

Ghosts



Babak Tagvhee reports on the MiG-29s of the 40th Tactical Aviation Brigade, which despite being outgunned and outdated, mounted significant resistance against Russia's invasion of Ukraine



of Kyiv

As the sun rose on February 24, 2022, the 40th Brihada Taktichnoyi Aviatsiyi (brTA; Tactical Aviation Brigade) of the Ukrainian Air Force (UkrAF) was scrambled. Russian helicopters had entered Ukrainian airspace and were heading towards the capital, Kyiv. Climbing away from their home base at Vasytkiv, some 18 miles southwest of the Ukrainian capital, the pilots in their outdated Mikoyan-Gurevich

MiG-29 *Fulcrums* faced insurmountable odds in defending their homeland, being both outnumbered and outgunned. Nevertheless, by the end of the day, at least two Russian aircraft had fallen to the weapons of the 40th brTA.

Soviet origins

Since 1993, Vasytkiv has been home to the 40th brTA, by far one of the UkrAF's foremost combat-ready units, and arguably the service's premier MiG-29 *Fulcrum* operator. Tracing its roots back to the ▶

Seen here at Vasytkiv boasting a pair of R-27Rs and four R-73s, '33 White' was on strength with the 40th brTA at the time of Russia's invasion. Its current status is unknown Sergey Popsuyevich



Right: **On strength with the 40th brTA since August 1997, MiG-29MU1 '05 White' drops a wing as it powers out of Starokonstantinov Air Base in western Ukraine for an air defence training sortie during Exercise Clear Skies in 2018. Note the jet carries a drill R-73 round under the starboard wing** Richard Cooper

Below right: **Of the eight two-seat MiG-29UB Fulcrum-Bs assigned to the UkrAF's 40th brTA at Vasytkiv, '90 White' was reportedly one of only three operational with the unit on February 24, 2022** Chris Lofting

Soviet Air Force's 92nd Istrebitel'nyy Aviatsionnyy Polk (IAP; Fighter Aviation Regiment) formed in April 1940, the unit has operated the *Fulcrum* since 1987.

In late 1991 – just two months before the collapse of the Soviet Air Force on February 14, 1992 – the 92nd IAP had 39 single-seat MiG-29s and five two-seat MiG-29UBs on strength at the now abandoned Mukachevo Air Base (AB) in western Ukraine's Zakarpatskaya Oblast, where it had been based since October 1951. With the disbandment of the 146th brTA, which at the time boasted a fleet of 41 MiG-25PD/PDS/PU *Foxbats*, the 92nd IAP was relocated to Vasytkiv in 1993.

Having been decorated with the Order of the Red Banner in April 1945, the 40th brTA bore the title until November 18, 2015, following amendments by Ukraine's President Petro Poroshenko to the October 30, 2000-issued directive Number 1173 that outlawed the usage of "Communist-era symbols and awards."

As one of two brTAs assigned to the UkrAF's Central Air Command – itself headquartered at Vasytkiv – to protect the capital, the 40th brTA was fortunate to escape the worst of Ukraine's economic troubles, which had left minimal funds for fuel and aircraft maintenance during the 2000s. As a result, while most other fighter units were all but crippled by relying on barely sufficient resources for their basic assignments – including maintaining Quick Reaction Alert (QRA), let alone pilot training – the 40th brTA remained a priority when it came to what little fuel and maintenance resources there were.



Not only has the 40th brTA been responsible for protecting the nation's capital, since 2014, it has been tasked with establishing an air defence barrier in eastern Ukraine following the outbreak of war in the Donbas region.

As such, the primary task of the 40th brTA has been to provide point air defence for vital infrastructure in and around the Ukrainian capital, as well as the nation's nuclear reactors – including Kharkiv TEC-5, a combined heat and power plant in the village of Podvorky, west of Kharkiv, and the Zaporizhzhia nuclear power plant located near Enerhodar. In 2012, the unit was also one of four brTAs tasked with safeguarding Ukrainian airspace during the Euro 2012 football tournament.

