

A LOOK AT THE PAST: THE F-106 DELTA DART INTERCEPTOR AND THE AIR-2 GENIE AIR-TO-AIR NUCLEAR ROCKET

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The Six



The Convair F-106 Delta Dart all-weather [interceptor](#) was developed from the company F-102 Delta Dagger. Originally designated F-102B, it was redesignated F-106 because it had extensive structural changes and a more powerful engine.

The first F-106A flew on Dec.26, 1956, and deliveries to the U.S. Air Force (USAF) began in Jul. 1959. Production ended in late 1960 after 277 F-106As and 63 F-106Bs had been built.

The F-106 was [the Air Force's main interceptor](#) for more than 10 years, though it was rarely referred to as the Delta Dart.

The colloquial name for the F-106 was "The Six."

Interceptor aircraft had major strategic significance during the 1960s because of the changing technology dictating the dynamics of the [Cold War](#) at the time. There was tremendous fear of long-range bombers. After the 1960s, aircraft designed exclusively for the interceptor mission became rare. The Delta Dart was America's last dedicated interceptor. Its Soviet counterpart was the Sukhoi Su-9.

Not a smooth development

Noteworthy the Delta Dart did not have a smooth development. Problems with the ejector seat killed 12 pilots who attempted to eject. However, the F-106 was relatively cheap, and in a broad sense its performance was considered strong, which garnered it a measure of popularity.

The purpose of an interceptor is to respond to and thwart incursions from enemy aircraft, [primarily bombers](#). The F-106 was designed with the [Tupolev Tu-95](#) in mind – a long-range strategic bomber, and the Soviet answer to the B-52. [An interceptor fighter](#) is built with speed in mind so that it can catch and destroy larger, slower aircraft.

To perform this kind of mission, the F-106 used the Hughes MA-1 electronic guidance and fire control system. After takeoff, the MA-1 could be given control of the aircraft to fly it to the proper altitude and attack position. Then it could fire the Genie and Falcon missiles, break off the attack run and return the aircraft to the vicinity of its base. The pilot took control again for the landing.

AIR-2 rocket for the F-106

The [McDonnell Douglas AIR-2 Genie](#), a rocket designed during the height of the Cold War, was intended for air to air use, and it had no guidance system. It was equipped with a W25 nuclear warhead, a 200-pound, compact fission bomb.



McDonnell Douglas Air-2A Genie Rocket on display at the National Museum of the U.S. Air Force.

During the Cold War, the United States was shocked by how quickly the Soviet Union duplicated not only the [atomic bomb](#), but the means to deliver it. During the height of the tensions, the precarious state of global politics created an urgent fear of a nuclear strike, forcing both sides to find ways to defend themselves.

As we have explained interceptor aircraft existed to counter long-range strategic bombers, but the tactics of the period dictated that those bombers flying in formation, often in large numbers. To prevent a nuclear strike, interceptors would have to shoot down every enemy aircraft, which was an unrealistic scenario given the air to air weapons technology at the time.

The AIR-2 was developed as a means of destroying an entire aircraft formation at once. The weapon had a range of approximately six miles, and it was detonated not by impact, but by time delay, meaning that the rocket didn't even have to hit an enemy bomber to be effective; the nuclear warhead would do the work, and the delay would give the interceptor pilot time to escape.

The F-106 and the AIR-2

More than 3000 AIR-2 weapons were built, and the United States shared them with the [Royal Canadian Air Force \(RCAF\)](#). An AIR-2 was only detonated once, in a test called Operation Plumbbob in 1957.

As the Cold War went on and intercontinental ballistic missiles (ICBMs) eclipsed strategic bombers as the most threatening means of delivering a strategic nuclear strike, interceptor aircraft and weapons like the AIR-2 lost much of their relevance, and the AIR-2 was retired from service in 1988.

The F-106 was continually updated during its service life, but was ultimately phased out and replaced by the F-15 Eagle in the early 1980s. Delta Darts were given to National Guard units, and retired toward the end of the decade, following the same fate of the AIR-2, their primary weapon.

The main theater of war open to the F-106 was Vietnam, but it never saw combat.

Many retired F-106s were converted into drones to be used for training purposes with the Pacer Six Program. NASA also acquired several F-106 jets for research and testing aimed at improving fighter technology, and the Eclipse Program, which developed the concept of using aircraft to help launch spacecraft.



Source: U.S. Air Force; Photo credit: Air National Guard and U.S. Air Force