

1185

# F-105 Thunderchief

in action



*Don Greer*

**Aircraft Number 185  
squadron/signal publications**

Front cover of the book.



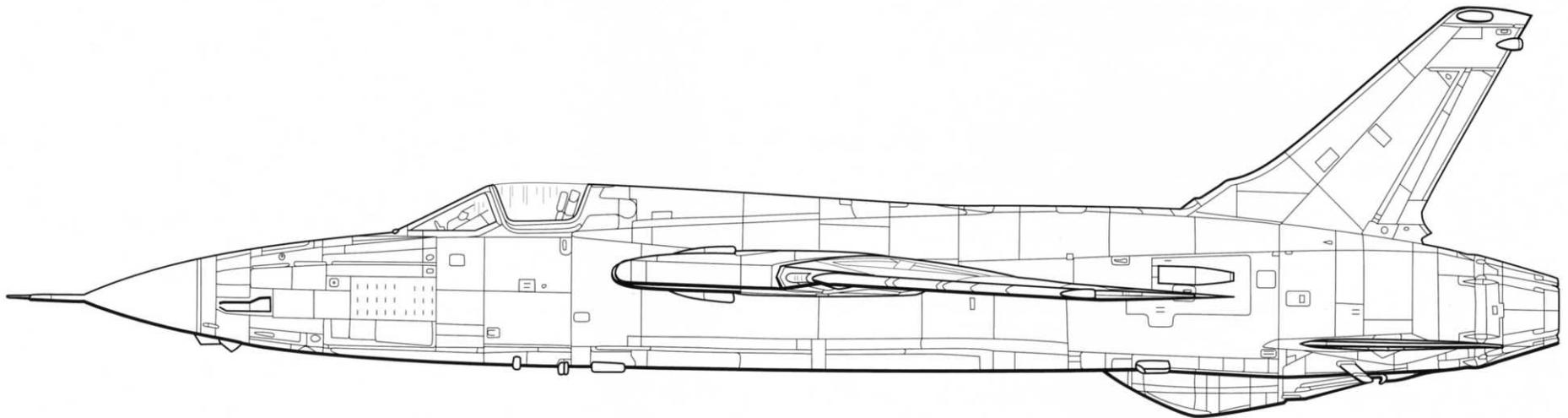
# **F-105 Thunderchief**

**in action**

**By Ken Neubeck**

**Color by Don Greer**

**Illustrated by John Lowe and Darren Glenn**



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Col Paul P. Douglas, Jr. flies his F-105D Thunderchief ARKANSAS TRAVELER (JJ/59-1743) over North Vietnam's Red River Valley in early 1968. He and his wingman are dodging North Vietnamese Anti-Aircraft Artillery (AAA) fire. Douglas commanded the 388th Tactical Fighter Wing (TFW) at Korat Royal Thai Air Base (RTAB), Thailand. Victory marks for eight German aircraft Douglas shot down in World War Two are painted under the canopy.

## Acknowledgements

The author wishes to express his sincere thanks to Joshua Stoff, curator of the Cradle of Aviation Museum (Garden City, Long Island, New York), and his staff for the use of their photo and negative archives. He also thanks Stoff and his staff for making their F-105B aircraft exhibit available for detailed photography. The museum has preserved photo archival material from the Fairchild Republic Company at the time of its closing in 1987. The author also thanks the Empire State Aerosciences Museum (Scotia, New York) for making their F-105G aircraft available for detailed photography. Thanks are also extended to Bill Caporale, Larry Starr, and the American Airpower Museum at Republic Airport (Farmingdale, Long Island, New York) for making their F-105D aircraft exhibit available for photography. The author wishes to thank Dennis R. Jenkins, Dave Conroe and John Golden for contribution of materials and photographs. Photo developing of archival photographs performed by Michael's Prolab.

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An F-105D, *Rosa L* (RE/59-1759), leads an F-105F, *Honey* (RK/63-8285), on a strike against Viet Cong targets in South Vietnam in May of 1970. The Thunderchiefs were assigned to the 355th TFW at Takhli RTAB, Thailand. The F-105D flew with the Wing's 544th Tactical Fighter Squadron (TFS), while the F-105F was assigned to the 333rd TFS. Both aircraft are armed with eight 500 pound (226.8 kg) general purpose bombs: six on the centerline and one on each outer wing pylon. (US Air Force)



# Introduction

The Republic Aircraft Company of Farmingdale, Long Island, New York was a major aircraft manufacturing company by the mid-20th Century. This firm built the P-47 Thunderbolt fighter, which saw service as a long-range escort fighter and as a fighter-bomber during World War Two. Republic entered the jet age soon after World War Two ended with the P-84 Thunderjet (redesignated F-84 in 1948). This straight-winged, single-engine fighter-bomber was delivered to United States Air Force (USAF) fighter-bomber units assigned to the newly-formed Tactical Air Command (TAC). The F-84E and F-84G variants saw extensive service during the Korean War, providing ground support for US-led United Nations (UN) troops. The straight-winged F-84 was further developed into the swept-wing F-84F Thunderstreak fighter-bomber and the RF-84F Thunderflash reconnaissance aircraft. The F-84F and RF-84F served with the USAF and Air National Guard (ANG), with the ANG retiring its last examples during the early 1970s. F-84Fs and RF-84Fs flew with several allied air forces from the mid-1950s up until – with some countries – the early 1980s.

By the early 1950s, F-84 production was winding down and Republic needed to pick up another aircraft program to continue its business with the USAF. The Air Force did not have the funding for any kind of F-84 improvement study, so the company initiated its own studies in the early 1950s. Republic Chief Engineer Alexander Kartveli, designer of the earlier P-47 and F-84, ran these studies. Republic titled its proposal **AP-63** (Advanced Project) and it was written to meet the USAF's requirement for a new fighter-bomber. This aircraft would replace the F-84F and be capable of carrying tactical nuclear weapons. AP-63 was originally proposed

**Republic's first jet fighter was the F-84 Thunderjet, which had straight wings and tail surfaces. It saw extensive action in the fighter-bomber role during the Korean War. This F-84G (51-821) flew with the 308th Fighter Escort Squadron, 31st Fighter Escort Wing in the early 1950s. (USAF Museum via Detail & Scale)**



as a scaled up version of the RF-84F Thunderflash, with a length of 52 feet 3.6 inches (15.9 M) – 5 feet (1.5 M) longer than the RF-84F. This new aircraft's wingspan was 36 feet 8.4 inches (11.2 M) and its height was 17 feet 8.4 inches (5.4 M). The fighter-bomber was designed to have an all-metal structure derived from the earlier RF-84F. The AP-63 was to be powered by one 14,500 pound thrust Allison J71-A-7 afterburning turbojet engine. This was projected to give this aircraft a maximum speed of over 800 knots (921.2 MPH/1482.5 KMH) at 35,000 feet (10,668 M).

An internal bomb bay in the mid-fuselage was planned to hold two 1000 pound (453.6 KG) conventional bombs or one 3400 pound (1542.2 KG) nuclear weapon. Additionally, six 1000 pound weapons or one nuclear bomb could be carried under the wings. The AP-63's defensive armament was four .60 caliber (15.2MM) T-130 machine guns mounted in the wing roots. The pilot sat in a Republic-developed ejection seat. He was enclosed by a three-piece windshield, a single-piece upward-opening canopy, and two rear vision windows retained from the F-84F.

Republic's engineers refined AP-63 by making 108 major design changes. These changes included powering the aircraft with two J71 engines, which would have increased its maximum speed to Mach 1.5. The finished AP-63 submission had its length increased by ten feet (3 M) to 62 feet (18.9 M). The wingspan was reduced from 36 feet 8.4 inches to 35 feet (10.7 M). The wing retained the 45° sweep angle from the earlier RF-84F, but had a thinner chord (width). Wing-mounted control surfaces included leading edge flaps, upper wing 'spoilerons' in place of conventional ailerons, and Fowler flaps on the trailing edge. The tail incorporated conventional vertical stabilizer and rudder and stabilators, which combined elevators and stabilizers in one movable surface.

The revised AP-63 proposal replaced the J71 engine with the new 23,000 pound thrust Pratt

**The F-84F Thunderstreak incorporated swept wings and tail surfaces to a modified F-84E fuselage. A clamshell canopy replaced the Thunderjet's aft-opening bubble canopy. This F-84F (52-6713) was assigned to the 77th Fighter Bomber Squadron, 20th Fighter Bomber Group at RAF Weathersfield, England in the 1950s. (R.L. Ward via Menard)**



& Whitney YJ75-P-3 afterburning turbojet engine. Fixed geometry engine inlets were located where the wing leading edge and fuselage met, while a variable exhaust outlet was fitted to the engine.

The internal weapons bay was revised to carry a single 2000 pound (907.2 kg) conventional bomb, a 3400 pound nuclear device, or a 350 gallon (1324.9 L) fuel tank. Four pylons were fitted under the wings to each carry up to 4000 pounds (1814.4 kg) of ordnance or an external fuel tank. A fifth pylon with a 2000 pound capability was located on the centerline, under the weapons bay. Defensive armament was changed from four .60 caliber T-130 machine guns on the wing roots to one 20MM General Electric T-171D (later M61A1 Vulcan) six-barrel rotary cannon. This weapon was mounted on the port nose side and was supplied with 1028 rounds of ammunition. The rotary cannon's maximum firing rate was 6000 rounds per minute.

General Electric's new MA-8 fire control system was common to both the original and revised AP-63 proposals. This system was installed in the nose, ahead of the cockpit. It used a K-19 modified sight system, which was linked to an AN/APG-31 radar ranging system for weapons aiming. The MA-8 also incorporated the E-34 ranging radar in the nose cone, an E-30 toss bomb computer, and the T-145 special (nuclear) stores weapons release system.

Republic projected the revised AP-63's performance to include a maximum speed of 765 MPH (1231.1 kmh) at 35,000 feet, a service ceiling of 33,400 feet (10,180.3 m), and a combat radius of 959 nautical miles (1104.3 miles/1777.2 km). Its designed mission profile of one nuclear weapon and underwing fuel tanks gave the aircraft a projected combat weight (its weight over the target) of 28,247 pounds (12,812.8 kg). This range could be extended by in-flight refueling, using a retractable probe mounted on the port side of the nose in front of the cockpit.

In February of 1952, Republic submitted the revised AP-63 to the USAF, which approved the proposal three months later in place of further F-84 production. That September, the USAF verbally ordered 199 aircraft, now officially designated the **F-105**. The Air Force Weapons Board reviewed this request and recommended a reduced contract. The USAF awarded Republic a formal development and production contract for 45 F-105 aircraft in March of 1953. This included 36 F-105 nuclear strike fighters and nine **RF-105** reconnaissance aircraft.



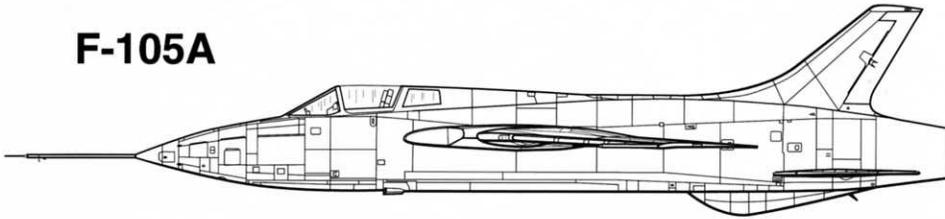
The RF-84F Thunderflash was based on the F-84F, but moved the engine inlet from the nose to the wing roots. This allowed photo reconnaissance equipment to be fitted in the nose. This taxiing RF-84F (52-7367) was assigned to one of two Michigan Air National Guard (ANG) Tactical Reconnaissance Squadrons between 1958 and 1971. (Cradle of Aviation Museum)

This aircraft (51-17059) was the first of two XF-84Hs built for the US Air Force and US Navy in 1955. It was powered by one 5850 SHP Allison XT40-A-1 turboprop engine and featured a T-shaped tail. The XF-84H fuselage resembled that of Republic's AP-63 proposal, which led to the F-105 Thunderchief. (Cradle of Aviation Museum)

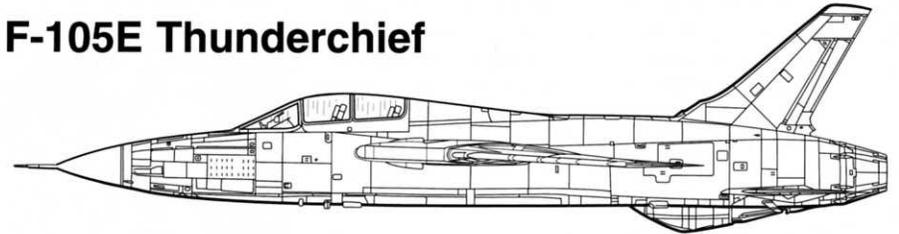


# Development

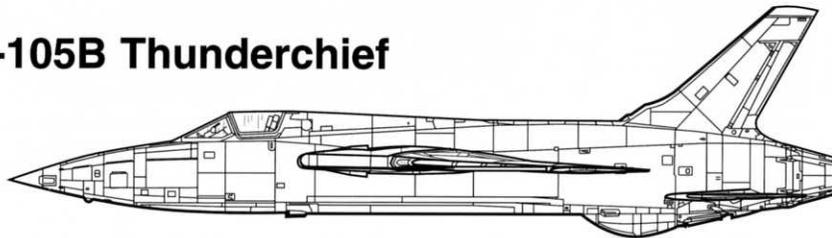
**F-105A**



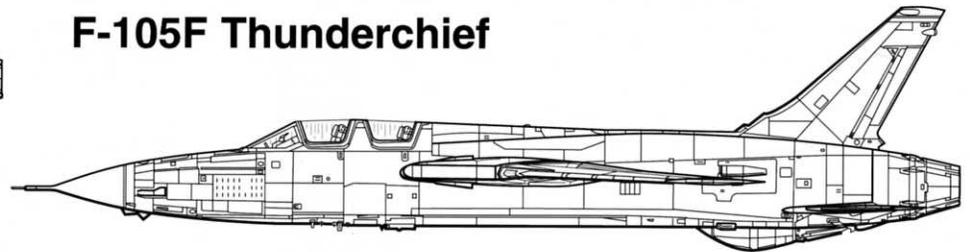
**F-105E Thunderchief**



**F-105B Thunderchief**



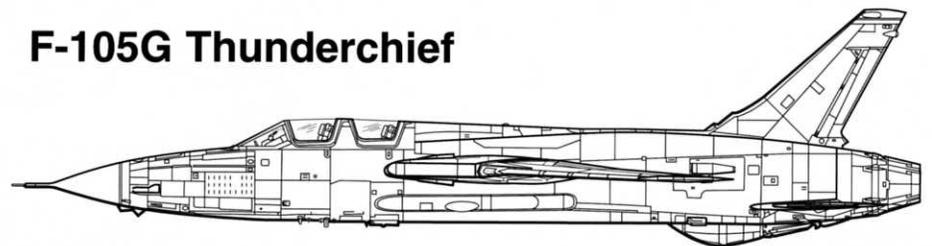
**F-105F Thunderchief**



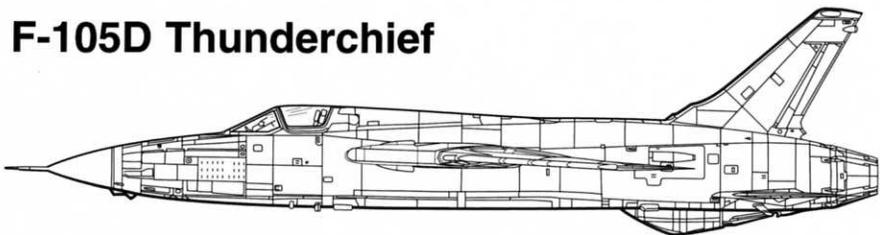
**F-105C Thunderchief**



**F-105G Thunderchief**



**F-105D Thunderchief**



# F-105A

Republic's original AP-63 proposal was greatly modified to a more streamlined design for the F-105A. The nose was more pointed and incorporated a small cone enclosing the E-34 ranging radar antenna. The fuselage was slab-sided from the cockpit area aft to the engine exhaust. A small strake was mounted under the tail to provide additional stability. The swept-back wing was mounted in the mid-fuselage and was capable of supersonic speed. Four stainless steel petals formed the aft end of the engine exhaust and opened to serve as speed brakes. The aircraft was also fitted with an arresting hook mounted in the lower aft fuselage. This hook was used to engage a barrier cable strung across a short runway.

Republic engineers built a mock up of the new F-105 at its Farmingdale, Long Island plant. The Air Force inspected and approved this mockup in October of 1953. The original order of 46 F-105s placed in March of 1953 was reduced for budgetary reasons to 15 YF-105 aircraft in February of 1954. This order was further reduced to only three YF-105s the following September, only to be reinstated to 15 aircraft in February of 1955. This order included two **YF-105As**, four **YF-105Bs**, six **F-105B** production fighter-bombers, and three **YRF-105As**. In June, the Air Force revised the order by eliminating the four YF-105Bs and increasing the F-105B order to ten.

The YF-105A was 61 feet 1 inch long (18.6 m), with a wingspan of 34 feet 11 inches (10.6 m) and a height of 17 feet 6 inches (5.3 m). It had an all-metal structure, which used forged components in high stress areas of the airframe. Skin panels were varied in thickness using machine milling, with thicker panels used where greater strength was required and thinner panels elsewhere. Republic's use of forging and machine milling was innovative in aircraft construction at the time. The fully retractable landing gear consisted of a forward-retracting nose gear in the forward fuselage and inward-retracting main landing gear units in the wings. Each gear used a single wheel and tire.

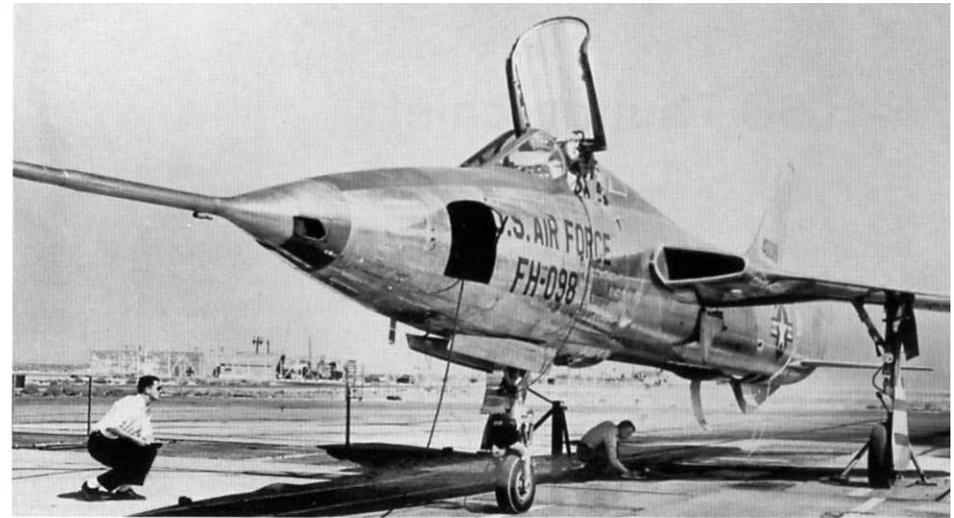
The F-105 was originally designed to use one 23,000 pound thrust Pratt & Whitney J75 afterburning turbojet engine; however, this powerplant was unavailable in 1953. Republic engineers redesigned the YF-105A to use the 15,000 pound thrust Pratt & Whitney J57 afterburning turbojet engine. Fixed elliptical inlets at the wing leading edge root supplied air for this engine.

Republic built two YF-105As (serial numbers 54-0098 and 54-0099) at Farmingdale. The first aircraft (54-0098) was completed and shipped to Edwards Air Force Base (AFB), California for flight-testing. It first flew from Edwards on 22 October 1955, with Republic's chief test pilot Russell 'Rusty' Roth at the controls. Roth broke the sound barrier on this 45 minute long flight, which landed safely at Edwards.

On 16 December 1955, the first YF-105A was making a 5.5 G<sup>1</sup> turn at over 550 knots (633.3 MPH/1019.2 kmh) when the starboard main landing gear inadvertently deployed. The slipstream tore the landing gear off the aircraft and forced Roth to make a belly landing on the Edwards dry lake bed. This landing caused extensive structural damage to the YF-105A's aft fuselage. It was returned to the Republic factory for repairs, but the damage was judged too extensive for economic repair and the aircraft was permanently grounded. The initial YF-105A accumulated only 22 flight hours in its 29 flights.

Flight tests continued with the second YF-105A (54-0099), which first flew on 28 January 1956. This aircraft differed from the first YF-105A in replacing the four-petal exhaust with a single piece exhaust section. Aerodynamic drag problems were encountered during the YF-105A test flight and confirmed during wind tunnel testing of scale models. This drag prevented the aircraft from reaching supersonic speeds as required in the original specification. It

<sup>1</sup>G: Force of Gravity. For example, 5.5 Gs equals 5.5 times the aircraft's weight.



Republic personnel prepare the first YF-105A prototype (54-0098) for flight at Edwards AFB, California in October of 1955. This aircraft was disassembled at Republic's Farmingdale plant and shipped to Edwards for reassembly and flight testing. An instrument probe for collecting flight data is mounted on the YF-105A's nose. (Cradle of Aviation Museum)

was also determined that the engine inlets would have to be changed in order to allow sufficient airflow into the engines in order for proper operation.

Republic addressed these problems by redesigning the aft fuselage to incorporate a bulge near the wing's trailing edge, which reduced drag. The elliptical engine inlets were swept forward and incorporated computer-controlled variable ramps. These ramps controlled the amount of airflow into the engine throughout the F-105's speed range. These changes – along with the J75 engine – allowed the aircraft to reach its intended speed of Mach 1.5. This revised aircraft was the first production model, the F-105B.

The first YF-105A takes off from Edwards on its maiden flight on 22 October 1955. Republic test pilot 'Rusty' Roth was at the controls for this 45 minute long flight, in which the aircraft exceeded Mach 1. The YF-105A was left in natural metal during its testing program. Anti-glare panels on the upper fuselage were Olive Drab (FS34087). (Cradle of Aviation Museum)



# F-105B Thunderchief

The F-105B incorporated the lessons learned by Republic's engineers during the YF-105A flight test program. The aft fuselage incorporated an 'area rule' bulge to delay the onset of drag, while variable engine inlets optimized engine airflow. Incorporating these changes delayed the start of F-105B production for several months. In 1955, Republic began production on the first nine F-105Bs (54-0100 through 54-0104, 54-0106 through 54-0107, and 54-0109 through 54-0110). The firm also started building three RF-105B reconnaissance aircraft (54-0105, 54-0108, and 54-0112).

The F-105B's length of 63 feet 1 inch (19.2 m) was two feet (0.6 m) longer than the YF-105A's 61 feet 1 inch (18.6 m) long fuselage. The wingspan remained at 34 feet 11 inches (10.6 m), with the leading edge swept back 45° at the quarter chord (width) point and the wing area was 385 square feet (35.8 m<sup>2</sup>). The F-105B's height was increased from 17 feet 6 inches (5.3 m) to 19 feet 8 inches (6 m). This 2 foot 2 inch (0.7 m) increase was done to improve high-speed control. The vertical tail chord was also increased and the rudder was enlarged. The basic all-metal structure and covering remained the same from the earlier YF-105A. The F-105B's empty weight was 25,855 pounds (11,727.8 kg), while its maximum weight was 52,000 pounds (23,587.2 kg).

Initial F-105Bs were powered by one 23,000 pound thrust Pratt & Whitney JY75-P-5 afterburning turbojet engine – the aircraft's intended powerplant. Later F-105Bs received the 24,500 pound thrust J75-P-19 engine. This powerplant allowed the F-105B to reach a maximum speed of 1386 MPH (2230.5 kmh) – Mach 2.1 – at 36,000 feet (10,972.8 m), or 864 MPH

**The second F-105B (54-0101) takes off from Edwards AFB in January of 1957. This variant featured several changes from the previous YF-105A, including variable engine inlets, a bulged aft fuselage, and a taller vertical tail. USAF 'buzz numbers' included FH for F-105s and the last three digits of its serial number. (Cradle of Aviation Museum)**



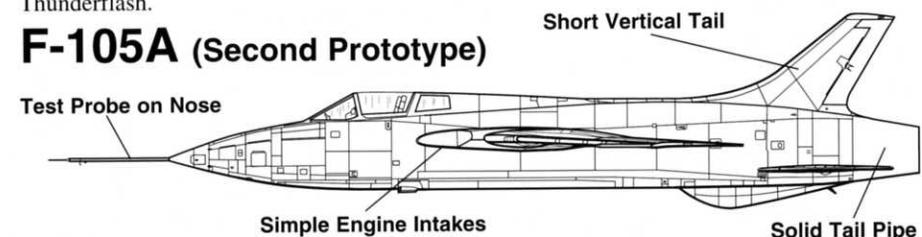
(1390.4 kmh) – Mach 1.13 – at sea level. The maximum internal fuel capacity was 1026 gallons (3883.8 L) in three fuselage tanks. The forward tank held 334 gallons (1264.3 L) of JP-4 fuel. The center tank held 242 gallons (916.1 L), the aft tank held 450 gallons (1703.4 L), and 25 gallons (94.6 L) were in the fuel lines. A 390 gallon (1476.3 L) weapons bay tank, one 600 gallon (2271.2 L) centerline external tank, and two 450 gallon (1703.4 L) tanks under the wings augmented this internal fuel. The F-105B's maximum ferry range on internal fuel amounted to 1900 miles (3057.7 km), although its unrefueled combat range with a full ordnance load was slightly over 200 miles (321.9 km). It was equipped with a retractable inflight refueling probe mounted on the port side of the nose, forward of the cockpit.

