



F-35 Lightning II
The World's Only 5th Generation International Multirole Fighter





Delivering on the Promise

With the first flight of the F-35C carrier variant scheduled to take place in the coming months, all three variants will be undergoing flight testing, and the program will deliver all 19 System Development and Demonstration aircraft in 2009.

The World's Only 5th Generation International Multirole Fighter

From defense of the homeland to coalition warfare, from deep strike and interdiction to the establishment of air dominance, the F-35 Lightning II redefines the meaning of a 5th generation multirole fighter. By combining a wealth of advanced technologies in a single platform, the F-35's weapon system and air vehicle capabilities allow the Lightning II to own the skies and defeat the threats of today – and tomorrow.

Decisive Operational Advantage

With all-aspect advanced stealth, the F-35 dramatically reduces the detection and engagement ranges of enemy defense systems or aircraft. Very low observable (VLO) stealth cannot be added on – it must be designed-in from the outset. The F-35's shape, embedded antennas, aligned edges, internal weapons and fuel, and special coatings and materials all contribute to its VLO stealth capability.



Advanced Sustainment

The F-35 establishes new levels of operational readiness. With simplicity and ease of maintenance designed-in, the aircraft brings unprecedented reliability and maintainability and an inherently smaller deployment footprint. Support-equipment requirements have been reduced, and logistics are streamlined and automated. The F-35 will provide never-before-seen mission capability rates with a fraction of the support required by legacy fighters, reduced numbers of support aircraft and reduced maintenance total life-cycle costs. Upfront design emphasis has been placed on supportable advanced stealth, systems reliability and maintainability, onboard systems diagnostics and health monitoring, reduced support equipment, intelligent support systems, paperless technical support and worldwide supply chain management.

Dominating the Skies

The F-35 excels in all air-to-surface and air-to-air combat missions while operating around the clock in any threat environment. The unmatched situational awareness of the F-35, along with extreme agility, acceleration and stealth, provides an asymmetrical advantage over all adversary aircraft.

Unrivaled Situational Awareness

The F-35 features the most powerful and comprehensive integrated sensor package of any fighter aircraft in history. Its unrivaled advanced avionics and sensor fusion give the pilot real-time access to battlefield information with 360-degree spherical coverage and unparalleled capability to dominate the tactical environment.

Joint Force Multiplier and Enabler

Embedded, network-enabled capability allows distribution of fused information to enhance and enable other platforms. Information gathered by F-35 sensors can immediately be uplinked and shared with commanders at sea, in the air or on the ground, providing an instantaneous, high-fidelity view of ongoing operations.



Interoperability

In the battlespace of the future, information is power. The F-35 is the first fighter in history specifically designed to be a key net-enabling node in a system of systems – a lethal information gatherer and transmitter in a vast network of coalition assets. Its tremendous processing power, open architecture, powerful sensors, information fusion and flexible communications links make the F-35 an indispensable tool in future homeland defense and joint/coalition warfare and major combat operations.

Global Sustainment – A Worldwide Commitment

A revolutionary fighter calls for an evolutionary support structure. This begins with a long-term partnership with our customer that lasts for the life of the aircraft. The F-35 offers a new paradigm for fighter aircraft support that dramatically reduces life-cycle costs, simplifies maintenance and keeps the aircraft where it belongs – in the air, performing its mission.

Autonomic Logistics Global Sustainment

The F-35's ability to monitor and report its own health automatically brings critical advantages to the operator. It begins with a smart and reliable aircraft; integrates training, digital technical data, integrated supply chain and a 24/7 sustainment operations center; and ends with an information infrastructure that continuously captures and analyzes F-35 overall readiness.

Worldwide Partnership of Suppliers

The worldwide sustainment network ensures the F-35 receives efficient support when and where it's needed. This includes aircraft operation, modernized supply chain integration, inspections, simulator facilities, maintenance and field support.





Global Partnerships

Global partnerships and technological innovation have always been the foundation of the F-35 program. As proven on the F-16 program, Lockheed Martin has demonstrated its ability to partner successfully with allied countries and their industries – and the F-35 program has taken this tradition to a new level of commitment and performance. Never before has there been the ground floor opportunity to provide components and systems to a fleet that is expected to grow to more than 3,000 aircraft.

The F-35 industrial participation program, based on building global, best-value partnerships among industries in the partner nations, offers substantially larger opportunities for defense industries compared to previous national offset models. The F-35 program builds on the existing capabilities of industry, incorporates national strategic desires and offers sustained growth in technology, development, employment and profitability. As the F-35 transitions into full-rate production, opportunities for these industries will increase and endure throughout the life of the program.

