

**UNITED TECHNOLOGIES CORPORATION
PRATT & WHITNEY**

PRESENTATION TO THE ARMED SERVICES COMMITTEE

UNITED STATES SENATE

SUBJECT: JOINT STRIKE FIGHTER ALTERNATE ENGINE

STATEMENT OF:

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UNITED STATES SENATE**

On behalf of United Technologies Corporation and Pratt & Whitney, I thank the Chairman, Senator Levin and Members of the Committee for giving me the opportunity to testify today.

My purpose today is to assure the Committee that the Administration's decision to eliminate funding for the alternate engine for the Joint Strike Fighter is, operationally and economically, a sound and secure one. I also assure you that Pratt & Whitney is committed to meeting our military customer's needs as we jointly support our servicemen, women and allies around the world. We believe the Pentagon's wish, to use the \$1.8 billion a second engine would have cost over the next five years for higher priority items, deserves your support.

The source of my confidence in making this statement, Mr. Chairman, is Pratt & Whitney's F135 engine.

In December 2005, we delivered the world's most powerful tactical fighter engine to Lockheed Martin, ahead of schedule. It is now installed in the first flight test aircraft. We have already logged more than 4,700 ground test hours on nine test engines, and are on track to support the first flight of the Joint Strike Fighter later this year.

The P&W JSF engine is a derivative of the engine for the F-22 Raptor. By the time the JSF is operational, the main or core portion of these engines will have accumulated more than 800,000 flight hours, which will ensure reliable operation.

The F135 has passed every test and met every milestone, and we are committed to maintaining that flawless record of performance and support to our customer.

In my testimony today, I will address four areas relevant to the Joint Strike Fighter alternate engine decision:

- the U.S. industrial base for fighter engines,
- operational readiness,
- the additional costs associated with an alternate engine program, and
- international participation in the program.

Industrial Base

The impetus for an alternate engine was the need to ensure the health of the U.S. industrial base for manufacturing tactical fighter engines. At the time, an argument was put forth that if there were no alternative engine for the Joint Strike Fighter, the U.S. would be left with only one tactical fighter engine manufacturer.

Mr. Chairman, I respectfully submit that there is no such thing as the fighter engine business per se – just the engine business. I don't mean that building an engine for an F-18 or an F-22 doesn't require specialized skills and technology. But the basic tools, technology, materials and processes used in large turbine military and commercial engines have become closely aligned over the years. The engineering and manufacturing workforce can readily move from commercial programs to military programs and vice-versa, as can the supply base.

Today, General Electric is the world's largest jet engine manufacturer, and it is likely to continue to be so for the foreseeable future. GE has produced more than 4,300 sole-source engines for the F-18 and will continue to produce these tactical fighter engines until at least 2012. GE has also been the sole production source of more than 12,000 T700 engines for Black Hawk and Apache helicopters, and will continue to be the sole source for the next 15 years. And that doesn't take into account the other engine

development programs in which GE will participate, such as those for unmanned aerial vehicles and the next generation long-range strike aircraft. Rolls-Royce, too, has a healthy backlog of orders, and has been selected as the sole source for engines on the C-130J and the V-22.

Operational Readiness

The second area that has been discussed is operational readiness. This argument basically translates as “develop a second engine in case something goes wrong with the first one.” Given unlimited funds, that would be good logic. Everyone would want a backup version of just about anything – just in case.

But there are no backup engines for the GE-powered F-18 or Black Hawk, the Rolls-Royce-powered V-22 or C-130 or the Pratt & Whitney-powered F-22 or C-17. For that matter, there are no alternate suppliers for flight controls, ejection seats or avionics – all these mission-critical systems on fighter jets are sole source.

We don't require these because resources are limited. And when resources are limited, the wise course is to conduct a risk assessment. Where you determine the risk level is unacceptable, you find the resources for a redundant system. Where it's not, you hold a competition to make sure the one supplier you do choose is the best one.

And that's exactly what did happen. Pratt & Whitney did compete head-to-head against General Electric in 1991, and we were awarded the engineering and manufacturing development (EMD) program for the F-119 engine. That program was the source of the derivative engine for the Joint Strike Fighter selected by both Boeing and Lockheed Martin for their concept demonstrators. Why? Because it was the right combination of performance, development cost and operational risk – factors even more valid today than in the past.

The readiness question really boils down to one of engine reliability, and the good news, Mr. Chairman, is that all engines – and I mean GE engines, Rolls-Royce engines and Pratt & Whitney engines – have become far more reliable in recent years.

