FLYING THE FLOGGER
Reflections on an Early Post-Cold War MiG-23 Experience

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Mikoyan's MiG-23UB dual-control company demonstrator

The author, an Honorary Daedalian since 2002, is a civil-rated pilot and defense analyst specializing in air warfare. He was a senior research associate at the RAND Corporation for 37 years and is now a nonresident senior fellow with the Center for Strategic and Budgetary Assessments. Before joining RAND in 1974, he served as a Soviet military analyst at the Central Intelligence Agency. During the last years of the Cold War and for a short time thereafter, when access by Western defense professionals to the USSR's and post-Soviet Russia's military leaders and military aviation industry was remarkably unrestricted, he had the rare privilege of flying four invitational fighter sorties with four of the country's top-ranked industry test pilots. This article recalls the highlights of the most instructive among them.

My ties with the Mikoyan Design Bureau, first established after I met then-chief test pilot Valery Menitsky at the Farnborough Air Show in 1988, opened the door for me to fly a MiG-23 (NATO code-name FLOGGER) at the Zhukovsky Flight Test Center during the 1993 Moscow Aviation and Space Salon. Four years before, at Menitsky's behest, I had been the first American to fly the MiG-29 and the first Westerner invited to fly a combat aircraft of any type inside Soviet airspace since the end of World War II.

Having previously flown both the MiG-29 and later the Su-30 with Anatoly Kvochur, formerly of Mikoyan and at the time with Russia's Gromov Flight Research Institute, getting a shot at the MiG-23 was a step backward into aviation history. Yet that aircraft had been a centerpiece of the Soviet fighter inventory for nearly two decades. On top of that, I was in Moscow to interview senior Russian Air Force leaders in connection with a U.S. Air Force-sponsored RAND Corporation study I was conducting on trends in post-Soviet Russian military aviation—a study eventually published as *Russia's Air Power in Crisis* (Smithsonian Institution Press, 1999). Naturally, if it could be worked out, I would stand to benefit enormously by sampling at first hand a fighter that, at the time, remained a workhorse not just in the Russian Air Force but in more than twenty other Soviet-supplied air forces around the world.

FLIGHT PREPARATIONS

I arrived at Mikoyan's chalet at Zhukovsky on the morning of August 31, 1993 and was met by Vladimir Gorbunov, the design bureau's deputy chief test pilot. Vladimir (Volodya for short) informed me that we would be flying together later that day.

During our drive across the airfield to Mikoyan's flight operations facility, Volodya asked me what I hoped to gain from my flight, since he was undecided whether to fly me in the front or back seat. I replied that I knew the MiG-23 to be a vintage product of Soviet fighter design and that I was mainly interested in experiencing its general handling and performance characteristics. I added that if he saw no problem from a safety-of-flight viewpoint, I would much prefer to fly the aircraft from the front cockpit.

I took special care to stress that I was not a former military aviator, but simply a civil-rated pilot with roughly 850 hours of modest flight experience at the time, including the good fortune of having logged some 250 sorties in more than 35 different types of fighter, attack, and jet trainer aircraft with the U.S. Air Force, Navy, Marine Corps, and eight foreign air forces over the course of the preceding seventeen years. I added that I had front-seat flight experience in the F-104, F-5, T-38, and F/A-18 and that I had flown the F-111 twice on tactical range missions from the left seat. In all, I told Volodya that I felt I could handle any responsibilities from the front cockpit, even with the added burden of having to communicate in a foreign language.

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We arrived at Mikoyan's flight line to find the company's two-seat MiG-23UB (UB for *uchebno-boyevoi*, or "combat trainer") parked with its canopies open and ground technicians readying the jet for flight. It looked for all the world like the common Russian fighter pilots' slang expression for it—*krokodil.*


Dr. Ben Lambeth boarding 03 for his flight

Volodya invited me to climb up into the front cockpit. Once I was settled in, he guided me methodically from the left console through the main panel to the right console, pointing out various switches and controls for which I would be responsible.

After we returned to flight operations to brief for our flight, I told Volodya I was interested in performing basic aerobatic maneuvers. He suggested a nonafterburner takeoff to save fuel for our air work. We planned a standard departure to the nearby work area, where we would perform fifteen minutes or so of *pilotazh* (advanced handling) and then return to Zhukovsky for some pattern work if our remaining fuel permitted.

As step time neared, we walked across the ramp to Mikoyan's life support facility, where I was issued a standard Russian helmet and oxygen mask, summer-weight flight suit and jacket, g-suit, and boots and gloves. A Mikoyan ground technician was on hand as we approached the jet to help me strap in and set up some switches in the front cockpit.