The F-105B was armed with one 20MM General Electric M61A1 Vulcan cannon on the port nose side. This six-barrel weapon was supplied with 1028 rounds of ammunition in a nose-mounted drum. The weapons bay held either one 3400 pound (1542.2 kg) nuclear bomb or a 390 gallon (1476.3 L) fuel tank. This bay was 15 feet 10 inches (4.8 m) long, with a width of 2 feet 8 inches (0.8 m) and a depth of 2 feet 8 inches. Four pylons under the wings and a fifth mounted on the fuselage centerline held up to 12,000 pounds (5443.2 kg) of ordnance. These weapons included 750 pound (340.2 kg) and 500 pound (226.8 kg) conventional bombs, Martin/Maxon AGM-12 Bullpup Air-to-Surface Missiles (ASMs), and Philco-Ford AIM-9 Sidewinder Air-to-Air Missiles (AAMs). F-105Bs were never equipped to carry Electronic Countermeasures (ECM) pods under the wings.

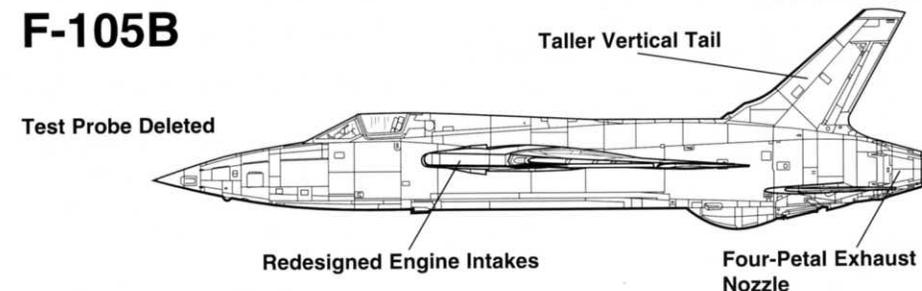
The aircraft was equipped with the Weapons System 306A (WS-306A) all-weather bombing system. Among the WS-306A's features were the MA-8 fire control system and the General Electric FC-5 flight control system with autopilot. An E-34 ranging radar was mounted in the nose under a fiberglass radome. A Bendix central air data computer and the AN/APN-105 Doppler all-weather navigation system were also included. The F-105B was flown by a single pilot sitting in a Republic designed ejection seat. The first ten F-105Bs had two rear cockpit windows like those on the F-84F and RF-84F, but these were deleted from subsequent aircraft.

Republic test pilot Hank Baird flew the first F-105B (54-0100) on its maiden flight from Edwards AFB on 26 May 1956. The one hour flight went well until Baird was unable to extend his nose landing gear and had to make a 'wheels up' landing on the dry lake bed. The aircraft was slightly damaged, but a crane operator dropped it while retrieving it. This mishap resulted in major repairs to the cracked fuselage. On 25 July 1956, the USAF honored Republic's request and named the F-105 **Thunderchief**. This name kept in line with other Republic aircraft names that began with Thunder, including Thunderbolt, Thunderjet, Thunderstreak, and Thunderflash.

## F-105A (Second Prototype)



## F-105B



The second F-105B (54-0101) first flew in December of 1956, but it had to make a belly landing after a flight on 30 January 1957. In this case, the main landing gear failed to extend, causing Republic test pilot Lindell Hendrix to land 'wheels up' at Edwards. The landing caused major fuselage damage, but Hendrix walked away unharmed. This same landing gear problem affected the fourth F-105B (54-0103), prompting Republic engineers to investigate the problem. They found that a significant amount of suction created by the air-bypass duct in the air intakes gathered in the wheel wells, causing the landing gear to remain in the up position. Republic soon changed the ducting design to prevent a recurrence of this problem.

The first production order of ten F-105B aircraft included three RF-105B photo-reconnaissance aircraft. They were built with a modified nose section to accommodate a KS24A camera system. This system consisted of five cameras mounted in the nose to take vertical and oblique photographs of targets. The USAF cancelled the RF-105 program in favor of the McDonnell RF-101A/C Voodoo in 1957. The three RF-105Bs in production at the time of this cancellation order were completed as **JF-105B**<sup>1</sup> test aircraft. Space reserved for the cameras was used to carry test equipment. The first JF-101B (54-0105) flew from Republic's Farmingdale airfield on 18 July 1957. It and the two other JF-101Bs were flown on high speed flutter system and flight performance tests from 1957 until 1961.

Republic soon began full scale production and the first operational F-105B (54-0111) was delivered to the 335th Tactical Fighter Squadron (TFS), 4th Tactical Fighter Wing (TFW) on 26 May 1958. The Squadron – based with the wing at Seymour-Johnson AFB, North Carolina – was deployed to Eglin AFB, Florida for F-105B tests. The Wing's 334th and 336th TFSs were subsequently equipped with the F-105B, which served in 4th TFW until they began to be replaced by the newer **F-105D** in December of 1962. The first F-105Bs were delivered to the 141st TFS, 108th Tactical Fighter Group (TFG), New Jersey Air National Guard (ANG) at McGuire AFB on 16 April 1964. These Thunderchiefs remained in ANG service until the spring of 1981. Additional F-105Bs flew with the 466th TFS, 508th TFG (later 419th TFW), Air Force Reserve at Hill AFB, Utah until 1982.

Republic built 75 F-105Bs – including the three JF-101Bs – between May of 1956 and December of 1959. This variant became a stepping stone for the improved F-105D, which had an all-weather capability that the F-105B lacked. Accordingly, the Air Force cut F-105B production in the late 1950s. No F-105Bs were deployed to Southeast Asia during the Vietnam War.

<sup>1</sup>JF-105B; J prefixes are assigned to aircraft modified for temporary special tests.

(Right) The second YF-105A (54-0099) refuels the third F-105B during a test from Edwards AFB. The receiving aircraft extended its refueling probe on the port nose side. This probe engaged a drogue from the refueling tank mounted under the YF-105A's starboard wing. The YF-105A had a shorter vertical tail than the F-105B. Vertical tail panels are International Orange (FS12197), while those on the YF-105A's tail have partially peeled off. The second YF-105A had a one-piece exhaust nozzle, while the first YF-105A and the F-105B had four-petal nozzles. (Cradle of Aviation Museum)



The third F-105B (54-0102) is parked on the runway of Republic airport in Farmingdale, Long Island in 1957. Thunderchief was first bestowed on this F-105 variant and appropriate artwork was painted on the aircraft's nose for its testing program. The small radome on the nose housed the E-34 ranging radar antenna. (Cradle of Aviation Museum)





The first of three JF-105B test aircraft (54-0105) taxis toward the active runway in 1957. The JF-105Bs were originally ordered as RF-105A reconnaissance aircraft, but this program was cancelled in 1956. These Thunderchiefs had the photo windows covered over and test equipment fitted inside the nose. (Cradle of Aviation Museum)

The third F-105B forms the end of a line of four major 1950s Republic programs parked in front of the Farmingdale plant. An F-84F Thunderstreak (53-3966) is parked beside the Thunderchief, with an RF-84F Thunderflash (53-7695) to the F-84F's left. An F-84G Thunderjet (52-3245) forms the beginning of this line. (Cradle of Aviation Museum)

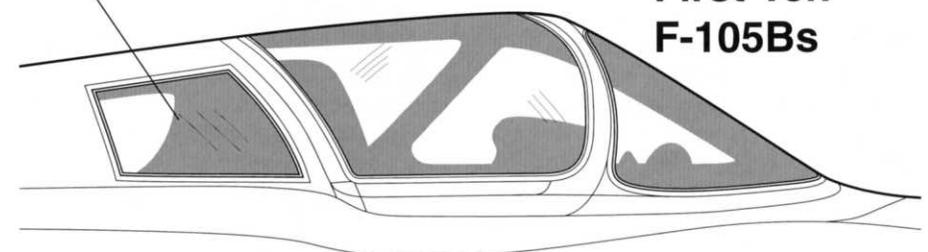


A pilot enters the cockpit of the third F-105B, while the second F-105B (54-0101) is parked in the background at Edwards AFB in 1957. Landing gear failure caused the latter aircraft to make a 'wheels up' landing on 30 January 1957. YF-105As and the first ten F-105Bs had rear vision windows retained from the F-84F and RF-84F. These windows were deleted on later Thunderchiefs. (Cradle of Aviation Museum)

## Canopy Development

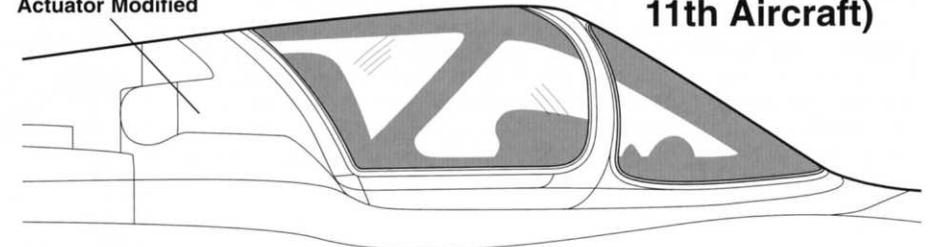
**YF-105A and  
First Ten  
F-105Bs**

Rear Window



Rear Window  
Deleted; Canopy  
Actuator Modified

**F-105B (From  
11th Aircraft)**





F-105Bs proceed through the final assembly area of Republic's Farmingdale plant in January of 1959. Fuselages lined up in the foreground await final component installation before they are mated to the wings and tail. Republic built 75 F-105Bs between 1956 and 1959, before switching to the improved F-105D. (Cradle of Aviation Museum)

An F-105B (57-5783) deploys its brake parachute to shorten its landing roll. The parachute canopy's diameter was 20 feet (6.1 m) and it was stored in a compartment aft of the vertical tail until released by the pilot. This New Jersey ANG aircraft landed at Republic Airfield in Farmingdale, New York on 29 April 1981. (Cradle of Aviation Museum)



Technicians check completed F-105Bs in the final assembly area at Farmingdale. The brake parachute compartment door is open near the tail of 57-5790. These Thunderchiefs would perform company flight tests before Republic delivered them to the US Air Force. The nose and tail bands are believed to be green (approximately FS14110) and white, indicating their assignment to the 335th TFS, 4th TFW. (Cradle of Aviation Museum)

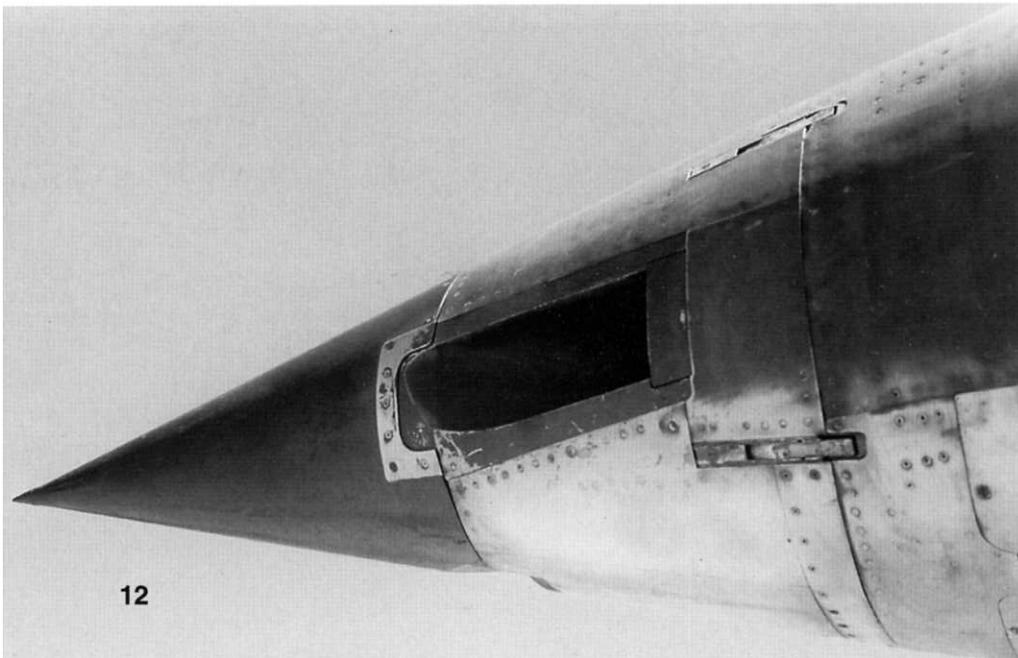
The F-105B stops after taxiing at Republic Airfield on 29 April 1981. This Thunderchief was assigned to the 141st TFS, 108th TFW, New Jersey ANG at McGuire AFB until its retirement that year. It was later donated to the Cradle of Aviation Museum at Long Island's Mitchel Field for display. (Cradle of Aviation Museum)





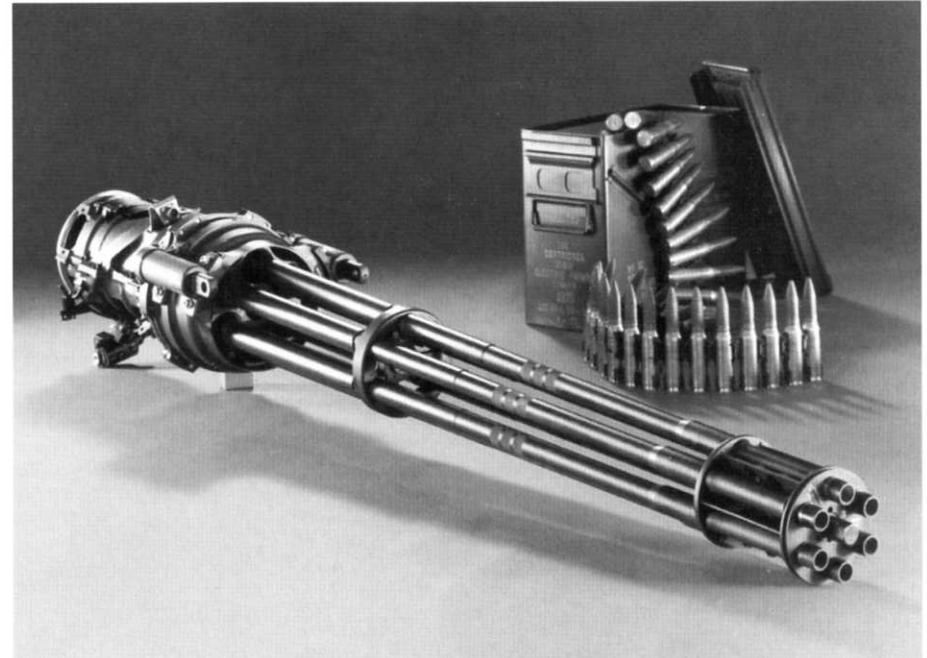
The F-105B had a narrow nose, which extended from a small radome for its E-34 ranging radar. The nose landing gear retracted forward into the gear bay. This Thunderchief (57-5783) formerly served with the New Jersey ANG and was undergoing restoration at the Cradle of Aviation Museum. (Ken Neubeck)

The 20MM M61A1 Vulcan cannon was mounted on the F-105B's port nose section. Its muzzle was located immediately aft of the radome. The nose was hinged to port for servicing. The cannon remained in the same location on later Thunderchief variants, although further aft of the radome on the lengthened noses of F-105D/F/G aircraft. (Ken Neubeck)



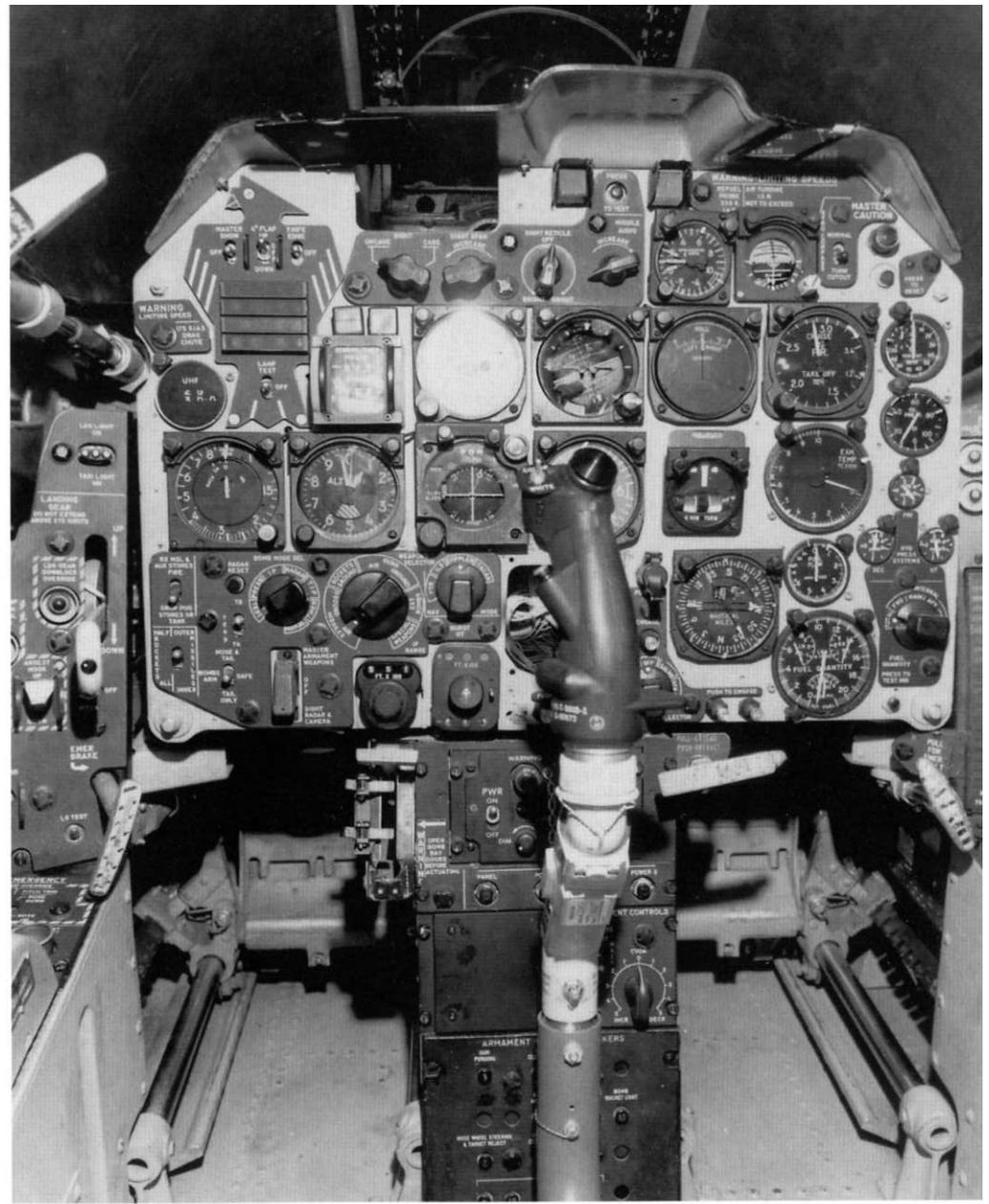
The F-105B's windshield and canopy remained the same for subsequent Thunderchiefs. The Plexiglas canopy opened upward for crew access, while the windshield had three panels for forward visibility. The pitot tube on the lower fuselage provided air speed data for the cockpit instruments. (Ken Neubeck)

All production F-105s were armed with a 20MM General Electric M61A1 Vulcan cannon. This six-barreled weapon had a maximum firing rate of 6000 rounds per minute, or 100 rounds per second. Available ammunition types included High Explosive Incendiary (HEI), Armor Piercing Incendiary (API), and Target Practice (TP).





A New Jersey ANG pilot waves from the cockpit of the F-105B he has just delivered to Republic Airfield in 1981. The red and white ejection seat warning triangle is placed immediately below the cockpit, while the tiger insignia of the 141st TFS is located under the windshield. The AN/ARN-59 Automatic Direction Finder (ADF) antenna is imbedded in the aft canopy section. (Cradle of Aviation Museum)

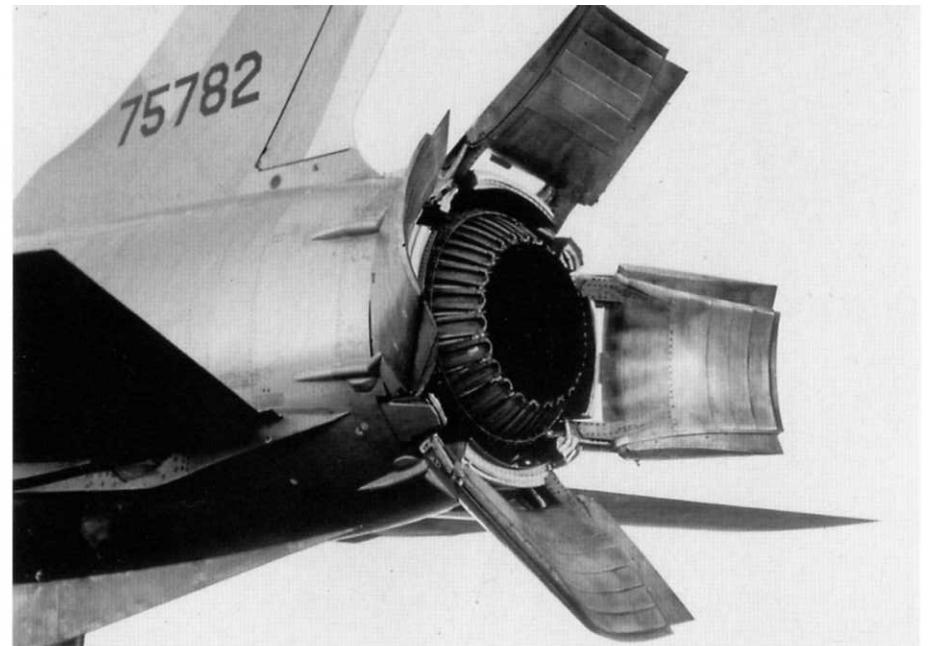


The F-105B cockpit consisted primarily of standard round indicators and rotary switches, while the control stick was a standard Air Force design. The rudder pedals traveled on metal bars located along the cockpit sides. This F-105B was one of nine assigned to the USAF Thunderbirds in 1964 and had modified flight control system instruments fitted to the upper port panel section. Thunderchief cockpits were primarily Cockpit Gray (FS36231) and Instrument Black (FS37038). (Cradle of Aviation Museum)



Ground crew load a 750 pound (340.2 kg) M117 bomb to the outboard wing station of an F-105B in 1959. This Thunderchief was deployed for weapons training; F-105Bs never saw actual combat. The M117 was one of the Thunderchief's primary weapons and an F-105 could carry up to sixteen 750 pound bombs: 12 on the centerline and two under each wing. (Cradle of Aviation Museum)

Major David Pilton flies the first F-105B (57-5782) assigned to the USAF Thunderbirds air demonstration squadron. It was modified to remove the cannon and navigation system, while adding smoke oil dispensers under the engine exhaust. This aircraft was delivered to the Thunderbirds' home at Nellis AFB, Nevada on 25 January 1964. (Cradle of Aviation Museum)



F-105s employed a four-petal speed brake that enclosed the engine exhaust. All petals extended 90° to slow the aircraft down in flight. The side petals were used to slow the Thunderchief down on landing, since the upper petal could foul the brake parachute and the lower petal could strike the runway. (Cradle of Aviation Museum)

## F-105Bs for the Thunderbirds

In May of 1963, the USAF Air Demonstration Squadron 'Thunderbirds' decided to switch from the North American F-100C Super Sabre aircraft to the F-105B for the 1964 show season. This change allowed the Thunderbirds to be the first aerial team capable of reaching Mach 2. The Air Force ordered nine F-105Bs from the 4th TFW to be modified for the air demonstration role. These aircraft were serialized 57-5782, 57-5787, 57-5790, 57-5793, 57-5797, 57-5798, 57-5801, 57-5802, and 57-5814. The nine selected F-105Bs were sent to Republic at Farmingdale for modifications. These included removing the AN/APN-105 Doppler navigation system, the 20MM M61A1 cannon with its associated fire control equipment, and the APS-54 radar warning receiver. None of these items were required for aerobatic aircraft. Two 50 gallon (189.3 L) smoke oil tanks, along with ballast for maintaining the Thunderchief's center of gravity, filled the cannon and ammunition space. Smoke oil was fed to a pair of dispensers added under the engine exhaust control petals. Four of these F-105Bs had their standard aluminum vertical stabilizer replaced by a stainless steel fin, which could withstand the lead aircraft's exhaust heat while flying in close formation. Metal nose cones replaced the fiberglass radomes on all nine aircraft. The F-105Bs were painted in the Thunderbirds' Red (FS11136), White (FS17875), and Blue (FS15044) scheme over its highly polished natural metal finish. There were two minor variations of this paint scheme, where one had a more pronounced scallop design than the other design. Republic delivered the nine modified F-105Bs to the Thunderbirds at Nellis AFB, Nevada between 25 January and 16 April 1964.

The Thunderbirds began flying displays in the F-105B in April, but tragedy struck during the sixth show of the season at Hamilton AFB, California on 9 May. An F-105B flown by Capt Gene Devlin broke apart in front of the weapons bay during a display and crashed, killing the pilot. The Thunderbirds' F-105Bs were grounded while the USAF conducted an investigation. This inquest revealed that a structural splice plate in the upper part of the fuselage failed due to fatigue. This finding resulted in Project BACKBONE, where a redesigned splice plate was retrofitted into all F-105Bs and early production F-105Ds.

The Thunderbirds converted to F-100D Super Sabres for the remainder of the 1964 show season. The Air Force considered bringing the F-105Bs back to the Thunderbirds for 1965, but the war in Vietnam caused the Thunderbirds to retain the F-100Ds until 1968. The eight remaining Thunderbird F-105Bs were modified to original status and transferred to the 141 TFS, 108th TFG, New Jersey ANG. This ended the shortest stint of any aircraft used by the Thunderbirds since their inception in 1953.