Following Russia's annexation of Crimea on April 6, 2014, Vladimir Putin created a security crisis across Ukraine to prevent it from launching any operation aimed at

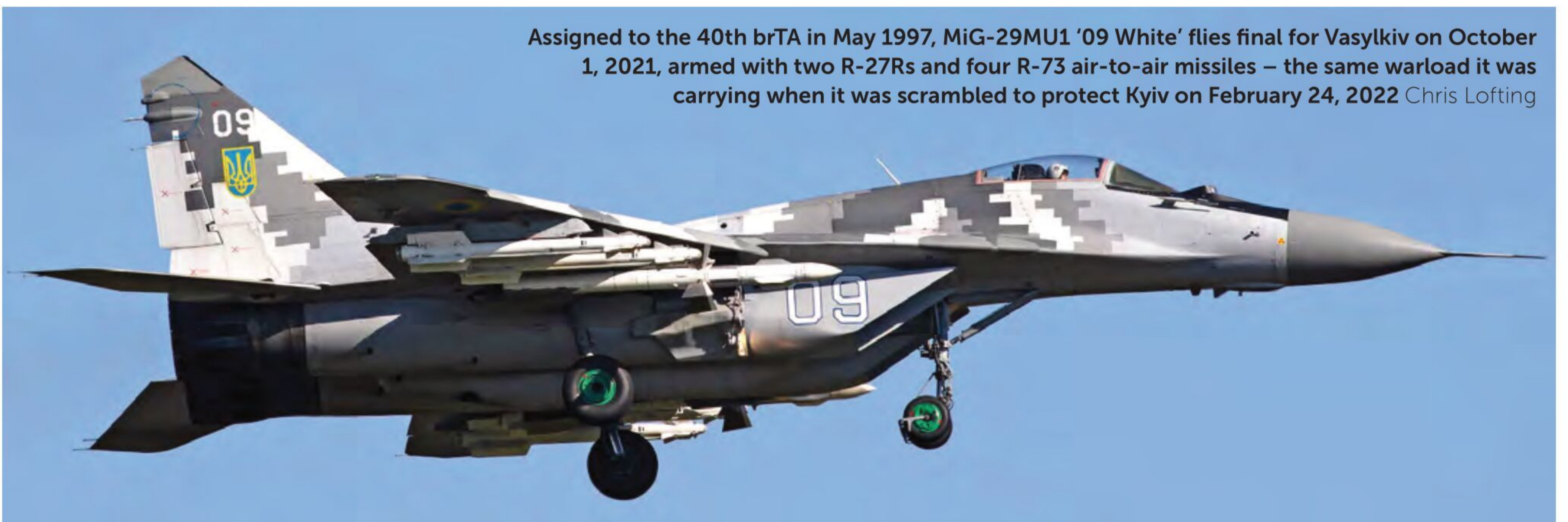
liberating the blockaded peninsula. The Russian government established several militia groups, which seized control of a number of cities in the Donetsk and Luhansk regions of Ukraine. Russian separatists quickly stormed offices belonging to Ukrainian Security Forces in both regions and took control of them and their weapon stores the following day in what was described as "a terrorist operation" by Ukrainian officials.

Action over Donbas

Prior to this, in February 2014, the 40th brTA – along with other UkrAF units – received orders to restore combat aircraft in storage to operational status and increase its readiness as the dark shadow of a military confrontation with Russia over Crimea shrouded the nation.

For this purpose, the unit's MiG-29 air/ground crews participated in an exercise

Assigned to the 40th brTA in May 1997, MiG-29MU1 '09 White' flies final for Vasytkiv on October 1, 2021, armed with two R-27Rs and four R-73 air-to-air missiles – the same warload it was carrying when it was scrambled to protect Kyiv on February 24, 2022 Chris Lofting



Right: *Fulcrum-C '19 White'* – seen here landing at Vasylykiv on April 27, 2016 – was returned to active service following several years in storage in response to Russia's actions across the Donbas region. The current status or whereabouts of the jet remain unknown Sergey Smolentsev



Below right: Following Russia's illegal annexation of the Crimean Peninsula in 2014, MiG-29 '21 White' was one of the jets drawn from storage and returned to active service by 40th brTA's maintenance personnel. At the time of Russian's invasion in 2022, this aircraft was awaiting upgrade to 'MU1' standard at the LDARZ Sergey Popsuyevich



that raised their combat readiness level – something that would later prove useful during the conflict in Donbas, when the 40th brTA sent four MiG-29s to Dnipropetrovsk (or Dnipro since May 2016), Ukraine's fourth-largest city.

