

EUROPE'S FINAL FISHBEDS



Romania remains the largest MiG-21 operator in Europe, however its fleet of upgraded LanceRs has dwindled considerably in recent years.
Dirk Jan de Ridder

Over 50 years after the type was first flown, the MiG-21 is still serving on the front line in Europe. However, the next 12 months may see several of these last operators taking the important decision to finally replace their jets.

report:
Dirk Jan de Ridder

AT THE HEIGHT of the Cold War, the MiG-21 (NATO/ASCC reporting name 'Fishbed') was the most numerous jet fighter in many of Eastern Europe's Warsaw Pact states, as well as in non-aligned Finland and Yugoslavia. By the beginning of the 21st century most of these operators had retired their MiG-21s, but four countries on the Balkan peninsula continue to operate the jet to this day: Bulgaria, Croatia, Romania and Serbia.

Having served in a multitude of roles, including ground attack and reconnaissance, current European MiG-21s are now only used operationally in the interceptor role, for which the type is eminently suitable. The aircraft is relatively cheap to fly, has an impressively quick response time of three to four minutes, and no expensive infrastructure is required to maintain and operate it. Spare parts are running out, though, and the MiGs have logged many more hours than originally intended. Further extension of airframe lives will become very difficult and expensive, as will regular maintenance. As a result, aircraft availability — already very low with most of the operators — will continue to decrease. All four remaining European MiG-21 operators began searching for a replacement at least five to 10 years ago, but until now all plans have been rejected and the MiG-21 has remained in service.

Bulgaria

When the Cold War ended, large numbers of Bulgarian MiG-21s were reduced to scrap metal in order to meet limits set by the Treaty on Conventional Forces in Europe. Only small quantities of MiG-21s, MiG-29s and Su-25s remained in service. Today, the Bulgarian Air Force operates a mere 10 per cent of its Cold War arsenal and it is having difficulties in keeping even this small number of aircraft airworthy. The MiG-21 and Su-25 are due to be retired imminently, after which it will be the MiG-29's turn to bow out by the end of this decade.

The total number of MiG-21s acquired by Bulgaria between 1963 and 1990 amounted to as many as 226 airframes in 11 different versions. Less than a dozen jets remain in service today, including a pair of two-seat MiG-21UMs. The MiG-21bis fighters still in use have not been upgraded due to a lack of funds. They have only been equipped with a transponder to conform to ICAO requirements.

The pace of operations is now reducing rapidly. When *Combat Aircraft* visited the 3rd Iztrebitelna Aviacionna Baza (3rd Fighter Aviation Base) Graf Ignatievo, in summer 2011, pilots of the first squadron (1/3 Iztrebitelna Avio Eskadrila) were already converting to the MiG-29, but some of them were only logging 20 or 30 flying hours a year — on both types. In the course of a single day, three MiG-21s logged four sorties, while eight MiG-29s flew at least 20 times. Two MiG-21s, plus a spare aircraft, remained on Quick Reaction Alert (QRA) duty. Armed with two R-60 infra-red-guided short-range air-to-air missiles and the 23mm GSh-23L cannon, they were ready to get airborne whenever the alarm sounded. NATO regulations require the aircraft to take

off within 15 minutes, which is relatively leisurely compared to the five minutes during the Warsaw Pact era, and pilots still approximate the old Soviet-era limits.

The Bulgarian Air Force has long had plans to retire and replace its MiG-21s. During 2002 plans for the acquisition of second-hand F-16s were abandoned in favour of overhauling and upgrading the remaining MiG-29s, which are expected to remain in service until around 2018. In a letter from the ambassador of the United States to Bulgaria in 2007, classified as secret and published on Wikileaks, it was said that Bulgaria should be steered away from the purchase of additional Russian fighters, which are viewed as an obstacle to Bulgaria's

'transformation to a more operationally and tactically flexible organisation as expected by NATO.'

On 6 May 2013, the country's Armed Forces Day, Bulgaria's president was quoted as saying that the country could purchase nine or 10 jet fighters 'soon'. Repeated reports have indicated that the choice will be made between used F-16s from Portugal, second-hand Eurofighters from Italy, or new Gripen. The Armed Forces Day was further celebrated with a military parade featuring three helicopters and military personnel on foot, with no mechanised vehicles present — allegedly as a cost-saving effort. If the latter is true, this raises the question of how the country can afford new jet fighters.

Bulgarian MiG-21s still maintain the important QRA mission.
Dirk Jan de Ridder



Repeated rumours suggest that Bulgaria may purchase a handful of secondhand Western fighters to replace its MiG-21s, although this has yet to be realised.

