

= Republic F @-@ 105 Thunderchief =

The Republic F @-@ 105 Thunderchief was a supersonic fighter @-@ bomber used by the United States Air Force . The Mach 2 capable F @-@ 105 conducted the majority of strike bombing missions during the early years of the Vietnam War ; it was the only U.S. aircraft to have been removed from combat due to high loss rates . Originally designed as a single @-@ seat , nuclear @-@ attack aircraft , a two @-@ seat Wild Weasel version was later developed for the specialized Suppression of Enemy Air Defenses (SEAD) role against surface @-@ to @-@ air missile sites . The F @-@ 105 was commonly known as the " Thud " by its crews .

As a follow @-@ on to the Mach 1 capable North American F @-@ 100 Super Sabre , the F @-@ 105 was also armed with missiles and a cannon ; however , its design was tailored to high @-@ speed low @-@ altitude penetration carrying a single nuclear weapon internally . First flown in 1955 , the Thunderchief entered service in 1958 . The F @-@ 105 could deliver a greater bomb load than some American heavy bombers of World War II such as the Boeing B @-@ 17 Flying Fortress and Consolidated B @-@ 24 Liberator . The F @-@ 105 was one of the primary attack aircraft of the Vietnam War ; over 20 @, @ 000 Thunderchief sorties were flown , with 382 aircraft lost including 62 operational (non @-@ combat) losses (out of the 833 produced) . Although less agile than smaller MiG fighters , USAF F @-@ 105s were credited with 27 @. @ 5 kills .

During the war , the single @-@ seat F @-@ 105D was the primary aircraft delivering the heavy bomb loads against the various military targets . Meanwhile , the two @-@ seat F @-@ 105F and F @-@ 105G Wild Weasel variants became the first dedicated Suppression of Enemy Air Defenses (SEAD) platforms , fighting against the Soviet @-@ built S @-@ 75 Dvina (NATO reporting name : SA @-@ 2 Guideline) surface @-@ to @-@ air missiles . Two Wild Weasel pilots were awarded the Medal of Honor for attacking North Vietnamese surface @-@ to @-@ air missile sites , with one shooting down two MiG @-@ 17s the same day . The dangerous missions often required them to be the " first in , last out " , suppressing enemy air defenses while strike aircraft accomplished their missions and then left the area .

The Thunderchief was the largest single @-@ seat , single @-@ engine combat aircraft in history , weighing approximately 50 @, @ 000 pounds (23 @, @ 000 kg) . It could exceed the speed of sound at sea level and reach Mach 2 at high altitude ; the F @-@ 105 could carry up to 14 @, @ 000 lb (6 @, @ 400 kg) of bombs and missiles . The Thunderchief was later replaced as a strike aircraft over North Vietnam by both the McDonnell Douglas F @-@ 4 Phantom II and the swing @-@ wing General Dynamics F @-@ 111 Aardvark . However , the " Wild Weasel " variants of the F @-@ 105 remained in service until 1984 after being replaced by the specialized F @-@ 4G " Wild Weasel V " .

= = Development = =

= = = Design phase = = =

Republic Aviation started the Thunderchief as an internal project to replace the RF @-@ 84F Thunderflash , which first used the characteristic wing @-@ root air intakes to place cameras in a pointed nose . The design team led by Alexander Kartveli examined some 108 configurations before settling on a large , single @-@ engine AP @-@ 63FBX (Advanced Project 63 Fighter Bomber , Experimental) , specifically AP @-@ 63 @-@ 31 . The new aircraft was intended primarily for supersonic , low altitude penetration to deliver a single , internally carried nuclear bomb . The emphasis was placed on low @-@ altitude speed and flight characteristics , range and payload . The aircraft would be fitted with a large engine , and a relatively small wing with a high wing loading for a stable ride at low altitudes , and less drag at supersonic speeds . Traditional fighter attributes such as maneuverability were a secondary consideration .