Once we were settled in, Volodya and I maintained a constant low-key patter in Russian almost from engine start to shutdown. Fortunately, while preparing for my MiG-29 flight with Valery Menitsky four years before, I had begun a determined effort to master basic Russian fighter cockpit and operations terminology. Thanks to that, although my spoken Russian remained far from native, I now felt completely at ease communicating with Volodya in the MiG-23.

On the left side panel immediately behind the throttle were three flap position-select buttons marked, respectively, takeoff, cruise, and land. Directly inboard of the throttle was a three-position handle to fix the variable-geometry wings at 16, 45, or 72 degrees of sweep. The 16-degree position is selected for takeoff and landing, with the 45-degree position used for most routine maneuvering. As in the case of the F-111, the full-aft position of 72 degrees is only employed for high-speed flight. We never used it.

To the immediate left of the landing gear handle was a small push-pull rod labeled MRK (*mekhanizm razvorota kolesa*) for selecting high-gain or low-gain deflection of the nosewheel steering system. Volodya told me that I would need to extend it before we taxied and to stow it immediately prior to takeoff, since he lacked a duplicate control in the rear cockpit.

The instrument panel was typical for Soviet fighters of the MiG-23's generation, painted turquoise green and featuring a familiar white vertical stripe down the center indicating where the pilot should place the control stick to neutralize roll input and unload the jet in case of an inadvertent departure from controlled flight. The attitude director indicator was also distinctively Soviet in being earth-stabilized rather than aircraft-stabilized. As in the MiG-29, it featured a drum that rotated in the vertical plane to indicate pitch attitude, with a separate airplane symbol at the instrument's center that rotated right or left to denote angle of bank.

With electrical power on, Volodya keyed his microphone button for a check of our intercockpit communications system (ICS), and I promptly acknowledged "*gromko i yasno*" ("loud and clear"). He then reviewed some final prestart checklist items with a ground technician who was talking to him on a patch cord. The crew chief standing on the front-cockpit boarding ladder gave my harness and connections a final once-over and then instructed me to close the canopy. With our canopies down and locked and the warning light out, Volodya called Zhukovsky tower for clearance to start.

START, TAXI, AND TAKEOFF

Once we received a green light from the tower to crank, Volodya directed me to depress the engine start (*zapusk*) button on the right sidewall. With the throttle set at ground idle, that commenced an automatic start sequence. We quickly got engine rotation on the tachometer, followed by the familiar rumbling sound and feel of a good lightoff.

Dr. Lambeth strapped into 03's front cockpit

Volodya checked the wing sweep mechanism, verified position changes with the ground technician, and finally advanced the wings forward to the 16-degree position. After selecting takeoff flaps, he instructed me to engage the MRK handle and then tested the nosewheel steering. That completed, we got clearance to taxi. Volodya released the brakes, added enough power to get the airplane moving, and then brought the throttle back to ground idle as he maneuvered us out of the ramp and onto the main taxiway. Once we were aligned and rolling, he gave me the airplane for the rest of our flight.

The nosewheel steering struck me as being unusually sensitive, and I found myself, despite my best effort to stay on the centerline, moderately S-turning the aircraft down the taxiway. I humbly apologized to Volodya for being such an apparent hamfoot on the rudder pedals. He replied that the problem was not typical of the MiG-23, but rather was a peculiar quirk of our airplane and that I was doing OK.

Even with the throttle fully retarded at ground idle, the airplane developed a brisk rate of speed on the taxiway, enough so that I felt a strong urge to tap the brakes. Before doing so, I asked Volodya if he was happy with our taxi speed. He replied that it was fine (*"normal'no"*), so I pressed ahead to Runway 12, the main runway at Zhukovsky. Our radio call sign was 588.

We got takeoff clearance, and after lining up with the runway, I pushed the throttle up to 100 percent for our final engine checks.

I informed Volodya that everything up front looked good and that I was ready to go. We then released the brakes, and I came onto the controls as the airplane began to accelerate at a smart pace.

It took no effort at all to keep the jet centered down the runway as the airspeed began to build. As instructed, I came back on the control stick at 230 km/hr (124 kts) and allowed the aircraft to rotate to a takeoff attitude at 250 km/hr (135 kts), pegging a 10-degree nose high attitude until the MiG-23 flew itself off the ground at 260-265 km/hr (140-143 kts). Once a positive rate of climb was established, I brought the landing gear handle up and Volodya selected cruise flaps.

After the jet was cleaned up, Volodya asked me to come left 20 degrees and establish a climb at 600 km/hr (324 kts) with the power set at 100 percent. He then directed me back to the right to pick up an outbound heading toward the maneuvering area, the northern boundary of which began 59 km (37 mi) southeast of Zhukovsky.

Departure control had assigned us an altitude block of 3-9,000 meters (roughly 10-30,000 ft) within the work area. Once we were established in the block, Volodya cleared me to maneuver the airplane as I wished.

