

## 4477 TEST AND EVALUATION SQUADRON



### MISSION

### LINEAGE

4477th Test and Evaluation Flight established and activated, 1 April 1977  
Redesignated 4477 Test and Evaluation Squadron, 1 May 1980  
Inactivated, 15 Jul 1990

### STATIONS

Nellis Air Force Base, Nevada, 1 Apr 1977–15 Jul 1990  
Tonopah Test Range Airport, NV

### ASSIGNMENTS

57 Fighter Weapons Wing

### COMMANDERS

### WEAPON SYSTEMS

YF-110B Soviet MiG-21F-13  
YF-110C Chinese Chengdu J-7B (MiG-21F-13 variant)  
YF-110D Soviet MiG-21MF  
YF-113B Soviet MiG-23BN  
YF-113E Soviet MiG-23MS  
YF-114C Soviet MiG-17F

YF-114D Soviet MiG-17PF  
T-38  
F-5

## HONORS

Service Streamers

Campaign Streamers

Armed Forces Expeditionary Streamers

Decorations

## EMBLEM



## MOTTO

### OPERATIONS

WHENEVER a US pilot swept in over the desert, the first thing he noticed was how truly small the MiGs were. Their engines didn't smoke, and they didn't swiftly change from tiny dots into giant fighters, as was true of US aircraft. To find these MiGs, you had to visually scour small sections of the Nevada sky.

The Soviet-designed fighters were agile, too. In an engagement, the enemy's first turn would be eye-watering—unless, that is, the model in question was a MiG-23. Then, there typically was no turn at all. The MiG-23 would simply tear away so fast that it seemed like a Ferrari leaving Fords behind.

Then there was the visual impact of the insignia. This was only training, and adversaries were

carrying sensor pods instead of missiles. For many US aircrews, though, there was something electric about seeing that red star on the side of an enemy fighter during the height of the Cold War.

For more than a decade, until just before the November 1989 fall of the Berlin Wall, a secret Air Force aggressor unit flew Soviet MiGs in more than 15,000 sorties against US Air Force, Navy, and Marine Corps pilots.

Neither current nor former Air Force members will discuss how and where the US obtained the Soviet-designed aircraft. However, that information remains classified.

During the Cold War, however, there were rare instances of communist pilots defecting with their aircraft, and, in the late 1970s, Egypt shifted from being a Soviet-supplied adversary to a US-equipped ally.

The locus of this activity was the 4477th Test and Evaluation Squadron, based at a remote airfield at Tonopah Test Range, which itself was set in the desolate desert north of Las Vegas. Facilities there were spartan. For years, on-site personnel lived in double-wide trailers, with the roofs weighed down by tires so they wouldn't blow off in high desert winds.

The squadron's very existence was highly classified. Exercise participants all pledged in writing to keep quiet about the MiGs, on pain of losing their careers. The aircraft themselves were routinely shunted indoors or sent aloft at times when US intelligence calculated Soviet spy satellites would not be overhead.

Late last year, USAF finally declassified this MiG effort, officially named "Constant Peg." Air Force officials thought that it was time to recognize the generation of pilots and maintenance personnel who made good use of the sometimes balky and often dangerous aircraft of the West's main adversary.

"You knew you were part of a select group doing very important work," said retired Brig. Gen. David L. Stringer, chief of plans and programs for the 4477th from 1980 to 1983. "The challenge was significantly greater than what you had in the ordinary Air Force."

For example, ask "Hawk" Carlisle how he got lucky. Therein lies a tale about the challenges that faced elite pilots who flew Constant Peg's MiGs.

Today, Brig. Gen. Herbert J. Carlisle is commander of the 3rd Wing at Elmendorf AFB, Alaska, but from 1986 to 1988 he was chief of weapons and tactics for the 4477th. One day he put a MiG-23 Flogger into a flat spin and had to eject. The Soviet-designed seats were equipped with barometers that deployed parachutes once they fell to a certain altitude. When the squadron commander arrived to retrieve him, Carlisle said they were going to have to turn the barometers up. He'd hurtled well below the ridges of the surrounding mountains before his chute opened.

Carlisle "was lucky he was over the valley," said the squadron commander in question, retired Col. John T. Manclark, who is now USAF's director of test and evaluation.