Enthusiastic at first , the United States Air Force awarded Republic with a contract for 199 aircraft in September 1952 . However , by March 1953 , the USAF had reduced the order to 37 fighter @-@

bombers and nine tactical reconnaissance aircraft , citing the approaching end of the Korean War . By the time the F @-@ 105 mock @-@ up had been completed in October 1953 , the aircraft had grown so large that the Allison J71 turbojet intended for it was abandoned in favor of the more powerful Pratt & Whitney J75 . Anticipating a protracted development of the engine , it was expected that the first aircraft would use the smaller Pratt & Whitney J57 . Near the end of 1953 , the entire program was canceled by the USAF due to a number of delays and uncertainties regarding the aircraft . However , on 28 June 1954 , the USAF officially ordered 15 F @-@ 105s (two YF @-@ 105As , four YF @-@ 105Bs , six F @-@ 105Bs and three RF @-@ 105Bs) under the Weapon System designation WS @-@ 306A .

The YF @-@ 105A prototype first flew on 22 October 1955 , with the second YF @-@ 105A following on 28 January 1956 . In spite of being powered by a less potent J57 @-@ P @-@ 25 engine with 15 @,@ 000 pounds @-@ force (67 kN) of afterburning thrust , the first prototype attained the speed of Mach 1 @.@ 2 on its maiden flight . (The J75 was expected to generate 24 @,@ 500 lbf (109 kN) with afterburner .) Both aircraft featured conventional wing root air intakes and slab @-@ sided fuselages typical of the early jets ; Republic viewed the prototypes as not being representative of the true capability of the aircraft due to numerous changes prior to production . Insufficient power and aerodynamic problems with transonic drag , as well as Convair 's experience with their F @-@ 102 , led to a redesign of the fuselage to conform to the Area rule , giving it a characteristic " wasp waist " . In combination with the distinctive forward @-@ swept variable @-@ geometry air intakes which regulated airflow to the engine at supersonic speeds and the J75 engine , this redesign enabled the F @-@ 105B to attain Mach 2 @.@ 15 .

= = = Into production = = =

In March 1956 , the USAF placed a further order for 65 F @-@ 105Bs and 17 RF @-@ 105Bs . In order to conduct the nuclear mission , an MA @-@ 8 fire control system , AN / APG @-@ 31 ranging radar , and K @-@ 19 gunsight to allow for toss bombing were integrated . The first pre @-@ production YF @-@ 105B flew on 26 May 1956 . Five of the F @-@ 105C trainer variant were added to the procurement plan in June 1956 , before being canceled in 1957 . The RF @-@ 105 reconnaissance variant was canceled in July 1956 . The first production F @-@ 105B was accepted by the Air Force on 27 May 1957 . In June 1957 , Republic Aviation requested that the F @-@ 105 be named Thunderchief , continuing the sequence of the company 's Thunder @-@ named aircraft : P @-@ 47 Thunderbolt , F @-@ 84 Thunderjet , and F @-@ 84F Thunderstreak . The USAF made the name official a month later .

To fulfill the Air Force requirement for all @-@ weather attack , Republic proposed the F @-@ 105D variant in 1957 . This version featured an enlarged nose and radome housing the AN / ASG @-@ 19 Thunderstick bombing / navigation system . The AN / ASG @-@ 19 was designed around the Autonetics R @-@ 14A radar , which operated in both air @-@ to @-@ air and air @-@ to @-@ ground modes , and the AN / APN @-@ 131 Doppler navigation radar . In the cockpit , the F @-@ 105D featured vertical @-@ tape instrument displays for adverse weather operation . The ability to carry the TX @-@ 43 nuclear weapon was also added . The RF @-@ 105 reconnaissance development was also restarted , now based on the F @-@ 105D . The first D @-@ model took its maiden flight on 9 June 1959 . Plans to build over 1 @,@ 500 F @-@ 105Ds were cut short when Secretary of Defense Robert McNamara decided to equip no more than seven combat wings with the type . In November 1961 , production was cut in favor of the Air Force adopting the Navy 's F @-@ 4 Phantom II , and in the longer term , the General Dynamics F @-@ 111 Aardvark of the TFX program .