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Romania

Although its inventory has decreased considerably over the past few years, Romania still operates the largest fleet of MiG-21s in Europe. From 1995, 110 MiG-21s were upgraded to LanceR A (specialised in ground attack), LanceR B (training) and LanceR C (air defence) standards. With the help of Israeli companies IAI and Elbit, the LanceR upgrade programme converted the jets into some of the world's most capable MiG-21 variants. In fact, the MiG-21 LanceR became the first operational aircraft to make extensive use of a helmet-mounted display system. They were also among the first capable of employing both Eastern and Western armament, including French Magic and Israeli Python 3 air-to-air missiles, American Mk82 and Mk83 'dumb' bombs, Israeli Lizard laser-guided bombs and the Russian S-24 unguided rocket.

Both the LanceR A and LanceR B sport a camouflaged colour scheme with different tones of green and brown and blue undersides. The LanceR C also has a blue

underside, but it is easily distinguished by its grey and white camouflage pattern. Only a small number of the 110 upgraded MiG-21s are still operational, the bulk of which comprise some 20 LanceR Cs and six LanceR Bs. In-flight photographs of the LanceR A have not surfaced for two years and the type may have silently been withdrawn from use.

Romania is the only country to have contributed MiG-21s to a NATO mission abroad. In August 2007, four LanceR Cs deployed to Šiauliai in Lithuania to police the airspace over the Baltic States. For three months, the fighters were on duty 24 hours a day, seven days a week, waiting for an alert to scramble into action within 15 minutes in order to intercept an incoming aircraft. Their readiness was never tested for real, so they only flew training flights to keep the pilots mission-ready.

In common with the other European MiG-21 operators, Romania has been looking to replace its fighters for some time. Back in 2005, the country reportedly asked Belgium and Israel for information

regarding the possibility of purchasing second-hand F-16s. In the years that followed, Eurofighter, Lockheed Martin and Saab also provided proposals for the sale of new aircraft, but a deal was never signed. A Romanian delegation visited Portugal in April 2013 to negotiate the purchase of 12 F-16s. An agreement was made to finalise documents by the following month and hopefully sign a deal by September. The airframes concerned were built for the US Air Force in 1984, but had been in storage for around 10 years before they were sold to the Portuguese Air Force in the 1990s. In Portugal they received a Mid-Life Update. Some of the most recently updated jets have only flown very few hours with the Portuguese Air Force, but it is still unclear whether Romania will receive these aircraft or some of the 'older' ones. The F-16s would form a single operational air policing squadron some time around 2017, and one squadron of LanceRs will reportedly be kept operational until another 12 F-16s are acquired elsewhere. >

Romania operates the LanceR A, specialised in ground attack and shown here, the LanceR B two-seat trainer and LanceR C air defence versions.

Dirk Jan de Ridder



Croatia

Croatia became an independent country in 1991 and initially operated three MiG-21s that had defected from Yugoslavia. Another 40 were purchased from Ukraine in the mid-1990s. Half of these were only used as a source for spare parts, leaving the Croatian Air Force with an operational force of 16 single-seat MiG-21bis and four two-seat MiG-21UMs. In 2003, eight MiG-21bis and four MiG-21UMs were overhauled by Aerostar in Romania and received upgraded avionics for NATO interoperability. Two single-seaters were lost in a collision during a training flight in September 2010, so only six MiG-21bisD (the unofficial, local designation given

to the aircraft after the overhaul in 2003) and four MiG-21UMDs remain available, but, as less than a handful of these are airworthy at any one time, flight operations by the Eskadrila borbenih aviona (fighter squadron) are extremely limited.

With a budget of around \$800 million, the Croatian Air Force has been looking for around 12 multi-role fighters to replace the MiG-21 since 2007. Dassault, Eurofighter, Lockheed Martin, RAC MiG and Saab all received requests for information, but the competition soon narrowed down to the Gripen and F-16 Block 52. Croatian news media calculated that the F-16 would be 10 per cent more expensive to acquire and 50

per cent costlier to operate than the Gripen. Added to this, in order to remain current, pilots will have to fly more hours than they are presently able to do in the MiG-21.

Any new fighter will be more expensive than the MiG-21, and not just in terms of initial purchase cost. As a result, no order has yet been placed. Over the years Saab has made some new offers, including one in October 2012 for a 10-year lease of eight Gripens, but although no financial details were specified it should be assumed that even a leasing contract did not meet Croatia's budget. At the same time, Croatia has also been looking for second-hand aircraft. At one point,

rumours even circulated that Germany had offered the country second-hand F-4F Phantom IIs. While these were said to be very competitively priced, it was never a serious long-term option. The Phantoms may have had a couple years of service life left and technologically would have represented a step forward, but the F-4F is also much more expensive to operate than the MiG-21. This summer it has been confirmed that Croatia will extend the life of its MiG-21 fleet by 10 years, sending three single-seaters and a quartet of two-seaters to Odessa for overhaul, and buying five ex-Yemeni aircraft to make up a total fleet of 12 jets.

