the burden of maintaining two logistical systems. In the middle of two wars, DoD has other higher priority uses for \$2.9 billion.

MYTH: *There is significant operational risk in having a fleet that could be entirely grounded with a single engine problem.*

FACT: The Department currently maintains two tactical aircraft programs, the F-22A and the F-18, which utilize a single source engine provider. Both programs have enviable safety records, and DoD is satisfied with the engines for both programs. Over the years, significant advancements in engine design, testing, and production have enabled DoD to manage the risks associated with single engine systems without having to ground an entire fleet.

MYTH: *There has never been an engine competition for the Joint Strike Fighter.*

FACT: In 1996 competitive contracts were awarded to Boeing and Lockheed Martin for the Concept Development phase of the JSF program, with a single contractor to be selected for the Engineering and Manufacturing Development (EMD) phase in 2001. Both contractors selected a variant of the Pratt & Whitney F119 engine as their propulsion system. Lockheed Martin maintained their selection of the P&W engine when they were awarded the EMD/Systems Development and Demonstration (SDD) contract in 2001.

MYTH: *The inevitable strike fighter shortfall is going to subject us to significant risk.*

FACT: It is strategically important that we maintain the strike fighter capacity of the Navy and Marine Corps. To this end, the Navy is rigorously managing the service life and warfighting effectiveness of each legacy Hornet, Harrier, and Super Hornet, and actively exploring shortfall mitigation initiatives.

The effectiveness of their risk mitigation has evolved, so it is now possible to manage the strike fighter shortfall by addressing both demand and supply initiatives in the near and long term. On the demand side, they are analyzing the effects of varying carrier air wing readiness, the size of Naval expeditionary squadrons, the manner in which the USMC transitions from legacy Hornets and Harriers to JSF aircraft, and the level of Marine integration on Navy aircraft carriers. Supply initiatives include maintaining the wholeness of the JSF program, the Service Life Extension Program (SLEP), and depot efficiencies.

MYTH: *The high level of concurrency in the program creates too much risk.*

FACT: The JSF Program was initially approved with a high level of concurrency that was determined to be an acceptable balance of risk, due to lessons learned from past programs, improvements in design techniques, increased use of modeling and simulation, and the requirement to provide 5th generation replacement strike fighter aircraft to the Services to replace aging and costly legacy aircraft.

The restructure established a plan to effectively balance service inventory requirements, unit cost affordability objectives, and concurrency concerns by:

- Procuring fewer aircraft during the development phase (concurrency) than originally planned at Milestone B in 2001;
- Procuring aircraft over the FYDP at cost and on a schedule consistent with recommendations from JET II and Independent Manufacturing Review Team;
- Delaying the Full Rate Production decision (Milestone C) until completion of Initial Operational Test and Evaluation; and
- Actively pursuing a transition to a Fixed Price contract structure as soon as possible. A Fixed Price contract places more of the cost risk associated with design changes to the production aircraft on the contractor, not the government, lessening some of the cost risk associated with concurrency.

MYTH: *The second engine is 70% complete and only needs an additional \$1.3 billion over the next five years.*

FACT: The alternate engine would still require a further investment of \$2.9 billion. Some have suggested that the necessary additional investment is much less; however, they are only looking at the cost to *complete development* of the second engine. The investment of \$2.9B includes the costs to finish the development, *conduct directed buys* to prepare the second source for competitive procurement beginning in FY 2017, and *create the necessary logistics support* to operate and sustain engines on deployed F-35 aircraft. In short, \$2.9B is the total additional cost required to take the alternate engine to full competition. The \$1.3 billion figure only gets you part way there.

MYTH: *The second engine will not require a redesign in the future.*

FACT: It is premature to declare the F-136 will not require a redesign in the future. In fact, most engines do require at least minor redesigns prior to initial service release configuration. In addition, all engines undergo continuous design changes as part of the Component Improvement Program. Funding for a second Component Improvement Program would have to be provided for a second engine.

MYTH: *The Great Engine War saved the F-16 program 21% in overall costs, therefore having an extra engine for the JSF will save the government \$1 billion over the next five years, and \$20 billion over the life of the program.*

FACT: Many proponents of a second engine cite the “Great Engine War” of the 1980s – when the DoD purchased engines for Air Force F-15 and F-16 fighters from two manufacturers. While much has been made of this example, the facts tell a more nuanced and inconclusive story. While the competition did appear to improve contractor responsiveness to Air Force needs, there were only minimal reductions in the acquisition unit price of the engines. Accordingly, it is difficult to cite this example as proof that substantial savings will occur as a result of having two engines.