The final 143 Thunderchiefs built were of the two @-@ seat F @-@ 105F trainer variant . Based on the F @-@ 105D , this model was 31 inches (79 cm) longer to provide room for the rear cockpit ; otherwise , the aircraft had similar flight performance to the preceding F @-@ 105D . A total of 833 F @-@ 105s were completed before production ended in 1964 . The F @-@ 105 had been designed for a short nuclear campaign , leading to shortcomings that became evident in a lengthy conventional war , such as a poor hydraulics layout and fuel tanks that were not self @-@ sealing .

Subsequent upgrades improved the reliability and weapons capacity of the existing F @-@ 105Ds . In response to the surface @-@ to @-@ air missile (SAM) threat experienced in the skies above Vietnam , dozens of F @-@ 105Fs were converted into anti @-@ radar " Wild Weasel " aircraft , culminating with the F @-@ 105G .

= = Design = =

= = = Overview = = =

The F @-@ 105 was a mid @-@ wing monoplane with a 45 ° swept wing and tail surfaces . The single engine was fed by two intakes in the wing roots , leaving the nose free for a radome housing the multi @-@ mode radar . Its fuselage provided room for 1 @, @ 184 US gallons (4 @, @ 480 L) of fuel and an internal bomb bay . The bomb bay measured 15 feet 10 inches (4 @. @ 83 m) by 32 in (0 @. @ 81 m) by 32 in (0 @. @ 81 m) ; it was originally to carry a single nuclear weapon but typically held an additional 350 US gal (1 @, @ 300 L) fuel tank . It featured four under @-@ wing and one centerline pylon ; the two inner wing and centerline pylons were capable of accepting fuel from 450 and 650 US gal (1 @, @ 700 and 2 @, @ 500 L) drop tanks . Two outer dry stations were wired for missiles or bombs . One M61 Vulcan (initially designated T @-@ 171E3) 20 mm 6 @-@ barrel Gatling @-@ style cannon was installed in the left side of the nose . A short @-@ range AIM @-@ 9 Sidewinder air @-@ to @-@ air missile could be carried on each of the outer wing pylons .

The F @-@ 105 was designed primarily for low @-@ level interdiction and its low @-@ altitude speed was its greatest asset when dealing with enemy fighters such as the MiG @-@ 17 / J @-@ 5s and MiG @-@ 21 . The F @-@ 105 managed 27 @. @ 5 air @-@ to @-@ air victories . Based on combat experience , the F @-@ 105D was updated with a better ejection seat , additional armor , improved gun sights , and Electronic Counter Measures (ECM) pods on the wings .

= = = Flight characteristics = = =

Former North American F @-@ 86 Sabre pilot Jerry Noel Hoblit recalled being in awe of the F @-@ 105 's size after seeing it for the first time ; he could not manage to reach the air intake lip even with a running jump . The F @-@ 105 had a spacious cockpit with good visibility and layout (particularly after introduction of " tape " instruments) ; the advanced electronics were easy to learn and operate . Takeoffs and landings were often performed in the 230 mph (370 km / h) range . The spoilers provided good roll control at all speeds and the distinctive four @-@ petal airbrakes (which also opened slightly when the afterburner was engaged to allow for the larger flow of exhaust gases) were highly effective even at supersonic speeds . Loss of control due to a spin or complications of adverse yaw required deliberate effort from the pilot and spontaneous spin recovery was rapid .

The initial reaction of the fighter pilot community to their new aircraft was lukewarm . Between its massive dimensions and troubled early service life , the F @-@ 105 had garnered a number of uncomplimentary nicknames . In addition to the aforementioned " Thud " , nicknames included the " Squat Bomber " , " Lead Sled " , and the " Hyper Hog " and / or " Ultra Hog " . The latter two names arose from the F @-@ 105 's predecessors , the Republic P @-@ 47 Thunderbolt and F @-@ 84 Thunderstreak , nicknamed " Hog " and " Super Hog " , respectively . According to F @-@ 105 pilots and crews , the " Thud " nickname was inspired by the character " Chief Thunderthud " from the Howdy Doody television series .

