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**WILD WEASEL THUDS
IN VIETNAM**



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THE DC 3 GOES TO WAR
VIGILANTE
THE NAVY'S LAST HEAVYWEIGHT

THUD, GOES THE WEASEL!



Courtesy Max Grace/Clouds Studio

After A Quarter Century Of Service, The F-105 Is Retired!

By Joe Mizrahi and Peter Mancus

Photos Courtesy Peter Mancus/Cloud 9 Photography

Either Jimmy Boyd was born to be a fighter pilot, or fighter pilots were born to be like Jimmy Boyd. He knew it, but the Air Force had to be convinced.

In 1959, fresh out of high school, Boyd was ready for flying training, but the standards of the time required two years of college for acceptance, so Boyd enrolled at Oklahoma State, not far from his home in Ponca City. He completed his two years and enlisted in the Air Force, believing the recruiting sergeant's assurances that he could get into a cadet flight training program under one of several options. But while Jimmy awaited reassignment, laboring on the flightline as a mechanic, new acceptance standards increased the college requirements to four years, and it was to take six years, from the time he enlisted, until he graduated from Oklahoma State with a degree and was accepted to flying school, for Boyd to reach his goal.

After 50 weeks of school at Vance in Oklahoma, most of it on the T-37 and T-38, Boyd got his wings and, in 1967, was assigned to Perrin AFB Texas, and the F-102.



Major Jimmy Boyd, left, and his Bear, Captain Gary Crystal, turn over their twin place F-105G Thunderchief (63-8320) from the 35th Tactical Fighter Wing, 562nd Tactical Fighter Sqdn., based at George AFB, Calif. to USAF Museum Curator, Royal D. Frey, for eventual display at Air Force Museum. The aircraft originally began life as an F-105F, eighteen years ago and, after serving in Germany, was sent back to Vietnam in 1967 after being modified. There it was credited with three MiG 17s and returned to the States in 1971 for further refit to Wild Weasel standards. When she ended her active duty career, "320" had accumulated 5766 flying hours. (AF Museum via Dave Menard)

Now Lt. Boyd was in the real Air Force, no more the nit-picking and sometime questionable procedures of Air Training Command. He was a flyer and would make his living doing just that.

It was about this time that the Russian takeover of Czechoslovakia made headlines. Boyd and his unit were flying temporary duty from the Philippines to DaNang, Vietnam. When the Russians moved into Czechoslovakia, it suddenly occurred to Air Force chiefs that Europe was being stripped of its defenses in order to maximize the effort in Vietnam, so Boyd was promptly shipped off to Germany for a year of duty with NATO.

He remembers the Convair F-102 as a very pleasant aircraft to fly, a delight for high altitude, cross-country missions, but it had been designed to intercept slowly maneuvering bombers, large aircraft like our own B-52. For this it was equipped with radar-guided missiles. It had no gun and was absolutely unsuited for the war the U.S. and its Allies would have to fight in Europe, the low level, down-on-the-deck fighter/bomber action that still sets the standards for that area. Although the F-102 could fly at Mach 1.5 at high altitude, at low level it was a subsonic aircraft. It could, however, out-turn anything with its delta-wing configuration, but, as Boyd points out, "what good is that when you don't have a gun." Furthermore, when the F-102 turned, it slowed down tremendously, speed fell off alarmingly and the aircraft would not accelerate quickly. For a fighter pilot, that's courting disaster.

After returning from Germany and transferring to a new base, Boyd filled out his Form 90, requesting a new assignment. Most of his fellow pilots picked the F-4 Phantom, Boyd chose the F-105, an aircraft he had always wanted to fly, and was promptly assigned to PACAF flying F-105s in Vietnam. The date was May, 1971.

Putting aside the fact that Republic always built tough aircraft, Boyd believes that the longevity and performance inherent in the 105 stems from its mammoth Pratt & Whitney J75 P-19w turbojet water injection engine, which generates an incredible 26,500 lbs. of thrust. Considering that the F-105 was designed in the early 50s, this powerplant in a single-seat fighter, provides nearly twice the thrust of alternative engines operating in most aircraft originating within that same time frame. The same engine was eventually emplaced in the F-102's successor, the F-106, an aircraft grossing nearly 8 tons less, and is also used in the Lockheed U-2. But in the F-105 it was programmed to provide two things: power to carry great loads, and tremendous speed at low altitude. For the F-105 was originally designed as a tactical bomber with an internal bomb bay large enough to accommodate a nuclear device.

