Current fighters have given the US a decade of air superiority. By the 1990s, though, the ATF becomes crucial.

Spreading the Firepower, Extending the Battlefield

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The most significant principle of warfare learned since World War I is that in order to deter war—or to wage a successful war against traditional military forces—a nation must be able to achieve air superiority. To do this, a nation must have highly capable aircraft that can be used to achieve air superiority quickly and completely. For the United States, the Advanced Tactical Fighter (ATF) is such an aircraft. It is the most important tactical airpower program of the next decade. The ATF offers us the opportunity to capitalize on American technology to maintain air superiority over enemy territories, as well as over our own, and do it well into the twenty-first century.

In the future, we will continue to conduct the missions we do today (offensive counterair, defensive counterair, interdiction, and close air support), but against more modern defenses. All these tactical air missions except defensive counterair require us to penetrate enemy airspace.

However, a new dimension is being added to air warfare. Newer Soviet fighters are now able to find and shoot down penetrating low-flying attack aircraft. Soviet fighters are being equipped with a highly capable look-down radar and an excellent shoot-down missile system. Direction and guidance of these fighters will be provided by their new airborne warning and control system. Our penetrating aircraft will have to operate against these
The Aircraft for the Job

For us to deal with this formidable threat, we must develop an aircraft that can provide local air superiority for our penetrating force. The ATF will be designed to do exactly that, thus spreading the firepower of our combined forces across large areas and extending the battlefield far into enemy territory instead of only to the point of contact between the armies.

A lot of homework was done before the tactical air forces could develop a definitive requirement for the ATF. First, we needed to know if our current fighters could be modified to do the job. Certainly, if a derivative of a current aircraft could do the job, then spending billions of dollars to develop a new airplane would be unwise. However, the current generation of fighters could be improved only marginally and at best provide us parity in the quality arena.

An aircraft was needed that would provide the Air Force with a significant improvement in capability—a revolutionary change rather than an evolutionary change. In light of the Soviets' practice of developing new aircraft every several years, we needed an aircraft that would be dominant for twenty-plus years.

One argument that has been made is that we needed a new aircraft because it has been a long time since we have had a new fighter; the F-15 came into the inventory in 1974, and the ATF is not programmed in until the mid-1990s. While this is true, the main reason we need to develop the ATF is to counter the evolving Soviet threat. The new dimension of the threat, as we've seen, is driving us to develop the ATF now.

How we go about developing this new fighter is also important. We plan to follow a design philosophy similar to that followed in the past with other air-superiority aircraft. All the modern technologies available will be incorporated in the ATF's structure, propulsion, avionics, aerodynamics, and low observables. The performance and weapons requirements will logically lead to a major advance in flight-control technology. In addition, the ATF will incorporate unprecedented levels of reliability and maintainability (R&M) to ensure that it can sustain the intense levels of flying that would be required in an all-out conventional battle against numerically superior forces.

First-Look, First-Shot Capability

One of the most important advantages of the ATF will be its first-look, first-shot capability. Historically, some eighty-five percent of the aircraft shot down in air combat never saw the attacker. Therefore, the first rule of all air combat is to see the enemy first.
The ATF will have sophisticated new sensors and other associated systems to allow our pilots to see the enemy first. It will also have the capability to beat future enemy surface-to-air threats, allowing it to penetrate the enemy's airspace and operate in the face of his best defenses. The ATF will be able to cruise at supersonic speed at less than full power, further complicating the enemy's problem. Its maneuverability will surpass that of any aircraft projected into the next century.

The integrated airframe, engines, avionics, and sensors of the ATF will make use of advanced very-high-speed integrated circuit (VHSIC) technology, allowing it to store, evaluate, process, and transfer vast amounts of information among the various systems of the aircraft. This will be the most highly integrated avionics suite ever assembled in a fighter aircraft, representing a tenfold increase over the computer capability of our most advanced fighter, the F-15. The on-board sensors and associated offensive weapons will enable the ATF to negate the enemy's defenses as well as to find and destroy enemy aircraft.

The air battles of the future will be so intense that, without help, pilots will not be able to absorb, sort, and prioritize the hundreds of pieces of information needed to win the fight. Even with all the great advantages in technology, the pilot must still look outside the cockpit during the battle. Therefore, we are making sure that the cockpit is the most efficient and effective ever developed.