The aircraft 's offensive capabilities were sarcastically referred to as a " Triple Threat " ? it could bomb you , strafe you , or fall on you . Positive aspects , such as the F @-@ 105 's responsive controls , strong performance at high speed and low altitude , and its outfit of electronics won over some pilots . For some , " Thud " was a term of endearment ; retroactively the RF @-@ 84F Thunderflash became known as " Thud 's Mother " . F @-@ 105 pilot Colonel Jack Broughton said of the nickname : " The Thud has justified herself , and the name that was originally spoken with a sneer has become one of utmost respect through the air fraternity " .

== Special modifications ==

=== Commando Nail ===

The rear cockpits of several two-seat F-105Fs were modified under project Commando Nail with an R-14A radar and a radar scope that offered high resolution. These aircraft were used for all weather and night low-level strikes against especially dangerous targets by a unit from the 13th Tactical Fighter Squadron (1966 ? 1975) dubbed "Ryan's Raiders" starting in April 1967. Some of these aircraft were later converted to the Wild Weasel III standard.

In an effort to thwart MiG attacks, several F-105Fs were also fitted with Hallicrafters QRC-128 communication jamming system under project Combat Martin. The North Vietnamese interceptor force followed Soviet air defense doctrine, with pilots under rigid direction of ground controllers over radio links. The QRC-128, nicknamed "Colonel Computer", filled up the rear cockpit of the F-105F. It bounced voice communications over the radio channel back out after a delay, resulting in an obnoxious garble. However, the first time the Combat Martin was used, the US National Security Agency (NSA), in charge of US strategic signals intelligence, ordered the Air Force to cease and desist immediately, since the NSA believed that the intelligence obtained by monitoring the channels outweighed the benefits of jamming them.

=== Thunderstick II ===

Experience in Vietnam demonstrated the need for a better visual and blind bombing capability. In March 1968, the Air Force ordered development of an upgraded bombing / navigation system, incorporating a Singer General Precision inertial navigation system, improvements to the AN/APN-131 navigation radar, and solid-state circuitry for the R-14A radar, which was redesignated R-14K. Furthermore, the digital AN/ARN-92 long-range navigation receiver replaced the problematic AN/ARN-85 receiver. The additional avionics were housed in a long, raised dorsal spine. The modified bombing / navigation system was known as Thunderstick II. F-105s with this system could achieve a bombing circular error of probability (CEP) of 50 feet (15 m) from an altitude of 15,000 ft (4,600 m). Although the first Thunderstick II aircraft flew in 1969, they were not used in Vietnam. A total of 30 F-105Ds received this modification.

=== Wild Weasel ===

In 1965, the USAF began operating two-seat North American F-100F Super Sabres specially equipped for Suppression of Enemy Air Defenses mission in Vietnam. Nicknamed the Wild Weasel, these aircraft achieved a number of victories against North Vietnamese surface-to-air missile radars. The second crew member was a Navigator trained as an Electronic Warfare Officer (EWO) to decipher sensor information and guide the pilot towards the targets. However, the F-100F was an interim solution, since its limited payload often required multiple aircraft to conduct a successful strike; it also lacked the speed and endurance to effectively protect the F-105.

The resulting EF-105F Wild Weasel III (the EF designation was popularly used but unofficial) supplemented its sensors and electronic jamming equipment with AGM-45 Shrike anti-radiation missiles and conventional bombs, giving it an offensive capability lacking in the F-100F. The first of these aircraft flew on 15 January 1966 and they began arriving in Southeast Asia in May, flying their first mission on 6 June 1966, with five assigned to the 13th TFS at Korat RTAFB and six more to the 354th TFS at Takhli RTAFB.

In a typical early mission, a single EF-105F would accompany one or two flights of F-105Ds to provide protection from enemy ground fire. While this strategy was effective in reducing F

@-@ 105D losses , the Weasel aircraft suffered heavy casualties with five of the first 11 lost in July and August 1966 . Attacks into high @-@ risk environments saw the Weasels operating in " Iron Hand " Hunter @-@ Killer flights of mixed single @-@ seat and two @-@ seat Thunderchiefs , suppressing sites during attacks by the strike force and attacking others en route . In the fall of 1967 , EF @-@ 105Fs began to be upgraded to the definitive Wild Weasel Thunderchief , the F @-@ 105G .