THE FLIGHT PROFILE

Starting from a base of around 5,000 meters (16,000 ft), I flew a maneuver sequence consisting of two hard 360-degree level turns to the left and right; two loops; a pitchback maneuver (*boyevoi razvorot*, or "combat reversal"); a sliceback maneuver; several aileron rolls, followed by an unloaded slow roll to the left; and finally an Immelmann turn (*polupetlya*, or "half loop"). Throughout this sequence, the MiG-23's wing position was kept at 45 degrees of sweep, which Volodya had selected as we accelerated to 600 km/hr (324 kts) en route to the work area. All of our over-the-top maneuvers (loops and Immelmann) were initiated at 900 km/hr (486 kts).

Mikoyan test pilot Vladimir Gorbunov, Dr. Lambeth's IP

No sooner had I rolled into my first hard turn than I sensed one of the aircraft's most pronounced limitations, namely, its poor field of view out of the cockpit. The canopy frame was mounted quite high. This produced a sensation of sitting deep in the cockpit. Because of that, I had the distinct feeling at times, especially during over-the-top maneuvers, of sitting almost in a tank rather than in a third-generation fighter. I could see the engine's air intake ramps if I twisted around in the seat hard enough. But in general, looking steady anywhere behind the aircraft's wing line required a special effort.

I initiated my loop maneuver in full military power at 900 km/hr (486 kts), with Volodya recommending a 5-g pull on entry. Like the F-4, the MiG-23 ate up a fair amount of sky as we climbed through the vertical and worked our way over the top.

The angle-of-attack indicator was redlined at 18 degrees. I noted that I had allowed the jet to go slightly into the red as we entered the float inverted at around 400 km/hr (216 kts). However, the aircraft showed no tendency to wing-rock or nose-slice in that regime, and we continued down the backside with steadily increasing g for a level recovery at more or less our entry altitude.

My pitchback to the left once again punctuated the MiG-23's restricted field of view as I threw my head back in search of an outside horizon reference. I felt a similar restriction during the sliceback maneuver, which I entered at around 800 km/hr (430 kts), more or less the aircraft's corner velocity—the lowest speed at which it can attain its maximum allowable g load—with the wings set at 45 degrees of sweep.

With a 135-degree bank angle established, I initiated an immediate pull into light buffet, feeling for the aircraft's maximum coefficient of lift. I peaked out at 5.5 gs in this tactical turn, the highest g-load I remember having seen during my flight. The aircraft lost a lot of altitude in the reversal, indicating yet again that it was a generation behind the MiG-29. In fairness to the jet, I was flying the MiG-23 very conservatively. For that reason, I was almost surely not producing anywhere near the turning performance that I might have generated with a more aggressive technique.

My aileron rolls and unloaded slow roll indicated a slow response rate compared to other fighters I have flown. As in the MiG-29 and Su-30, it took a substantial lateral stick displacement to get the roll rate I was seeking. Pitch trim response during airspeed transitions was also slower than I was accustomed to in comparable Western aircraft.

My final maneuver was an Immelmann turn, which Volodya had suggested to me over the ICS. Accelerating again to 900 km/hr (486 kts), I initiated a 5-g pull into the pure vertical, with Volodya tapping the afterburner this time for a little extra thrust as we started heading uphill. Coming over the top, a seemly blend of aileron and rudder made for a smooth slow-speed recovery to level flight. With our fuel quantity gauge indicating less than 2,000 liters (we had started with 4,500 liters—or around 7,000 lb), Volodya said it was time to begin working our way back to Zhukovsky.

RECOVERY

After assigning me a return heading, Volodya contacted Zhukovsky approach control and requested clearance to return to base (RTB). I throttled back to 600 km/hr (324 kts) on a northwesterly heading for the en route descent. Zhukovsky approach cleared us first down to 1,500 meters (5,000 ft), then to 900 meters (3,000 ft), and finally to pilot's discretion for a straight-in to Runway 30. That set us up for a landing in the opposite direction from which we had taken off, a typical flow pattern for the few daily test flights normally conducted out of Zhukovsky.

As the airfield emerged into sight, I began a gradual descent toward the end of the runway. It soon became apparent that we were

overtaking a Yak-40 light jet transport directly ahead on its own short final approach. I informed Volodya that I had the traffic in sight, whereupon he directed me to offset to the right and go around, taking the aircraft himself to throw in a couple of aileron rolls for the air show spectators as we passed slightly left of the airfield's centerpoint. I then turned left onto a downwind leg at 500 meters (1,600 ft) above ground level and waited for the tower to call our base-leg turn.