## F-105C Thunderchief

In 1956, the USAF issued a requirement for a two-seat training version of the F-105B. The **F-105C** retained the same 63 feet 1 inch (19.2 M) length as the F-105B, but housed an additional crew member using a single rear opening Plexiglas canopy. The second crew member's cockpit displaced the 334 gallon (1264.3 L) forward fuel tank, which resulted in a slight range decrease. Weapons and avionics were retained from the standard F-105B and all other dimensions were the same.

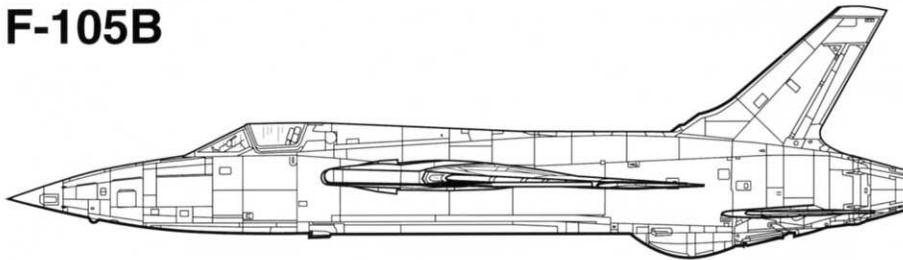
Republic built a full-scale F-105C mockup in 1956, in anticipation of getting this contract. This mockup used the fuselage of the first JF-105B (54-0105). The Air Force ordered five examples in June of 1956, but rising costs resulted in the USAF canceling the F-105C contract in 1957. The service wished to save money and have Republic concentrate their efforts on developing the all-weather F-105D. The Air Force would revisit the idea of a two-seat F-105 within two years.



A Thunderbirds F-105B (57-5801) departs from Republic Airfield in March of 1964. This aircraft crashed during the sixth show of the Thunderbird season on 9 May 1964, killing the pilot. The accident effectively ended the F-105B's use by the Thunderbirds. These Thunderchiefs had red, white, and blue trim painted on their polished natural metal surfaces. (Cradle of Aviation Museum)

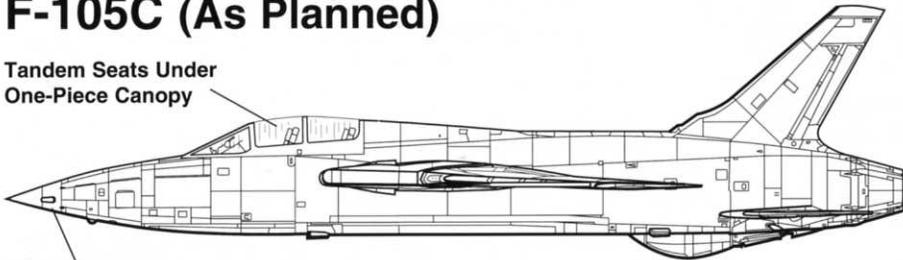
Republic modified a JF-105B fuselage to serve as the F-105C mockup in 1956. It has a single-piece Plexiglas canopy to cover both seats. The fictional buzz number FH-105C was painted on the nose. Republic kept this mockup after the F-105C was cancelled and modified it for the later F-105E mockup in 1958. (Cradle of Aviation Museum)

### F-105B



### F-105C (As Planned)

Tandem Seats Under One-Piece Canopy



Modified 20MM Cannon Muzzle



# F-105D Thunderchief

The F-105D represented a major upgrade from the limited all-weather F-105B and was the first aircraft to employ the concept of fully integrated avionics. Significant changes to the avionics and cockpit instrumentation allowed the F-105 to be a true all-weather fighter.

This new Thunderchief variant incorporated several changes, notably the AN/ASG-19 Thunderstick bombing navigation system. It included the aircraft's fire control system and allowed the pilot to employ either visual or blind bombing techniques, depending upon weather conditions, for nuclear or conventional weapons. The AN/ASG-19 had both air-to-air and air-to-ground modes for delivering ordnance onto the target. A General Electric FC-5 automatic flight and fire control system was installed.

The Thunderstick system's basis was the Autonetics NASARR<sup>1</sup> R-14A search and ranging radar. This X-band radar provided greater capabilities to search and track targets over the F-105B's E-34 ranging radar. An APN-131 Doppler navigation radar was installed on the fuselage centerline, just aft of the nose landing gear bay. The additional avionics equipment resulted in the overall length increasing from the F-105B's 63 feet 1 inch (19.2 M) to 64 feet 5.3 inches (19.6 M). This length did not include the pitot tube, which was moved from the port wingtip to the radome tip on the F-105D. The 20MM M61A1 Vulcan cannon remained in the same location as on the earlier F-105B; however, the lengthened nose placed the cannon muzzle further aft of the F-105D's fiberglass radome.

<sup>1</sup>NASARR: North American Search And Ranging Radar.

**An F-105D-5-RE (58-1173) conducts a weapons test mission from Eglin AFB, Florida in July of 1962. The Thunderchief is armed with sixteen 750 pound (340.2 kg) M117 bombs under the wings and fuselage, for a total ordnance load of 12,000 pounds (5443.2 kg). It was assigned to the 355th TFS, 4th TFW – the first operational F-105D squadron. (Cradle of Aviation Museum)**



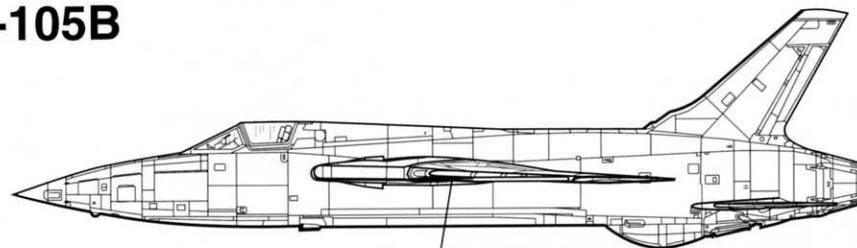
The instrument panel was redesigned to replace several standard circular instruments with vertical tape instruments. The latter were much easier for the pilot to read, particularly during combat. An on-board computer matched 'real time' readings with navigational markers the pilot set before the flight. This allowed the computer to let the pilot know if he was off course.

The F-105D measured 64 feet 5.3 inches (19.6 M) long, with a wingspan of 34 feet 11 inches (10.6 M) and a height of 19 feet 8 inches (6 M). The latter two were unchanged from the earlier F-105B, the same wing and tail being retained on the F-105D. The empty weight increased from 25,855 pounds (11,727.8 kg) in the F-105B to 26,855 pounds (12,181.4 kg) in the F-105D, primarily due to the increased electronic equipment. The F-105B's maximum weight of 52,000 pounds (23,587.2 kg) was increased to 52,838 pounds (23,967.3 kg) on the newer F-105D. The increased weights necessitated installing strengthened main landing gears, while the nose gear remained the same throughout the F-105's production run.

This variant was powered by one 26,500 pound thrust Pratt & Whitney J75-P-19W afterburning turbojet engine. The powerplant produced 2000 pounds of greater thrust over the F-105B's 24,500 pound thrust J75-P-19, due to the newer engine's water injection system. Water injection was used for take off at high weights and proved valuable when the F-105Ds were flown in the heat and humidity of Southeast Asia. The J75-P-19W's power ratings were 24,500 pounds without water injection in afterburner and 14,300 pounds without afterburning. This power allowed the F-105D to reach a maximum speed of 1372 MPH (2208 km/h) – Mach 2.08 – at 36,090 feet (11,000.2 M), or 836 MPH (1345.4 km/h) – Mach 1.1 – at sea level. The water injection equipment and greater power settings required internal changes in the F-105D's intake ducts and aft fuselage.

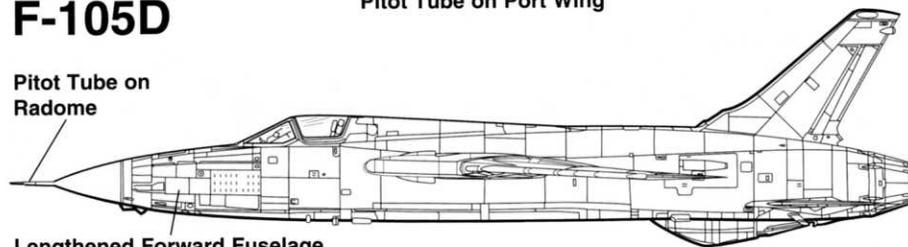
The Thunderchief had a service ceiling of 48,500 feet (14,782.8 M) and a tactical radius of 920 miles (1480.6 km) when loaded with two 450 gallon (1703.4 L) underwing tanks and one 650 gallon (2460.5 L) centerline tank. This range was extended using in-flight refueling, for which the F-105D retained the F-105B's retractable probe on the port forward fuselage. From mid-1962, the refueling receptacle compatible with US Air Force tanker booms was installed on the F-105D's upper nose, forward of the windshield. The internal fuel capacity of 1026 gallons (3883.8 L) of JP-4 fuel in three fuselage tanks was the same as for the earlier F-105B. The Thunderchief's ferry range was 2390 miles (3846.2 km) with full fuel capacity of 2976 gallons (11,265.4 L).

## F-105B



Pitot Tube on Port Wing

## F-105D



Lengthened Forward Fuselage and Enlarged Radome

The nose-mounted M61A1 cannon was supplied with 1028 rounds of 20MM ammunition in a tank located in the starboard forward fuselage. This was the same ammunition load as on the earlier F-105B, but the F-105D replaced the earlier variant's linked ammunition belts with a linkless ammunition feed system. This system improved feed efficiency. The mid-fuselage internal weapons bay held one nuclear weapon or a 390 gallon (1476.3 L) fuel tank. Five external stores stations – one on the centerline and two under each wing – allowed the Thunderchief to carry 16,750 pounds (7597.8 kg) of ordnance. This was a 4750 pound (2154.6 kg) increase over the F-105B's 12,000 pound (5443.2 kg) capacity. These weapons included 500 pound (226.8 kg), 750 pound (340.2 kg), and 1000 pound (453.6 kg) conventional bombs, 720 pound (326.6 kg) napalm fire bombs, and Philco Ford AIM-9 Sidewinder Air-to-Air Missiles (AAMs). The Sidewinders were carried on the outer wing pylons for self-defense, or were replaced by Electronic Counter Measures (ECM) pods.

Republic began F-105D production in early 1959, with the first production aircraft (58-1146) making its maiden flight on 9 June 1959. This aircraft was the first of three F-105D-1-RE Thunderchiefs built, which were followed by 66 F-105D-5-RE aircraft and 45 F-105D-6-REs. Each production block had minor equipment changes from the previous block. These flight differences were also carried on the later production blocks F-105D-10-RE (121 aircraft), -15-RE (66), -20-RE (55), -25-RE (80), -30-RE (39), and the -31-RE (135). The F-105D was the most produced Thunderchief variant, with Republic completing 610 aircraft between 1959 and 1964.

The first operational F-105D unit was the 335th Tactical Fighter Squadron (TFS), 4th Tactical Fighter Wing (TFW). This Squadron temporarily deployed from Seymour-Johnson AFB, North Carolina to Eglin AFB, Florida when it accepted this aircraft on 28 September 1960. The 4th TFW's four squadrons (333rd, 334th, 335th, and 336th) were equipped with F-105Ds when this variant was declared operational in 1961. Six additional wings were equipped with F-105Ds, including two in West Germany: the 36th TFW at Bitburg AB and the 49th TFW at Spangdahlem AB. Late 1962 saw F-105Ds begin equipping the 18th TFW at Kadena AB, Okinawa, followed by the 8th TFW at Itazuke AB, Japan in early 1963. (The 8th TFW moved to Yokota AB, Japan in early 1964.) F-105Ds also equipped the 23rd TFW at McConnell AFB, Kansas and the 4520th Combat Crew Training Wing (CCTW) at Nellis AFB, Nevada. The USAF originally requested 1500 F-105Ds to equip 14 wings; however, Secretary of Defense Robert McNamara reduced this order for budgetary reasons.

The heavy aircraft required a longer take off run than other USAF tactical fighters, which resulted in pilots nicknaming the Thunderchief the 'Thud.' The F-105D's large amount of avionic and hydraulic equipment required frequent servicing. The Thunderchief needed approximately 150 man-hours of maintenance for each flight hour.

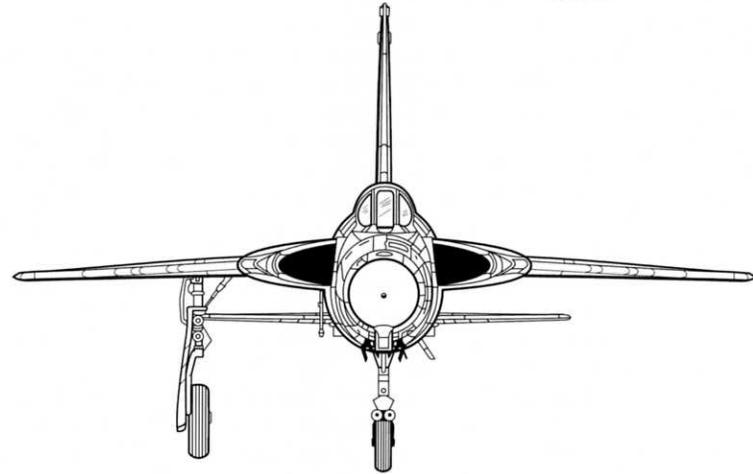
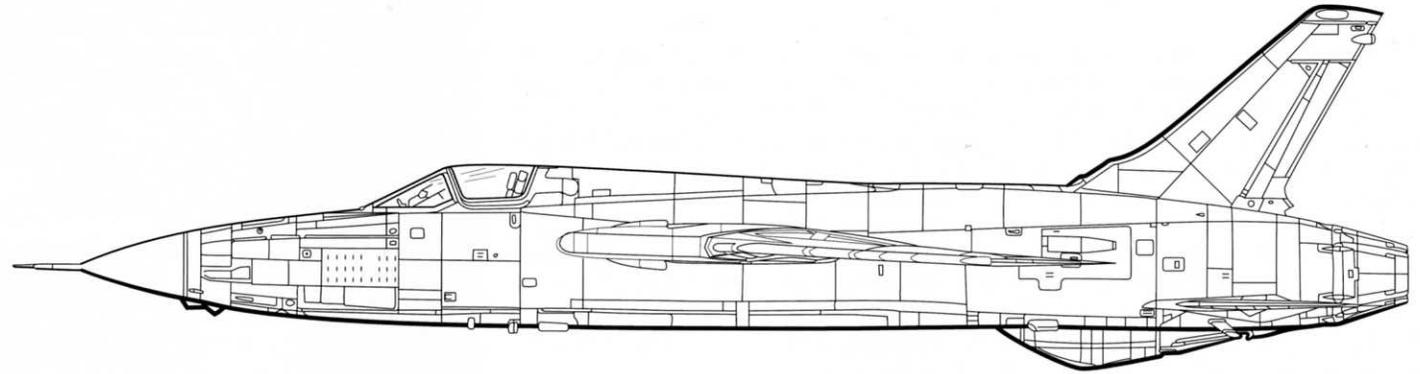
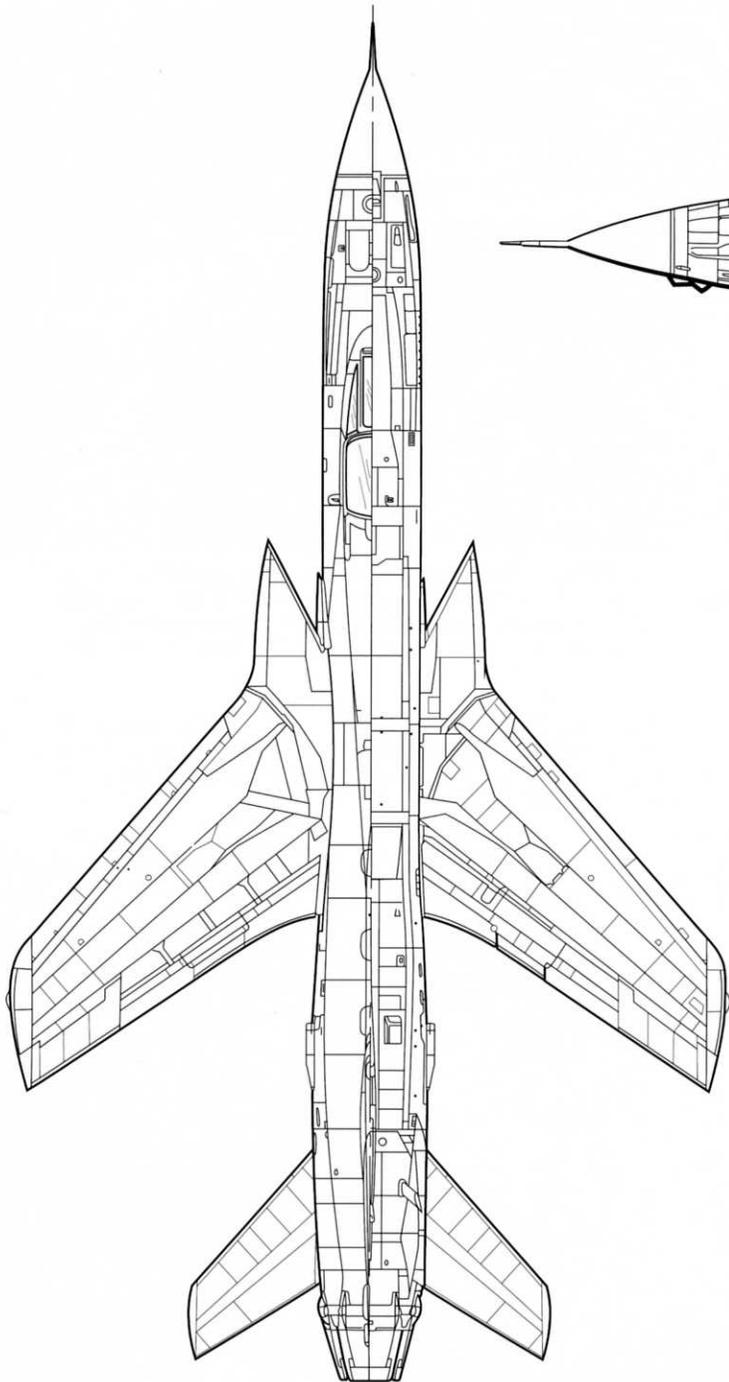
Over 60 F-105Ds were lost in a series of engine explosions and accidents between 1960 and 1965. These mishaps resulted in the USAF grounding the F-105D fleet several times for equipment modifications. Republic engineers addressed the engine explosion problem by designing two additional cooling scoops, which were installed on the aft fuselage. This retrofit was applied to F-105Bs and early production F-105Ds, and was standard on late production F-105Ds. In mid-1962, the USAF implemented Project LOOK ALIKE to bring all early F-105Ds to F-105D-25-RE standard. The project replaced wiring, fuel and hydraulic lines with updated equipment. The F-105D was also equipped to carry and fire the Martin AGM-12 Bullpup Air-to-Surface Missile (ASM) from the wing pylons. The natural metal finish was found to be prone to corrosion and to allow moisture to seep into equipment bays. Modified aircraft were painted overall aluminum lacquer (FS17178) to solve this problem. This finish



**An F-105D-5-RE (58-1163) leads a row of Thunderchiefs on the final assembly line at Republic's Farmingdale plant in early 1960. Technicians install electrical and hydraulic components into the lower starboard fuselage. Fuselages of other F-105Ds await component installation before wings and tail surfaces are mated to them. (Cradle of Aviation Museum)**

**Two F-105Ds are parked outside the main hangar doors of Republic's factory in Farmingdale. This facility was located at the edge of Republic Airfield, which was used for flight testing the Thunderchiefs prior to delivery. Republic built 610 F-105Ds for the USAF between 1959 and 1964. (Cradle of Aviation Museum)**





## Republic F-105D Thunderchief Specifications

**Wingspan:**.....34 feet 11 inches (10.6 M)

**Length:**.....64 feet 5.3 inches (19.6 M)

**Height:**.....19 feet 8 inches (6 M)

**Empty Weight:**.....26,855 pounds (12,181.4 KG)

**Maximum Weight:**...52,838 pounds (23,967.3 KG)

**Powerplant:**.....One 26,500 pound thrust Pratt & Whitney J75-P-19W afterburning turbojet engine with water injection

**Armament:**.....One 20MM M61A1 Vulcan cannon with 1028 rounds in the nose.  
Maximum of 16,500 pounds (7484.4 KG) of ordnance on one internal and five external stores stations.

### Performance:

**Maximum Speed:**..1372 MPH (2208 KM/H) at 36,090 feet (11,000.2 M)

**Service Ceiling:**....48,500 feet (14,782.8 M)

**Maximum Range:**..2390 miles (3846.2 KM)

**Crew:**.....One

(Right) Over two dozen F-105Ds are lined up on the flight testing line at Republic Airfield in June of 1960. Company technicians performed various checks of the Thunderchiefs' systems in between test flights flown by the firm's test pilots. The two tunnels on the upper left of this testing line were engine sound suppressors. These allowed technicians to run up the F-105's engine without greatly disturbing the nearby residents. Two adjacent shelters covered the forward fuselages of Thunderchiefs, which allowed servicing components in all weather conditions. (Cradle of Aviation Museum)



was replaced by the Southeast Asia (SEA) camouflage scheme from mid-1965. Republic and the USAF completed Project LOOK ALIKE by mid-1964.

Combat experience over North Vietnam from August of 1964 resulted in several field modifications to the F-105Ds deployed in the theater. The secondary hydraulic system was located close to its primary system, which made it vulnerable to enemy fire. Republic engineers devised a mechanical lock on the stabilators to keep them in the horizontal position, instead of locking the leading edge in the up position to push the Thunderchief down. A third hydraulic system was later retrofitted along the upper fuselage. This improved the margin of safety in the event the other two systems were knocked out. Radar Homing And Warning (RHAW) antennas were added to the lower nose fairing and to the vertical fin cap. These antennas alerted the pilot to the presence of Surface-to-Air Missile (SAM) and Anti-Aircraft Artillery (AAA) tracking and guidance radars. A combat camera was installed in the nose fairing's aft section to record mission results for later analysis.

Republic also proposed an upgrade of the F-105D's AN/ASG-19 Thunderstick bombing system. This more advanced version would allow for greater bombing accuracy than the existing system. The USAF approved this proposal in early 1969 and Fairchild Republic<sup>2</sup> began modifying selected Thunderchiefs to carry the Thunderstick II system.

Thunderstick II was based on the Singer/General Precision gyro-compassing attitude vertical reference system. This system worked in conjunction with modified AN/APN-131 Doppler navigation radar. Additional Thunderstick II equipment included an ITT AN/ARN-92 Long Range Navigation (LORAN) radar system and a modified R-14 radar – designated R-14K – for improved radar returns. This new system increased the F-105D's terrain avoidance and bombing accuracy over the previous Thunderstick equipment. The Thunderstick II equipment was installed inside an enlarged dorsal spine on the fuselage.

Fairchild Republic retrofitted 30 F-105Ds with the Thunderstick II system between early 1969 and July of 1971. None were sent to Southeast Asia for combat, since the USAF preferred the McDonnell Douglas F-4 Phantom II and General Dynamics F-111 for all-weather fighter-bomber missions. All Thunderstick II F-105s were assigned to the 23rd TFW at McConnell AFB, Kansas from March of 1970. These aircraft were later transferred to the 457th TFS, 301st TFW of the Air Force Reserve at Carswell AFB, Texas, where they remained in service until late 1982.

<sup>2</sup>Fairchild Hiller acquired Republic Aviation to become Fairchild Republic in 1961.