The F @-@ 105G incorporated a considerable amount of new SEAD @-@ specific avionics , including an upgraded Radar Homing and Warning (RHAW) system which required a redesign of the wingtips . To free outboard hardpoints for additional weapons , the Westinghouse AN / ALQ @-@ 105 electronic countermeasures were permanently installed in two long blisters on the underside of the fuselage . Thirty aircraft were fitted with pylons to carry the AGM @-@ 78 Standard anti @-@ radiation missile . On a typical mission , the F @-@ 105G carried two Shrikes on outboard pylons , a single Standard on an inboard pylon balanced by a 450 US gal (1 @,@ 700 L) fuel tank on the other side , and a 650 US gal (2 @,@ 500 L) centerline fuel tank .

= = = Costs = = =

Notes : The costs above are in approximately 1960 United States dollars and have not been adjusted for inflation .

= = Operational history = =

= = = Introduction = = =

The F @-@ 105B entered USAF service with the Tactical Air Command 's 335th Tactical Fighter Squadron of the 4th Tactical Fighter Wing in August 1958 , although the squadron did not become fully operational until 1959 . On 11 December 1959 , an F @-@ 105B piloted by Brig Gen Joseph Moore (commander of the 4th Tactical Fighter Wing) set a world record of 1 @,@ 216 @.@ 48 miles per hour (1 @,@ 958 km / h) over a 62 miles (100 km) circuit . Difficulties with its avionics and the MA @-@ 8 fire @-@ control system were experienced early on ; typically the F @-@ 105 required 150 hours of maintenance for each flying hour . Most of these problems were addressed under Project Optimize . The lack of spares resulted in the entire F @-@ 105B fleet being briefly grounded in 1960 . In 1964 , modified F @-@ 105Bs with ballast replacing the cannon , fuselage and wing reinforcement for aerobatics , and the addition of a smoke generator , briefly flew with the United States Air Force Thunderbirds demonstration team . After only six shows , a fatal accident from overstressing the airframe led to the reintroduction of the F @-@ 100 Super Sabre .

By 1964 , the F @-@ 105B was relegated to USAF Air National Guard (ANG) squadrons . It was replaced in frontline service by the definitive F @-@ 105D whose advanced NASARR R @-@ 14A radar and AN / ASG @-@ 19 Thunderstick fire @-@ control system gave it all @-@ weather capability . The R @-@ 14A radar also added a terrain @-@ avoidance radar capability , while a completely new instrument panel was fitted , replacing dial @-@ type instrument with vertical tape instruments which were easier to read in combat . In order to accommodate the new radar , with a much larger radar dish , the forward fuselage was redesigned , increasing overall length by 16 inches (41 cm) .

The F @-@ 105D entered service with the 335th TFS in September 1960 , although it was not fully operational on the F @-@ 105D until early 1961 . The first overseas F @-@ 105 units formed in West Germany in 1961 , with the 36th Tactical Fighter Wing at Bitburg Air Base in May and the 49th Tactical Fighter Wing at Spangdahlem Air Base in October . Both wings had a primary tactical nuclear strike role for NATO . The F @-@ 105D was also deployed to the Pacific , with the 18th Tactical Fighter Wing at Kadena in Okinawa converting in 1962 and the 8th Tactical Fighter Wing converting from 1963 .

Like the F @-@ 105B , the F @-@ 105D 's early career was plagued with maintenance problems

and in @-@ flight failures . The origins of the nickname " Thud " were obscure ; some claim that it stood for the sound of an F @-@ 105 crashing into the ground . The entire F @-@ 105D fleet was grounded in December 1961 and then again in June 1962 . Many of the issues were worked out during the production run and by 1964 , early F @-@ 105Ds were upgraded with these fixes under Project Look Alike , although engine failures and fuel system problems persisted until 1967 .

