

To Snatch a Sabre

Fifty years ago, North Korea's secret allies plotted to heist from the United States a North American F-86.

Ralph Wetterhahn

Air & Space Magazine

WHEN THE SUPERPOWERS FACED OFF IN THE AIR OVER KOREA, EACH SIDE WANTED WHAT THE OTHER ONE HAD. The U.S. Air Force was able to determine precisely how the Soviet-built MiG-15 compared with its own premier fighter, the North American F-86 Sabre, because on September 21, 1953, two months after the cessation of hostilities in Korea, North Korean Lieutenant No Kum-Sok defected, flying his MiG-15 to Kimpo Air Base, South Korea. (The pilot earned a \$100,000 reward, and his aircraft is now on display at the U.S. Air Force Museum in Dayton, Ohio.) The next day, the Air Force airlifted the MiG to Okinawa and sent two test pilots—Major Charles “Chuck” Yeager and Captain H.E. “Tom” Collins—to take its measure. During 11 test flights, the two pilots answered a question that is still being asked 50 years later: Which is better, the Sabre or the MiG?

At the start of the Korean War, the F-86 was the fastest airplane in the world: Its maximum speed was a blistering 685 mph. The MiG, at 670 mph, was not far behind. The Sabre had higher roll and turn rates than the MiG. But the test pilots found that the MiG had better acceleration, could climb faster, and could fight at a higher altitude.

With two 23-mm and one 37-mm cannon, the MiG packed a harder punch than the Sabre's six .50-caliber machine guns. But the Sabre had sharper aim. Its AN/APG-30 radar gunsight gave its pilots the advantage in ease of use and accuracy.

The Soviets had learned all this even before the Americans did. They had conducted comparisons of their own, thanks to a rare combination of circumstances and a focused opportunism.

Although U.S. Air Force Second Lieutenant Bill N. Garrett didn't know it at the time, the MiG-15 that took him out of the fight on October 6, 1951, was flown not by a Chinese or North Korean pilot, but by a Russian. The MiG pilot had hit Garrett's F-86A behind the cockpit and had damaged its J-47 engine and ejection seat. As Garrett struggled westward toward the Yellow Sea, where he planned to ditch and, with luck, get rescued, another MiG pilot spotted his stricken aircraft. This pilot too was Russian.

Throughout the Korean War, U.S. pilots traded rumors about the enemies they faced in the air; they were never briefed that they were flying against Soviet pilots, but they suspected as much. What U.S. pilots didn't know was that every MiG flown in North Korea between November 1950 and December 1951 had a Soviet pilot at the controls. They didn't know that a veteran Soviet unit, the 324th Fighter Air Division, had arrived in China in April 1951. They

didn't know that the ranks of the 324th were filled with some of the highest scoring Soviet pilots from World War II or that by October those pilots would down so many B-29s that the U.S. Far East Air Force would have to restrict the big bombers to night missions. And Garrett didn't know that a pilot of the 324th was following him to finish him off.

Captain Konstantin Sheberstov was patrolling in a formation of four when he spotted easy prey: a lone, wounded F-86. Sheberstov remembered the incident 45 years later for the Russian aviation journal *Mir Aviatsii*: "This F-86 was descending at an angle of 45–50 degrees with black smoke [trailing]. I started chasing him at the maximum speed. I caught up with him at an altitude of [3,300 feet] and from a distance of [975 to 1,150 feet] opened fire...." In trying to evade his pursuer, Garrett lost more altitude and was barely able to reach the mud flats along the coast, where he ditched the airplane. Here, on October 6, 1951, the Russians were presented with the trophy they had been trying to snare for months.

In the month before the first F-86s got to Korea, MiGs ruled the sky. Although World War II F-51 Mustangs were holding their own, they were no match for the Russian-built jets, and the U.S. straight-wing jets, Republic F-84s and Lockheed F-80s, were almost 100 mph slower than the MiG-15. But in December 1950 the Sabre arrived, like a Hollywood sheriff come back to town; they had barely joined the war when they shot down six MiG-15s in a single engagement on December 22.

The Soviets immediately set out to learn everything they could about the new enemy fighter. In the months that followed, Soviet intelligence agents monitored F-86 radio transmissions, interrogated Sabre pilots who had been shot down and taken prisoner, and reported their findings to the Soviet leadership. Premier Joseph Stalin himself gave the order to capture an F-86.