(Below) Three F-105Ds – including an F-105D-1-RE (60-0530) in the foreground – are parked at Eglin AFB. These aircraft were assigned to the 335th TFS 'Chiefs,' which deployed from their home base of Seymour Johnson AFB, North Carolina to Eglin for F-105D conversion tests. The Squadron insignia is proudly displayed along the flight line, while several other Thunderchiefs are parked aft of the three lead F-105Ds. (Cradle of Aviation Museum)



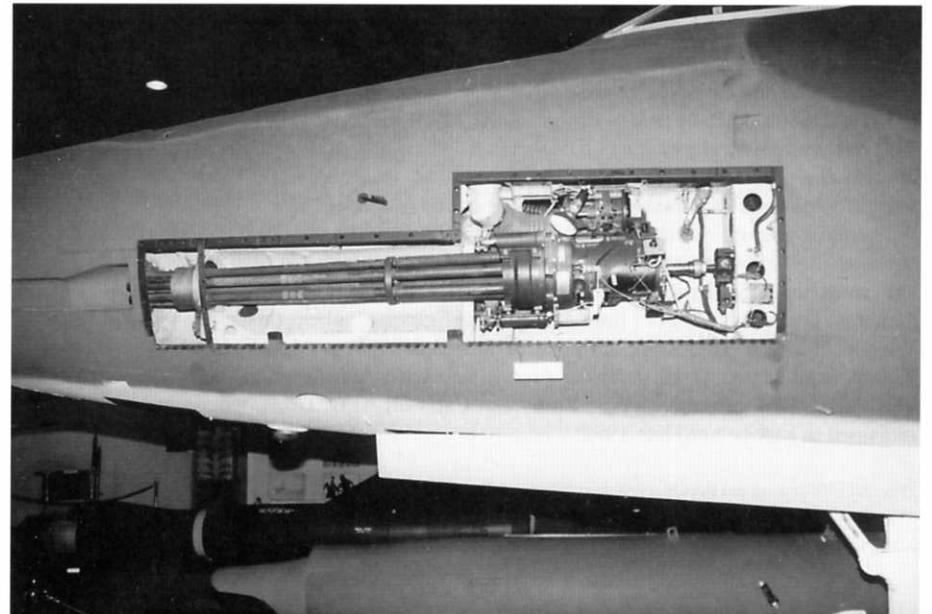


An F-105D is displayed with the variety of ordnance it could carry placed in front of the aircraft. AGM-12 Bullpup Air-to-Surface Missiles (ASMs) are mounted on the outboard wing pylons, while 500 pound (226.8 kg) bombs are loaded on the outboard wing and centerline racks. The Thunderchief's refueling probe is extended from its position on the port nose, ahead of the windshield. The light colored device ahead of the F-105D is a tactical nuclear 'shape' (inert weapon), which was usually carried in the weapons bay. (Cradle of Aviation Museum)



The F-105D's nose was increased 16.3 inches (41.4 cm) from the earlier F-105B's nose. This extra space was filled with additional avionics equipment, which gave the F-105D an all-weather capability. The 20mm cannon was retained in the same location as on the F-105B, but the lengthened nose placed the muzzle further aft of the radome. This restored Thunderchief is displayed at the Eglin AFB Museum in Valparaiso, Florida. (Dennis R. Jenkins)

Cannon access doors are removed to display the 20mm M61A1 Vulcan cannon on this restored F-105D. Thunderchiefs in service had the gun trough left in stainless steel and the gun bay was painted Zinc Chromate Green (FS34151). The six-barreled M61A1 has a muzzle velocity of 3380 feet (1030.2 m) per second and a maximum firing rate of 6000 rounds per minute. (Dennis R. Jenkins)



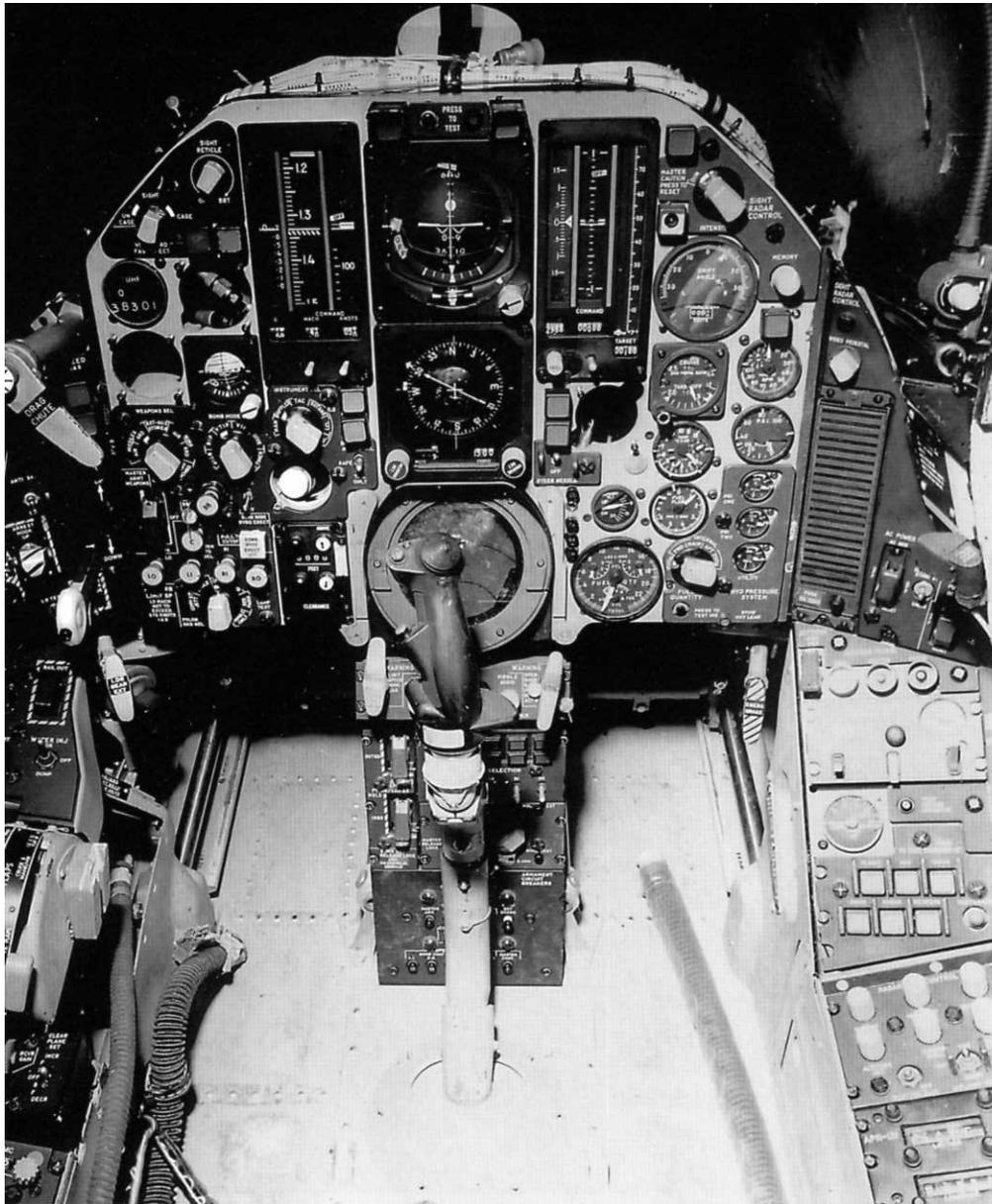


The 20mm ammunition drum was mounted on the F-105D's starboard nose, head of the cockpit. This drum held 1028 rounds of ammunition for the M61A1 Vulcan cannon. The drum access door was hinged at the top and folded upwards. A cooling vent was fitted immediately in front of the ammunition compartment. This F-105D is displayed at the American Airpower Museum, located at Republic Airport in Farmingdale, New York. (Ken Neubeck)

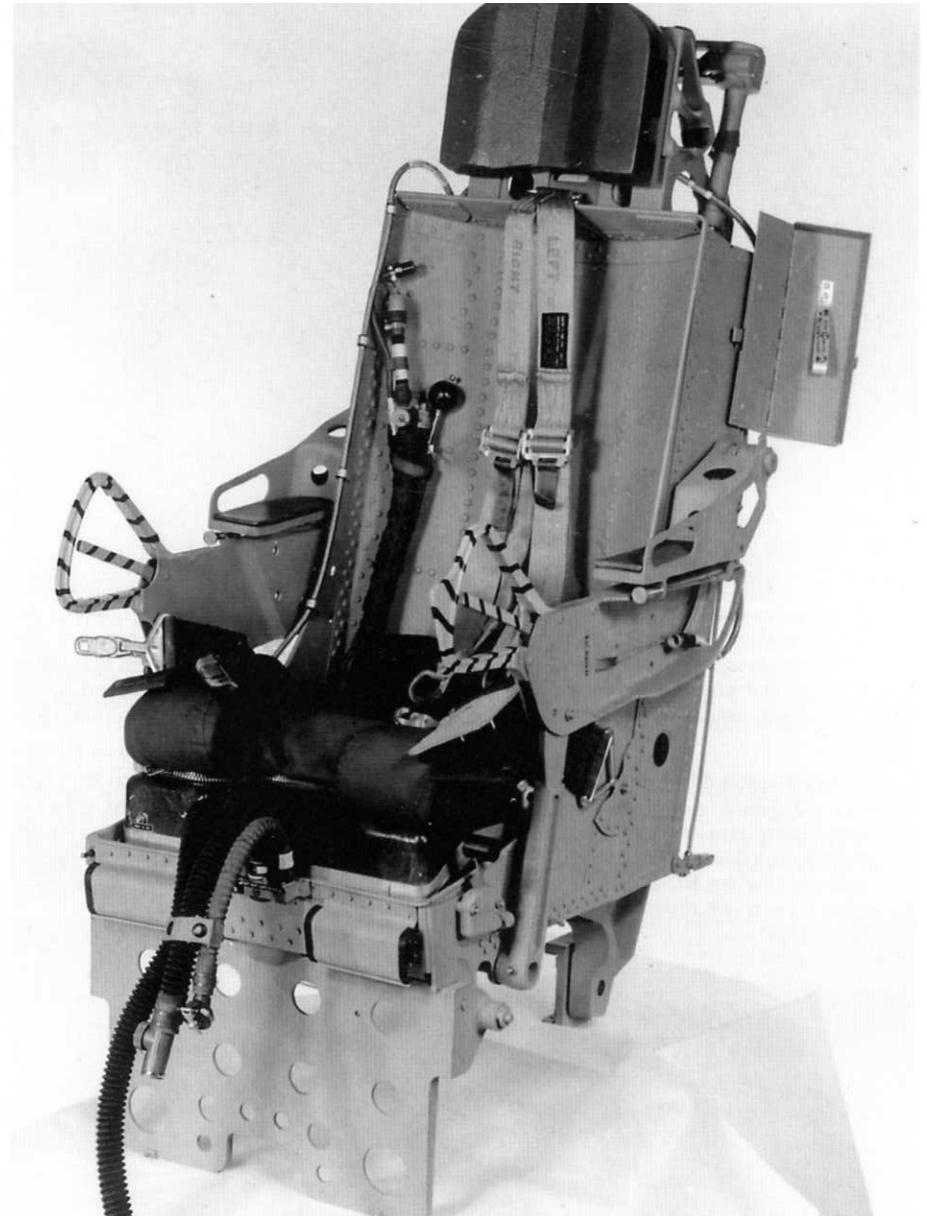
A Boeing KC-135A Stratotanker (57-2603) refuels an F-105D during a mission to South Vietnam in December of 1969. Two other Thunderchiefs fly alongside the tanker, either to refuel or to continue after refueling. These F-105Ds – armed with 750 pound bombs – were assigned to the 333rd TFS, 355th TFW at Takhli RTAB, Thailand. It was common during the Vietnam War for KC-135s to refuel several F-105s at a time, particularly since many missions were flown deep into North Vietnam. (Cradle of Aviation Museum)



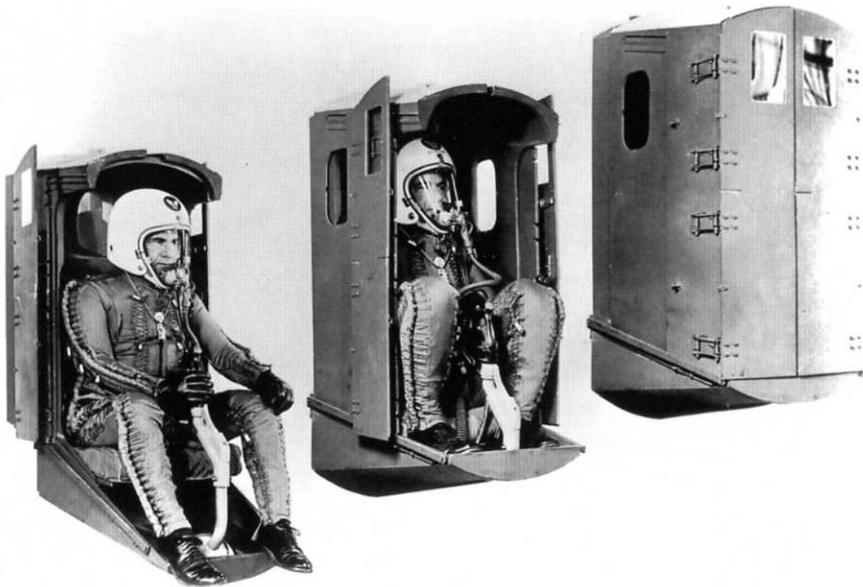
A KC-135's refueling boom is fitted to an F-105D's receptacle over Southeast Asia. This receptacle was located in the forward fuselage and allowed a higher fuel transfer rate than through the extended probe. Ground refueling was accomplished through a single point receptacle on the port lower fuselage, aft of the weapons bay. Excess fuel is vented from this F-105D through wing trailing edge ducts. The light colored circle immediately forward of the refueling receptacle is the Automatic Direction Finding (ADF) antenna. (Cradle of Aviation Museum)



The F-105D's instrument panel featured vertical tape indicators on the upper panel, which replaced several round indicators found on the earlier F-105D. Pilots found the tape indicators easier to read in flight. A round scope for the R-14 radar was installed on the lower panel, ahead of the control stick. This variant retained most of the other cockpit instruments used on the F-105D. Two port instruments and one to starboard are missing from this aircraft. The F-105D's side consoles remained the same, with the throttle quadrant to port and radio and lighting controls to starboard. (Cradle of Aviation Museum)

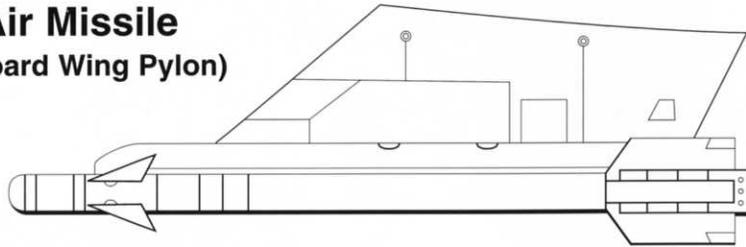


All F-105 variants used a Republic-developed ejection seat that was not used on any other USAF aircraft. It was a self-contained unit, which incorporated a seat bucket with a cushion and a headrest. The cushion enclosed a survival kit to help the pilot if he was forced down in hostile territory. The recess in the seat back held the parachute, which the pilot wore on his back. Ejection was initiated by pulling one or both yellow handles located at the seat's front. The ejection seat was primarily Cockpit Gray (FS36231), with a red headrest and Olive Drab (FS34087) cushion. (Cradle of Aviation Museum)

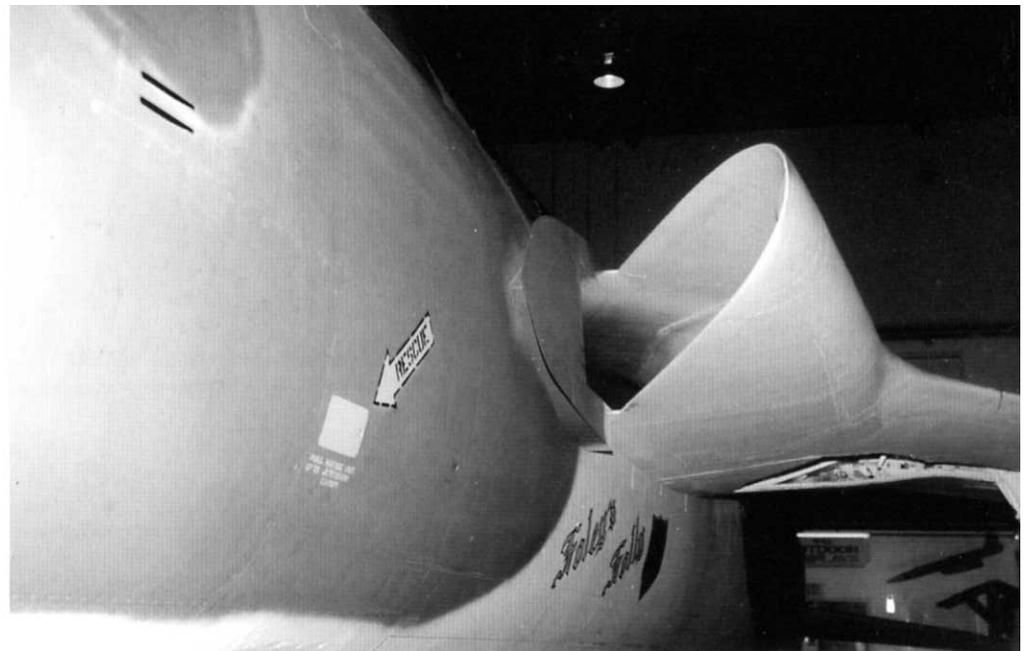
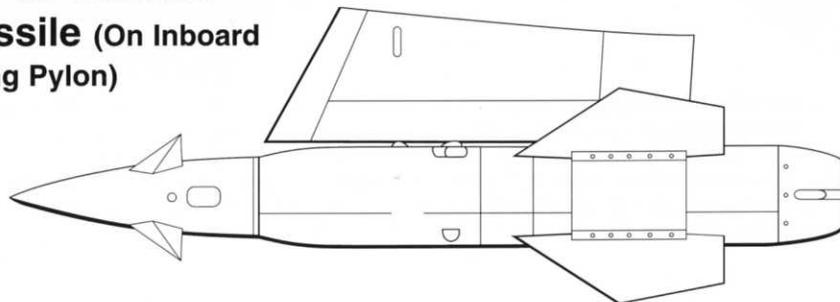


In 1968, Fairchild Republic studied the feasibility of equipping F-105s with a self-contained ejection capsule. This container would wrap around the pilot when ejection was initiated and was ejected with the seat and pilot from the aircraft. The capsule was intended to shield the pilot from the airstream. A mockup was built, but the concept was not employed on the F-105. (Cradle of Aviation Museum)

**AIM-9B Sidewinder**  
**Air-to-Air Missile**  
 (On Outboard Wing Pylon)



**AGM-12B Bullpup**  
**Air-to-Surface**  
**Missile (On Inboard**  
**Wing Pylon)**



The F-105D retained the variable engine inlets introduced on the F-105B. An air splitter plate was mounted on the fuselage side to redirect excess air from the inlet area. A computer-guided ramp deep inside the intake controlled airflow going to the J75-P-19W turbojet engine at all airspeeds. The port main landing gear well is located aft of the engine inlet. This museum aircraft's inboard landing gear door is locked closed; normally, this door was open on the ground. (Dennis R. Jenkins)

A Multiple Ejector Rack (MER) with four 750 pound (340.2 kg) M117 bombs is fitted to the centerline of this F-105D, OHIO Express (59-1771), displayed at the Eglin AFB Museum. The MER was fitted to the centerline pylon, which was mounted over the weapons bay doors. Each MER is capable of holding up to six bombs. (Dennis R. Jenkins)



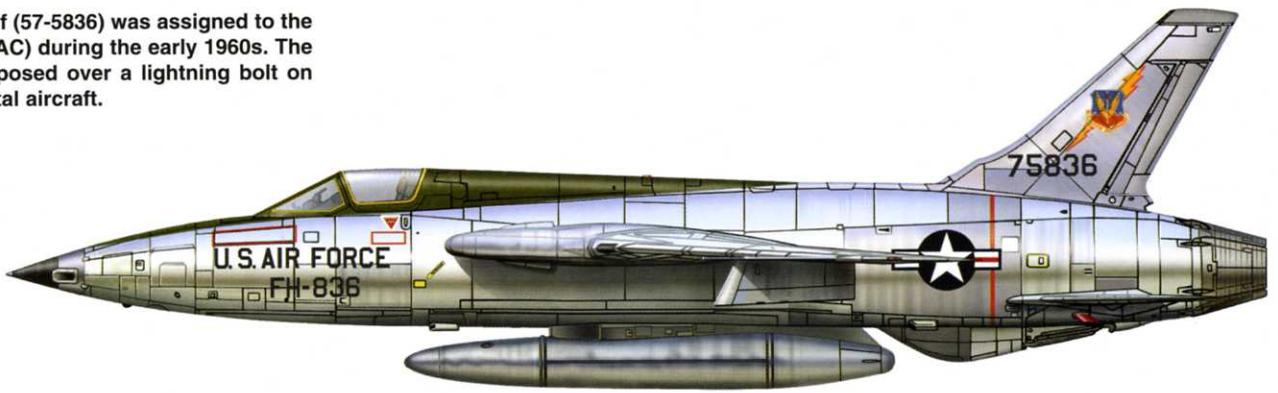


The F-105D and other Thunderchief variants used the same nose landing gear assembly. The gear strut retracted forward into its bay and was enclosed by two doors. A single wheel and tire was mounted on the strut. This restored F-105D's gear assembly is painted Gloss White (FS17875), which replaced the original Aluminum (FS17178) finish from the late 1960s. (Glen Phillips)

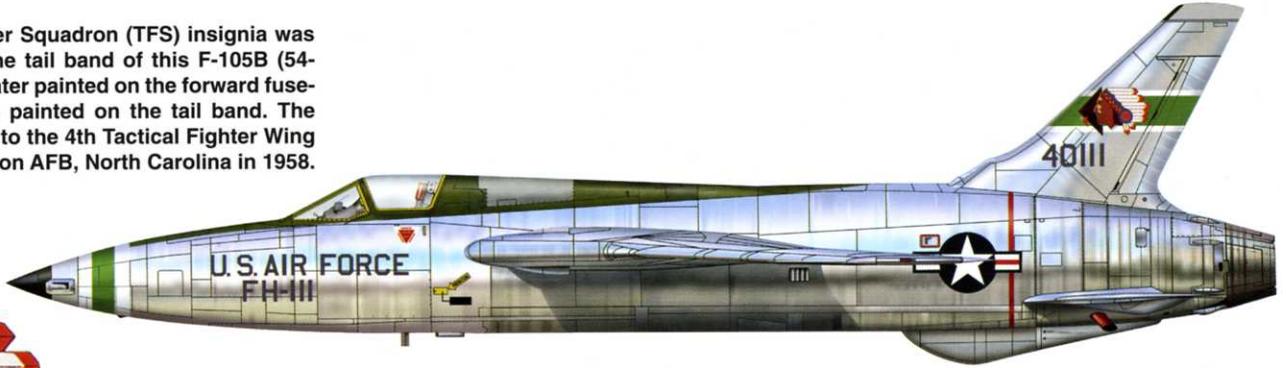


Thunderchief main landing gears were mounted in the inboard wing sections and hydraulically retracted outboard into their bays. A retraction strut from the bay connected to the main strut above and aft of the taxi light. The F-105D strut assembly appeared similar to the one fitted to early F-105Bs, but was strengthened to handle higher aircraft weights. The wheel and tire on this restored example are raised off the ground to reduce wear on these items. (Glen Phillips)

This F-105B Thunderchief (57-5836) was assigned to the Tactical Air Command (TAC) during the early 1960s. The TAC insignia is superimposed over a lightning bolt on the tail of the natural metal aircraft.



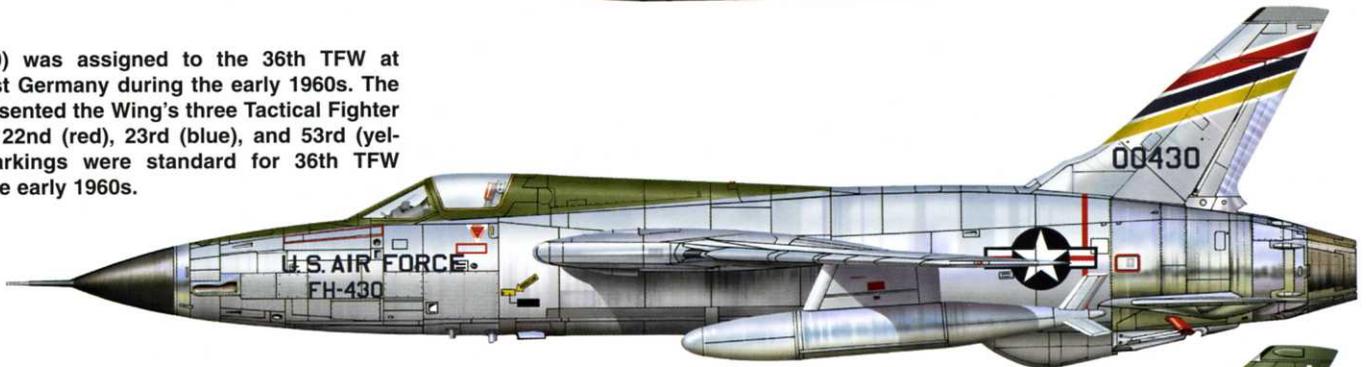
The 335th Tactical Fighter Squadron (TFS) insignia was incorrectly painted on the tail band of this F-105B (54-0111). The insignia was later painted on the forward fuselage and the TAC badge painted on the tail band. The 335th TFS was assigned to the 4th Tactical Fighter Wing (TFW) at Seymour Johnson AFB, North Carolina in 1958.



The 466th TFS, 419th TFW, Air Force Reserve flew this F-105B (HI/57-5823) from Hill AFB, Utah during the late 1970s and early 1980s. This aircraft's Southeast Asia camouflage was extended to the fuselage and wing undersurfaces.



F-105D (60-0430) was assigned to the 36th TFW at Bitburg AB, West Germany during the early 1960s. The tail stripes represented the Wing's three Tactical Fighter Squadrons: the 22nd (red), 23rd (blue), and 53rd (yellow). These markings were standard for 36th TFW F-105s during the early 1960s.



This F-105D (RK/59-1772) was assigned to the 33rd TFS, 355th TFW at Takhli RTAB, Thailand in December of 1968. The Thunderchief is armed with 750 pound (340.2 kg) bombs on the centerline and a rocket launcher on the outboard wing pylon.



F-105D (TH/60-490) was one of 30 F-105Ds retrofitted with the 'Thunderstick II' fire control system in the enlarged spine. It flew with the 475th TFS, 301st TFW, a Reserve unit at Carswell AFB, Texas in the late 1970s and early 1980s.



This F-105F (62-4423) was assigned to the 4520th Combat Crew Training Wing (CCTW) at Nellis AFB, Nevada in 1964-65. The overall aluminum lacquer finish greatly reduced the corrosion risks compared to leaving the aircraft in natural metal.



FAT FANNY was an F-105F (RK/62-4436) assigned to the 33rd TFS, 355th TFW at Korat RTAB, Thailand in December of 1968. This aircraft was assigned to Wild Weasel defense suppression duties and carried an AGM-45 Shrike anti-radiation missile on the outboard wing pylon.