For that mission the F-105 had to be incredibly strong to carry

the large nuclear weapon and drop it in a toss bombing maneuver, wherein the Thunderchief raced in at the target, looped and released the bomb as it pulled up and over, before leaving the target low down at supersonic speed. The F-105 never had to carry out such a maneuver in combat, but Boyd remembers the training exercises, where the 105 was flown toward the target and switched to an automatic pilot that took over, dropped the bomb and completed the half loop and roll out, while the pilot sat squashed back into his seat by a force seven times that of gravity.

The P & W J75 is dependable. It just keeps running, it has to! In the air, if you throttle back to anything below 80% power, the 105 stops flying, begins to wobble and starts sinking. The J75 goes only one way, all out, just like the aircraft it is so much a part of. It seems to shrug off damage and Boyd remembers that before louvered doors were put on the cannon access hatch, gas built up from the expended cannon shells would often blow the old stationary doors loose. These would be promptly swallowed by the 105's intake and ground up, but the aircraft would keep flying.

Approaches in the 105 are always made at near 90% power. You don't glide down, you fly it right in at 180 knots and maybe a few extra for the pilot and his Bear (observer/electronics warfare officer). The airplane wants to fly and when it is refueled with a full load at 15,000 ft. it has to go to after-burner to stay in the air. During the Vietnam war, Boyd recalls how hard it was to persuade the KC-135 tanker pilots to speed up while refueling. They tended to want to slow down, flying at 315 knots, which was too slow for the struggling F-105.

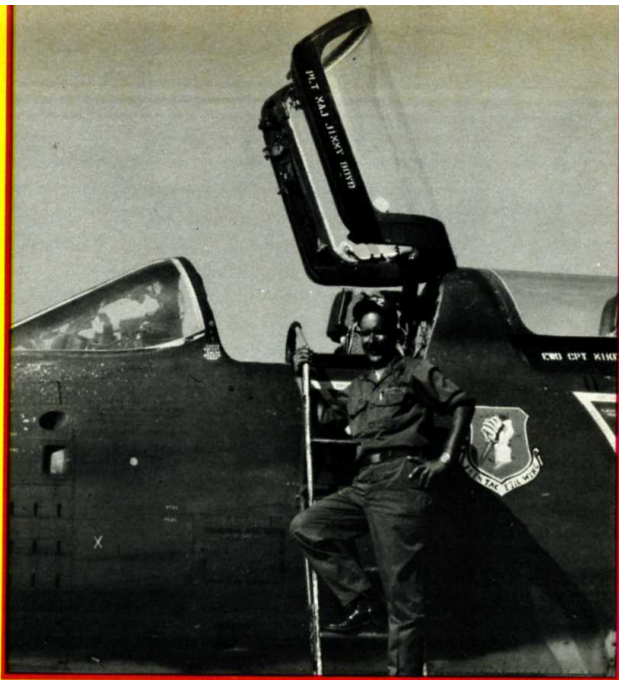
A shortage of parts, rather than an implacable enemy, was probably the F-105's main source of concern. Only some 850 were completed, and after nearly twenty years of service, it became difficult to find spares and more and more aircraft had to be cannibalized to provide systems for others.

At one time, in 1968, there was a study underway to build a revamped 105, by reducing the weight engendered by the need to incorporate special equipment for delivering the nuclear bomb. With that gear deleted, the 105 would have been even more formidable and Boyd thinks the Air Force made a big mistake in not building the new 105. In his opinion, the Thud's successor, the F-4, just can't perform like the 105. It can carry nearly the same load and maneuvers well at altitude, but down low, where it counts, nothing performs like a 105.