How the Soviets first attempted to carry out the order is not a proud moment in Russian aviation history. In April 1951, the Soviet Central Aero-Hydrodynamics Institute, a flight research center located at what is today Zhukovsky Airfield near Moscow, dispatched a special group of test pilots to a training base in Manchuria. The team practiced precision formation flying in MiGs, with the outlandish goal of boxing in an F-86, escorting it to Manchuria, and somehow forcing it to land. After a month of practice, the pilots joined the 196th Fighter Air Regiment, part of the 324th Fighter Air Division, at Andun, on the Manchurian side of the Yalu River, which formed a border between China and North Korea.

Experienced combat pilots of the Soviets' highest scoring regiment in Korea, the 196th made fun of the plan. Even today, the regimental commander, Colonel Yevgeniy G. Pepelyayev, derides the test pilots. When I spoke to him in Russia two years ago, he still had the pugnaciousness and arrogance at age 80 that characterized his career as a fighter pilot. He told me that the test pilots wanted to fly MiG-15s assigned to his regiment and offered to let the 196th count test-pilot victories as their own. Pepelyayev told them, "I don't need your victories and won't have any. You will be lucky if you manage to stay alive." Although Pepelyayev relented and allowed the use of his airplanes, his words were prophetic. He didn't

need donated victories—he became the Soviet Union’s top-scoring ace in Korea, credited with 19 kills (including Garrett’s F-86; it was Pepelyayev who got the first hit). And the test pilots achieved no victories. During their first combat experience, on May 31, 1951, one of the senior test pilots was shot down. After their commander died in a crash landing at Andun airfield within weeks of the first loss, members of the group were spirited back to Moscow. Five remained and were absorbed into combat units, but the plan to corral a Sabre was quietly dropped.

Then on October 6, Bill Garrett bellied into a tidal pool on the coast of the Yellow Sea, and the Russians saw their chance.

Garrett was rescued by an SA-16 amphibian, but above his F-86 a three-hour battle raged as U.S. pilots tried to destroy the aircraft and Russian pilots fought them off. The Russians paid dearly for the prize. “We lost seven MiGs and didn’t get any more Sabres,” Pepelyayev said, “but the incoming tide covered the plane.”

A Russian search team, which included Moscow representatives of the Mikoyan design bureau, used the MiG pilots’ reports to locate the aircraft. Knowing it was only a matter of time before the Americans returned, the search team recruited 500 Chinese laborers to haul the wreckage from the water. The next day, as the team members labored to remove the wings, they had the advantage of an overcast sky, but U.S. ships at sea spotted the group and fired on them. An F-84 dropped through the clouds, causing the workers to scurry for cover on the levee, but the F-84 turned out to be a reconnaissance version and had no bombs to drop on the aircraft. That night, desperate to depart before dawn, the team continued dismantling the Sabre, finally finishing at four in the morning. The laborers loaded the pieces on trucks. Rolling toward Andun, the convoy hid in tunnels during the day, hopping from one to the next each night, yet the prize was nearly lost. According to the 1998 article in *Mir Aviatsii*, one of the military engineers, N.M. Chepelev, rode in the lead truck, which carried the F-86’s forward fuselage. Even though daylight was fast approaching, he decided to attempt to reach the next tunnel. The rest of the group elected to play it safe and stayed behind. The Americans “almost got us,” Chepelev remembered. “The driver...was already approaching the tunnel when we noticed the ‘night watchman,’ a B-26.... We entered the tunnel at high speed as the B-26 fired several rockets at us. Fortunately, we were already about a hundred meters deep inside the tunnel, and the rockets could only penetrate for about 10 meters before hitting the walls.”

Eventually, the convoy got its prize to Andun. The design group wanted the Sabre sent immediately to Moscow, but Pepelyayev persuaded the team to leave it at the base for a few days. “I sat in the cockpit. We all did,” he said. “It was a well-laid-out cockpit, which created an impression that you were sitting in an expensive car.” When the aircraft was finally sent on to Moscow, Pepelyayev recalled, someone sent back a complaint: “Couldn’t you have washed the mud off the aircraft before sending it to us?”