Typically the 4477th had a constant stable of 16 aggressor pilots. Most were from the Air Force, though the mix often included Navy and Marine personnel. All had the problem of flying aircraft for which they'd had little formal training, with no manuals, and no access to anyone who'd designed the fighters or flown them for more than a few hours.

Their accident rate was 100 per 100,000 flying hours, according to former squadron officials—far higher than the rate for domestic Air Force aircraft. Two pilots died in crashes. The Air Force has only released the name of one—Capt. Mark F. Postal, whose family only last year learned he died at the controls of a MiG-23.

Unconfirmed reports in various publications have long held that Lt. Gen. Robert M. Bond was flying a MiG when he died in a 1984 crash in Nevada airspace. Bond, however, was "not connected to the [Constant Peg] program," said Air Force spokes woman Maj. Dayan Araujo, declining to answer further questions on the subject.

Over the course of its history, from 1977 to 1988, the 4477th pilots flew three models of Soviet-designed MiGs.

MiG-17 Frescos were a subsonic, early jet aircraft design. Though originally meant to counter American bombers of the 1950s and 1960s, durable, cigar-shaped MiG-17s became North Vietnam's primary fighter and eventually served in at least 20 air forces worldwide.

MiG-21 Fishbeds were cone-nosed, supersonic fighters that were somewhat less maneuverable than MiG-17s. They also saw action with the North Vietnamese and became a popular export aircraft, with more than 8,000 produced.

MiG-23 Floggers were the MiG-21's replacement. Their swing-wing was patterned on that of the F-111, but unlike their US antecedent, the MiG-23s were small and light enough to serve as dogfighters.

On the whole, the aircraft weren't as capable as US models, say those who flew them. Their fit and finish were vastly inferior, characterized by such defects as protruding rivets.

That does not mean they could be written off. Far from it. "They performed very well for the state of technology they had," said Manclark.

All the models had quirks. The MiG-17 did not have an electric seat, so pilots had to use cushions to position themselves properly inside the cockpit. Both it and the MiG-21 had pneumatic brakes applied by squeezing a lever on the front of the stick. Many of the MiG-21s did not have steerable nose gears, making them difficult to taxi; the sign of a novice Fishbed

pilot was the zigzag track he made while moving on the ground. "The real trick was to taxi fast enough so the rudder worked," said Manclark.

If a pilot put the throttle back on a MiG-21, it would take a long time to spool up again when trying to accelerate. Thus many of those who flew it stayed on afterburners as much as possible. The MiG-23 did not have that problem, as it was designed for speed—but it was unstable and difficult to fly.

Constant Peg pilots would typically fly MiG-23s only after they had acquired extensive experience on the other Soviet models. "The guys really didn't like flying the 23," said Manclark. "They were scared of them."

None of the Soviet-designed aircraft at Tonopah flew in bad weather or at night. All were very short-legged, compared to contemporary US aircraft, and sorties were limited to 20 minutes or so. The MiGs had US airspeed indicators and a few other minor instrument and safety modifications. Other than that, they were stock—down to their Warsaw Pact paint jobs.

None of the squadrons that arrived at Nellis or NAS Fallon, Nev., for training with the 4477th were supposed to know that they were going to face an aggressor squadron flying Soviet-designed aircraft. Unofficially, however, almost all the trainee pilots had heard stories about the MiGs.

On the second day of their stay, incoming squadrons would take their first flight up to Tonopah. The Constant Peg pilots had a picket line of T-38s up in the air to tell them of the students' arrival. When it was time, they took off from their desert strip and rose up to greet their guests.

The mere shock of their presence accomplished one of the main goals, participants say. Even if the student pilots knew what was coming, nothing could prepare them for the shock of seeing an unfamiliar airframe with a real red star, edged in white and black. Far better that they have that experience over Nevada, than somewhere over Western Europe in some future war.

"You were really trying to get the 'Oh my God' factor away from people," said Stringer, who recently retired as commander of the Arnold Engineering Development Center, Arnold AFB, Tenn.

The Constant Peg pilots would show how quickly they could pull a MiG-17 nose around, or roll a MiG-21, or how a MiG-23 could out-accelerate anything. However, given the expense of running the MiGs, and their limited number, the Air Force used great caution in preparing these engagements. Eventually they would progress to two students vs. one MiG, or two on two. Every day of the weeks-long stay, the combat problems would get tougher.