Deploying to Dnipro Airport, the unit was primarily tasked with maintaining a 24/7 QRA mission. Each jet was armed with a pair of semi-active, radar-guided medium-range Vympel R-27R (AA-10 *Alamo-A*) and four IR-guided short-range Vympel R-73 (AA-11 *Archer*) air-to-air missiles (AAM). In addition, the unit maintained constant combat air patrols (CAP) across the Donbas region in support of ground forces, during which it frequently flew show-of-force passes to disperse enemy troops, separatists and militia. However, after several Sukhoi Su-25M1 *Frogfoot-A* ground attack aircraft from the 299th brTA were shot down by Russian separatists armed with man-portable air defence systems (MANPADS), from August 5, 2014, the *Fulcrums* assigned to the 40th and 114th brTAs were armed with 80mm B-8M1 unguided rocket pods to conduct close air support (CAS)/interdiction missions across the contested regions.

Three days later, a 40th brTA-operated MiG-29 ('02 Blue') was shot down over Enakievo by a RuASF Buk-M1-2 (SA-17 *Grizzly*) surface-to-air missile (SAM) system while returning to Dnipro following an

interdiction sortie, but the pilot ejected safely. A few days after this, the UkrAF ceased using its combat aircraft in operations over Donbas owing to the overwhelming presence of Russian-built SAMs in the region – a situation that would be repeated in 2022.

Modernising machines

Just before the start of the Crimean crisis in February 2014, the 40th brTA had almost one-third of the UkrAF's operational *Fulcrum* fleet on strength. Of the 20 single-seat MiG-29 *Fulcrum-C*s (Izdeliye 9.13s) and eight two-seat MiG-29UB *Fulcrum-B*s (Izdeliye 9.51s) in Ukrainian service, the unit operated six Cs and three Bs. However, at the time, Col Volodymyr Kravchenko, the 40 brTA's commander,

said his unit could place between 10-12 MiG-29s at full combat readiness with just an hour's notice. Around this time, the first of the UkrAF's *Fulcrum*'s received the type's now familiar three-tone grey camouflage.

Over a ten-month period, maintenance personnel restored eight MiG-29s in reserve condition to frontline status. In parallel, several other airframes previously operated by the 3rd IAP, were withdrawn from storage before being overhauled and upgraded to 'MU1' standard at the Lviv'sky Derzhavnyy Aviatsiynny Remontnyy Zavod (LDARZ; Lviv State-owned Aircraft Repair Plant) located in western Ukraine. In 2018, the 40th brTA received two MiG-29MU1s ('07 White' and '08 White'); a third ('09 White') was delivered the following year. ▶

Below: MiG-29MU1 *Fulcrum-C '31 Blue'* was one of four jets returned to combat readiness in 2014 by the 40th brTA adorned in the faded, yet patriotic, yellow and blue of the Ukrainian Air Force demonstration team, The Ukrainian Falcons. The team disbanded in 2002 Sergey Popsuyevich





Left: This January 2022 satellite image of Vasytkiv reveals what appears to be at least 15 MiG-29s in open-storage Google

Below left: Eight 'active' MiG-29s (including a Ukrainian Falcons marked jet, top left) are visible in this early 2022 satellite image of Vasytkiv. Note the L-39C bottom left Google



In 2019, the unit received three more modernised *Fulcrums*, while another – '12 White' – entered LDARZ to be upgraded to 'MU2' standard equipped with a 20PM weapon control system, along with an R-862 radio, upgraded navigation technology and a Kurs-93M-V onboard integrated and combined VHF omnidirectional range/instrument landing system (VOR/ILS). Additionally, the MiG-29MU2 gained a modernised self-defence suite, which included radar warning receivers manufactured Kiev-based firm Radionix. This uses its multifunction display (MFD) as a radar scope that could also show live video feeds from the likes of the 500lb KAB-500Kr TV-guided fire-and-forget bomb and Kh-29T (AS-14 *Kedge-B*) air-to-surface missiles. Its modified 20PM weapon control system also permitted the use of air-to-ground munitions.