Partnering with our customers and industry, we have seen advances in manufacturing processes, materials, design tools, fleet management, predictive maintenance and risk management tools. Many of these advancements have been championed by our customer, and have greatly improved engine reliability and reduced safety-related incident rates by a factor of 10 over the last 30 years.

The U.S. Air Force's data demonstrates this. Single engine fighter aircraft Class A mishap rates have been reduced from 10 per 100,000 hours to less than 1 per 100,000 hours in that time period.

In this context, Mr. Chairman, we've heard a lot of comparisons to the F-16 and the F-14 programs. But, this situation is fundamentally different. Over twenty years ago, Congress funded an alternative engine at the request of the customer – that is, the Defense Department. Now the Department believes one engine is sufficient to meet its needs, and has laid out more pressing uses for the \$1.8 billion a second engine would cost over the next five years.

Additional Costs

A third area under discussion today is the idea that a second engine will save taxpayers' money. This argument asserts that where there is competition, cost savings follow automatically. But, Mr. Chairman, it is unlikely that a second engine for the Joint Strike Fighter will save American taxpayers a penny. It is certain, however, that an alternate engine will add billions to the overall program cost, which may ultimately translate to fewer aircraft for the services and international partners.

The additional costs associated with a second engine will outweigh any savings, and will be impossible to recover over the life of the program. This is a situation, after all, in which the government is not only doing the buying, but also paying twice for product development. If the government opts to split the purchase between two suppliers, neither will be able to deliver maximum savings from economies of scale. A split buy will also double the government's support costs over the 30-year product life cycle. In a situation like this, costs will mount rapidly and quickly overtake savings.

Here is our analysis of the additional cost factors:

- Completion of the System Development and Demonstration program for the second engine in 2013 will cost at least \$2.4 billion.
- Sustaining engineering and component improvement of a second engine will each add hundreds of millions to a \$1 billion dollars over the life of the program.
- Splitting the buy of engines will also depress economies of scale for each manufacturer. As a result, the production cost for engines will increase. This is confirmed by the government cost model for the JSF program.
- And finally, doing a mid-life upgrade on an additional engine will add additional costs.

All totaled, the increase in cost to qualify and support an alternate engine is between \$4 and \$6 billion.

Competition may be effective to obtain the best price in situations where costs are unknown. However, since F135 costs are disclosed to the government, it is hard to imagine significant savings from competition in this case.

The cost disclosure requirement is an important factor. It provides built-in protection against a single-source provider raising prices to unreasonable levels. Under our contract, cost and pricing data are fully disclosed to the government and are audited

on a regular basis. Moreover, the government sets the pricing targets and our profit is related directly to meeting these targets. It is our full expectation that the F135 production contract will have similar cost management incentives.

International Participation

Finally, Mr. Chairman, members of the Committee have often expressed concern for our international partners on the Joint Strike Fighter, and an interest in their meaningful participation in the program. We fully understand the importance of the international coalition, and I'm proud to tell you that Pratt & Whitney has teamed up with more than 40 companies from all eight partner countries. These companies are providing technology, manufacturing capability and the overall best value to the Joint Strike Fighter and the partner countries.

On the F135 program, our single largest teammate, in fact, is Rolls-Royce. In December 2001, we signed a contract with Rolls-Royce now worth more than \$1 billion for the development of lift components for the STOVL, or vertical lift, variant. And this past January we signed a memorandum of understanding to continue our teaming relationship into the production and sustainment phase of the JSF program. That work is expected to earn Rolls-Royce many additional billions over the life of the program.

The truth is, Rolls-Royce will be a winner – with billions of dollars of Joint Strike Fighter business – whether there is an alternate engine or not. And so will others in the U.K, including BAe Systems, which has been awarded a significant share of the airframe work. This will be a substantial return on the United Kingdom's initial \$2 billion investment.

For our part, I can assure you that Pratt & Whitney will remain dedicated to achieving the objectives of the Administration and Congress and provide an engine

whose reliability and performance will be unsurpassed. Our total commitment is to meet the needs of our military customers as we jointly support our service men, women and allies around the world. We believe the Administration's decision will save taxpayers money, maintain the nation's industrial base, enhance fleet operational readiness and ensure participation by our international partners. We urge you to support the Administration on this important question.

Thank you. I welcome the opportunity to answer your questions.