This photo: Croatia's MiG-21s have received a modest upgrade, but in reality they are in desperate need of replacement.

Katsuhiko Tokunaga/DACT

Right top to bottom: The 'Stone Age' cockpit of a Croatian MiG-21bis, upgraded by Aerostar in Romania with basic avionics for NATO interoperability.

Katsuhiko Tokunaga/DACT

A MiG-21UMD of the Eskadrila Borbenih Aviona (EBA) back at Zagreb-Pleso following a mission.

Frank Noort

A MiG-21bisD tears out of Zagreb-Pleso. Despite its age, the MiG-21 is still suitable for the QRA mission, conceived as it was as a point interceptor.

Frank Noort



'The time from receiving the scramble alarm from the operations centre to the release of brakes is usually less than four minutes — a result that would put much more modern designs to shame'



Serbia

With the first examples arriving in 1964, Yugoslavia took delivery of a total of 261 MiG-21s in 11 versions. They saw no combat against NATO coalition aircraft during the 1999 Kosovo conflict and, while about two-dozen MiG-21s fell victim to airfield attacks, many survived. After the war only enough remained active to equip one regiment, so all MiG-21s were transferred to Batajnica near Belgrade. In the newly styled Serbia and Montenegro, which had been formed in 2003, 10 MiG-21s underwent limited overhauls. Currently, a handful of the MiG-21bisK fighters and two MiG-21UM combat trainers are still flown, although the number of aircraft available for training flights is extremely limited. The MiG-21's out-of-service date has continually been pushed forward each time its airframe life has expired.

During *Combat Aircraft's* visit in October 2011, a single MiG-21UM was the only aircraft available to the squadron for training. It logged five sorties in one day, giving 10 pilots the opportunity to add another flying hour to their logbook. The

next day was similar. While only one MiG-21 was available for training flights, an airworthy pair of single-seaters was parked on the opposite side of the runway. Each armed with R-60 short-range air-to-air missiles and a fully loaded internal cannon, they are still preferred for QRA over the more capable MiG-29. The older fighter is considered a pure interceptor, perfectly suitable for air policing but not much more than that, whereas the MiG-29 is a more sophisticated air superiority fighter. While the MiG-21 will soon be phased out, the MiG-29s will continue to serve until at least 2018.

Replacement plans for the MiG-21 were first drafted as long ago as the 1980s. In order to make Yugoslavia self-sufficient in the manufacture of military equipment, the Novi Avion (new aircraft) project was initiated, but due to the cancellation of this programme, the MiG-21 remained in service much longer than planned.

If no replacement is acquired, the inevitable retirement of the MiG-21 will leave a serious gap in the country's air

defences. It will be very difficult to maintain the current level of training, since two of Serbia's four MiG-29s are reserved for QRA duties, leaving only one single-seater and a two-seater for training and maintenance requirements. Therefore the introduction to service of a new fighter is a major priority for the Serbian Air Force. Types officially under consideration included US (F-16, F/A-18), European (Eurofighter, Gripen, Rafale) and Russian (MiG-29, Su-30) aircraft. In April 2013, quite unexpectedly, the Serbian government announced that it was close to finalising a deal for the purchase of six MiG-29M/M2s and that pilots were already being trained to fly the aircraft.

Developments over the next couple of years will clarify whether these Balkan countries will be able to independently operate fighters into the future, or whether it has become a 'luxury' too expensive for some. The latter situation is certainly not unthinkable when it comes to Croatia. One thing seems certain: time is fast running out for the MiG-21, half a century after the legendary jet first flew. ✈



The Serbian QRA unit is mostly manned by 101st Fighter Squadron 'Knights' pilots and ground crew, and occasionally by senior pilots from the 204th Aviation Brigade. Igor Salinger



Serbian QRA MiG-21s operate in the open, on an apron next to the south-east end of the runway at Batajnica. Igor Salinger



Armed with R-60 short-range air-to-air missiles and a fully loaded internal cannon, the MiG-21 remains Serbia's preferred option for QRA over the more capable MiG-29. Igor Salinger

GONE IN 50 SECONDS: SERBIAN QRA

Two pilots, six ground crew and two MiG-21bis, each carrying two or four air-to-air missiles in addition to some 200 rounds of 23mm ammunition and a centreline drop tank. These are the assets that stand guard around the clock for Quick Reaction Alert (QRA) duties within the Serbian Air Force (ViPVO). Commonly known as *dežurna para* (duty pair), the mission is officially referred to as *dežurna jedinica* (DJ), or duty unit.

Except for a relatively brief period during the 1990s, when the MiG-29 assumed the position, the 'Fishbed' has provided the backbone of the air superiority mission over the former Yugoslav republics since the first early MiG-21F arrived back in 1962. Introduced only five years after Yugoslavia's first jet fighter, the North American F-86E Sabre, the Mach 2 MiG-21 represented a major leap in capabilities for the service.