MiG-23 cockpit showing characteristic Soviet-style layout

Abeam a point about five miles from touchdown, the tower finally called us back inbound, and I repositioned the MiG-23 for a long straight-in approach to landing. Volodya had briefed me earlier to hold 350 km/hr (190 kts) on the approach. I complied, periodically calling out our airspeed over the ICS to let him know I was watching it carefully.

Earlier during our RTB, Volodya had moved the wing sweep handle fully forward to the 16-degree position. He also beat me to landing gear extension once I rolled out on final approach. The aircraft handled very solidly throughout the approach. After I crossed the runway threshold and initiated a flare, I gradually retarded the throttle almost back to flight idle. With that, it was simply a matter of holding the jet off the ground as it slowly settled, letting the airspeed bleed off and looking for about 280 km/hr (150 kts) at touchdown. The MiG-23 landed gently within the first 500 ft of runway.

Although the main gear retracts into the narrow fuselage, the wheel base is surprisingly wide, the product of an ingenious Mikoyan design featuring multiple pivots and joints. This made for a solid and stable contact with the runway, and I found the aircraft very easy to land. Once we were down and rolling out, I fully retarded the throttle past the detent to ground idle.

After I had re-extended the MRK handle and turned the aircraft onto the parallel taxiway, Volodya directed me to continue taxiing back to the Mikoyan ramp. Turning 90 degrees left into the hardstand, I brought my canopy up as we braked to a full stop at the direction of the ground marshal, whereupon Volodya shut the engine down from the rear cockpit. We touched down with a little less than 1,000 liters of fuel, which is normal minimum landing fuel for the MiG-23. Our elapsed time from start to shutdown was 45 minutes, with about 30 minutes in the air.

IMPRESSIONS

Although I was flying an obsolescent fighter even then, more than two decades ago, this experience was more instructive from a pilot's point of view than either my earlier MiG-29 flight with Valery Menitsky or my subsequent Su-30 flight with Anatoly Kvochur. In both earlier cases, I flew from the back seat in forbidding winter weather, with a low overcast, blowing snow, and little horizon reference to speak of.

This time, I was in the front cockpit; I was flying a maneuver sequence that I had largely designed myself; and I was by now comfortable enough speaking Russian "fighterese" that I was able to sustain a continuous conversation with Volodya.

Better yet, the weather that day was absolutely spectacular, with light scattered clouds but otherwise 60-mile visibility and blue sky all around ("a million by a million," as Russian pilots say).

Indeed, during our descent back to Zhukovsky, it occurred to me during a long pause in our ICS chatter that my sense of the moment was perfectly captured in a refrain from my favorite old Russian folk ballad hauntingly sung by the popular female vocalist Zhanna Bichevskaya: "*Lyublyu ya storonu rodnuyu, tuda b letel ya sokolom...*" ("I love my native homeland, there I would fly like a falcon ....") I later penned those words in the aircraft's maintenance log when a Mikoyan ground technician invited me to write down a short remembrance of my flight for his record.

Since I am not a trained fighter pilot, let alone a test pilot, I need to be especially careful about presuming to venture any "evaluation" of the MiG-23. My overall sense was that it was typical of its generation in terms of its performance and responsiveness to the controls. I later thought long and hard about what the closest Western analogue might be from my own diverse flight experience in terms of general handling and aircraft feel. I concluded that the MiG-23 most closely reminded me of a cross between the Tornado GR1 and a hard-wing F-4. The FLOGGER is plainly a high-performance aircraft. Indeed, it has a higher allowable top speed on the deck than the MiG-29 that replaced it. Nevertheless, "nimble" is anything but the word I would use to describe it. Stick forces in both pitch and roll seemed a bit heavier than those in the F-4 and about like those I remember from the Tornado GR1. And from my own best recollection, the MiG-23's sustained turn rate fell somewhere between that of the F-104 and F-105.

I did not seek to sample the aircraft's signature performance feature—its phenomenal rate of acceleration—because of the excessive fuel penalty it would have exacted. It has long been said, however, that from a head-on pass, a properly-flown MiG-23, with its Tumansky RD-29 engine producing 27,500 lb of thrust in full afterburner, could pitch back and run down any Western fighter of its day if it had an adequate fuel reserve.

The MiG-23 was the first Soviet fighter equipped with a look-down/shoot-down radar and beyond visual-range air-to-air missiles. For that reason alone, it was a threat to respect by NATO's pilots when the Cold War was a daily fact of life in Central Europe. Today, sad to say, the fleeting openness of early post-Soviet Russia that made possible my flight in the FLOGGER and other Soviet fighters has since yielded to a more familiar and dismaying pattern of conduct under Vladimir Putin's autocratic rule. There is little likelihood that an American, especially one of my background, would have an occasion to repeat such an experience in today's far more hostile and confrontational Russia.

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