Meanwhile , the USAF was gradually changing the anticipated F @-@ 105 mission from nuclear interdiction to conventional bombing . The Look Alike upgrades increased the aircraft 's capacity from four to 16 conventional 750 lb (340 kg) bombs on underwing and fuselage centerline hardpoints and added the equipment to launch AGM @-@ 12 Bullpup air @-@ to @-@ ground missiles . In June 1961 , an F @-@ 105D delivered 15 @, @ 430 lb (7 @, @ 000 kg) of conventional bombs during a USAF test ? at the time a record for a single @-@ engine aircraft with a payload three times heavier than American four @-@ engine heavy bombers of World War II such as the Boeing B @-@ 17 Flying Fortress and the Consolidated B @-@ 24 Liberator , though aerial refueling would be required for long missions . One of the F @-@ 105Ds was named Memphis Belle II after the famed World War II B @-@ 17 .

= = = Vietnam War = = =

In spite of a troubled early service life , the F @-@ 105 became the dominant attack aircraft early in the Vietnam War . The F @-@ 105 could carry more than twice the bomb load farther and faster than the F @-@ 100 , which was used mostly in South Vietnam . In a foreshadowing of its Wild Weasel role , the first F @-@ 105D combat mission of the war involved an attack on 14 August 1964 against an anti @-@ aircraft artillery site on Plaine des Jarres . This mission was carried out by aircraft of the 36th TFS , 6441st Tactical Fighter Wing deployed from Yokota Air Base , Japan to Korat Royal Thai Air Force Base , Thailand . The first Thunderchief lost in the war also occurred during this mission , although the pilot managed to return the aircraft to Korat . The first strike mission took place on 13 January 1965 with the destruction of the Ben Ken bridge in Laos . In early 1965 additional F @-@ 105 squadrons were deployed to Korat and Takhli air bases in Thailand . At the start of Operation Rolling Thunder in March 1965 , large numbers of F @-@ 105Ds were shipped to these bases to participate in intense bombing missions .

On 3 April 1965 , a total of 79 aircraft , including 45 F @-@ 105 Thunderchiefs , were sent against the Thanh Hoa Bridge , nicknamed " Dragon 's Jaw " . The next day , enemy MiGs were encountered during a second run upon the bridge ; a total of eight MiG @-@ 17s faced 46 F @-@ 105s escorted by a MiGCAP flight of 21 F @-@ 100 Super Sabres . The MiG @-@ 17s evaded the escorts using altitude and cloud cover , instead focusing upon the bomb @-@ laden Thunderchiefs . Two Thunderchiefs were lost to the MiG @-@ 17s ; a third , thought to be lost to groundfire , was later claimed by the North as downed by a MiG @-@ 17 . An F @-@ 100 claimed the only probable MiG @-@ 17 kill , although a Vietnamese pilot believes three of his comrades were shot down by F @-@ 105s . One F @-@ 105 piloted narrowly escaped . USAF Chief of Staff General John P. McConnell was " hopping mad " to hear that two F @-@ 105s had been shot down by Korean War @-@ era subsonic North Vietnamese MiGs . The Thanh Hoa Bridge proved resistant to aerial bombing , multiple missions were flown to damage the bridge both by F @-@ 105s and U.S. Navy aircraft .

In December 1966 , the VPAF 's MiG @-@ 21 pilots of the 921st regiment downed 14 F @-@ 105s without any losses .

On a typical combat mission into North Vietnam , the F @-@ 105D carried two 450 US gal (1 @, @ 700 L) wing @-@ mounted fuel tanks , a 390 US gal (1 @, @ 500 L) fuel tank in the bomb bay , and five 1 @, @ 000 lb (450 kg) or six 750 lb (340 kg) bombs , and required inflight refueling going to and sometimes returning from Hanoi 700 mi (1 @, @ 100 km) distant . F @-@ 105s flying in the vicinity of Hanoi would routinely travel around mountainous terrain nicknamed Thud Ridge to evade the air defenses surrounding the city . Colonel Jack Broughton , an F @-@ 105 pilot in Vietnam , noted the demands of flying close to Hanoi gave " simply no room for error " .

On 11 August 1967 , F @-@ 105Ds from 335th Tactical Fighter Squadron with support from F

@-@ 105 Wild Weasels from 338th Tactical Fighter Squadron made the first of many successful attacks on the Paul Doumer bridge over the Red River . Flying low @-@ altitude missions and conducting dive bombings forced the F @-@ 105s into range of North Vietnamese anti @-@ aircraft guns , sometimes coming under heavy fire .