For more than 35 years, until the MiG-29 arrived in 1987, the MiG-21 represented the 'top gun' for Yugoslav pilots, and it is still loved despite its age. One of the reasons for its success is undoubtedly its simplicity and ease of operation and maintenance. Although five MiG-29s that survived 1999's Operation 'Allied Force' were overhauled and received a moderate upgrade in 2008, enabling them to serve for another 10 years or 700 flight hours, the type is yet to be seen in the QRA role.

In addition to the four remaining MiG-29s — three 9.12A single-seaters and a single MiG-29UB trainer — one aircraft has been lost in an accident. The survivors are kept busy for pilot training and conversion to type. Moreover, since its re-introduction to service, the type has suffered from generally poor serviceability, be it a lack of tyres, avionics problems, or other reasons. In a rather bizarre explanation offered to the press in May, the Serbian defence ministry said that 'ejection seat cartridges' were the reason for a lack of MiG-29 flying, and that this would be 'resolved soon'.

The Serbian Air Force (Vazduhoplovstvo i Protivazduhoplovna Odbrana/ViPVO) maintains its QRA mission with a pair of MiG-21bis fighters from the 101st Fighter Squadron 'Knights' (101. Iae Vitezovi), armed with two or four R60 missiles and G5-23L cannon. Igor Salinger

Moreover, certain facilities required for the MiG-29 in the QRA role are lacking. As one senior 'Fulcrum' pilot explained, the type requires a 'covered facility to shelter it from atmospheric conditions, be it strong sun, heavy rain or snow and icing — through the course of the year we have it all here'. The Yugoslav Air Force had a dedicated QRA shelter — known as *Vranica* — located next to the north-west end of Batajnica's runway 2 (12L). However, as a prime NATO target this was bombed from the opening hours of the conflict in 1999.

Today's DJ MiG-21s are located in the open, on the apron next to the south-eastern end of the same runway (30R), once the home of the 126th Fighter Squadron. This was a MiG-21bis/UM unit that was merged with the 127th Fighter Squadron to form today's 101st Fighter Squadron 'Knights' (101. Iae Vitezovi).

The QRA unit is mostly manned by 'Knights' pilots and ground crew, and occasionally by senior pilots from the 204th Aviation Brigade (204. vazduhoplovna brigada) command. The recently refurbished barracks are shared with a helicopter, usually a Mi-8/17, the crew of which are on search and rescue duty round the clock. MiG personnel rotate every two or three days and engine runs are usually conducted at that point.

In the words of one ViPVO MiG-21 pilot: 'Although it is one of the few so-called 'combat missions' during peacetime, with live weapons, it is kind of relaxing. For those three or four days you are, both in your state of mind and physically, away from everything else, your daily routine, personal life, be it workload in the squadron or problems with your car. The moment a call is received, you instantly switch off that tranquillity, that state of ease, and quite rapidly start doing the sequence you have been trained to do, and you are focused on doing it flawlessly. I kind of like DJ.'

The DJ commander is the more senior of two pilots and, when a scramble takes place,

they take off first, followed by the second MiG-21 after an interval of several seconds. The time from receiving the scramble alarm from the operations centre (Operativni Centar) to the release of brakes is usually less than four minutes — a result that would put much more modern designs to shame. In that time, the pilots and ground crew are rushed to the aircraft, covers are removed from the canopy and missiles, the air intake and other hatches. The pilots strap in, start the engines and complete a quick systems check. The engines start in a cloud of diesel smoke, powered up by two Soviet-made ZIL auxiliary power unit trucks that are always connected to the fighters. The safety pins are removed from the missiles and the aircraft are cleared to go.

Typical MiG-21bis armament for QRA or combat air patrol includes two or four R-60 missiles and the G5-23L (GSH-23L) twin-barrel 23mm calibre cannon with up to 250 rounds, and capable of firing at 3,400 rounds per minute. Each aircraft carries a 490- or 800-litre auxiliary tank on the centreline, the latter enabling a range of up to 1,500km, more than enough for the control of Serbian airspace.

For more than half a century, air policing duties in the former Yugoslav and today's Serbian Air Force have been undertaken by the venerable MiG-21. Despite its obvious technical obsolescence, the jet is perfectly capable of fulfilling its primary fighter task: taking off quickly and intercepting the target. In addition to routine training scrambles, one of the more recent events included the interception of a light aircraft that flew (apparently without filing a flight plan) from Italy via Croatia to Serbia. The scramble took place on 9 May 2012 before the leisure flyer landed near Sremska Mitrovica in north-west Serbia. The event was regarded as proof of the continuing readiness of the Serbian MiG-21 QRA. Igor Salinger