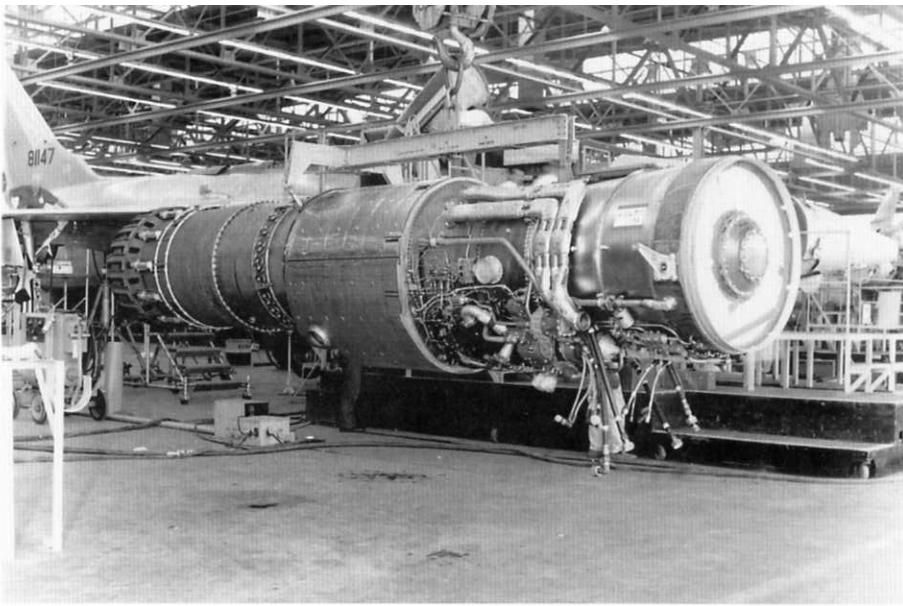


This F-105G Wild Weasel (JB/63-8275) flew with the 17th TFS, 388th TFW at Korat RTAB in 1972-73. AN/ALQ-105 Electronic Countermeasures (ECM) pods were faired into this variant's lower fuselage sides.



F-105G (GA/62-4423) was assigned to the 562nd TFS, 35th TFW at George AFB, California in September of 1979. The Wing was the last active duty F-105 unit and replaced the Thunderchief with the F-4G Phantom II in 1980.



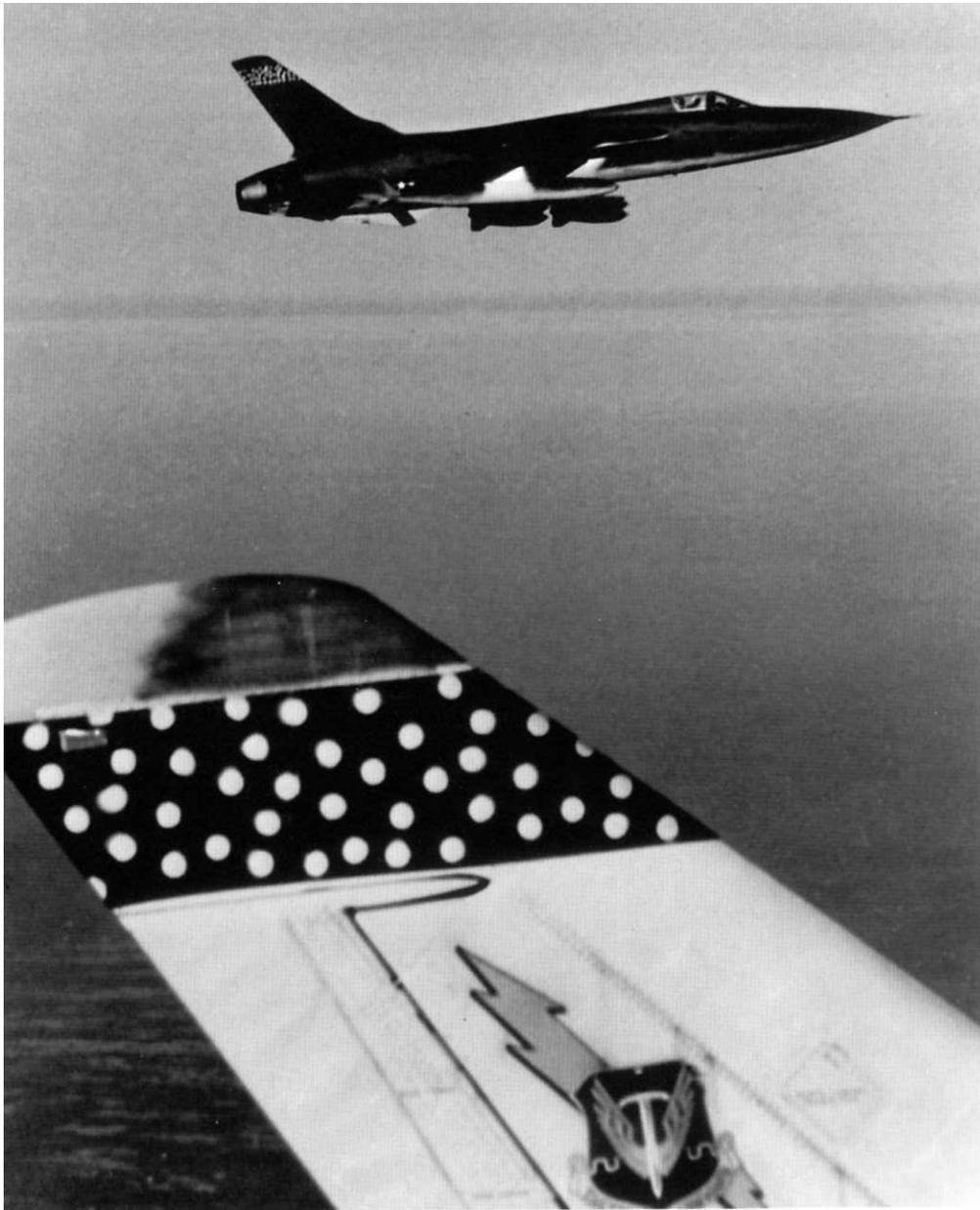


A Pratt & Whitney J75-P-19W engine is hoisted above the factory floor at Republic's Farmingdale, New York plant. The powerplant was later installed on an F-105D on the assembly line. Thunderchiefs used progressively powerful J75 variants, reaching its peak in the J75-P-19W used on F-105Ds, Fs, and Gs. Water injection and afterburning at take off allowed a thrust of 26,500 pounds, while it was rated at 24,500 pounds in normal afterburner and 14,300 pounds without reheat. (Cradle of Aviation Museum)

F-105Ds started their J75 engines using a cartridge system located in the aft port fuselage. The solid propellant cartridge emitted toxic black smoke when it was engaged. A ground crewman stands near a Thunderchief being started during preflight ground testing. The pilot's access ladder hangs from the port canopy sill. (Cradle of Aviation Museum)



Ground crew at Korat RTAB, Thailand install a new J75-P-19W engine into the F-105D's fuselage. The powerplant was wheeled into position on a Model 4000A trailer, which employed hydraulic control for raising and lowering the engine. The Thunderchief's fuselage split in two aft of the wing trailing edge, with the engine fitting inside the aft section. J75s were normally changed at every 200 flight hours; however, constant high speed and low altitude flying in Southeast Asia reduced this time to 125 hours. (Cradle of Aviation Museum)



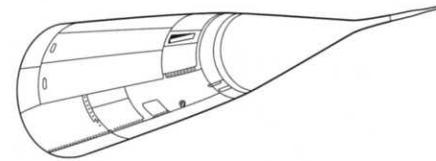
Two 335th TFS, 4th TFW F-105Ds fly in formation early in Operation ROLLING THUNDER – the 1965 to 1968 air campaign against North Vietnam. The far aircraft was repainted in the Southeast Asia camouflage, while the near Thunderchief retains its aluminum lacquer finish. Painted on the near aircraft's tail is the Tactical Air Command (TAC) insignia, superimposed on a yellow and red lightning bolt. F-105s were retrofitted with Radar Homing And Warning (RHAW) antennas on the fin tips from late 1965. (Cradle of Aviation Museum)



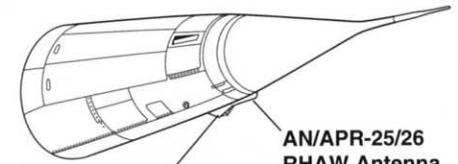
*Big Sal* (RE/61-086) was an F-105D assigned to the 44th TFS, 355th TFW in February of 1970. It is flying over South Vietnam while returning from a mission to Takhli RTAB, Thailand. The front of the lower nose fairing housed an AN/APR-25/26 RHAW antenna, while a rear facing motion picture camera in the aft fairing section filmed attacks for later study. A rear-facing AN/APR-25/26 antenna was mounted on the fin tip. (Cradle of Aviation Museum)

## Nose Development

Early F-105D



Later F-105D

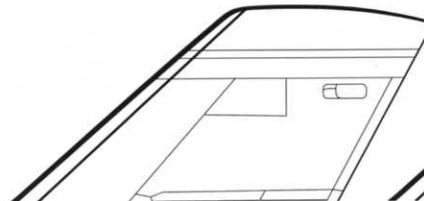


Rear-Facing Strike Camera

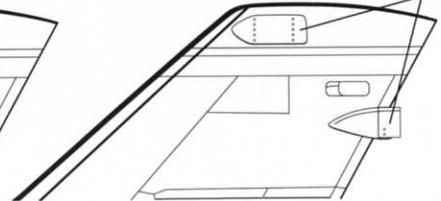
AN/APR-25/26 RHAW Antenna

## Fin Cap Development

Early F-105D



Later F-105D

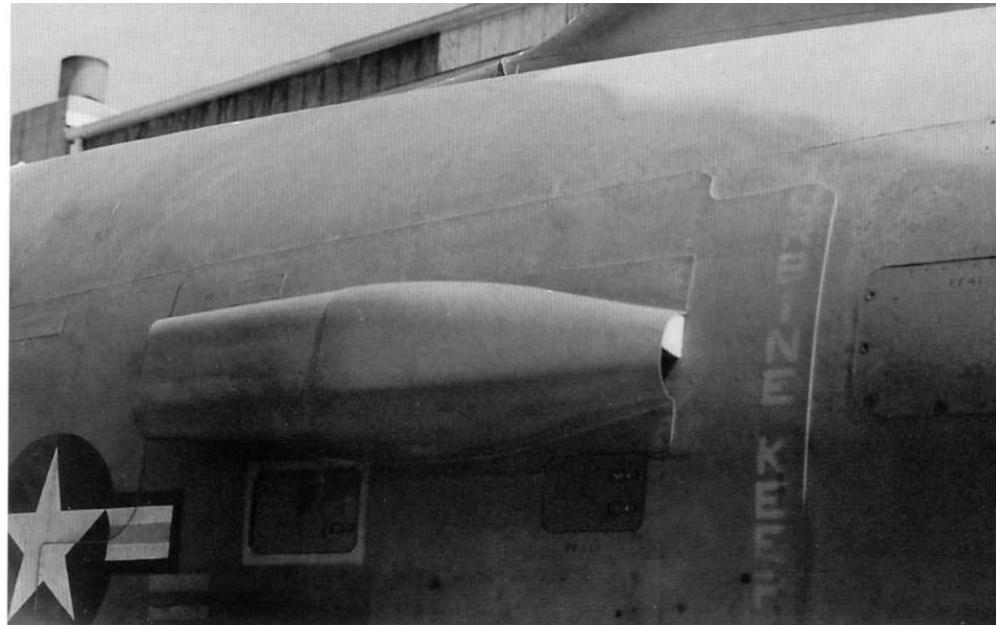


AN/APR-25/26 RHAW Antennas



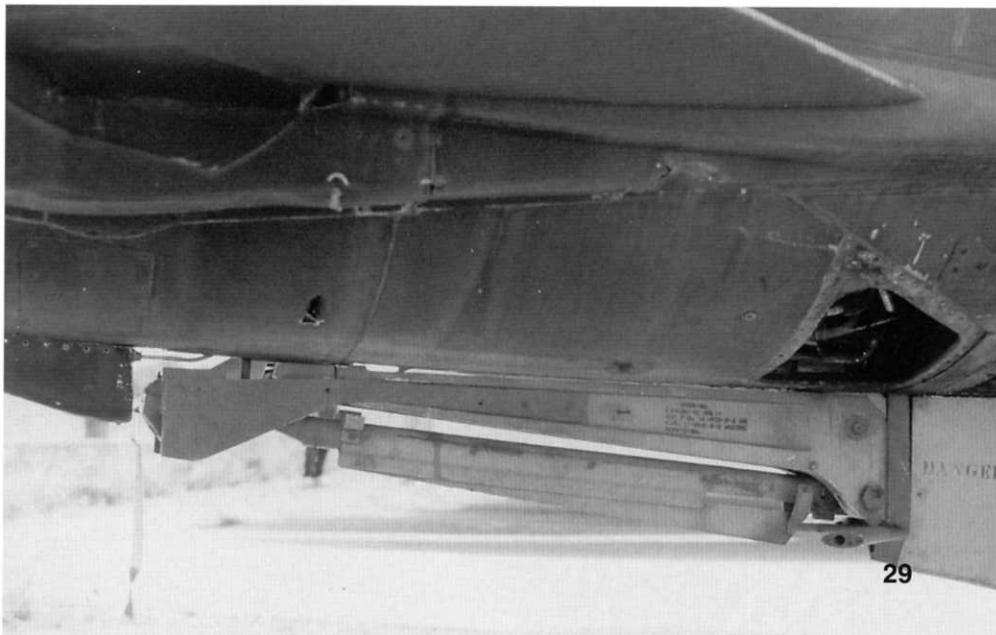
A trio of 355th TFW F-105Ds return to Takhli RTAB following a mission in early 1970. The two nearest aircraft (RE/61-076 and RE/62-4361) were assigned to the 44th TFS, while the far Thunderchief (RU/59-1731) was with the 357th TFS. Each aircraft is fitted with 450 gallon (1703.4 L) fuel tanks under the wings and a MER on the centerline pylon. (Cradle of Aviation Museum)

The brake parachute door has opened on this F-105D (59-1771) displayed at the Eglin AFB Museum. Ground crewmen closed this spring-loaded door after reloading the parachute. The lower speed brake petal normally lowered after hydraulic pressure bled off minutes after engine shut down, while the other three petals have slightly opened. (Dennis R. Jenkins)



Several engine fires early in the Thunderchief's service career were traced to inadequate cooling air in the afterburner section. In 1964, Fairchild Republic added two cooling ducts to the aft fuselage – one each to port and to starboard– which greatly reduced the fire risk. It was standard on late production F-105Ds and was retrofitted to earlier aircraft. (Ken Neubeck)

An arresting hook was mounted in the aft section of the F-105's ventral fin. If the Thunderchief experienced brake failure on landing, this hook was deployed to engage arresting cables strung across the runway's end. The arresting hook was standard on all production Thunderchiefs. (Ken Neubeck)





This Thunderchief (61-0080) is being fitted with the Thunderstick II bombing system at Fairchild Republic's Farmingdale plant in August of 1968. The airframe was disassembled, inspected, and refurbished during this upgrade procedure. Fairchild Republic modified 30 F-105Ds with Thunderstick II through July of 1971. (Cradle of Aviation Museum)

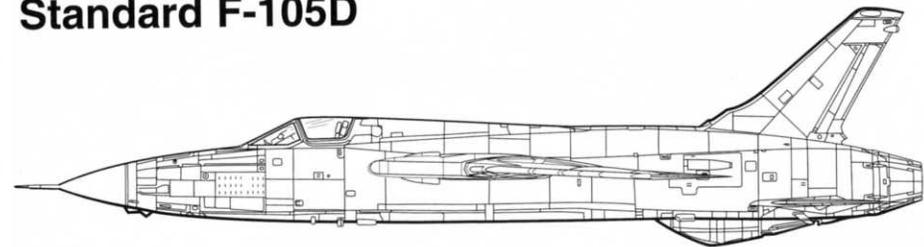
A Thunderstick II-equipped F-105D (TH/61-100) is preserved at the Naval Air Station (NAS) Fort Worth Joint Reserve Base (JRB) Museum in Texas. The JRB was named Carswell AFB when this aircraft flew with the 475th TFS, 301st TFW, Air Force Reserve at this facility from 1972 until 1981. The 475th TFS was the only Squadron to operate this F-105D sub-variant. (Glen Phillips)



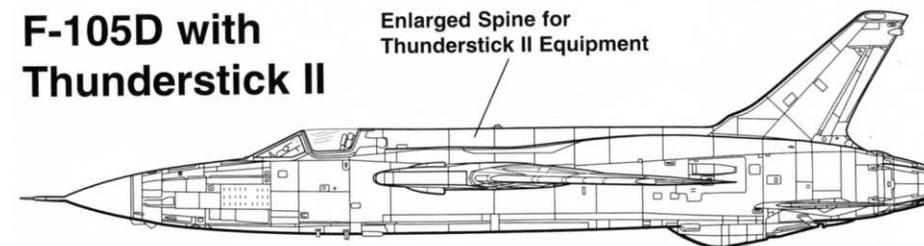
The same F-105D is parked on the Fairchild Republic ramp in Farmingdale in July of 1969. The fuselage spine was enlarged to accommodate the Thunderstick II weapons control and navigation equipment. Although this system improved the Thunderchief's bombing accuracy in all weather conditions, none of the 30 Thunderstick II-equipped F-105Ds saw action over Vietnam. (Cradle of Aviation Museum)

## F-105D Development

### Standard F-105D



### F-105D with Thunderstick II

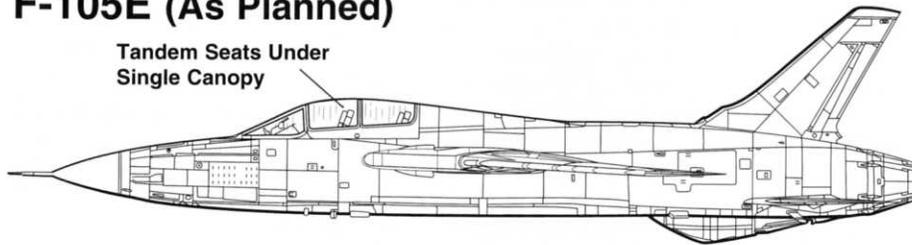


# F-105E Thunderchief

In 1958, Republic initiated studies into a new two-seat version of the F-105. This drew from the company's earlier experience in developing the cancelled F-105C two-seat derivative of the F-105B. The F-105C mockup was brought out of storage and F-105D instruments installed in both cockpits. A single Plexiglas canopy was intended to cover the fore and aft cockpits in the same manner as the F-105C. Other dimensions remained the same as for the standard F-105D.

The US Air Force expressed interest in this concept and ordered 26 **F-105E** aircraft in late 1958. The next year, the USAF cancelled this aircraft as a cost saving measure. This allowed Republic to focus its efforts on F-105D production. No F-105Es were completed; however, several completed subassemblies were installed in F-105Ds on Republic's production line.

## F-105E (As Planned)

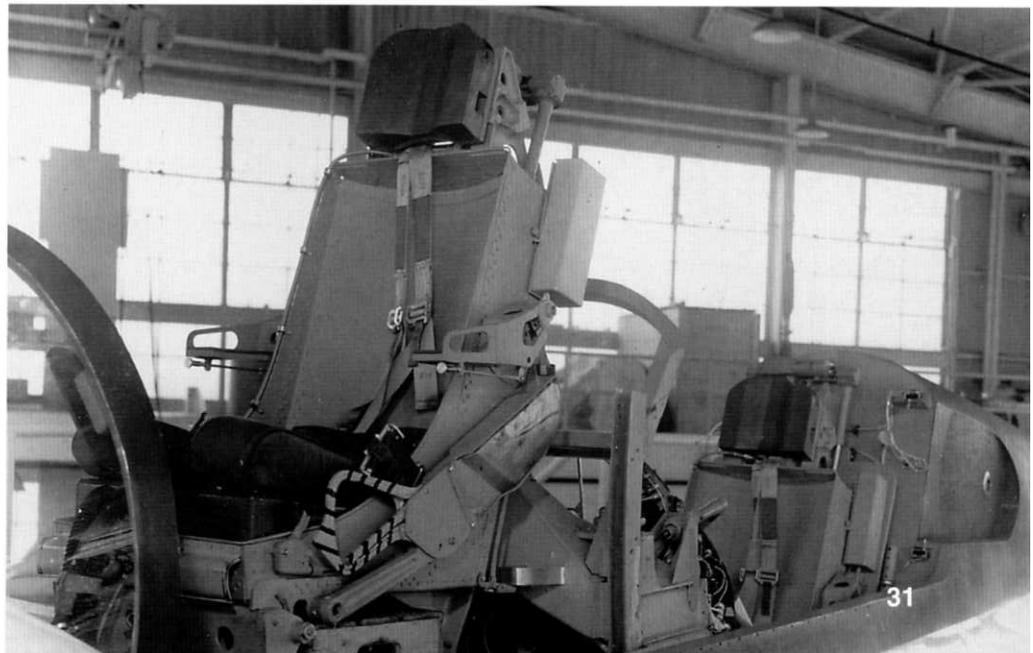


The F-105C mockup was pulled from storage and used as the F-105E mockup in 1958. Each crewman had an ejection seat and dual flight controls, although the aft cockpit had fewer instruments than the front. A platform connected to stairs allowed visitors to inspect the cockpits. (Cradle of Aviation Museum)



A Republic artist's conception shows the F-105E Thunderchief taking off, armed with bombs on the wing pylons. This two-seat trainer variant was proposed in 1958 and was the same length as the F-105D. A single Plexiglas canopy was designed to cover both crewmen. (Cradle of Aviation Museum)

The forward ejection seat was raised off the cockpit floor on the F-105E mockup, while the aft seat was in its regular position. The front seat was elevated for display purposes. The USAF ordered 26 F-105Es in 1958, but cancelled this order for budgetary reasons one year later. (Cradle of Aviation Museum)



# F-105F Thunderchief

Although the US Air Force (USAF) cancelled the F-105E in 1959, the need for a two-seat Thunderchief remained apparent. Pilots slotted to fly F-105Ds trained on two-seat North American F-100F Super Sabre conversion trainers, but this aircraft lacked the F-105's difficult flight characteristics and F-100Fs were in short supply by the early 1960s. In May of 1962, the US Department of Defense authorized development of a two-seat variant of the F-105D. The Air Force ordered 143 **F-105F** two-seat aircraft, which replaced a comparable number of F-105Ds previously on order.

The F-105F differed from the earlier F-105C and F-105E concepts in that the fuselage was lengthened to accommodate the second seat, without reducing internal fuel capacity. A 30.7 inch (78 cm) section was added to the F-105F's forward fuselage, which increased the fuselage length from the F-105D's 64 feet 5.3 inches (19.6 m) to 67 feet (20.4 m). The aft cockpit was fitted with dual flight controls and a separate aft hinged canopy. The student sat in the front cockpit while the instructor flew from the aft cockpit, although his forward visibility was greatly limited. The F-105F retained the F-105D's avionics, including the ASG-19 Thunderstick fire control system and the R-14A radar. Some forward fuselage electrical components were rearranged to make room for the second cockpit.

Its wingspan remained at 34 feet 11 inches (10.6 m); however, the height was increased from the F-105D's 19 feet 8 inches (6 m) to 20 feet 1 inch (6.1 m). This difference was due to the F-105F's 5-inch (12.7 cm) taller vertical tail, which provided greater stability with the increased fuselage length. The vertical tail's chord was also increased for added stability.

**The first F-105F (62-4412) taxis at Republic Airfield in Farmingdale prior to making its maiden flight on 11 June 1963. A sheet metal nose cone tipped by an instrument boom was fitted instead of a radome. The USAF replaced an order for 143 F-105Ds with a like number of two-seat F-105Fs in May of 1962. (Cradle of Aviation Museum)**



Combining the greater length and height with the second cockpit increased the F-105F's weight over the single-seat F-105D. Empty weight went from 26,855 pounds (12,181.4 kg) to 30,419 pounds (13,798.1 kg), while maximum weight increased from 52,838 pounds (23,967.3 kg) to 54,580 pounds (24,757.5 kg). The additional weight required installation of strengthened main landing gears.

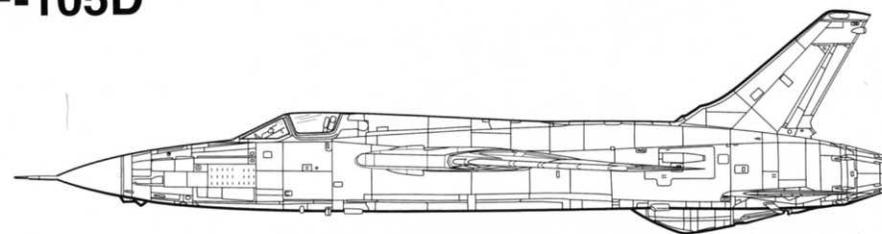
The F-105F retained the F-105D's 26,500 pound thrust Pratt & Whitney J75-P-19W afterburning turbojet engine with water injection for take off. The powerplant's normal thrust with afterburning only was 24,500 pounds, while its dry (non-afterburning) thrust rating was 14,300 pounds. Installing the second cockpit in a lengthened forward fuselage allowed the F-105F's internal fuel capacity to remain at 1026 gallons (3883.3 L) of JP-4 fuel in three fuselage tanks. Both the retractable flight-refueling probe and the tanker boom receptacle were installed in the forward fuselage for using either drogue or boom-equipped tankers. A 390 gallon (1476.3 L) fuel tank often replaced the nuclear weapon inside the weapons bay. Like the F-105D, the F-105F could carry external fuel in two 450 gallon (1703.4 L) underwing tanks and one 650 gallon (2460.5 L) centerline tank.

Performance figures for the F-105F were nearly identical to the earlier F-105D. This new variant had a maximum speed of 1372 MPH (2208 KM/H) – Mach 2.08 – at 36,090 feet (11,000.2 m), or 836 mph (1345.4 KM/H) – Mach 1.1 – at sea level. It had a service ceiling of 48,500 feet (14,782.8 m) and a tactical radius of 920 miles (1480.6 km) on full internal and external fuel, while its ferry range amounted to 2090 miles (3363.4 km) – 300 miles (482.8 km) less than the F-105D.