USAF F @-@ 105s were escorted by F @-@ 4s to protect them against enemy fighters . However , the Thunderchief was officially credited with 27 @.@ 5 air @-@ to @-@ air victories against North Vietnamese aircraft at the cost of 17 aircraft lost to enemy fighters (North Vietnamese pilots claimed to have shot down an additional 23 F @-@ 105s but none have been confirmed by USAF) . All victories were against MiG @-@ 17s . Of these 24 @.@ 5 were shot down with cannon fire (one victory was shared with an F @-@ 4) , and three with AIM @-@ 9 Sidewinder missiles . One F @-@ 105F is unofficially credited with downing three MiGs ? one by air @-@ to @-@ air missile , the second by cannon fire and the third by jettisoning the centerline rack full of bombs directly into the path of a surprised MiG .

On 31 May 1968 , a dedication ceremony took place at the United States Air Force Academy to honor graduates who had served in Vietnam . An F @-@ 105 , which had been assembled using parts from ten different F @-@ 105s that had seen service in Vietnam , was placed on permanent static display . The ceremony included the entire cadet wing , the superintendent and commandant of cadets of the USAFA , a representative of Republic Aircraft , members of the press , among others . To conclude the ceremony , a flight of four F @-@ 105s from McConnell AFB were to fly over in formation at 1 @, @ 000 feet above the ground and then fly over singly at 250 feet . The formation portion happened as planned . But the flight leader , Lt Col James " Black Matt " Matthews , came back for the single @-@ file pass and exceeded the speed of sound at less than 100 feet . The ensuing sonic boom broke hundreds of windows and fifteen people sustained cuts .

= = = Medal of Honor recipients = = =

Two Wild Weasel pilots received the Medal of Honor :

USAF Captain Merlyn H. Dethlefsen was awarded the Medal of Honor and Capt Kevin " Mike " Gilroy the Air Force Cross for an F @-@ 105F Wild Weasel mission on 10 March 1967 , flying F @-@ 105F , serial number 63 @-@ 8352 . After their aircraft was damaged by ground fire , Dethlefsen and Gilroy elected to stay in the skies above the steel works at Thai Nguyen until the SAM site was found and destroyed .

USAF Captain Leo K. Thorsness was awarded the Medal of Honor and Capt Harold Johnson the Air Force Cross for an F @-@ 105F Wild Weasel mission on 19 April 1967 , flying F @-@ 105F , serial number 63 @-@ 8301 . Thorsness and Johnson protected an attempted rescue of another Wild Weasel crew that had been shot down , in the process destroying two MiG @-@ 17s . After running out of ammunition , Thorsness and Johnson continued to act as decoys to draw the MiGs away from the rescue aircraft .

= = = Phase @-@ out and retirement = = =

As production of F @-@ 105s had ended , the type was replaced in the Vietnam War by other aircraft , primarily the McDonnell Douglas F @-@ 4 Phantom II . In October 1970 , the 355th Tactical Fighter Wing , based at Takhli RTAFB , Thailand , the last F @-@ 105D unit in Vietnam , began to return to the U.S. The F @-@ 105G Wild Weasel versions soldiered on until the end of the war . They were gradually replaced by F @-@ 4G Wild Weasel IVs .

The Thunderchief was rapidly withdrawn from USAF service after the end of the Vietnam War . Of the 833 F @-@ 105s built , a combined 395 F @-@ 105s were lost in Southeast Asia , including 334 (296 F @-@ 105Ds and 38 two @-@ seaters) lost to enemy action and 61 lost in operational accidents . Following the war the U.S. Air Force began transferring the remaining aircraft to Air Force Reserve (AFRES) and Air National Guard (ANG) units . By the late 1970s , these aging Thunderchiefs were becoming difficult to maintain . The last F @-@ 105Gs with the 128th Tactical Fighter Squadron of the Georgia ANG were retired on 25 May 1983 . The last flight of the F @-@

105 Thunderchief was by the AFRES 466th Tactical Fighter Squadron with F @-@ 105Ds on 25 February 1984 .

= = Variants = =

YF @-@ 105A

Two pre @-@ production prototypes with P & W J57 engine model .