In April 2020, due to the absence of any official state-run flight test centre in Ukraine, '12 White' was delivered to the 40th brTA to undergo state testing at Vasytkiv. On May 28 that year, the aircraft fired a pair of Kh-29Ts over the Povursk Air Range, near Kovel in the Volyn Oblast, for the first time. The result of this test was successful. However, despite this, it would take three to four years for the 40th brTA and LDARZ to complete the required tests of the MiG-29MU2. In light of the Russia's invasion of Ukraine, testing was suspended almost immediately.

Combatting the Bear

At the behest of Vladimir Putin, the Russian Armed Forces launched their unlawful invasion of Ukraine at 0400hrs (local time) on February 24, 2022.

In the opening hours of what was dubbed "a special military operation" by Putin, ballistic missiles fired by the Russian Army and cruise missiles launched from Tupolev Tu-95MS *Bear-H* strategic bombers of the Russian Aerospace Forces (RuASF) and Russian Navy warships struck several Ukrainian military facilities – including Vasytkiv. Despite intense bombardment, they failed to cause any significant damage to the base or its facilities.



“Just three days later on August 8, a 40th brTA-operated MiG-29, ‘02 Blue’, was shot down”



A pair of 40th brTA-operated MiG-29MU1 *Fulcrum*-Cs (‘19 White’, closest, and ‘21 White’) overfly Vasylkiv carrying a full complement of live air-to-air missiles. The jets joined the unit in March 1998 and August 1997, respectively Sergey Popsuyevich

In the space of a few hours, Russian Army missile brigades launched countless 9M723K1 short-range ballistic missiles from Iskander-M (SS-26 *Stone*) systems, while the Russian Navy and RuASF launched 160 3M-54 Kalibr (SS-N-27 *Sizzle*) and Kha-101/555 (AS-15 *Kent-B/C*) cruise missiles at numerous targets across Ukraine. The objective was to wipe out – or at the very least disable – Ukraine’s air defence capability and infrastructure on the ground. However, due to the inaccuracy of the missiles, as well as a lack of intelligence, almost all of them failed to hit their intended targets. They also failed to cause any damage to the runways, which allowed the UkrAF to quickly scramble fighters to mount defensive CAPs across several parts of the country – significantly hindering the progress of the Russian forces.

During the morning of February 24, Russian Airborne Forces launched an operation to occupy Hostomel Airport (also known as Antonov Airport – see *Casualty of War, Aviation News*, May 2022) just to the northwest of Kyiv in an

attempt to establish an air bridge between southern Belarus and the Ukrainian capital. In total, 24 Mi-8AMTSh *Hip*-H tactical transport helicopters, escorted by ten attack helicopters comprising Mil Mi-24P *Hind*-Fs and Kamov Ka-52 *Hokum*-Bs, were used to transfer 400 Russian troops to Hostomel. Launching from forward operating locations in the south of neighbouring Belarus, the helicopters flew at altitudes of below 100ft to remain undetectable to air defence radars, as well as make it difficult for Ukrainian forces to detect them visually.

The first helicopter formations to reach Hostomel were the Mi-24P and Ka-52 gunships, which engaged in a CAS mission against Ukrainian State Border Guard Service forces trying to prevent the airport from falling into enemy hands. At the same time, a second group of helicopters faced an ambush laid by Ukrainian Army troops, who used 9K38 Igla (SA-18 *Grouse*) MANPADS to down a Mi-24P and Ka-52, as well as damage a Mi-8AMTSh flying over the Dnieper River.

Once the rotorcraft reached the north of Kyiv, the 40th brTA scrambled a pair of its MiG-29MU1s armed with R-27Rs and R-73s to intercept. Within minutes of engaging the enemy helicopters, the *Fulcrum* pilots claimed two ‘kills’ – including another Ka-52 that made an emergency landing near Kyiv and was quickly captured by the Ukrainian Army. But this came at a cost: one of the MiG-29s was later shot down close to the Dnieper River, although its pilot ejected successfully and survived. On February 25, the 40th brTA was tasked with conducting a two-aircraft CAP between Kyiv and Ozerne, located 125km west of the Ukrainian capital, after the Russian forces launched another attack against Vasylkiv. Following the sortie, these jets landed at Ozerne AB in the Zhytomyr Oblast. Later that day, the UkrAF’s Sukhoi Su-27 *Flanker*-equipped 39th brTA out of Ozerne carried out CAP missions over Kyiv to defend the city from the threat of Russian fighters and bombers.