Eventually, the student pilots would learn new tricks to deal with the enemy. Example: Don't

try and turn with a MiG-17 from behind, because he'll just turn tighter and you'll overshoot him. Instead, go vertical, then fly up and down in a sort of sewing machine stitch.

The MiG-21 could also turn abruptly; you didn't want to fight one allow speed. Again, the answer was to use the more powerful engines of the US fighters to make it a vertical engagement.

And the MiG-23? Well, the Flogger pilot was going to make one pass If he tried to turn, officials said, you owned him.

For the Constant Peg pilots, the point was not to win every engagement. If the student pilots paid attention, eventual ly they would do well. "I think people left there with a lot more confidence in what they were going to do," said Manclark.

If flying the MiGs was hard, keeping them in the air was a tremendous challenge. One day, the Constant Peg maintenance shop noticed it was running out of MiG-21 brakes. With no place to buy any off the shelf, they sent out some worn brakes for duplication.

Six weeks and untold dollars later they got back a brand-new set of worn-out brakes. The new parts had been made to look exactly like the old.

The maintainers of the 4477th were just as responsible as the pilots for the program's success, say former officials of the squadron. Unlike the pilots, who commuted in every day on a transport from Nellis (where they would brief and debrief their students). the maintainers lived at Tonopah five days a week. Their housing was in the trailers, which were impossible to keep dust-free. They were allowed to wear civilian clothes and have nonmilitary haircuts so they could blend with the few locals.

Like the pilots, the maintainers had elite skills. For transport, they built vehicles from scrap. At the beginning of the program, they had to cook their own food. "It was truly more or less pioneer days," said Stringer.

The maintainers' first problem was that the MiGs were not built to last. The Soviet design philosophy was based on consumption; they made a lot of any given aircraft, expecting they would break down and be discarded. The cheapness of the materials used in some of the MiG engines limited their expected life span to 500 hours, for example. For the 4477th, which had no access to Soviet factories, that wasn't good enough. The crew members had to do something to make them last.

This led to the second maintenance problem—the lack of instruction manuals and tech data. US intelligence supplied some of the information they needed but not nearly enough, as far as Constant Peg officials were concerned.

Parts were their third, and maybe biggest, problem. "For things like hydraulic pumps, we

would use American components that looked about right," said Stringer. "But it was only about five to 10 percent replacement. Most of the time we tried to recondition."

The MiG-17s were straightforward, but eventually the 4477th crews lost faith in the engines. It was an obsolete airframe, in any case, flown mainly by developing nations, so the MiG-17 was phased out in 1981.

The MiG-21 had a few more problems than the MiG-17, including spotty fuel couplings. One day, the fuel couplings of a MiG-21 failed and caught fire as the crew was testing its engine on the trim pad. "Fortunately, it was right across the street from the fire station," said Stringer.

It was the MiG-23 that was the maintainers' nightmare. The Flogger was a compromised design, in the US view. Made light for speed, the airframe didn't have sufficient strength. The wing box which carried the weight of the swing wings was particularly prone to cracks.

Eventually the cost of keeping the MiGs in the air caught up to the program. By the late 1980s, the decline of communist rule in the Soviet Union made Constant Peg seem anachronistic. The Air Force ended the program in March 1988.

However, the MiGs of Tonopah went out with a big last hurrah. Toward the very end of the program, the 4477th sent up 10 MiG-21s, four MiG-23s, and a couple of T-38s, all at once. A Blue Force of US aircraft had deployed from bases across the country, then hit tankers and continued in to Nevada. Their mission: Fight their way into a target area, drop bombs, and fight their way out.

Electronic pods on both the MiGs and the attackers sent back images that could be monitored on the ground. When a MiG was "killed," it would go back and fly a low approach at Tonopah and then regenerate, as if another airplane had been launched.

The whole thing was about as close to actual combat as an American pilot could aspire to, without actual shooting.

"I think everybody was proud of their work there," said Manclark of the time when the only opportunity for the Air Force to fly against the enemy's aircraft was to head to Nevada.

Constant Peg was a natural outgrowth of the frustration many Vietnam-era pilots had with the structure of their training.

At the time, USAF tactics dictated a four-man, welded-wing formation for such fighters as the F-4. It was a configuration designed for combat with machine guns, with two aircraft serving as shooters, and two wingmen preventing adversaries from getting in close enough to attack the leaders.

In Vietnam, though, the enemy used missiles. A MiG could launch a tailshot from a mile back. In addition, the welded wing was unwieldy, taking as long as 30 seconds to turn 180 degrees.