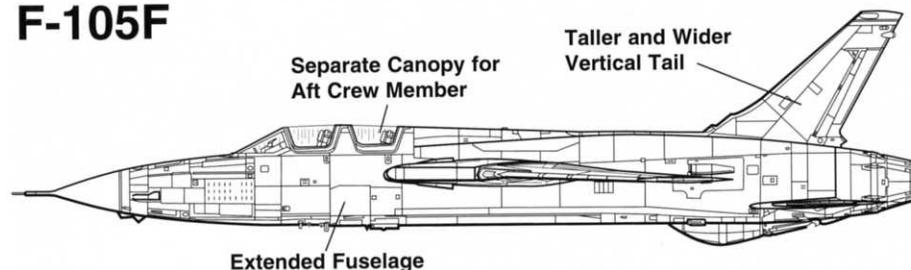
This variant retained the single nose-mounted 20MM M61A1 Vulcan cannon with 1028 rounds of ammunition. F-105Fs could carry up to 16,750 pounds (7597.8 kg) of ordnance on five external stores stations (four wing and one centerline). These stations carried high explosive bombs, fire bombs, Air-to-Surface Missiles (ASMs), Air-to-Air Missiles (AAMs), and Electronic Countermeasures (ECM) pods.

The F-105F prototype (62-4412) was rolled out of Republic's Farmingdale plant on 23 May

## F-105D



## F-105F



1963, which – due to the high commonality of F-105D components – was 40 days ahead of schedule. This aircraft first flew on 11 June and exceeded Mach 1.15 on this flight. Early flight tests indicated similar reliability problems to the F-105D, resulting in F-105Fs receiving the same Project LOOK LIKE modifications as the earlier single-seat aircraft. The first operational F-105F was accepted by the 4th TFW at Seymour-Johnson AFB, North Carolina on 23 December 1963. At least one F-105F was assigned to each F-105D squadron for proficiency training. The last of 143 F-105Fs (63-8366) was delivered to the USAF in January of 1965, which completed Thunderchief production at 833 aircraft.

Many F-105Fs were deployed to Southeast Asia and saw action over Vietnam from 1964. Most of these aircraft flew bombing missions alongside single-seat F-105Ds, but others were employed in the Wild Weasel role for Suppression of Enemy Air Defenses (SEAD). ECM and Radar Homing And Warning (RHAW) equipment were added to track and attack North Vietnamese air defense radar and Surface-to-Air Missile (SAM) sites. Texas Instruments AGM-45 Shrike Anti-Radiation Missiles (ARMs) were mounted on the outer wing pylons to engage these radars. The General Dynamics AGM-78A Standard ARM joined the Shrike in the Wild Weasel armory from 1968. Cluster bombs were also carried to drop on North Vietnamese radar and SAM sites. The aft cockpit was optimized for the Electronic Warfare Officer (EWO), or 'Bear,' to operate this equipment. Republic modified 86 F-105Fs to Wild Weasel III standard from January of 1966. These aircraft were unofficially designated **EF-105F**s until June of 1967, when it was dropped in favor of **F-105F (WW)**.

After the Vietnam War ended in 1973, surviving F-105Fs remained in service alongside F-105Ds. These aircraft remained in Air Force Reserve and Air National Guard service until the early 1980s.

An F-105F deploys its brake parachute on landing at a base in West Germany on 27 November 1963. The 20 foot (6.1 m) diameter chute canopy reduced the Thunderchief's landing roll. F-105Fs served alongside F-105Ds with the 36th TFW at Bitburg AB and the 49th TFW at Spangdahlem AB from 1963 until 1967. (Cradle of Aviation Museum)



Air Force flight and ground crews prepare the initial F-105F (62-4412) for its delivery flight from Farmingdale on 21 June 1963. One of the crewmen inspects the nose landing gear bay for any problems. The F-105F's fuselage was lengthened 30.7 inches (78 cm) to accommodate the second seat, while retaining the F-105D's internal fuel capacity of 1026 gallons (3883.8 L). (Cradle of Aviation Museum)

A Fairchild Republic pilot prepares to board the third from last last production F-105F (63-8364) prior to departing Farmingdale on 9 January 1965. A technician performs last minute checks near the aft cockpit. The company apparently used building ladders as temporary crew access ladders. The red rectangle outline above U.S. AIR FORCE is the aerial refueling probe door. (Cradle of Aviation Museum)





The F-105F's aft cockpit had fewer instruments than the forward cockpit, which was identical to the F-105D cockpit. The light blue and black artificial horizon was mounted on the upper center of the panel. Full flight controls were provided to allow the occupant – either an instructor pilot or an Electronic Warfare Officer (EWO) on Wild Weasel missions – to fly the F-105F if the pilot was incapacitated. (Cradle of Aviation Museum)



An F-105F (63-8364) prepares to take off from Republic Airfield on 9 January 1965. A 450 gallon (1703.4 L) fuel tank is mounted under the starboard wing and a 650 gallon (2460.5 L) tank is fitted to the centerline. F-105Fs were originally finished in aluminum lacquer (FS17178), with Olive Drab (FS34087) anti-glare panels on the upper fuselage. (Cradle of Aviation Museum)

An F-105F (ME/63-8300) is parked on a dispersal point at McConnell AFB, Kansas in October of 1969. It was assigned to the 562nd TFS, 23rd TFW, which performed conversion training for the remaining Thunderchiefs in USAF service. From late 1965, this and other F-105Fs were retrofitted with nose and tail RHAW antennas and nose-mounted strike cameras.



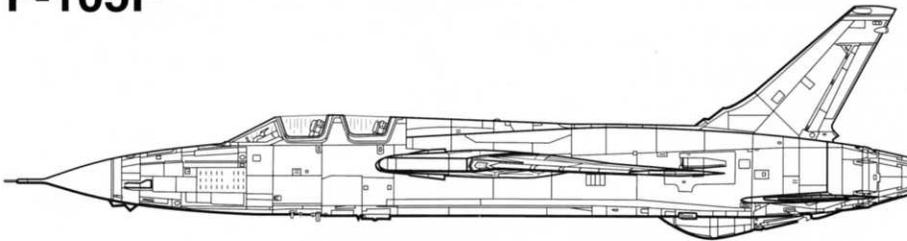
# F-105G Thunderchief

In 1967, the US Seventh Air Force in Southeast Asia ordered all F-105Fs tasked with a mission into North Vietnam to carry at least one Electronic Countermeasures (ECM) pod. The Thunderchiefs used either the Hughes ALQ-71 or the General Electric ALQ-87 pods, which were mounted on one of the outboard wing pylons. An AGM-45 Shrike ARM was fitted to the other outboard pylon and fuel tanks were located on the inboard wing pylons, which left the centerline pylon free for ordnance. The ECM pod helped the Thunderchief counter North Vietnamese radars, but denied it another weapon against surface targets.

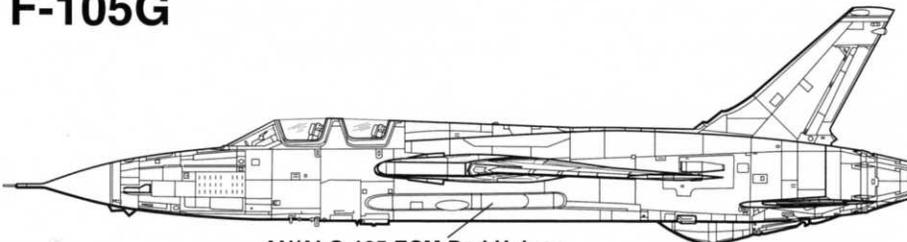
Fairchild Republic, Westinghouse, and the USAF teamed up to devise a solution in the fall of 1967. Their solution was to split a Westinghouse ALQ-101 ECM pod in half and mount each half along the lower fuselage of an F-105F, above the weapons bay. The AN/ALQ-101 modification was originally designated QRC-380 before it was redesignated AN/ALQ-105. Fairchild Republic also replaced the F-105F's Itek AN/PR-25/26 RHAW system with the improved Itek AN/APR-35/36 RHAW set. Four antennas for these systems were mounted immediately aft of the radome. A lower nose housing immediately aft of the radome housed a combat camera for recording mission results for later study. A Loral AN/ALR-31 RHAW was installed with antennas on the wingtips. Additionally, a Bendix APS-107 target acquisition system was installed in the fuselage. Upgraded displays for the EWO were fitted to the aft cockpit; however, processing the increased amount and quality of information greatly taxed the already busy 'Bear.'

The USAF designated this upgraded aircraft the **F-105G** and authorized modifying 54 F-105Fs to this standard on 23 February 1970. It was normally armed with two Shrikes on the outboard wing pylons and one AGM-78 Standard ARM on the port inboard pylon. A 450 gallon (1703.4 L) fuel tank was located on the starboard inboard pylon and a 600 gallon (2271.2 L) tank was mounted on the centerline. The 20MM M61A1 Vulcan cannon with 1028 rounds of ammunition was retained in the nose.

## F-105F



## F-105G



AN/ALQ-105 ECM Pod Halves  
Along Lower Fuselage (Port and  
Starboard)

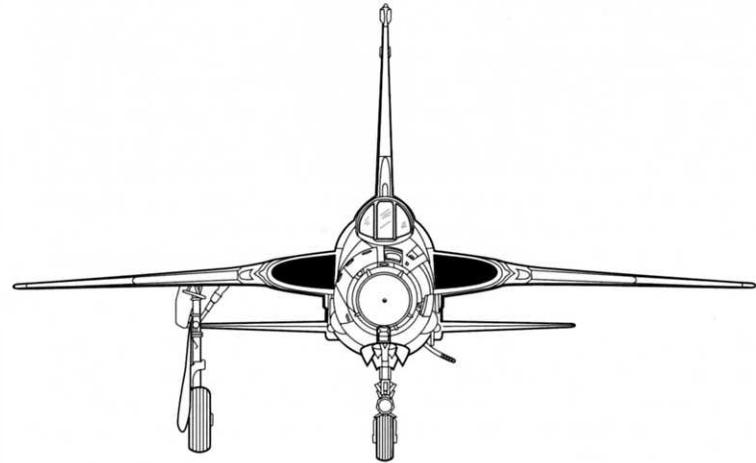
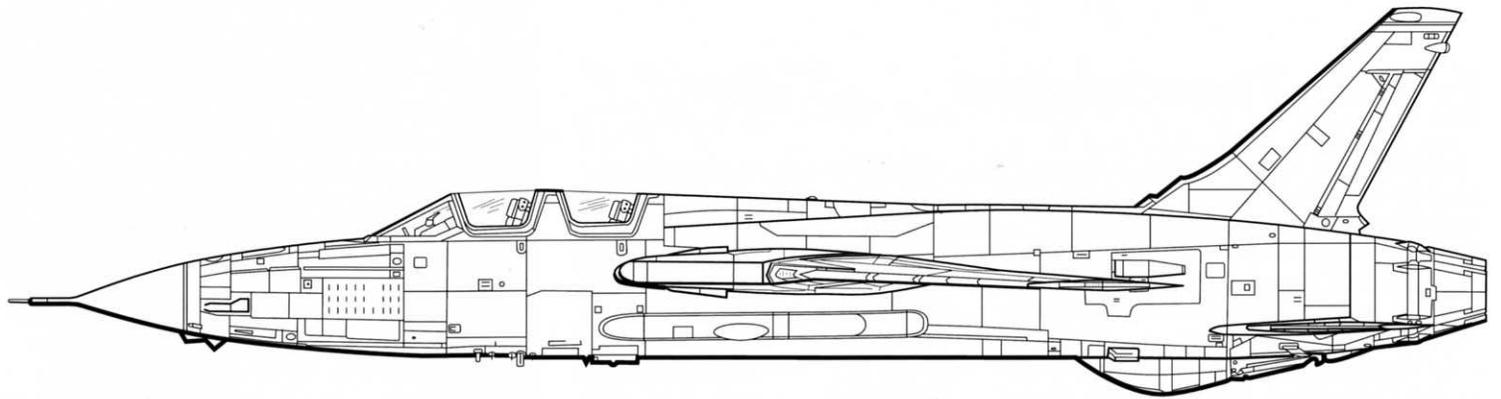
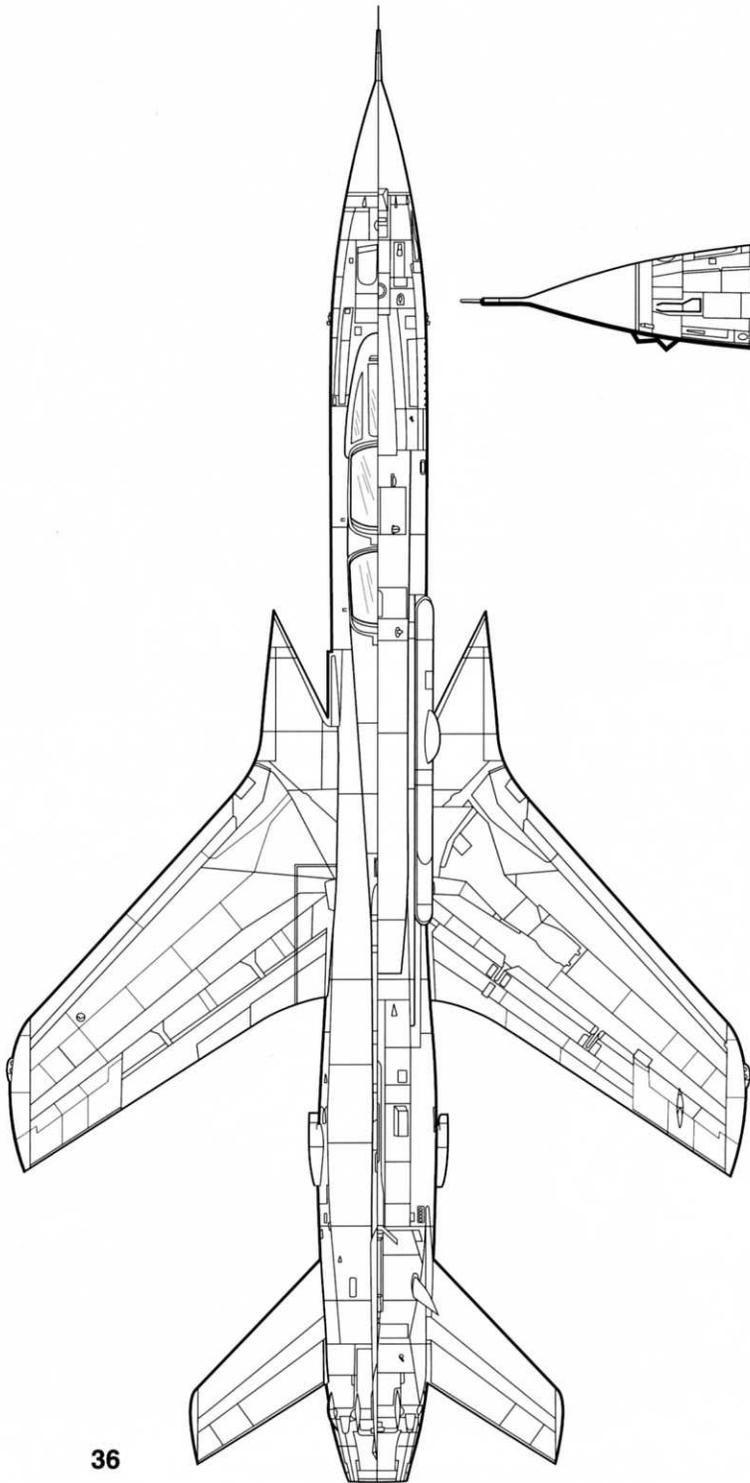
The additional electronic warfare equipment increased the F-105G's empty weight from the F-105F's 30,419 pounds (13,798.1 kg) to 31,279 pounds (14,188.2 kg). Some of this equipment displaced nine gallons (34.1 L) of internal fuel, reducing the F-105G's internal fuel capacity from 1026 gallons (3883.8 L) to 1017 gallons (3849.8 L). This combined with the 390 gallon (1476.3 L) weapons bay tank and the 650 gallon centerline and 450 gallon starboard wing external tanks for a total fuel capacity of 2507 gallons (9490 L). The reduced fuel capacity brought the F-105G's maximum unrefueled range down to 1493.7 miles (2403.8 km). Other dimensions and performance figures remained virtually identical to the standard F-105F.

Conversion of 54 F-105Fs to F-105G standard began in early 1970, with the first example received by Tactical Air Command (TAC) on 9 June 1970. Modification work was performed by Fairchild Republic at Farmingdale, New York and by the Air Force at McClellan AFB, California through 1972. F-105Gs were deployed to Korat RTAB, Thailand in mid-1970 and were originally assigned to the 44th TFS, 355th TFW. In late 1970, the aircraft were reassigned to the 6010th Wild Weasel Squadron (WWS) at Korat, which was designated the 17th WWS in 1971. These Thunderchiefs – joined by others assigned to the 561st TFS – flew Wild Weasel missions over North Vietnam for the remainder of the conflict.

The last F-105Gs departed Southeast Asia on 29 October 1974 and were reassigned to the 35th TFW at George AFB, California. This Thunderchief variant stayed with the 35th TFW until its replacement by the McDonnell Douglas F-4G Phantom II in 1980. Surviving F-105Gs flew with the 128th TFS, 116th TFW, Georgia ANG from 1980 until the last Thunderchief flight on 23 May 1983.

**An F-105G (62-4434) is parked at Eglin AFB, Florida on 5 May 1970. This aircraft was one of 54 F-105Fs modified from early 1970. Triangular AN/APR-35/36 RHAW antennas are mounted immediately aft of the radome. The AN/ALQ-105 ECM pod halves are installed along the lower fuselage, below the engine intakes. F-105Gs normally carried a 450 gallon tank under the starboard wing and a 650 gallon tank on the centerline. (USAF)**





## Republic F-105G Thunderchief Specifications

**Wingspan:**.....34 feet 11 inches (10.6 M)

**Length:**.....67 feet (20.4 M)

**Height:**.....20 feet 1 inch (6.1 M)

**Empty Weight:**.....31,279 pounds (14,188.2 KG)

**Maximum Weight:**...54,580 pounds (24,757.5 KG)

**Powerplant:**.....One 26,500 pound thrust Pratt & Whitney J75-P-19W afterburning turbojet engine with water injection.

**Armament:**.....One 20MM M61A1 Vulcan cannon with 1028 rounds in the nose. Maximum of 16,500 pounds (7484.4 KG) of ordnance on one internal and five external stores stations.

### Performance:

**Maximum Speed:**..1372 MPH (2208 KM/H) at 36,090 feet (11,000.2 M)

**Service Ceiling:**....48,500 feet (14,782.8 M)

**Maximum Range:**..1493.7 miles (2403.8 KM)

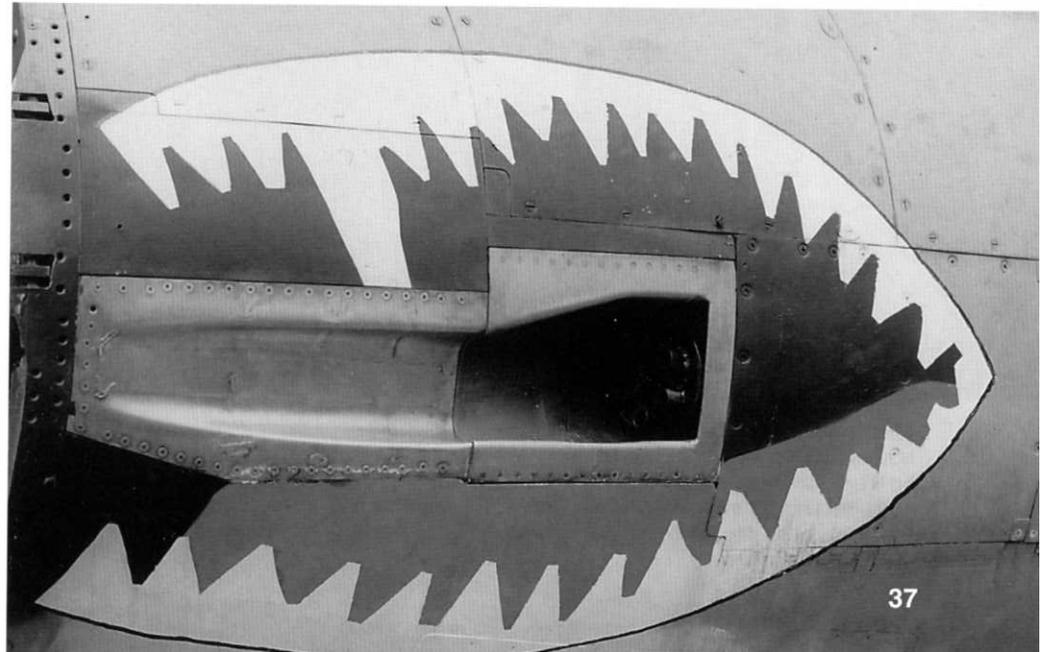
**Crew:**.....Two

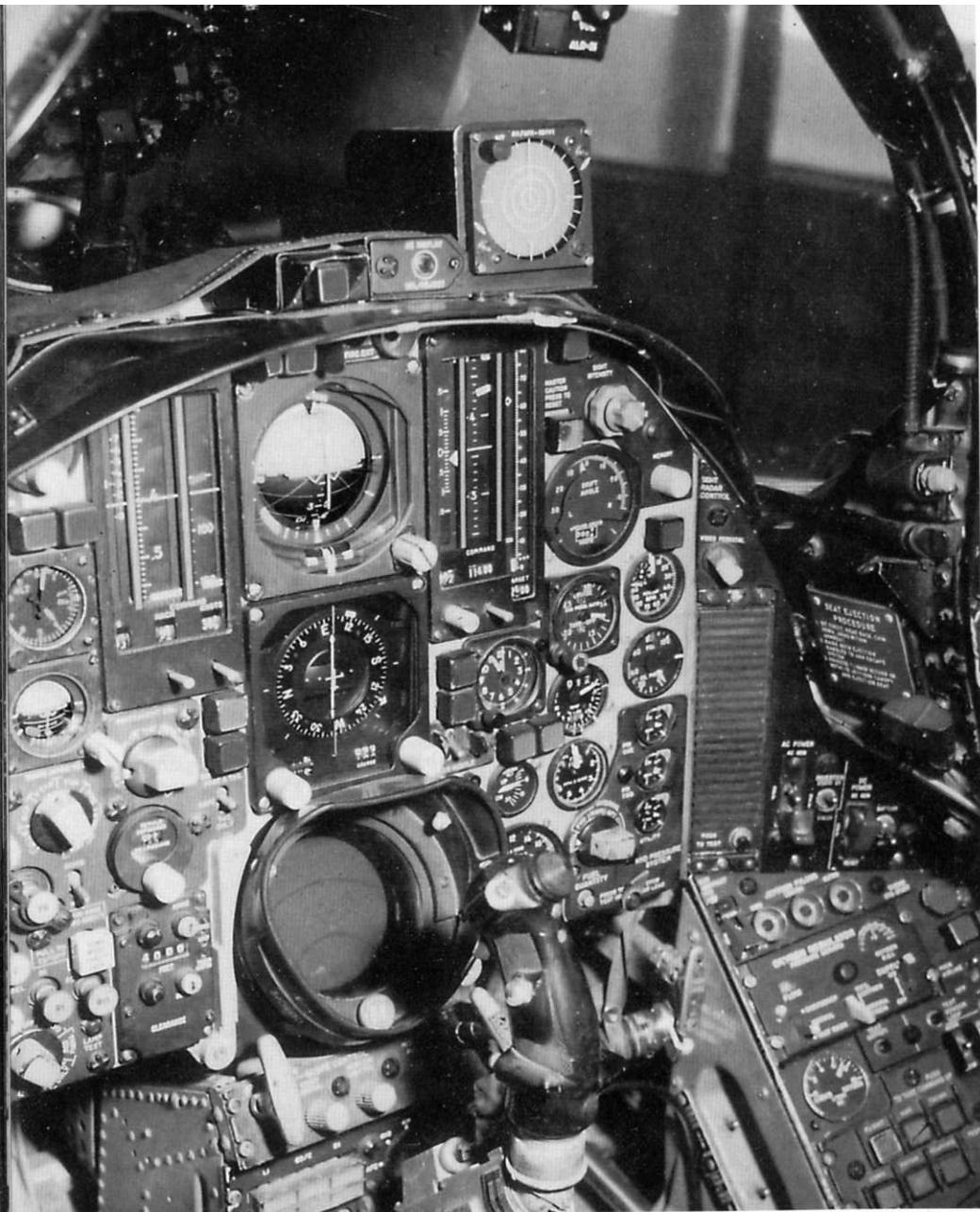
The first F-105G (WA/62-4432) modified from an F-105F is parked just outside Fairchild Republic's Farmingdale plant in February of 1974. A circular Automatic Direction Finder (ADF) antenna is mounted on the upper nose, between the radome and the refueling receptacle door. A radar reflector for the Instrument Landing System (ILS) is mounted on the nose wheel strut, just above the wheel. Both the ADF antenna and the ILS reflector were standard on all production Thunderchiefs. A 450 gallon fuel tank is mounted under the starboard wing. Antennas for the Loral AN/ALR-31 RHAW system are mounted on the wingtips and alerted the Electronic Warfare Officer (EWO) to Surface-to-Air Missile (SAM) radars. This F-105G was assigned to the 66th Fighter Weapons Squadron (FWS) at Nellis AFB, Nevada, which trained Wild Weasel crews. (Cradle of Aviation Museum)