Of note, one Su-27 – piloted by Col Oleksandr ‘Grey Wolf’ Oksanenko, ▶

Right: **Until 2008, the 40th brTA operated ten MiG-29A Fulcrums, which were delivered to the UkrAF in the mid-1980s, including '01 White' seen here at Vasytkiv in 1993 wearing 92nd IAP markings** Sergey Popsuyevich



Below right: **MiG-29UB '91 Blue' – the only Fulcrum-B operated by the 40th brTA that was painted in the colours of the Ukrainian Falcons – currently remains in long-term storage at Vasytkiv** Sergey Smolentsev



the nation's famed *Flanker* exponent and display pilot, who had returned to active duty following the Russian invasion – was mistakenly shot down by what appears to have been a UkrAF-operated medium-range air defence system when it was caught in the middle of a Russian Navy cruise missile attack on Kyiv at approximately 0500hrs (local time) on February 25.

At around the same time, Ozerne itself was attacked by the Russian army and navy, with reports confirming that at least one Su-27 parked on the ramp was hit and destroyed by a 9M723K1 ballistic missile. Two more missiles, which were supposed to strike the middle of the runway, instead struck its shoulders, causing debris to spread across the strip. As a result, a *Flanker* returning from a CAP over Kyiv burst its main landing gear tyres, causing it to skid off the runway and suffer unspecified damage.

Satellite images of Ozerne dated February 25, 2022 published by Colorado, US-based Maxar Technologies revealed a number of 40th brTA *Fulcrums* on the ground, along with a dozen Su-27s (including the jet that had skidded off the runway) spread across the base. Another satellite image taken by San Francisco, California-based imaging specialist Planet Labs on February 28 appeared to show no flight activity from the 40th brTA at Vasytkiy, with its complement of MiG-29s – and three Aero Vodochody L-39C/M1 Albatros jet trainers – parked across various areas of the base.

After the loss of a pair of 299th brTA-operated Su-25M1s while attacking a

Russian convoy near Kherson in Ukraine's south, the UkrAF ceased conducting combat sorties across the besieged nation in an attempt to prevent further losses.

With the Russian Army and RuASF deploying countless short- and medium-range air defence systems around the northwest of the Ukrainian capital, it soon became difficult for the UkrAF to conduct defensive missions over Kyiv. This was highlighted by the loss of a 39th brTA Su-27 conducting a CAP on February 28. At the time of writing, western analysis noted at least five Ukrainian MiG-29s had been lost in action, the identity of which are yet to be determined.

Prior to the start of the war, the 40th brTA had fielded 31 MiG-29 *Fulcrum*-Cs, including 17 MU1s. In addition, six L-39C/M1s and eight MiG-29UB *Fulcrum*-Bs were

assigned to the brigade for training. When the Russian invasion of Ukraine started, 18-21 of its MiG-29s were reportedly operational. However there have been no reports indicating the activity – if any – of these *Fulcrums* over Kyiv since March 1. At the same time, there have been numerous reports detailing further cruise missile strikes against Vasytkiv, purportedly resulting in the airfield's destruction. However, it is not known whether any of the unit's MiG-29s have been damaged or destroyed as a result.

While the stories of the 40th brTA's efforts in the skies over the capital are yet to be truly told, one thing that is known is the 'Ghosts of Kyiv' helped contest and maintain the integrity of Ukraine's airspace – despite being technologically stunted, outnumbered and outgunned. **AN**

Assigned to the 40th brTA in February 2010, MiG-29MU1 *Fulcrum*-C '11 Blue', seen here powering into the sky for a training sortie from its home base at Vasytkiv on April 17, 2016, was last noted in use during November 2017 Sergey Smolentsev