As Vietnam veterans began to filter into the Air Force Fighter Weapons School and other training institutions, tactics began to change. The combat veterans established ways to turn the welded wing faster. They developed a two-aircraft fluid two formation.

Significantly, aggressor programs slowly took shape, with Weapons School instructors using Navy A-4s to simulate MiG-17s.

In this context, the idea of using actual MiGs seemed a natural next step. "It was a logical progression, in my opinion," said now-retired Col. Gaitlard R. Peck Jr., the first commander of the 4477th at Tonopah.

US intelligence technology exploitation programs such as Have Drill-Have Ferry, and Have Doughnut began pulling MiGs apart to study their strengths and weaknesses as early as the 1960s. And so, one day in the mid-1970s, Peck found himself briefing Maj. Gen. Charles L. Donnelly Jr., Air Force deputy director of plans and policy, on the idea of a training program featuring actual MiGs.

Donnelly thought it sounded good. He said he'd provide the airplanes if Peck, then a tactics officer based at the Pentagon, could produce an airfield. Peck asked Donnelly if he had a call sign. It was "Constant."

Wandering back to his Pentagon office, Peck thought of his wife, Peg. He recalls thinking, "Constant Peg" had a nice ring to it, "and that's what it became."

One of the Air Force's oldest "open secrets" was declassified in November, when the service revealed that it acquired, tested, and flew Soviet-designed fighters during the Cold War.

The program's code name was "Constant Peg," and it ran from 1977 to 1988. The Air Force said its 4477th Test and Evaluation Squadron, nicknamed the "Red Eagles," flew MiG-17, MiG-21, and MiG-23 aircraft from various bases in Nevada, including Tonopah Test Range, home of the then-secret F-117 stealth fighter.

The program provided intimate knowledge of MiG design and capabilities. The MiGs were flown against US fighters, toward developing better tactics. They also participated in "Aggressor"-style programs like Red Flag.

The Air Force declined to say how it had obtained the MiGs, offering only that they were "communist built." Some are known to have been provided by Israel, which captured them during various conflicts. USAF officials have privately confirmed that some were also provided by Egypt and Pakistan.



Since 1988, though, the Air Force has acquired more advanced Russian-designed aircraft. In 1997, the US openly purchased 21 MiG-29s from Moldova. As recently as 2003, in Operation Iraqi Freedom, the Air Force acquired MiGs captured in Iraq—some of which had been buried to hide them from US aerial attack.

The Air Force wouldn't say whether the April 1984 death of Lt. Gen. Robert M. Bond was connected with Constant Peg. Bond was killed on the Nevada Test Range in an aircraft USAF has never officially identified. Rumors at the time had Bond flying a secret stealth aircraft, but USAF officials later said Bond was killed in a MiG-23 accident. At the time of his death, Bond was vice commander of Air Force Systems Command. 2007

The 4477th TES Red Eagles' operated T-38s during the 1984-1988 time period in support of USAF testing of Soviet aircraft acquired by the U.S. This testing was accomplished in the Nevada Flight Range complex north of Las Vegas.

1979 23 August MiG-17, 002, of the USAF 4477th Test & Evaluation Squadron, Groom Lake, Nevada is lost due to pilot induced loss of control. Pilot Lt. M. Hugh Brown, USN, 31, of VX-4, "Bandit 12", originally of Roanoke, Virginia, enters spin while engaging adversary, U.S. Navy Northrop F-5 Freedom Fighter, recovers, but enters second spin too close to ground, irrecoverable, impacts at steep angle near Tonopah airfield boundary, killed instantly. No bail-out attempted.

1984 26 April Lt. Gen. Robert M. Bond (1929–1984), Vice Commander of Air Force Systems Command, is killed in a high-speed ejection from a Mikoyan-Gurevich MiG-23 of the 4477th Test and Evaluation Squadron, out of Groom Lake, Nevada at 1018 hrs., which was initially reported to be an F-117A Stealth fighter. The MiG impacted on Little Skull Mountain on the remote Nellis AFB range in a high-speed 60-degree dive. Following this accident, officers of General rank were prohibited from test flying. The Air Force is also forced to admit that it is flying Soviet bloc aircraft.

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USAF Unit Histories  
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Sources  
Air Force Historical Research Agency. U.S. Air Force. Maxwell AFB, AL.