MYTH: *The international JSF partners strongly support having two engines.*

FACT: Some of the international partners are interested in establishing potential national workshare programs in production and maintenance if a second engine is pursued. However, they recognize that the U.S. alone would have to fund the remaining R&D costs under the JSF System Development and Demonstration Memorandum of Understanding. They also understand that allocating future R&D money to complete a second JSF engine would divert much needed funds from more pressing DoD priorities.

MYTH: *The fighter engine industrial base will be significantly downgraded unless two contractors participate in the JSF program.*

FACT: It is far from certain that ending the F-136 program will lead to a reduction in the number of suppliers for JSF engine spare parts. A 2007 Institute of Defense Analysis study examined the top F-136 component suppliers and concluded that it is "unlikely that any supplier would exit the domestic industrial base because of F-136 termination". A number of these suppliers will likely maintain significant capacity through their commercial efforts.

MYTH: *General Electric's new fixed price contract proposal for the alternate engine requires the contractor to assume all the risk for cost overruns.*

FACT: The fixed price for the engines would require GE to assume the normal amount of risk for a fixed price contract. The price is contingent upon a fixed configuration, so any changes to that configuration would require modification of the contract price. The remaining portions of the contract may be cost-type line items, which shift the risk for performance of those line items to the Government.

MYTH: *Reducing the number of F-35s purchased in FY11 won't have any long-term consequences.*

FACT: Costs will increase. The unit cost will start to increase for the U.S. and our international partners in FY13 and beyond, just when most partners intend to begin significant buys. This is the timeframe when we currently expect to begin realizing the cost benefits of production

efficiencies and supply base growth and maturation. Reducing the quantity in FY11 will reduce these long-term benefits. Needed growth in the vendor/supply base could stagnate, making it more difficult to reach the most cost efficient production rate.

Risk will increase as reductions push out the production time horizon. The Services' fighter modernization strategies and planned ability to respond to future contingencies are linked to bringing this 5th generation capability online as quickly as possible. A reduction also means unnecessary delays in getting needed capabilities to our forces and delays in the delivery of the aircraft necessary for training initial pilot cadres for both operational testing and initial operational squadrons.

Relations with our international partners will be affected, because reductions in FY11 could delay the achievement of 240 aircraft per year. That constrained capacity combined with higher unit costs will likely drive our international partners to delay their planned buys or possibly to opt out of the program. This would have significant long term national security and political-military implications beyond the JSF program.

Any cuts will be disruptive to a carefully restructured and balanced program. We have carefully balanced the operational need for the timely delivery of these aircraft with the need to ensure a viable production process and a quality product.

The Services, foreign partners and contractors have all adjusted to delivery schedules in accordance with the restructuring, and reductions will likely require modifications to the contractors' business arrangements. We are currently in the middle of important negotiations with the contractors, and a change now will jeopardize our ability to conclude the negotiations in the taxpayer's interest.

MYTH: *The second engine will conduct its first test flight in 2011 with production engines available in 2013.*

FACT: From a program planning perspective, only a fully funded System Development and Demonstration phase could deliver its first F-136 Flight Test Engine to the prime contractor by July 2011, with initial flight release for one variant of the JSF in September 2011, and a projected first flight in December 2011. The FY11 budget request does not include funding for the F-136 alternate engine, and DoD has no plans to request funding for future years.

MYTH: *The second engine is not very far behind. It will start production after only 100 of the current engines are produced.*

FACT: A direct comparison shows that the F-136 Initial Service Release (ISR) dates are at least 2-3 years behind the F-135 ISR dates. The F135 Conventional Take-off and Landing/Carrier Variant achieved its ISR date in February 2010, and the same ISR date is planned for the F-136 in December 2012. The planned F-135 Short Take-off and Vertical Landing ISR date is fourth quarter of FY10 and the same ISR date for the F-136 is planned for fourth quarter FY13. There is also no guarantee that a second engine program will not face the same challenges as the current program has already faced and be forced to delay its own program.