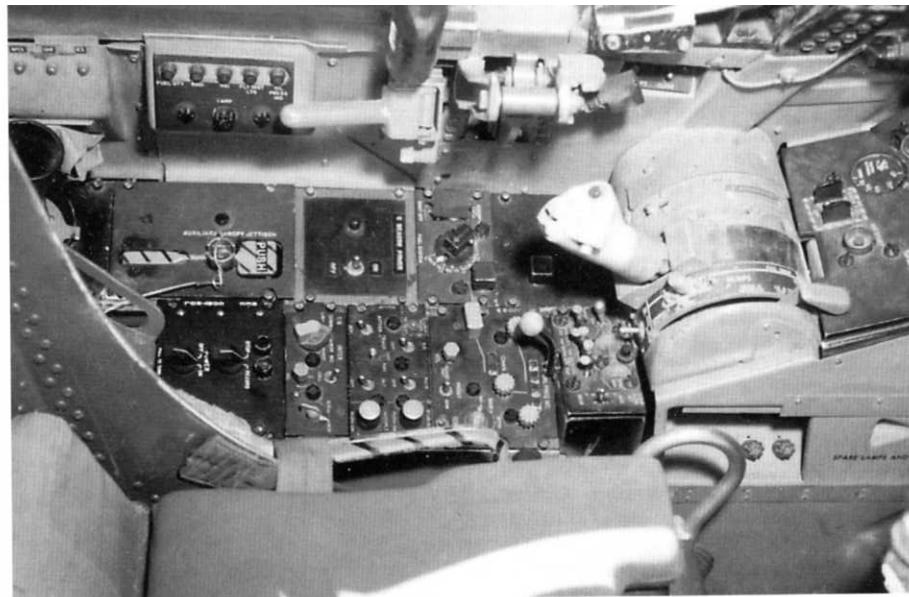
The F-105G retained the F-105F's separate cockpits for the pilot (forward) and EWO (aft). The ejection seat was removed from the aft cockpit of this museum Thunderchief for an unknown reason. Wild Weasel EWOs were nicknamed 'Bears' during the Vietnam War, due to their position in the 'pit' (aft cockpit). This F-105G appears to be painted in an overall desert camouflage of tan, brown, and medium green. (Ken Neubeck)

F-105Gs were armed with a 20mm M61A1 Vulcan cannon mounted in the port nose. The cannon's position remained the same for all Thunderchiefs, although the longer noses of F-105Ds, Fs, and Gs placed the muzzle further aft of the radome. Stainless steel panels lined the muzzle opening, due to the blast effects of this weapon. The sharkmouth was a popular decoration on the noses of F-105Gs. (Ken Neubeck)



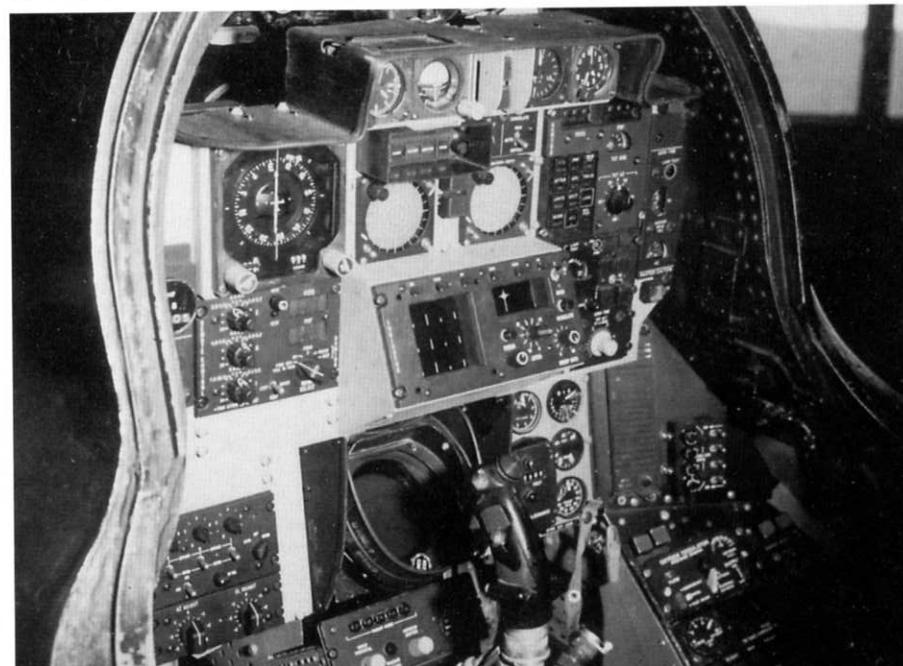


The F-105G pilot's instrument panel was nearly identical to the one fitted to F-105Fs. One notable change was the addition of a circular RHAW scope to the panel shroud. This alerted the pilot to the presence of SAM and Anti-Aircraft Artillery (AAA) radars. Vertical tape displays flank the artificial horizon on the upper panel. The compass is located between the artificial horizon and the radar scope.



The white throttle grip is pulled fully aft on its quadrant on the pilot's port console. Inboard of the throttle is the flap control lever. Controls for the R-14 radar are located immediately aft of the throttle quadrant, followed by those for the Automatic Flight Control System (AFCS). The yellow canopy locking lever is located just under the canopy sill, above the console.

The F-105G aft instrument panel was 'missionized' for the EWO, with basic flight instruments moved to the panel's top. Two circular AN/APR-25/26 RHAW scopes are placed in the panel's center, flanked by the Horizontal Situation Indicator (HSI) to port and the Anti-Radiation Missile (ARM) controls to starboard. The ER-142 scan receiver immediately below the AN/APR-25/26 scopes presented radar signal direction to the EWO.

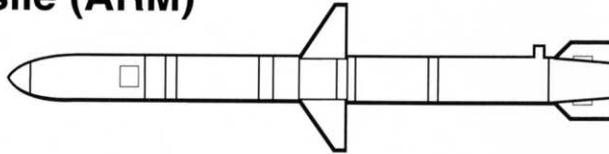




Covers for the starboard AN/ALQ-105 ECM pod were opened on this F-105G undergoing maintenance. These covers allowed technicians to access the pod's electronic assemblies and wiring for servicing. Westinghouse split one of its AN/ALQ-101 pods in half to create the AN/ALQ-105 for the F-105G. This installation freed a wing pylon for ordnance. (Cradle of Aviation Museum)

## F-105F/G Weapons

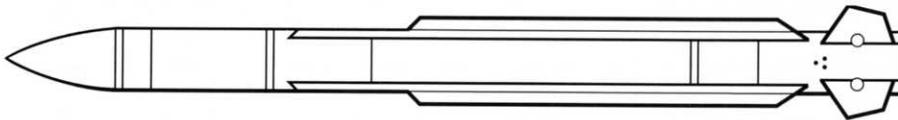
### AGM-45A Shrike Anti-Radiation Missile (ARM)



Length: 10 feet (3 m)  
Diameter: 8 inches (20.3 cm)  
Weight: 390 pounds (176.9 kg)

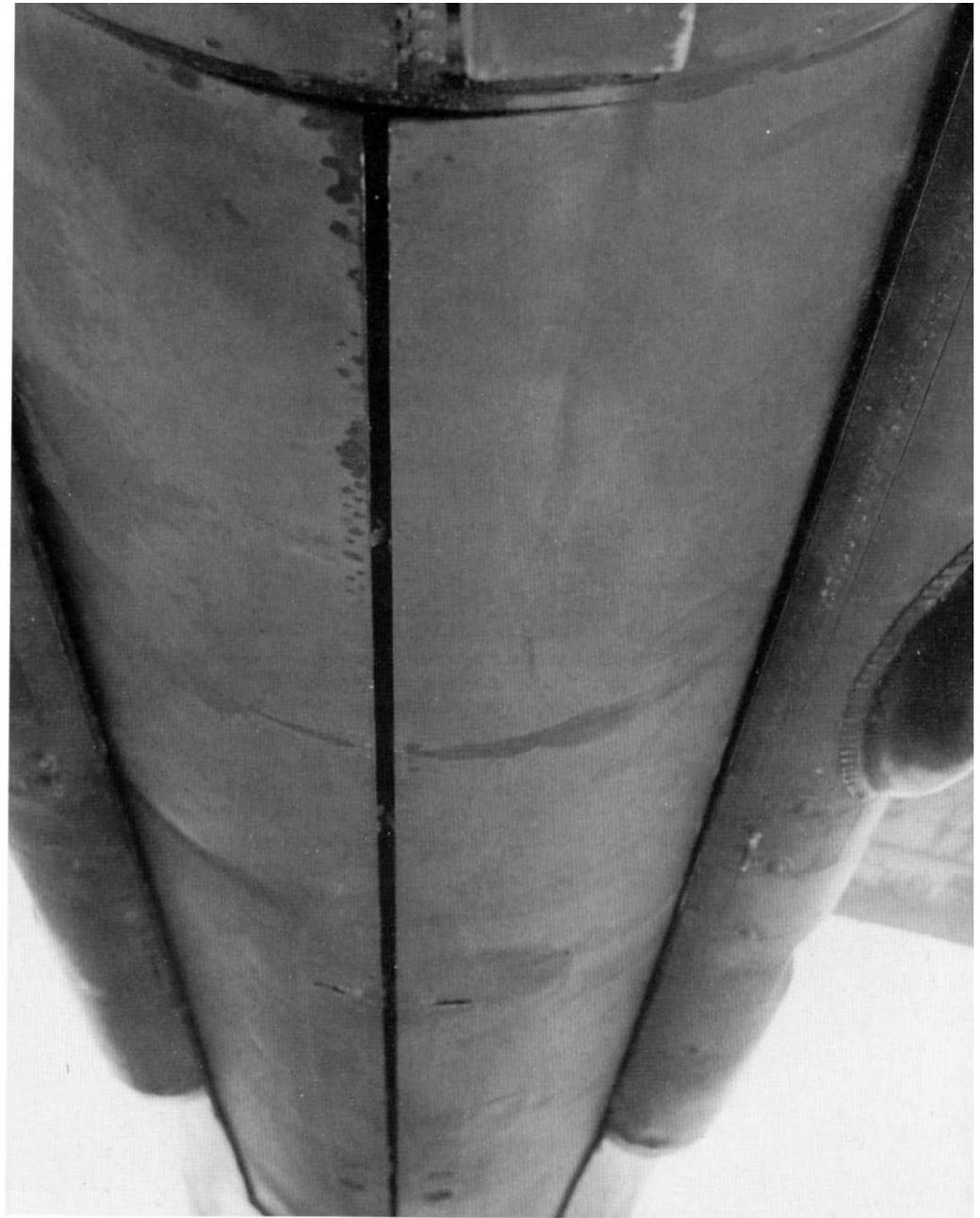
Range: 10 miles (16.1 km)  
Warhead: 145 pounds (65.8 kg), high explosive fragmentation

### AGM-78A Standard ARM



Length: 15 feet (4.6 m)  
Diameter: 13.5 inches (34.3 cm)  
Weight: 1350 pounds (612.4 kg)

Range: 75 miles (120.7 km)  
Warhead: 223 pounds (101.2 kg), high explosive fragmentation



The AN/ALQ-105 pods straddled the F-105G's weapons bay doors. This bay was used on all Thunderchiefs and measured 15 feet 10 inches (4.8 m) long, 2 feet 8 inches (0.8 m) wide and 2 feet 8 inches deep. It was originally designed to house a nuclear weapon, but was primarily used to hold a 390 gallon (1476.3 L) fuel tank. F-105Gs never employed nuclear weapons. (Ken Neubeck)



The F-105G main landing gear assembly was the same as the unit installed on earlier F-105D and F-105F variants. A strengthened structure was used to handle increased aircraft weights compared to the earlier F-105B. The main gear strut retracted inwards into the lower wing surface. A landing light was mounted on the strut's front, just above the scissor link connecting the upper and lower strut assemblies. (Ken Neubeck)



F-105Fs and Gs had their vertical tail sections increased by five inches (12.7 cm) and their base chord (width) widened. These measures provided additional stability for a longer aircraft than previous variants. A cover was placed over the afterburner cooling air intake on the vertical stabilizer's lower leading edge. Antennas for the AN/APR-25/26 RHAW system were retrofitted on the vertical tail. This F-105G (62-4444) served with the Georgia ANG until retirement in 1983. (Cradle of Aviation Museum)

# The F-105 over Vietnam

US involvement in Vietnam – originally advising South Vietnam in its fight against the Communist North – was escalated after the Gulf of Tonkin incident on 4 August 1964.<sup>1</sup> Five days later, eight F-105Ds from the 36th TFS, 8th TFW deployed from Yokota AB, Japan to Korat RTAB, Thailand. This was the vanguard of the large Thunderchief force sent to Southeast Asia by early 1966. F-105 squadrons deployed from bases in Japan and the US on a temporary basis before the Pacific Air Forces (PACAF) organized two permanent F-105 wings. The 355th TFW was established at Takhli RTAB, Thailand on 8 November 1965, while the 388th TFW was organized at Korat RTAB on 8 April 1966. The single seat F-105Ds were accompanied by two-seat F-105Fs, which were joined late in the conflict by F-105G Wild Weasels.

The Thunderchief soon became the USAF's primary fighter-bomber in Vietnam, flying its first mission over North Vietnam on 8 February 1965. These early strikes against southern North Vietnam led to the sustained bombing campaign codenamed Operation ROLLING THUNDER, which began on 2 March 1965. These missions were made dangerous by North Vietnamese air defenses, which included Soviet-supplied Surface-to-Air Missiles (SAMs), Anti-Aircraft Artillery (AAA), and Mikoyan-Gurevich MiG-17<sup>2</sup> fighters. The F-105 was suited for its attack role due to its maneuverability and stability during high speed, low altitude flight. The low-level flights also had the disadvantage of exposing the Thunderchiefs to AAA fire. The first F-105s deployed to Southeast Asia were finished in overall aluminum lacquer (FS17178); however, the aircraft were camouflaged in the Southeast Asia camouflage scheme from mid-1965. This scheme consisted of upper surfaces in Dark Green (FS34079), Medium Green (FS34102), and Tan (FS30219), while the undersurfaces were Light Gray (FS36622).

F-105 missions over North Vietnam were directed at radar installations and AAA batteries in specific areas north of the Demilitarized Zone (DMZ) separating North and South Vietnam. A typical mission from Takhli covered a round trip distance exceeding 1200 miles (1931.2 km), requiring at least three refuelings from Boeing KC-135 tankers. The F-105D were armed with either six 750 pound (340.2 kg) M117 general purpose bombs on the centerline or a pair of 2000 pound (907.2 kg) bombs under the wings. AGM-12 Bullpup missiles were sometimes used, but proved unreliable and lacked the power to knock out bridges.

The North Vietnamese heavily defended a mountain ridge located northwest of Hanoi, their capital, with AAA batteries. This ridge overlooked the valley of the Red River. F-105s had to fly over this region, due to restrictions placed by US political leaders. (Hanoi and the port of Haiphong were off-limits to US attacks.) The AAA batteries took a heavy toll of Thunderchiefs flying over this range during this conflict and US pilots nicknamed this geographic feature 'Thud Ridge.' While USAF units in Europe and the US replaced their F-105s with F-4C Phantom IIs, their Thunderchiefs were deployed as replacement aircraft to the two F-105 wings in Thailand.

The F-105Ds were soon augmented by the two-seat F-105F version, which was used in the role of suppressing SAM radars and known as Wild Weasel aircraft. These Thunderchiefs were used to draw live SAM fire and then seek and destroy these sites before they could down other

US aircraft. This mission was highly dangerous and significant losses occurred to the F-105F force. The only two Thunderchief pilots to earn the Medal of Honor – Capt Merlyn H. Dethlefsen and Maj Leo K. Thorsness – flew F-105F Wild Weasels on their honored missions in early 1967. This role was continued late in the war by F-105Fs modified to F-105G standard.

In March of 1967, the USAF modified four F-105Fs for night and all-weather radar bombing of North Vietnamese industrial targets. These targets included steel mills and railroad yards. This program was originally called Operation NORTHSOPE, but was later renamed COMMANDO NAIL. The F-105F's R-14A radar was modified to allow the bombardier/navigation in the aft cockpit to see a clearer radar image of the target. There were no external airframe changes, although the Light Gray undersurfaces were repainted Tan and Medium Green for night missions. The COMMANDO NAIL F-105Fs were nicknamed 'Ryan's Raiders,' after Gen John D. Ryan, Commander-in-Chief of Pacific Air Forces (CINCPACAF), who authorized this scheme. The four 'Ryan's Raiders' were assigned to the 13th TFS, 388th TFW at Korat RTAB from 24 April 1967. Two of the four COMMANDO NAIL aircraft were lost in the first month of operations – one to enemy fire, the other to an accident – but the other two modified F-105Fs flew successful night missions until March of 1968.

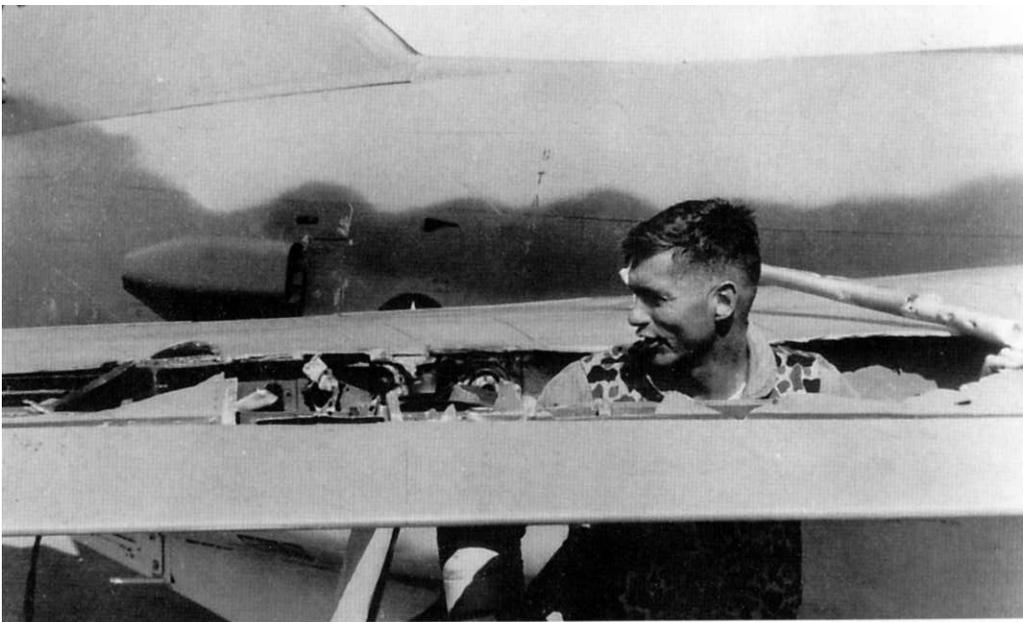
In 1967, the USAF modified 13 other F-105Fs for the Combat MARTIN project to jam communications between North Vietnamese ground controllers and interceptor aircraft. The aft seat was removed and a Hallicrafters QRC-128 jamming set – nicknamed 'Colonel Computer' by the pilots – was installed in the rear cockpit. Additionally, a large blade antenna was mounted aft of the rear canopy. The Combat MARTIN aircraft retained their full combat capability

**A row of F-105Ds led by 62-4389 is parked on the runway at Korat RTAB, Thailand in April of 1966. Crew access ladders are attached to the canopy sills. Each Thunderchief has two 750 pound (340.2 kg) bombs on the center line rack, a pair of 450 gallon (1703.4 L) external fuel tanks, and two AIM-9 Sidewinders on the outboard wing pylons. (Cradle of Aviation Museum)**



<sup>1</sup>North Vietnamese torpedo boats allegedly attacked the destroyers USS MADDIX (DD-731) and USS C. TURNER JOY (DD-951) in the Gulf of Tonkin, off North Vietnam's coast, on the evening of 4 August 1964. Two nights before, North Vietnamese vessels attacked MADDIX in the same waters.

<sup>2</sup>The MiG-17 was codenamed Fresco by the Air Standards Coordinating Committee (ASCC) of the North Atlantic Treaty Organization (NATO).



Major William McClelland stands inside a large hole in the wing of his 357th TFS, 355th TFW F-105D (60-0454) after a mission on 7 July 1966. He was on a bombing mission against the Kueh Bich Dong River bridge in North Vietnam when his Thunderchief was hit by Anti-Aircraft Artillery (AAA) fire. An 85mm shell hit his starboard wing and took out the inboard pylon and tank. McClelland had to fly over 500 miles (804.7 km) to return to Takhli, along with one in-flight refueling. This F-105D was repaired and returned to service. (Cradle of Aviation Museum)



and often flew strikes while performing airborne jamming missions. These Thunderchiefs were assigned to the 355th TFW at Takhli RTAB. One of these F-105Fs was shot down in April of 1968, but the remaining 12 Combat MARTIN aircraft flew their missions until the project's end in November of 1970.

The 388th TFW at Korat began converting from F-105Ds to F-4E Phantom IIs in October of 1968. The Thunderchiefs were transferred from the 388th to the 355th TFW at Takhli, which became the sole F-105 unit in Southeast Asia. This Wing was deactivated on 10 December of 1970 and the last F-105Ds left the theater. F-105F and F-105G Wild Weasels transferred from Takhli to Korat in the same month to continue their missions. Their unit was originally named the 6010th Wild Weasel Squadron (WWS), which was redesignated the 17th WWS in late 1971. The Wild Weasels were heavily involved in supporting two major US air operations over North Vietnam: Operation LINEBACKER from May to October of 1972 and Operation LINEBACKER II from 17 to 29 December 1972. The last Thunderchief lost in Vietnam was an F-105G downed in November of 1972. F-105Gs remained at Korat until the last aircraft departed for the US on 29 October 1974.

'Thud' pilots flew over 20,000 missions over Vietnam between July of 1965 and November of 1972 and accounted for over 75 percent of all US bombing missions during the war. During that period, 321 F-105s were lost in combat and 61 more Thunderchiefs were lost in accidents. This total of 382 was just 18 aircraft shy of the 400 F-105s deployed to the region. The most losses in one year occurred in 1966, when the North Vietnamese shot down 111 F-105s. AAA fire accounted for 280 Thunderchiefs destroyed in combat, while SAMs accounted for another 24 F-105s. North Vietnamese Mikoyan-Gurevich MiG-21<sup>3</sup> fighters downed 12 of the 17 F-105s destroyed in aerial combat, while MiG-17s accounted for the other five Thunderchiefs. 'Thud' pilots downed 27.5 MiG-17s between June of 1966 and December of 1967. (One of the 'kills' was shared with the crew of an F-4D Phantom II.) All but three of these victories were achieved solely by 20mm cannon fire. Two 'kills' were by AIM-9 Sidewinders fired by the F-105 pilots, while one MiG-17 was destroyed by both cannon and missile fire.

The loss rate came down from March of 1968, due to President Lyndon B. Johnson's halt of bombing missions over North Vietnam and the arrival of F-4Es in the 388th TFW. Additionally, many F-105s were damaged by enemy fire – severely in some cases. These aircraft were able to return safely to their home bases, which was a tribute to the great strength Republic built into every Thunderchief. Most of these damaged aircraft were repaired and returned to service. Additionally, F-105F/G Wild Weasel crews destroyed many North Vietnamese SAM and AAA radar sites.

In human terms, 130 F-105 pilots and Electronic Warfare Officers (EWOs) were either Killed In Action (KIA) or Missing In Action (MIA) over Southeast Asia. Another 90 crewmen became Prisoners Of War (POWs), imprisoned for as long as seven years before their release in early 1973.

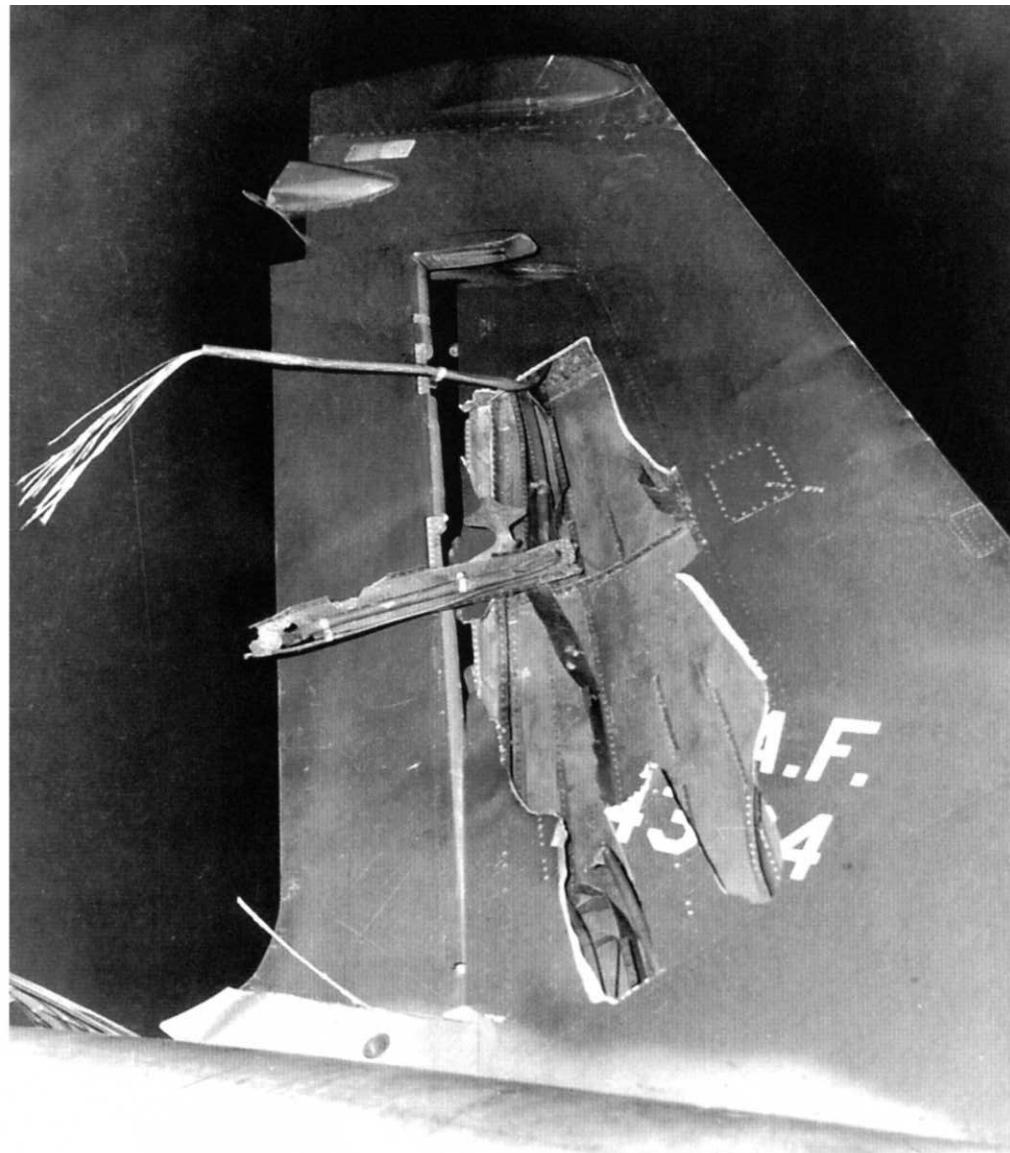
<sup>3</sup>The MiG-21 was codenamed Fishbed by NATO's ASCC.

