



# AIR COMBAT COMMAND

## PEOPLE FIRST - MISSION ALWAYS

### F-35 Lightning II

Current as of March 24, 2023



#### MISSION

The F-35A is the U.S. Air Force's latest 5th generation fighter and the cornerstone of the U.S. Air Force fighter fleet. With its aerodynamic performance and advanced integrated avionics, the F-35A will provide next generation low observability (LO), enhanced situational awareness and reduced vulnerability for the United States and allied nations.

#### FEATURES

The conventional takeoff and landing (CTOL) F-35A gives the U.S. Air Force and allies the power to dominate the skies – anytime, anywhere.

The F-35A's advanced sensors are designed to gather, fuse and distribute more information than any fighter in history, giving operators a decisive advantage over all adversaries. Its processing power, open architecture, sophisticated sensors, information fusion and flexible communication links make the F-35A is designed to achieve unprecedented levels of reliability and maintainability, combined with a highly responsive support and training system linked with the latest in information technology. The Autonomic Logistics Information System (ALIS) and Operational Data Integrated Network (ODIN) integrates current performance, operational parameters, current configuration, scheduled upgrades and maintenance, component history, predictive diagnostics (prognostics) and health management, operations scheduling, training, mission planning, and service support for the F-35A. Essentially, ALIS/ODIN performs behind-the-scenes monitoring, maintenance, and prognostics to support the aircraft and ensure continued health and enhance operational planning and execution.

The F-35A's electronic sensors include the Distributed Aperture System (DAS). This system provides pilots with situational awareness in a sphere around the aircraft for enhanced missile warning, aircraft warning, day/night pilot vision, and fire control capability. Additionally, the aircraft is equipped with the Electro-Optical Targeting System (EOTS). The internally mounted EOTS provides extended range detection and precision targeting against ground targets, plus long range detection of air-to-air threats.

The F-35A's helmet mounted display system is the most advanced system of its kind. All the sensor and targeting information an F-35A pilot needs to complete the mission is displayed on the helmet's visor.

The F-35A contains state-of-the-art tactical data links which provide the secure sharing of data among its flight members as well as other airborne, surface and ground-based platforms required to perform assigned missions. These capabilities allow the F-35A to lead the defense community in the migration to the net-centric war fighting force of the future.

The F-35A's engine produces 43,000 lbs of thrust and consists of a 3-stage fan, a 6-stage compressor, an annular combustor, a single stage high-pressure turbine, and a 2 stage low-pressure turbine. The F-35A is designed to provide the pilot with unsurpassed situational awareness, positive target identification, and precision strike under any weather condition. Mission systems integration and outstanding over-the-nose visibility features are designed to dramatically enhance pilot performance.

With eight countries (United States, United Kingdom, Italy, Netherlands, Canada, Denmark, Norway and Australia) and nine foreign military sales countries (Japan, Korea, Israel, Poland, Belgium, Finland, Switzerland, Germany and Singapore), the F-35A represents a new model of international cooperation, ensuring U.S. and coalition partner security well into the 21st century. The F-35A also brings together strategic international partnerships, providing affordability by reducing redundant research and development and providing access to technology around the world. Along these lines, the F-35A will employ a variety of US and allied weapons.

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### BACKGROUND

The F-35 is designed to replace aging fighter inventories including U.S. Air Force A-10s and F-16s, U.S. Navy F/A-18s, U.S. Marine Corps AV-8B Harriers and F/A-18s and U.K. Harrier GR.7s and Sea Harriers.

With LO and a host of next-generation technologies, the F-35A will be far and away the world's most advanced multi-role fighter. There exists an aging fleet of tactical aircraft worldwide - the F-35A is intended to solve that problem.

Under Secretary of Defense for Acquisition, Technology and Logistics Edward C. "Pete" Aldridge Jr. announced on the afternoon of 26 October 2001 the decision to proceed with the Joint Strike Fighter program. This approval advanced the program to the next phase, the System Development and Demonstration phase. Then Secretary of the Air Force James G. Roche announced the selection of Lockheed Martin teamed with Northrop Grumman and BAE to develop and then produce the aircraft. On July 7, 2006, U.S. Air Force Chief of Staff General T. Michael Moseley officially announced the name of the F-35 as "Lightening II," with the name Lightening evoking two historic fighter aircraft: the Lockheed P-38 Lightening and the English Electric Lightning. To date, more than 371 F-35A aircraft have been delivered to the U.S. Air Force.

During the Systems Development and Demonstration phase, the program focused on developing a family of aircraft that significantly reduces life-cycle cost while meeting operational requirements. The requirements represent a balanced approach to affordability, lethality, survivability and supportability. The program uses a phased block approach that addresses aircraft and weapons integration and provides a validated and verified air system for Initial Operational Capability requirements.

### Characteristics

**Primary Function:** Multirole fighter

**Prime Contractor:** Lockheed Martin

**Power Plant:** One Pratt & Whitney F135-PW-100 turbofan engine

**Thrust:** 43,000 pounds

**Wingspan:** 35 feet (10.7 meters)

**Length:** 51.4 feet (15.7 meters)

**Height:** 14.4 feet (4.38 meters)

**Maximum Takeoff Weight:** 70,000 pound class

**Fuel Capacity:** Internal: 18,000 pound class

**Payload:** 18,000 pounds (8,160 kilograms)

**Speed:** Mach 1.6 (~1,200 mph)

**Range:** More than 1,350 miles with internal fuel (1,200+ nautical miles), unlimited with aerial refueling

**Ceiling:** 50,000 feet (15 kilometers)

**Armament:** Internal and external capability, munitions vary by mission

**Crew:** One



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