The secret of the 105 is its low level speed. Supersonic at altitudes of 50 ft., it accelerates so fast down there that the pilot leaves Mach behind before he knows it, and breaking the sound barrier at sea level in the 105 is a matter of course. The faster the 105 goes at this altitude, the better it rides, rock-steady, as if it were on rails, the perfect bombing delivery platform. Speed is a fighter pilot's prime need, and at low altitude, few aircraft can match the 105.

With an all up weight of 53,000 lbs., including fuel and sixteen 750 lb. bombs, plus 1029 rounds of 20mm cannon ammunition (each round weighing approximately 10 oz. or 625 lbs. of projectiles), the 105 has a payload of approximately ten tons. With all that weight it has to fly fast, otherwise it would fall out of the sky. It struggles at slow speeds and takes all 10,000 ft. of runway to get off with a full load on a hot day. You don't turn out of traffic as soon as the wheels come up, you keep on climbing straight ahead, until you burn off some fuel. The 105 is comfortable and visibility is good, except from directly behind, where there is none. At speed, the plane will roll with the best rolling aircraft ever built. It doesn't turn well, but with that great big body and virtually no wing, it rolls beautifully. On the deck at supersonic speed, instead of getting louder and bucketing, it smooths out to a nice quiet hum. The faster you go, the sweeter the ride.

The airplane devours fuel, a great deal of it, and a standard mission with a full load will give you a radius of action of 150 miles, including about ten minutes for raising hell. This is in sharp contrast to the aircraft's stated 2000 mile range with a negligible load at cruising speed. The tailcone dive brakes work



After 920 hours and 240 Vietnam combat missions in the Thunderchief, Major Jimmy Boyd poses in front of his F-105G from the 35th Tactical Fighter Wing, 562nd Tactical Fighter Sqdn., as George AFB and the Air Force phase out the last of Alexander Kartveli's amazing F-105 Thunderchiefs, better known to its crew as "Thud". On June 27, 1980, the last operational mission for the Thunderchief was flown by three aircraft from the 562nd, thus ending an eighteen year relationship with that aircraft. But for Major Boyd, the bond will never be broken. If it is possible to have a love affair with 26 tons of iron, Boyd has had and is still having one. (Peter Mancus/Cloud 9 ©1980)

well and will slow you down but, again, the aircraft does not perform well at low speed. It really is a big rocket with a man in it.

In Vietnam, the worst of the weather was personified by thunderstorms. Unless you were over the coast, where radar could easily distinguish between water and land, navigational aids weren't too useful, although the Doppler ground navigation system improved in overseas use, mainly because the crews wrote up any defects, and it was constantly being monitored and maintained by dedicated ground crews, who would work 20-hour days, if required.

In the States, you didn't care if your Doppler system was off, you could see landmarks and your base miles away. In Vietnam there were no landmarks, particularly at night, so the pilots depended on their Doppler system and it worked well for them.

Flying at night also presented problems with ground launched SAM missiles. During the day you could see these big telephone poles coming up. When one got a certain distance from you, gauged by the pilot by how much of the windshield it filled, you made your move away from it. According to Boyd, if you could see the SAM, it couldn't hit you. It might be able to pull 40 Gs and it might run at four times the speed of sound, but that was at altitude. Low down, it just couldn't turn that tight and its speed was reduced by more than half, but still fast enough to scare hell out of you. At night, it was a different story. Since the SAMs were radar directed, lack of visibility didn't deter their guidance. On clear nights they sparked in long flashing arcs, which made them show up well, a plus for the Wild Weasel 105 pilots. On cloudy nights, you only knew they were around when they showed up on the radar scope or a cloud nearby pulsated with sudden light, as a SAM's wake reflected from it.

In a normal month, if combat flying can be called normal, squadron pilots got 70 hours, but for three months running in 1972, the men put in 100 hours per month. Patrol missions or flying in support of B-52 strikes would run five to six hours. A strike on a specific target in North Vietnam would run 3½ to 4 hours, including a refueling each way, up and back.