The captured Sabre, serial number 49-1319, arrived at the Air Force Research Flight-Test Institute at Zhukovsky, 22 miles southeast of Moscow, in October 1951. Stalin knew that getting his hands on a Sabre would permit Russian engineers to copy and modify parts for fighter aircraft in a fraction of the time it would take to develop improvements from scratch. His intention had been to have the F-86 copied by an aviation design bureau, just as he had done with the B-29 after three of those aircraft had made emergency landings in Vladivostok during World War II (see "Made in the U.S.S.R.," Feb./Mar. 2001). But the inspection team at Zhukovsky, led by the highly respected test engineer Major Semyon Fradkov, concluded that the copying effort wasn't necessary. Engineers from the Mikoyan, Yakovlev, Tupolev, and Sukhoi design bureaus also examined the Sabre, and noted in their evaluation that the MiG-15 already was a good match for the F-86 and that the MiG-17, about to go into production, was more advanced.

According to Yakovlev's Eugenji Adler, only one engineer dissented: V.V. Kondratyev, from the Central Aero-Hydrodynamics Institute. For his trouble, Kondratyev was tasked with the project of reverse-engineering the Sabre, but the design bureau that was to be created for the purpose never came to be, the effort lost among the many projects jockeying for attention and funding in the final years of Stalin's regime. (Stalin died in 1953.)

Meanwhile, the Air Force Research Flight-Test Institute proceeded with its analysis of the F-86's systems. A team of engineers removed each item and measured, photographed, and drew wiring and engineering diagrams of it. One of the systems that most interested the Russian engineers was the gunsight. Senior Lieutenant Vadim Matskevic, who worked in the air force engineering department, got the job of comparing the F-86 gunsight system with the one on the MiG-15.

The F-86 had a Sperry APG-30 radar gunsight, which was extremely accurate up to a range of about 3,000 feet and able to measure the range and compute the lead time required even while the target was maneuvering. The MiG-15, on the other hand, had a manual system that had been designed in 1939. In Korea, many Sabre pilots credited their gunsight with the advantage they had over MiGs. Matskevic said as much in his report, concluding that the F-86 sight was better than the Soviet design. But questioning a decision in Stalinist Russia—the decision, in this case, to field a fighter with an inferior system—was a dangerous business. Matskevic's opinion earned him some 30 denunciations from other engineers.

Matskevic is still proud of the work that evolved from his report. Today a retired engineer with horn-rimmed glasses living on a pension in Moscow, he talks about the pressure he felt while he was at the institute. Believing he could be kicked out of the service, sent to Siberia, or worse, Matskevic says he worked feverishly to develop a counter to the F-86 gunsight. Matskevic is excitable, especially when describing his achievement; he puffs out his chest, his voice rises in triumph, and he perhaps overemphasizes his own importance. But he is one of the few from the era who was denounced and still saved his own neck, so his immodesty is understandable.

He designed a warning system that detected the signal from the Sabre's gunsight and alerted the pilot that his aircraft was reflecting the signal back to a pursuer. Based on the same technology as today's police-radar detectors, the system was a simple receiver, mounted on the tail.

Flight testing the device became the chore of Lieutenant Colonel Stepan Mikoyan, nephew of the renowned Mikoyan-Gurevich Design Bureau chief, Artem I. Mikoyan. Mikoyan had fought in Moscow and Stalingrad during World War II. He then attended the Zhukovsky Air Force Academy in Moscow, graduating with honors in 1951 to become a test pilot at the Research Flight-Test Institute.

Mikoyan, now 81, is an elegant, accomplished man with a full mane of silver hair and a mustache. He smiles often, his face showing the crow's feet of a man who has spent many, many hours squinting into the sun from beneath a fighter canopy. Though retired with the rank of lieutenant general, he still goes to work at the institute every day.

One of Mikoyan's responsibilities was testing Sabre systems and avionics. He recalled for me how he and test pilot Igor Sokolov tested Matskevic's warning device. To prove his concept, Matskevic set up the radar emitter from the captured Sabre on the roof of one of the institute's tall buildings and mounted his warning device on a MiG. Every time Mikoyan and Sokolov flew the MiG over the building, "we heard a low-pitched 'howling' in the earphones," Mikoyan recalled. "As the distance from it grew, the noise became higher in pitch, but lower in volume. Even so, it remained perfectly distinct within seven or eight kilometers [four to five miles]."