YF @-@ 105B

Four pre @-@ production aircraft with P & W J75 engine .

F @-@ 105B

Initial production model with AN / APN @-@ 105 navigational radar , 71 built .

JF @-@ 105B

Test aircraft built from re @-@ allocated RF @-@ 105B airframes ; three built .

RF @-@ 105B

Proposed reconnaissance version of the F @-@ 105B ; none built . Three were ordered but completed as JF @-@ 105Bs .

F @-@ 105C

Proposed dual @-@ control trainer ; canceled in 1957 , none built .

F @-@ 105D

The definitive production model , all @-@ weather capability because of advanced avionics , including AN / APN @-@ 131 navigational radar ; 610 built .

RF @-@ 105D

Proposed reconnaissance version of the F @-@ 105D ; none built .

F @-@ 105E

Proposed trainer version of F @-@ 105D ; cancelled in 1959 , none completed .

F @-@ 105F

Two @-@ seat trainer version of F @-@ 105D with lengthened forward fuselage . It was fully combat @-@ capable and had dual controls , taller fin , and increased takeoff weight ; its first flight took place on 11 June 1963 . A total of 143 were built . It featured the AN / APN @-@ 148 navigational radar .

EF @-@ 105F

Initial designation for a Wild Weasel / SEAD version , 54 converted from F @-@ 105Fs .

F @-@ 105G

Two @-@ seat Wild Weasel / SEAD improved version of EF @-@ 105F conversions . The variant used the AN / APN @-@ 196 navigational radar .

= = Operators = =

United States

United States Air Force

United States Air Force Thunderbirds

Air Force Reserve

Air National Guard

= = Survivors = =

= = Specifications (F @-@ 105D) = =

Data from The Great Book of Fighters and Quest for Performance

General characteristics

Crew : 1 (2 for F @-@ 105C / E / F / G variants)

Payload : 14 @,@ 000 lb (6 @,@ 700 kg) of weapons

Length : 64 ft 4 in (19.63 m)

Wingspan : 34 ft 11 in (10.65 m)

Height : 19 ft 8 in (5.99 m)

Wing area : 385 ft² (35.76 m²)

Airfoil : NACA 65A005.5 root , NACA 65A003.7 tip

Empty weight : 27,500 lb (12,470 kg)

Loaded weight : 35,637 lb (16,165 kg)

Max. takeoff weight : 52,546 lb (23,834 kg)

Powerplant : 1 × Pratt & Whitney J75 -P -19W afterburning turbojet

Dry thrust : 14,300 lbf (63,74kN)

Thrust with afterburner : 24,500 lbf (109 kN)

Zero-lift drag coefficient : 0.0173

Drag area : 6 ft² (0.62 m²)

Aspect ratio : 3.16

Performance

Maximum speed : Mach 2.08 (1,372 mph , 2,208 km / h) at 36,000 ft (11,000 m)

Combat radius : 780 mi (680 nmi , 1,250 km)

Ferry range : 2,210 mi (1,920 nmi , 3,550 km)

Service ceiling : 48,500 ft (14,800 m)

Rate of climb : 38,500 ft / min (195 m / s)

Wing loading : 93 lb / ft² (452 kg / m²)

Thrust / weight : 0.74

Lift-to-drag ratio : 10.4

Time to altitude : 1.7 min to 35,000 ft (11,000 m)

Armament

Guns : 1 × 20 mm (0.787 in) M61A1 Vulcan 6-barreled Gatling cannon , 1,028 rounds

Hardpoints : 5 total : 4 × under-wing , 1 × centerline pylon stations plus an internal bomb bay with a capacity of Up to 14,000 lb (6,400 kg) of ordnance , including conventional and nuclear bombs , and AIM-9 Sidewinder and AGM-12 Bullpup missiles .

Avionics

NASARR R-14A radar

AN / ASG-19 Thunderstick fire control system

AN / ARN-85 LORAN (AN / ARN-92 in Thunderstick II -modified aircraft)