Unfortunately for the men of the 17th Wild Weasel Sqdn., Headquarters of Seventh Air Force began to think of the F-105s
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Above: An F-105G from the 562nd Tactical Fighter Sqdn., one of the Air Force's last operational Thunderchiefs. Call letters WW, although apropos, are incidental to the fact that the F-105 acted as a Wild Weasel machine in Vietnam. (Peter Mancus/Cloud 9)

Below: If the sharkmouthed F-105G above has a leer, then the Wild Weasel F-105G shown here sports the sneer, the curled lip painted on Wild Weasel machines. A derivative of the sharkmouth, this gaping maw was painted on all Wild Weasel 105s to distinguish them from regular fighter/bomber 105s. This aircraft belonged to Georgia National Guard. F-105G can be distinguished by bulge along both sides of lower fuselage, which houses electronic countermeasures equipment. Stability fin protrudes from lower rear fuselage. (Peter Mancus/Cloud 9)





Above: Roaring out on take-off, its afterburners glowing, the F-105D, equipped with the Thunderstick II bombing system, first flew in 1969. T-Stick II included a special electronics system that was housed in a saddle-back fairing above the fuselage. (Compare with the older F-105B below.) Aircraft was operated by Texas ANG. (Peter Mancus/Cloud 9)

Below: A New Jersey ANG F-105B, one of 75 completed with larger J75-P-3 engine; the two original prototypes featured smaller J57 engines, without the elongated swept-forward air intakes. (Peter Mancus/Cloud 9)





Why do they call it Thud? Simple: The aircraft displays great durability, blinding speed low down, is extremely rugged, but with its small wingspan (34 ft.), great bulk (53,000 lbs. gross), and relatively long length (67 ft.), it just doesn't fly well, particularly at anything less than full power. Instead, it goes Thud! Shown here, an old F-105B, production of which ceased in 1959, from the 4th Tactical Fighter Wing. (USAF)

in terms of a necessity for every mission. But there just weren't enough to go around and, in some instances, B-52s would not fly certain missions over known SAM site areas unless the Wild Weasels went in first to suppress enemy ground fire and radar stations. In many instances, certain areas in Laos or Vietnam would be cordoned off to U.S. aircraft, unless Wild Weasels first went in and cleared them out, even when such off limits postings were not justified.

Shaking his head, Boyd talks about the time a C-130 went down over Laos, after being hit by a SAM. For six months a twenty mile area around the site of the crash was forbidden to U.S. aircraft, until the Wild Weasels had located and knocked out the SAM base. Boyd and others continually flew over that area during that period, searching for the SAM base and never found it, if it, in fact, ever existed.

The Wild Weasel is a trouble-shooter. That's how he got his name. His aircraft heads in the general direction of a pro-

(Text continued on page 32)



1. F-105Ds from the 23rd Tactical Fighter Wing. D was the main production model, 600 of which were built, with production ending in 1963. Thirty were modified to carry the Thunderstick II computer-aided all-weather and night bombing system. D was also first model to incorporate in-flight refueling.

2. All-weather modification of the two-seat F-105F trainer, the F-105G was used for first true Wild Weasel defense suppression missions. In place of a variety of bombs it also carried four Shrike missiles. Although production ended in 1965, contracts were let in 1968 for installing an even newer bombing system. This G, with its Wild Weasel mouth, was operated by Georgia ANG.

3. An F-105G from the 562nd, before its call letters were changed to WW from GA.

4. An F-105D showing the aircraft's shorter fuselage and tailfin, when compared to Fs and Gs. In Vietnam, the one and only F-105 Wing, the 355th, flew 101,000 sorties between the end of 1969 and war's end, logging 263,000 combat hours and dropping 202,596 tons of bombs.

5. Although the 105 is not known for its aerobatic ability, it did serve as the mount of the Air Force's famed Thunderbirds aerial demonstration team.

6. Sporting 3 MiG kills, (the 105 shot down 23 enemy aircraft in combat) this F-105G, from the 562nd, is scheduled for display at the Air Force Museum.