The pilot will be able to fight an air battle and defeat other defenses at the same time by using head-up display technology. This advancement includes a command system that allows him to interface with the aircraft to check aircraft status, select weapons, change operating modes, and identify targets while keeping his eyes out of the cockpit and his hands on the stick and throttle. Incidentally, some have implied that we are developing an airplane that goes beyond the limits of our pilots. This is simply not true. The ATF will be sophisticated and rugged, but has been designed to ease the pilot's job, not complicate it.

All of this capability is irrelevant if the aircraft isn't readily available for combat. The reliability and maintainability of military aircraft have steadily increased with each generation of new aircraft; we are designing the ATF to have better reliability and maintainability than any military airplane in history. The ATF will be designed to check its own complex systems to the point of telling the crew chief which individual circuit groups are malfunctioning. VHSIC technology and new design features will reduce the number of moving parts and thus reduce failures to a minimum. The ATF will offer a 100 percent increase in reliability over the F-15.

Another advantage of increased R&M is the decrease in manpower needed to support a typical ATF squadron. Compared to the F-15, the number of different maintenance specialties required to support the ATF will be reduced by two-thirds and total manpower requirements will decrease by one-third.

These improvements will have other positive effects on our overall combat readiness by reducing the amount of airlift required to deploy and support a typical fighter
squadron. We are short of airlift capability, and our get-well date is many years away. By introducing the R&M improvements with the ATF, we will be able to deploy more tactical fighters with fewer airlift aircraft. A squadron of ATFs will be able to deploy faster than any other fighter squadron in the world and do it with less than half the airlift requirement.

Right Number, Right Kind
The Soviets believe strongly in the value of large forces. We see the application of this philosophy in nearly every Soviet weapon system. They believe in shock power, numbers, and ruggedness. Because we do not want to spend as much as the Soviets do for national defense, we must get the most capability for the best price. For us, this usually means that we have to build superior weapons but in fewer numbers, usually for a lower total price. However, the right number of the right kind of aircraft is what we need.

It does the United States no good to have a great airplane if we can afford only a few of them. We need sufficient numbers of ATFs to meet our commitments and to deter Soviet aggression. We have proved that weapon systems can be both effective and affordable through the use of competitive procurement processes. We cannot afford to accept a new weapon system with cost overruns and delayed delivery schedules.

The level of technological achievements in this country is such that when we apply the proven American concepts of competition and pride to weapons development, our defense contractors give us the best possible product for the best possible price. Today, defense contractors have many incentives to produce results at a reasonable cost. We have encouraged them to be accountable to the taxpayer. The ATF will be developed and procured using this proven process. If they want a piece of the action, they will have to perform.

We plan to buy the ATF through a fly-before-buy prototyping process. We have two contractors, or teams of contractors, to develop and build flying prototypes of the ATF. In addition, we will have all the integrated avionics systems prototypes built and tested in the same time frame. Two engine contractors will build and install their best engine candidates in these prototypes. The result will be a complete set of systems to choose from when the time comes to make a choice. This concept has worked in the past and will work with the ATF as well.

The idea of prototyping the ATF will also allow us to make decisions and changes early in the program and avoid costly problems or surprises after we have already bought the airplane. The best attribute of this idea is its commonsense approach to ensuring that the military gets what it pays for. We would not think of buying a new car without first driving it to see if it will meet our needs. Likewise, we should not commit ourselves to a particular aircraft design until we are confident it meets our requirements. By competing different prototypes and paying attention to performance and capability, we believe we can not only get the quality we need but buy the quantity we need as well. And that is the key to overall effectiveness in the tactical airpower business. The right numbers of the right kind of aircraft will ensure that we can meet our commitments well into the twenty-first century.

The Overriding Consideration
The need for the ATF by the mid-1990s is well documented and supported by the nature of modern warfare. It is an aircraft needed and driven by not only the future threat but the present one as well. Our current fighters have provided us with a decade of superiority. If we are to fulfill our commitments into the next century, we must continue with the sound and logical development process already under way in the ATF program. By using the American competitive process and American industrial know-how, we will get the quality we need at a price our nation can afford.

The overriding consideration is that we must be able to win any war we fight. Losing is not an option. We must win. The Advanced Tactical Fighter will ensure that we have the best chance to do just that.

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