Four F-105D drop their 750 pound M117 bombs – two per aircraft – on a radar bombing mission over North Vietnam on 27 September 1966. Leading the Thunderchiefs is a Douglas EB-66B Destroyer that cued the F-105 pilots when to release their weapons. The Destroyer also jammed North Vietnamese radars attempting to track the strike package. F-105Ds and other strike aircraft were later fitted with ECM pods, which eliminated the need for EB-66s to fly with the strike packages. The EB-66B and one of the F-105Ds have not yet been repainted in the Southeast Asia camouflage scheme. (Cradle of Aviation Museum)

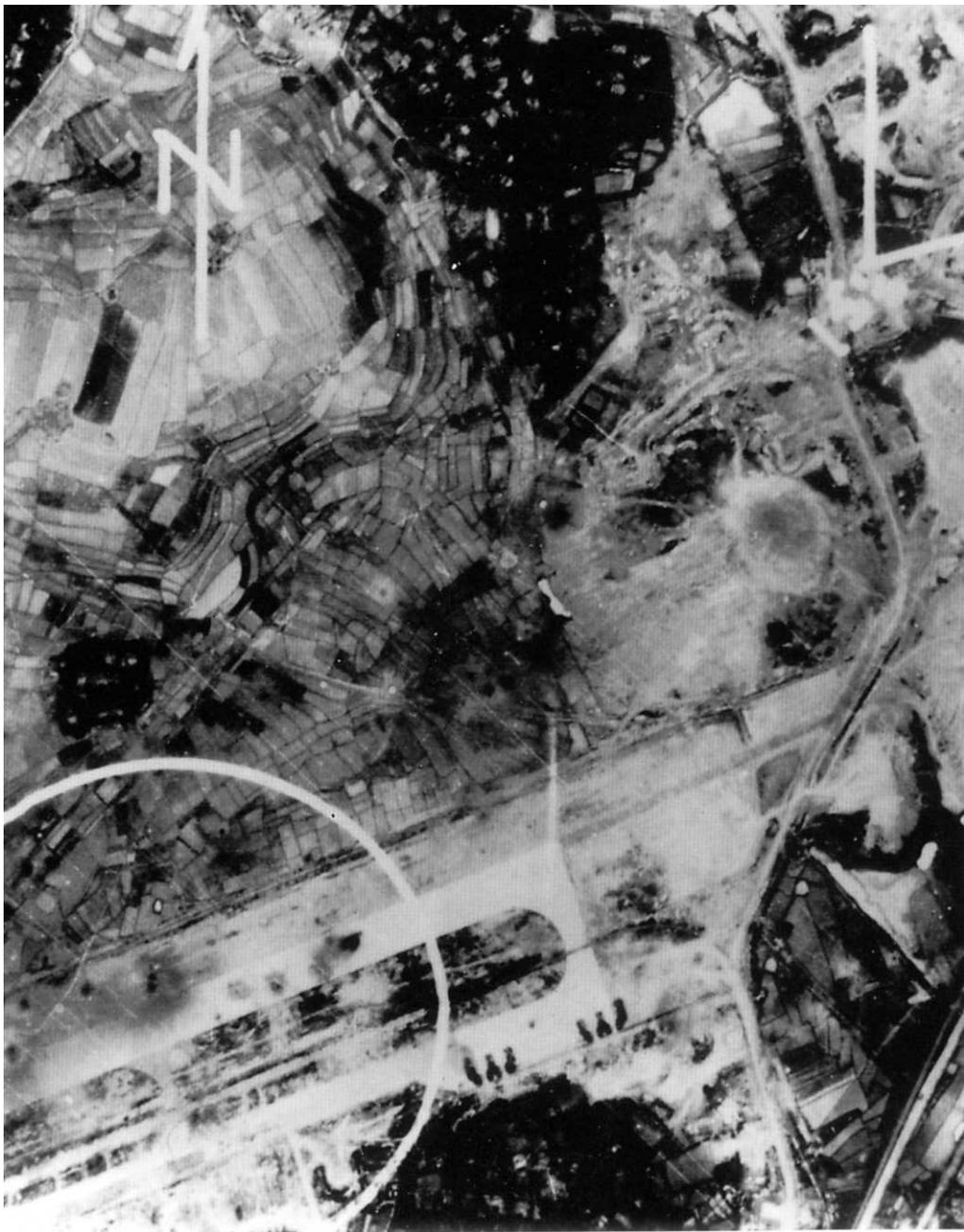


Four F-105Ds fly in formation en route to their targets in October of 1966. They are painted in the Southeast Asia camouflage scheme of Dark Green (FS34079), Medium Green (FS34102), and Tan (FS30219) upper surfaces. These colors helped mask the Thunderchiefs from North Vietnamese fighters flying overhead. (Cradle of Aviation Museum)

Maintenance crews perform nighttime service on an F-105D at Korat RTAB in March of 1967. One crewman leans into the cockpit, while two others perform work on the vertical tail. The Thunderchief is armed with 500 pound (226.8 kg) bombs on the centerline Multiple Ejector Rack (MER). Heavy use of the maintenance-intensive Thunderchiefs required around-the-clock servicing during the Vietnam War. (Cradle of Aviation Museum)



This F-105D (62-4394) sustained damage to its vertical stabilizer on a mission in January of 1967. The frayed electrical cable was severed from its connection by the hit, which was believed to be from North Vietnamese AAA. Torn sheet metal has partially obscured the white lettering U.S.A.F. above 24394. Maintenance crews soon repaired the damage to the Thunderchief's vertical stabilizer and it returned to service. (Cradle of Aviation Museum)



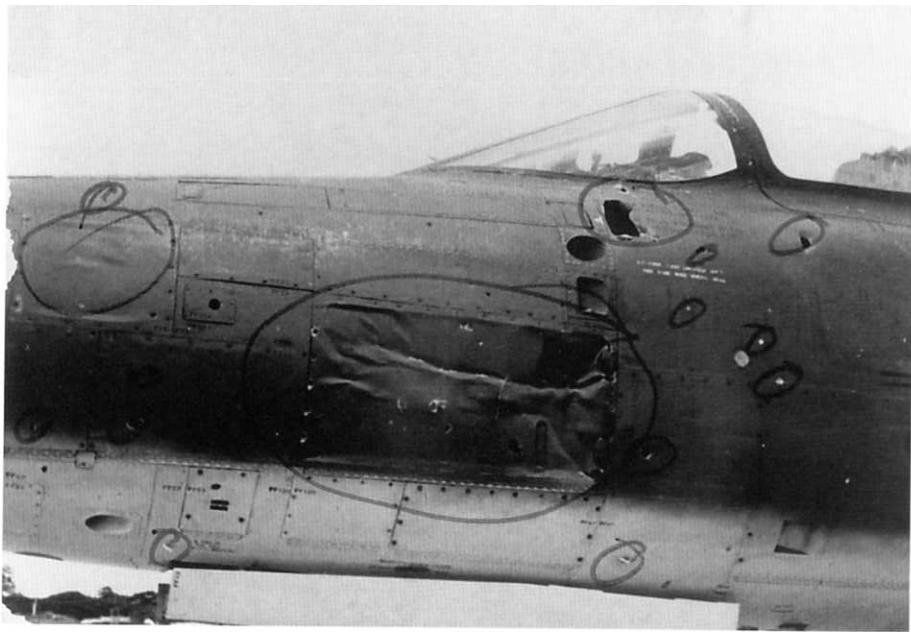
This Battle Damage Assessment (BDA) photo of Kep airfield in North Vietnam was taken in July of 1967. The BDA image was taken after 355th and 388th TFW F-105s bombed Kep, a fighter base approximately 55 miles (88.5 km) northeast of Hanoi. A photo interpreter circled the airbase area hit by the Thunderchief's bombs, including bomb craters in the runway. (Cradle of Aviation Museum)



USAF maintenance personnel change strike camera film in the nose of an F-105D at Korat RTAB. The rear-facing motion picture camera recorded attack run results for later study. Thunderchiefs were housed in open-air revetments at their Thai bases to reduce the risk of attack by Communist irregular forces. Six 750 pound bombs are loaded on the MER fitted to the centerline pylon. (Cradle of Aviation Museum)

An airman places a ruler alongside the exhaust nozzle/speed brake of an F-105D (60-450) in July of 1967. This Thunderchief was hit by a North Vietnamese V-75 *Dvina* (SA-2 Guideline) Surface-to-Air Missile (SAM). The ruler provides scale for the shrapnel damage inflicted on the F-105D, which was able to safely return to its base. (Cradle of Aviation Museum)





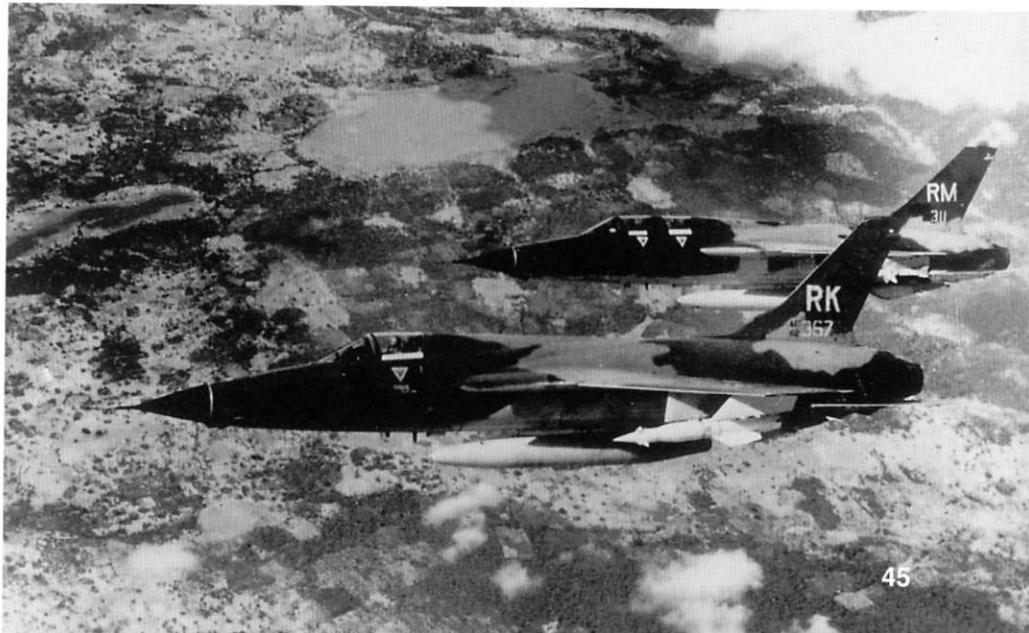
AAA fire caused this damage to an F-105D flying low over North Vietnam in June of 1967. The North Vietnamese projectiles hit the port nose immediately in front of the cockpit. 'Thuds' had great structural strength to withstand this punishment and bring their crews home. Bullets became 'golden BBs' when they hit an F-105's vulnerable hydraulic system, which often resulted in a downed aircraft. (Cradle of Aviation Museum)

Six 388th TFW F-105Ds undergo night time maintenance inside a large hangar at Korat in 1968. The hangar sheltered the aircraft and its ground crews from intense tropical sunshine and heavy rains during the monsoon season. White tail codes indicating the Wing and Squadron assignment began appearing on Thunderchiefs in 1967. (Cradle of Aviation Museum)



Approximately 50 F-105Ds assigned to the 388th TFW are lined up at Korat RTAB on 1 July 1968. This Wing began replacing their Thunderchiefs with F-4E Phantom IIs the following October. Several aircraft had their Dark Green and Tan upper surface camouflage colors reversed when they were painted at aircraft maintenance depots. KC-135 tankers are parked in the background. (Cradle of Aviation Museum)

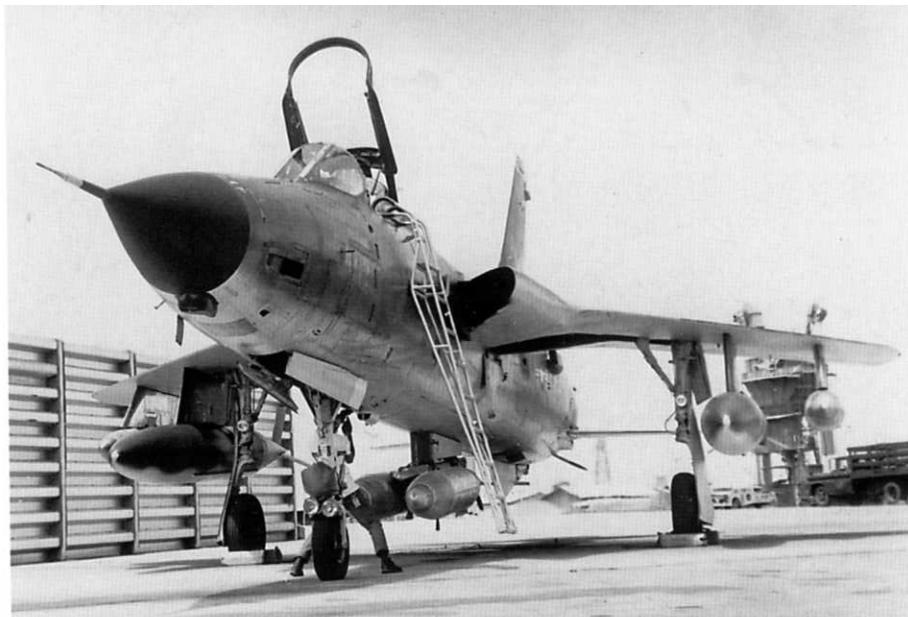
A 354th TFS F-105D (RK/62-4367) flies with a 333rd TFS F-105F (RM/63-8311) over Vietnam in August of 1968. Both Squadrons were assigned to the 355th TFW at Takhli RTAB, Thailand. The F-105D is armed with Martin/Maxon AGM-12 Bullpup Air-to-Surface Missiles (ASMs), while the F-105F has Texas Instruments AGM-45 Shrike Anti-Radiation Missiles (ASMs). (Cradle of Aviation Museum)





An unidentified F-105F drops six 500 pound Mk 82 bombs from medium altitude over North Vietnam in October of 1967. This Thunderchief is armed with an AGM-45 Shrike ARM on the outboard pylon. An Electronic Warfare Officer (EWO, or 'Bear') occupied the aft cockpit seat on F-105Fs and Gs. The 13 Combat MARTIN F-105Fs replaced the aft seat with communications jamming equipment. (Cradle of Aviation Museum)

The crew of this 357th TFS F-105F (RU/63-8321) taxis towards the active runway at Takhli on 17 December 1968. It was armed with an AGM-45 Shrike on its port outboard pylon for attacking North Vietnamese SAM sites. The 750 pound bomb on the inboard pylon is fitted with a fuse extender, which detonated the weapon above ground. (Cradle of Aviation Museum)



A 355th TFW F-105D awaits its next mission in its revetment at Korat in July of 1968. This Thunderchief is armed with 720 pound (326.6 kg) napalm fire bombs on the centerline and outboard wing pylons. The F-105s flew ROLLING THUNDER missions over North Vietnam until President Lyndon B. Johnson halted these raids on 1 November 1968. (Cradle of Aviation Museum)

## F-105 Units in Southeast Asia, 1964-1974

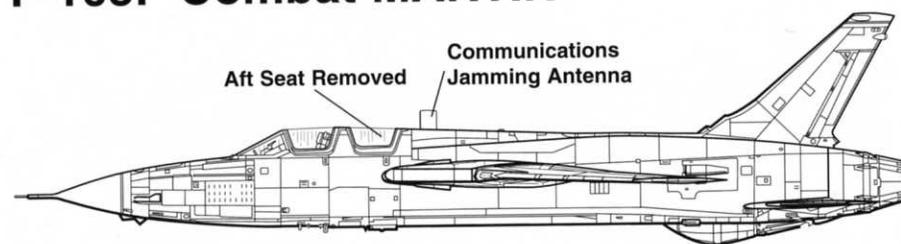
6234th TFW (Provisional) at Korat RTAB, Thailand, 1964-1966 – 12th TFS, 36th TFS, and 67th TFS

6235th TFW (Prov.) at Takhli RTAB, Thailand, 1964-1965 – 334th TFS, 336th TFS, and 354th TFS

388th TFW at Korat (replaced 6234th TFW (Prov.)), 1966-1968 – 4th TFS, 34th TFS, 44th TFS (later to 355th TFW), 469th TFS, and 17th WWS

355th TFW at Takhli (replaced 6235th TFW (Prov.)), 1965-1970 – 44th TFS (later WWS) (from 388th TFW), 333rd TFS, 354th TFS, 357th TFS, and 367th TFS

## F-105F Combat MARTIN





Ground crew prepare to load 750 pound M117 bombs onto a 354th TFS F-105F (RM/63-8351) at Korat RTAB. The Olive Drab (FS34087) bombs have Orange Yellow (FS33538) nose rings to indicate high explosive weapons. Thunderchiefs carried up to six M117s on a MER mounted on the centerline pylon. A Shrike ARM is fitted to the port outboard pylon. (Cradle of Aviation Museum)

Four 355th TFW F-105Ds sit on the Korat hardstand in December of 1968. Each Thunderchief is armed with 750 pounds bombs on the outboard wing and centerline pylons. Over the next two years, three of these aircraft were lost over Laos: RK/59-1772, RU/60-522, and RM/61-060. Only RU/59-1731 survived the conflict to return to the US. (Cradle of Aviation Museum)



An F-105D dodges North Vietnamese AAA fire on a mission in 1969. It has just released ordnance from the centerline MER. ECM pods are fitted to the outboard wing pylons to jam enemy guidance radars. Between 1965 and 1972, the USAF lost 382 F-105s – 321 to enemy defenses and 61 to accidents. This total represented 50.7 percent of the 753 F-105D and F aircraft built. (Cradle of Aviation Museum)



The pilot of the 357th TFS F-105D (RU/372) flies a flag from his open cockpit while taxiing at Korat in December of 1969. He has also extended the refueling probe on the nose in a variation of the 'giving the finger' gesture. This pilot was likely celebrating his 100th mission over North Vietnam, which ended his tour of duty. A 'follow me' truck leads the Thunderchief towards its revetment. (Cradle of Aviation Museum)

A 354th TFS ground crew changes the 20mm ammunition drum on this F-105D (RM/62-4387) in its revetment at Korat on 3 December 1969. One airman operates the lift truck, while his colleague adjusts the hoist connected to the drum. Thunderchiefs carried up to 1028 rounds for the M61A1 cannon, which a pilot exhausted in just over ten seconds of firing. (Cradle of Aviation Museum)



Two ground crewman service the 20mm M61A1 Vulcan cannon on this 388th TFW F-105F at Korat on 17 December 1968. Thunderchief pilots used this weapon for both aerial combat and strafing ground targets. Another crewman supervises the Thunderchief's refueling, standing near the single-point receptacle located on the lower port fuselage. (Cradle of Aviation Museum)

A 354th TFS F-105D (RM/60-490) leads another Thunderchief from this unit above a cloudy Southeast Asian sky in April of 1970. Fuse extenders are fitted to the lead aircraft's bombs, a 500 pound weapon (outboard) and a 1000 pound (453.6 kg) bomb (inboard). The 354th's parent 355th TFW – the last F-105D wing in Southeast Asia – was deactivated on 10 December 1970. (Cradle of Aviation Museum)



# Retirement

The 355th TFW's surviving F-105Ds were flown from Takhli RTAB, Thailand to McConnell AFB, Kansas in October and November of 1970. The Thunderchiefs were absorbed by the resident 23rd TFW, which was the Replacement Training Unit (RTU) for F-105 pilots. The Wing's 457th TFS received the 30 Thunderstick II equipped F-105Ds. January of 1971 saw the 127th TFS, 184th Tactical Fighter Training Group (TFTG) Kansas ANG at McConnell receive F-105Ds. This Squadron served as the RTU for two ANG F-105 units: Virginia's 149th TFS, 192nd Tactical Fighter Group (TFG) at Byrd Field, Richmond, and the District of Columbia's 121st TFS, 113rd TFG at Andrews AFB, Maryland. The 192nd TFG flew F-105Ds and Fs from 19 February 1971 until converting to LTV A-7D Corsair IIs in 1982. The 113th TFG received its first 'Thuds' in July of 1971 and flew F-105D/F Thunderchiefs until converting to the F-4D Phantom II in March of 1982. New Jersey's 141st TFS – the original ANG F-105 unit – flew its F-105Bs from April of 1964 until their replacement by F-4Ds in the spring of 1981.

Thunderchiefs also began reaching Air Force Reserve (AFRES) units in early 1972, when F-105Bs were assigned to the 466th TFS, 508th TFG at Hill AFB, Utah. These aircraft were transferred from the 119th TFS, 177th TFG, New Jersey ANG, which received the F-105Bs in June of 1970. In June of 1972, F-105Ds were assigned to the 507th TFG at Tinker AFB, Oklahoma. The 457th TFS and its Thunderstick II F-105Ds was transferred to the 301st TFG (later 301st TFW) at Carswell AFB, Texas two months later. The 507th TFG became inactive in March of 1973 and its Thunderchiefs transferred to other units. The 357th TFS replaced their Thunderstick II F-105Ds with F-4E Phantom IIs in 1981.

F-105G Wild Weasels and F-105Fs equipped the 35th TFW at George AFB, California from

**This F-105D (HI/62-4299) was assigned to the Air Force Reserve's 466th TFS, 419th TFW at Hill AFB, Utah. The Thunderchief's upper surface camouflage was extended to the undersurfaces. The tail band is Orange-Yellow (FS33538), while other markings are black. The 466th TFS made the final F-105 flight on 25 February 1984. (Curtiss Knowles)**



July of 1973. The F-105G was superseded by the F-4G Phantom II in the defense suppression role from September of 1977. This Wing flew the last F-105G mission by an active duty unit on 27 June 1980, then transferred their aircraft to the 128th TFS, 116th TFW, Georgia ANG at Dobbins AFB. Serviceability of the F-105Fs and Gs was badly affected by the aircraft's age and lack of spare parts, but the Georgia ANG crews worked wonders in maintaining their aircraft. One of the 116th TFW's F-105Fs (63-8299) made the last ANG Thunderchief flight from Dobbins AFB on 25 May 1983.

The last Thunderchiefs remaining in service were the F-105Bs, Ds, and Fs assigned to the 508th TFG at Hill AFB, which was redesignated the 419th TFW on 1 October 1982. This unit's 466th TFS retired its F-105Bs in January of 1980. The Wing continued to fly F-105D/F aircraft until the last F-105D flight was made from Hill on 25 February 1984. Upon retirement from service, these Thunderchiefs joined other already sent to the Military Aircraft Storage and Disposition Center (MASDC)<sup>1</sup> at Davis-Monthan AFB, Arizona. The vast majority of F-105s were scrapped within several years of their arrival at MASDC. There are no flying Thunderchiefs left anywhere in the world; however, several F-105s are preserved in museums throughout the United States.

In 1961, the Republic Aircraft Company merged with Fairchild Hiller to form the Fairchild Republic Company. After completing F-105 Thunderchief production in 1964, the firm's last military aircraft program was the A-10 Thunderbolt II ('Warthog') anti-tank and close air support aircraft. The A-10 was in production from 1975 until 1983. Fairchild Republic began production of the T-46A trainer for the US Air Force when the program was suddenly cancelled in 1987. This termination resulted in the firm closing its doors for good that year.

<sup>1</sup>MASDC was renamed Aerospace Maintenance And Regeneration Center (AMARC) in the early 1990s.

**This sharkmouth-marked F-105F (TH/63-8343) is displayed at the Cavanaugh Flight Museum in Addison, Texas. It is painted in the markings of the 475th TFS, 301st TFW, an Air Force Reserve unit based at Carswell AFB, Texas. A white-trimmed red tail band is painted above the white Texas map on the vertical tail. Thunderchiefs flew with the 475th TFS from July of 1972 until 1981. (Glen Phillips)**





(Above) An F-105B Thunderchief (57-5804) flies off the US East Coast in 1964. It was assigned to the 141st TFS, 108th TFW, New Jersey ANG at McGuire AFB. F-105Bs flew with this Squadron from April of 1964 until the spring of 1981. The overall aluminum lacquer finish was replaced by the Southeast Asia camouflage scheme from 1965.

(Below) This F-105F (62-4444) was one of the 13 Combat MARTIN aircraft employed for jamming North Vietnamese communications. It was assigned to the 357th TFS, 355th TFW at Takhli RTAB, Thailand between 1967 and 1970. The aft cockpit seat was removed and replaced by 'Colonel Computer,' the QRC-128 jamming equipment.