7. Gathering of Eagles. Representative aircraft from all remaining Air Force and Air Guard 105 units during their final flyby at George AFB, June 1980. (Peter Mancus/Cloud 9 ©1980)

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grammed raid. He has no specific target but to find SAM sites, SAM radar controllers and ground control radar, which guides enemy interceptors and enemy anti-aircraft gun emplacements. He's there to "weasel" or ferret them out. Once he finds them, his mission reveals itself: Destroy these targets so that they don't interfere with the attack being delivered by your own aircraft. It sounds all too simple, for what the Wild Weasel crew does, is present itself as bait, live decoys to be shot at.

Once they discover where the firing is coming from and the location of the ground radar station that is directing it, the Wild Weasel crew goes into action with rockets, bombs and cannon fire, and that's where the second part of "Wild Weasel" comes from. They usually flew to the side and a little ahead of the incoming bombers, trying to pick up signals, trying to spot enemy emplacements, milling around in what may have appeared, and actually was, a haphazard manner. But one thing wasn't haphazard, the 105 crew was always alert.

Eventually a pattern developed. SAM radar sites couldn't turn off their radar or their missiles wouldn't run, but the ground controllers monitoring the interceptors, MiG 19 and MiG 21s, could. When the F-105 approached within 75 miles of their station, they would turn off and allow the next controller 150 miles away to provide guidance for the interceptors. Pretty soon you found yourself playing aerial chess, with move and counter-moves, each party trying to outthink the other. Eventually, however, the enemy must reveal himself and open up. He couldn't let the U.S. Air Force bomb with impunity.

One day a target would be covered exclusively by SAMs, the next it was protected by MiGs. The North Vietnamese rarely mixed the two. And because the Wild Weasels were out there constantly looking for trouble and, usually, finding it, they rarely changed from their pre-arranged pattern of getting in harm's way. Missions were flown at the same altitude, on the same headings, over the same landmarks and usually took place at the same time, obliging the defenders by making it easy for them to spot you. But that's what both sides wanted. The defenders had to destroy the Weasels in order to concentrate on the incoming bombers, while the Weasels had to ferret out the defenders, identify them and attack them, so the bombers could get on to their targets with as little obstruction and detouring as possible. In short, a great game of "Aerial Chicken" was played out over the skies of Vietnam and the Wild Weasels were the indispensable players.

What happened when the F-105 crews were attacked by missiles and interceptors? The first thing was to avoid being hit,

1. The last lineup. Remaining F-105s on George AFB ramp, Victorville, California. From left: Hill AFB, Dist. Col. ANG, Texas AF Res., Hill AFB, Oklahoma AF Res., New Jersey ANG, Texas AF Res., 562nd Tactical Fighter Sqdn. Virginia and Georgia ANG. (Peter Mancus/Cloud 9)

2 & 3. A pair of F-105Bs with new wraparound Vietnam war camouflage. Gray undersides were discontinued when they popped out against green and brown of jungle as aircraft rolled and presented its belly at low altitudes.

4. An F-105F from Texas AF Reserve. Trainer first flew in 1963. F-105 was extremely maintainable and veteran crew chiefs swear that the 105 was the only aircraft that could be taken apart completely and reassembled with only three common tools, two screwdrivers and a crescent wrench. During heavy combat the aircraft could be turned around completely, without ever shutting down, with new ordnance, ammunition, drag chute and fuel. This could be done in thirty minutes, from touchdown to take-off, the same aircraft being handled in a similar manner four times straight.

5. A formation of F-105Ds from Oklahoma AF Res. Because of the 105's great bulk, it became known in certain circles as the "Triple Threat Weapon". In order for a pilot to make sure of his target, all he had to do was "bomb 'em, strafe 'em," and to make absolutely certain, "fall on 'em!"

6. F-105D, retrofitted with T-Stick II equipment on fuselage spine. Aircraft also carries new wraparound camouflage. Perforated panel just below pilot's cockpit was redesigned to allow gases from Vulcan cannon to dissipate. In earlier models, solid panel caused gases to build up, blowing off door and sucking it into intakes. (Peter Mancus/Cloud 9)

7. An F-105D from Oklahoma AF Res. with red starred MiG kill emblem just below cockpit. Last Wild Weasel missions over North Vietnam were flown in December, 1972, ending seven years of 105 combat there.

