F-16 FALCON (aka VIPER)

Current as of January 23, 2022

MISSION

Due to the F-16 Viper's intrinsic maneuverability, advanced avionics and communication suites, and weapons diversity, Vipers regularly operate the full spectrum of mission sets; from defensive counter-air (protecting friendly assets from enemy aircraft and weapons) to offensive missions (attack operations or escort).

Until the recent addition of the F-35, the Viper was the only Air Force platform tasked to perform the Suppression of Enemy Air Defenses mission, or SEAD.

This critical mission set involves protecting friendly aircraft from enemy surface-to-air missiles, and is the descendant of the F-4 Wild Weasel missions in Vietnam. Vipers also perform Close Air Support (CAS), supporting ground troops in close proximity to the enemy.

OVERVIEW

Today, the U.S. Air Force, Air Force Reserve, Air National Guard, U.S. Navy, and NASA operate about 1,000 Vipers, in addition to approximately 25 coalition countries. These remarkable aircraft perform virtually every mission set there is; from experimental testing to pilot training and everything in between. The Viper's versatility, low operating costs, and adaptability have kept it at the forefront of America's military power.

BACKGROUND

Since its maiden flight in 1976, the Viper has undergone nearly thirty different modernization upgrades including bigger engines, advanced avionics, precision lethal weapons, and higher fidelity sensors. At its core, the Viper is still one of the most maneuverable aircraft in the world. Its ability to accelerate, turn in a short radius (resulting in loads up to nine times the force of gravity on the aircraft and pilot), and maneuver rapidly to employ weapons is why it has earned the nickname "Viper".

Originally designed as the "light-weight fighter program" by General Dynamics (now Lockheed Martin), the Viper was a groundbreaking aircraft. It was the first to feature a computerized fly-by-wire design, having no physical connection between the pilot's control stick and the flight surfaces. It was also the first aircraft with wingtip missiles, along with a bubble canopy without a canopy bow, which greatly increases pilot visibility.

Modern Vipers around the world continue to break ground upgrading with Active-Electronically Scanned Array (AESA) radars, providing them a leap forward in threat detection, weapons employment capability, and self-defense. They have communication suites that enable them to speak on virtually every radio frequency in use, including satellite links that allow Beyond Line-of-Sight (BLOS) communication to virtually anywhere on the planet. They are also connected by a vast datalink called Link-16, which connects nearly all U.S. and many coalition aircraft over a secure network.

F-16s are powered by advanced General Electric or Pratt & Whitney engines, capable of propelling them beyond twice the speed of sound and upwards of 50,000 feet.

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Many Vipers feature a helmet-mounted cueing system, where navigation and tactical information are displayed directly in the pilot's line-of-vision, enabling them to cue weapons or sensors simply by looking at a target. Once cued, the Viper can employ nearly every air-to-air or air-to-ground munition in the U.S. arsenal, including nuclear payloads.

EMPLOYMENT

Since Desert Storm, F-16's have been involved in every major U.S. operation, including ALLIED FORCE, IRAQI FREEDOM, ENDURING FREEDOM, UNIFIED PROTECTOR, INHERENT RESOLVE and FREEDOM SENTINEL. In addition to overseas operations, since Sept. 11, 2001, the Viper has been the backbone of OPERATION NOBLE EAGLE (ONE), the air defense of the United States.

Characteristics

Primary Function: Multi-role fighter

Builder: Lockheed Martin Corp. (formerly General Dynamics)

Power Plant: Pratt and Whitney F100-PW-200/220/229 or General Electric F110-GE-100/129

Thrust: F-16C/D, 27,000 pounds or 29,500 pounds (GE-129 or PW-229)

Length: 49 feet, 5 inches (14.8 meters)

Height: 16 feet (4.8 meters)

Wingspan: 32 feet, 8 inches (9.8 meters)

Speed: 1,500 mph (Mach 2 at altitude)

Ceiling: 50,000 feet (15 kilometers)

Maximum Takeoff Weight: 37,500 pounds (16,875 kilograms)

Range: More than 2,000 miles ferry range (1,740 nautical miles)

Armament: M-61A1 20mm Vulcan cannon with 510 rounds; external stations can carry up to six air-to-air missiles, conventional and nuclear air-to-surface munitions, laser and GPS-guided smart weapons, stand-off munitions, such as the Joint Air-to-Surface Standoff Missile (JASSM), and electronic countermeasure pods.

Unit cost: F-16A/B, $28.6 million (fiscal 2018 constant dollars); F-16C/D,$36.8 million (fiscal 2018 constant dollars)

Crew: F-16C, one; F-16D, two (training only)

Date Deployed: January 1979

Inventory: Approximately 936