In May 1952, Matskevic took 10 sets of his new invention to Korea and began installing them in MiG-15s. It took about three hours to complete each installation.

Because it occasionally gave false warnings, pilots initially distrusted the device. Many just turned it off, Matskevic said. But he was soon vindicated: A regimental commander flying over the Yalu heard the device give off a faint tone. He checked his six o'clock position and saw nothing. The tone grew louder, so the pilot craned his neck around to look again. Still nothing. He decided the system was acting up, so he shut it off. A minute later, feeling uneasy, he turned it back on. Now the tone was howling. He looked back in time to see two F-86s closing to gun range. As the Sabres opened fire, the MiG pilot banked sharply and escaped with only minor wing damage. From that point on, the word spread. "We saved a lot of pilots," Matskevic said. The system also saved Matskevic's career. He received the Soviet Red Banner, awarded for meritorious service, and a tribute from North Korea. His warning device and its derivatives became a standard equipment on all Soviet fighters.

As more components from the captured F-86 were removed and cataloged, they were installed on test bed aircraft at the Soviet test institute. As a result of the evaluations, several conducted by Mikoyan, the Soviets modified their existing fighters and incorporated some features into future models. The MiG-15bis, for example, already in production, was given a larger speed brake and new hydraulic systems to operate the elevator and ailerons. The larger

brake and aileron boost system were also incorporated into the MiG-17. The small F-86 accelerometer, for measuring G forces, was adopted and installed on the MiG-19 and follow-ons.

While work on the F-86A continued in Moscow, an F-86E, serial number 51-2789, flown by World War II ace Walker H. Mahurin, was downed in Korea by flak in July 1952. Mahurin, then a wing commander, crash-landed. He sustained a broken wrist and was captured and remained a prisoner until just after the armistice in 1953.

His aircraft, though it was in worse condition than Garrett's F-86A, was recovered and dismantled, and the parts were sent to Moscow. The evaluations of its systems were conducted after the war.

In the F-86A model, cables connected to hydraulic actuators moved the control surfaces, but the -E eliminated the cables in favor of a completely hydraulic system for operating control surfaces. The -E also used an all-moving horizontal stabilizer. The combination improved maneuverability at high speeds without the need for trim tabs. Artificial feel was built into the aircraft controls using weights and bungee springs, which let the pilot feel normal stick forces that were still light enough for superior combat control.

A prototype of the MiG-17, dubbed SI-10, was selected to evaluate the features of the new F-86E models. After the design bureau test pilots made several flights at Zhukovsky airfield, Mikoyan ferried it to the Chkalovskaya airfield and in June 1955 began testing it. One of the the F-86E's modifications included the leading edge flap system. "The leading edge flaps improved maneuverability to some extent, but they were not adopted, I think because production of the MiG-17 was ceasing then," Mikoyan told me. "They were not used on the MiG-19 either, probably because of the greater sweep angle of its wings [almost 60 degrees]."

The fully movable stabilizer was also tried on the MiG-17. When Mikoyan flight tested it, at a three-G load factor, he let go of the stick to test the aircraft's dynamic stability. He expected the MiG to porpoise slightly and return to stable flight, but he got a surprise. "The aircraft pitched down so sharply that I was tossed up from my seat and bumped my head against the canopy," he said. "Then it pitched up, and I was pressed down into the seat. After a series of such violent and hardly bearable jolts, I finally decided to get hold of the stick, and the aircraft steadied down. My head was booming like a church bell and ached—I was only wearing an ordinary leather helmet. When the instrument readings were studied afterward, it turned out that there had been nine up-and-down jolts in eight seconds, with the positive load—pressing me into the seat—up to 10 Gs and the negative up to -3.5 Gs."

Mikoyan borrowed one of three U.S. "crash helmets" recovered in North Korea and flew a second test. "The whole thing happened again, the only difference being that my head did not ache quite as much," he said. The stabilizer modification, Mikoyan added, was not adopted for the MiG-17. However, the all-movable stabilizer was installed on the MiG-19 and later Soviet fighters.

One of the most significant adaptations the Soviets made after capturing the Sabres and Sabre pilots was the introduction of G-suit systems, which enabled Russian pilots to handle the increasingly formidable MiG and Sukhoi fighter jets to come. With the addition of G-suits, the Soviets improved the performance of the most lethal system in a combat aircraft: the pilot.