8. Special aircraft to eventually be displayed at George is this "SAM Slayer" from the 562nd Tactical Fighter Sqdn. It is an F trainer, revised to F-105G standards. No. 62-4416 flew for six years over Southeast Asia, logging more than 3,500 hours. It was the fifth F model built by Republic at Farmingdale, Long Island and was accepted November 27, 1963 by the Air Force. In 1966 it was assigned to Nellis AFB as a Wild Weasel test aircraft. It was revamped into a G model at McClellan AFB in 1971 and returned to the war. It arrived at George with the 17th Wild Weasel Sqdn. in September, 1973, the last of a very noble breed. (Photos courtesy Peter Mancus/Cloud 9)

before going after the launching sites. F-105s never wanted to dogfight at altitude with a MiG. There was no future in that. The 105 does not turn well. Either turn into him so that your closing speed is 2000 miles per hour, or better still, light your afterburner and head for the trees where the 105 is without peer. When the SAMs come up, you waited until the last minute and then turned to present the smallest section of your aircraft, usually your wing. You again went low, where the SAM couldn't maneuver as well. The first SAMs were big 20 ft. telephone poles, the next, the

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new, improved batch, were narrower and only 13 ft. long. They were more difficult to dodge and, according to Boyd, when the enemy finally perfects the small SAM with a relatively narrow cross-section and a length of only four or five feet, then they will be virtually impossible to dodge. Radar picks them up, but it is the pilot's own eyesight, in the last analysis, that is his best line of defense against the SAM.

SAMs will turn sharply at low altitude and Boyd remembers one that chased one of his squadron mates through the trees at low level, before it buried itself in the ground. In theory, an explosion 300 ft. away, triggered by the missile's proximity fuse, is enough to knock you down, but Boyd's 105 has vibrated from explosions even closer and survived. The SAMs usually come up in bunches, launched so that if one misses, another will connect, and Boyd believes that it is the one that you don't see that gets you. That is why a pilot must have the utmost faith in his observer or *Bear*. He is the man who calls out the approaching missile, plots its speed and course and, in case of multiple launchings, gives out priorities.

Compared to this type of warfare, the old-time dogfights must have been exhilarating. This is sweat-pop-out-on-your-face anxiety, a sort of nonstop crisis barely under control, and the difference between living or dying is keeping it that way, under control.

For the enemy ground controllers, the 105 had a missile that would home in on their radar equipment and until they figured out why so many of their stations were being blown away, the 105s batted 1000 against them. Eventually, they learned to turn off their stations when the Wild Weasels approached and switch to one out of range of our homing missiles.

In general, Boyd preferred to be up against SAMs. As he tells it, "You eventually get to know the enemy's missile and what it can do, better than he does, because you're up against it. A fighter is something else, you never know how good he is or what he's going to do. When the SAMs came up, we knew there would be no fighters, because of the chance of the missiles hitting their own planes. But we were always under our own separate ground control and these guys got so good that when interceptors came up, we would be given a call with an accurate location of what was coming. We would then just turn into them, and go low on the deck and they couldn't get us, because we could outrun anything they had at low altitude. Once we were past them, we'd never see them again. They'd be a few hundred miles away. In other words, anywhere an enemy fighter would go, our ground controllers would locate him and then we'd just go down and point at him and throw him off. It's just the best thing to do. If he can't get behind you, he can't do anything to you, and when you point head on for him, light after-burner and head away on the deck, you won't see him anymore."

When we asked Major Boyd about the ground attack machine of the future, he seemed a bit perplexed by the claims for the F-16. He can't understand how they can hang all that ordnance on a relatively small aircraft and expect it to do the job that the 105 did. He feels that the F-15 which, in his words is, "bigger and uglier", should be performing the fighter/bomber mission. Keeping the bigger aircraft clean for strictly air-to-air combat, while hanging all sorts of bombs and equipment on the smaller one for low level attack, just doesn't make sense. But then as Jimmy Boyd often says, the air wars of the future are just too complicated and "too cosmic" for him to compute. He doesn't figure them out, he just flies 'em. That's what we pay him for, and we get our money's worth.