Global partnerships are fundamental to the success of the F-35 program. An F-35 partnership also includes these benefits:

- Strategic commitments
- Long-term stability
- Affordable modernization
- Industrial participation
- Technology transfer
- Improved interoperability
- Autonomous and coalition warfighting capabilities



Exceptional Technology Team

The world's most experienced aerospace industry leaders are combining sophisticated manufacturing, engineering and technological capabilities to develop the F-35 Lightning II. The extensive fighter aircraft and stealth technology experience of prime contractor Lockheed Martin is joined with the expertise of principal industrial partners Northrop Grumman, BAE Systems, Pratt & Whitney and the GE Rolls-Royce Fighter Engine Team.

Lockheed Martin Aeronautics Company and the government-operated JSF Program Office deliver the F-35 and its support systems. Lockheed Martin leads the core industrial team and manufactures the F-35 forward fuselage and wings. F-35 final assembly takes place at the Fort Worth, Texas, plant.

Northrop Grumman brings extensive experience in carrier aircraft and expertise in low-observable/stealth technology. The company also provides support in logistics, sustainment, modeling, simulation and mission planning, and builds the F-35 center fuselage in Palmdale, Calif.

BAE Systems brings a rich heritage of capabilities to the F-35 program, including short takeoff and vertical landing experience, advanced lean manufacturing, flight testing and air system sustainment. BAE Systems is responsible for the fuel, crew escape, life-support, prognostics and health management systems, and the U.K.'s Future Carrier F-35 integration support. BAE Systems produces the F-35's aft fuselage and tails at its Samlesbury, England, plant.

LOCKHEED MARTIN



NORTHROP GRUMMAN

BAE SYSTEMS



GE Rolls-Royce
Fighter Engine Team



Propulsion: A Joint Commitment to Power

The Pratt & Whitney (F135) and the GE Rolls-Royce Fighter Engine Team (F136) engines are physically and functionally interchangeable across all F-35 aircraft and their autonomic logistics systems. Both engines bring key benefits to this 5th generation fighter.

- Cooperative development in which common propulsion system components are used to minimize development costs
- Wide range of options to meet individual customer requirements
- Sharing of propulsion support equipment to simplify maintenance of either engine



Pratt & Whitney F135



GE Rolls-Royce Fighter Engine Team F136

New Way of Thinking. New Era. New Fighter.

Every generation of fighter aircraft brings greater strengths and performance improvements. The F-35 goes far beyond that – so far that it will redefine tactical air concepts.

- The only 5th generation fighter for the world’s air forces
- Precision, stealth and unmatched speed in combat configuration
- Quantum leap in combat capability
- Revolutionizing coalition warfare



F-35A CTOL
Conventional Takeoff and Landing

Span 35 ft / 10.67 m
 Length 51.4 ft / 15.67 m
 Wing area 460 ft² / 42.7 m²
 Combat radius (internal fuel) >590 n.mi / 1,093 km
 Range (internal fuel) ~1,200 n.mi / 2,222 km
 Max g-rating 9.0
 Speed Mach 1.6
 Weapons payload 18,000 lb / 8,164.67 kg



F-35B STOVL
Short Takeoff/Vertical Landing

Span 35 ft / 10.67 m
 Length 51.2 ft / 15.61 m
 Wing area 460 ft² / 42.7 m²
 Combat radius (internal fuel) >450 n.mi / 833 km
 Range (internal fuel) ~900 n.mi / 1,667 km
 Max g-rating 7.0
 Speed Mach 1.6
 Weapons payload 15,000 lb / 6,803.89 kg



F-35C CV
Carrier Variant

Span 43 ft / 13.11 m
 Length 51.4 ft / 15.67 m
 Wing area 668 ft² / 62.06 m²
 Combat radius (internal fuel) >600 n.mi / 1,111 km
 Range (internal fuel) >1,200 n.mi / 2,222 km
 Max g-rating 7.5
 Speed Mach 1.6
 Weapons payload 18,000 lb / 8,164.67 kg

Revolutionary Manufacturing Concepts

Advanced digital design tools, assembly methods and highly accurate manufacturing equipment help the aircraft achieve unprecedented goals of affordability, quality and assembly speed. Manufacturing processes are common for all three variants and are in place today, further demonstrating the F-35 is ready for full-rate production.

- Digital thread (a 3-D digital solid model of the entire aircraft) allows snap-together assembly
- Robotic finishing allows high accuracy and repeatability with lower labor costs
- Electronic mate and alignment provides rapid major component positioning
- Precision fabrication technologies facilitate high-accuracy parts to reduce shimming
- Flexible, automated component movement, including a moving line, facilitates lean enterprise



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Conventional Takeoff and Landing



Short Takeoff/Vertical Landing



Carrier Variant



GENERATION FIGHTERS

LOCKHEED MARTIN

NORTHROP GRUMMAN • BAE SYSTEMS

PRATT & WHITNEY • GE ROLLS-ROYCE FIGHTER ENGINE TEAM

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