THE AVIATION MAGAZINE

www.TheAviationMagazine.com

№ 78 May-June 2022
Volume 13, Issue 3

- North Macedonian Air Force
- Ukrainian Su-22s AND L-39s
- Baltic Air Policing
- The Italian AMX
- And so much more ...

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www.TheAviationMagazine.com

№ 77 March–April 2022
Volume 13, Issue 2

Content

Cover: Polish Air Force F-16 deployed to Šiauliai AB for Baltic Air Policing over Lithuania. ***Photo Joris van Boven***

This page: Mi-8VT *Hip* of the Macedonian Air Force assigned to 301. Transportna Helikopterska Eskadrila (301 Transport Helicopter Squadron). ***Photo Military Aviation Reachout***

THE AVIATION MAGAZINE

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THE AVIATION MAGAZINE is published six times a year by a team of volunteers interested in aviation. We are devoted to cover a wide range of aviation events ranging from air shows, air base visits, military exercises, civilian spotting, and pilot and veteran interviews – accentuated with exceptional photography. THE AVIATION MAGAZINE is a leader in the e-magazine format since 2009, bringing exclusive and fascinating reports to our global aviation enthusiasts digitally.

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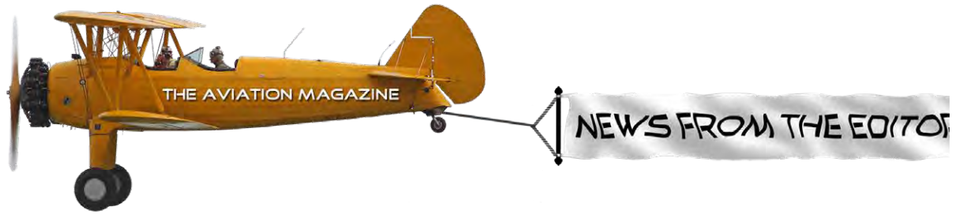

Dear Readers,

The battle of David against Goliath – Ukraine against Russia – has been going on for more than two months now. A scenario that was not even remotely imaginable in today's civilized world, in the middle of Europe, and yet, has become a dramatic reality. Whatever President Putin expected from his attack on his neighbor Ukraine, and whatever he certainly did not expect, is that the unity of a free, united Europe will be strengthened to such an extent, that its importance and cohesion in NATO will be less than ever in question, and that Russia will be increasingly isolated in the world. There is a lot at stake, not only for Ukraine and Russia, but also for the West. The cold war is a reality again, the 'hot' war seems to become possible. Ending the war in Ukraine without it spreading to the West is certainly the greatest challenge for Western politics at the moment. It remains to be hoped that this will succeed in the near future and that the bloodshed will come to an end soon.

Despite this situation, I am pleased that we have once again been able to put together an interesting and varied issue for you. It is available for download **here**!

For now, the whole team of THE AVIATION MAGAZINE wishes you all the best

Ralf Peter WALTER
Publisher & Editor

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NORTH MACEDONIAN AIR FORCE

ARTICLE BY MILITARY AVIATION REACHOUT

HISTORY

The Military Aviation Force of Republic of Macedonia was established on 10th of April 1992 with a decree issued by Kiro Gligorov, the first President of the Republic of Macedonia. On this day, the first Macedonian Air Force and Air Defence Command with its Aviation Brigade composed of Aviation, Transport and Combat Helicopter Squadrons was established. The Air Force celebrates the 10th June as the official remembrance day of the North Macedonian Air Force, since this day commemorates the beginning of the first flight in the Macedonian Air Force with an UTVA 75 that occurred on the 10th of June 1992.

The UTVA-66 and UTVA-75 were the first aircraft types to be introduced into the Macedonian Air Force and Air Defence Forces. Upon its creation, the Macedonian Air Force and Air Defence Forces could count on one UTVA-66 and four UTVA-75 A21 two-seat trainers, all leased from the Makedonski Vozduhoploven Sojuz. After the full-scale conflict began in 1991 in the newly independent republics of Croatia and Bosnia-Herzegovina, the Security Council unanimously adopted resolution, requesting the immediate UN arms embargo to Bosnia-Herzegovina, Croatia, Federal Republic of Yugoslavia, Macedonia and Slovenia.

In 1994, the Macedonian Air Force and Air Defence Forces acquired four Mi-17s from Ukraine. Because of the arms embargo they were delivered to the Macedonian Air Force and Air Defence Forces with civil registrations. In 1996, the Security Council excluded Macedonia from the UN arms embargo. Shortly after this all four Mi-17s of the Macedonian Air Force and Air Defence Forces were painted in camouflage schemes and they received military serials. A year later, 4 Zlin 242L two-seat trainers were acquired from the Czech Republic. They were used for basic, aerobatic, navigation, instrument and night flying, for formation flying and combat training maneuvers. One Zlin 242L was lost on April 7, 1999 when it crashed about 1 km west of Mantovo Accumulation Lake, near Radovish, the pilot escaping with minor injuries.

During the Kosovo crisis, the Macedonian Air Force and Air Defence Forces relocated all its aircraft in safe places, deep within Macedonian territory, while it monitored the troubled borders with Yugoslavia (in the part with Kosovo) and Albania. Macedonia also supplied a number of refugee camps with Albanians from Kosovo with food, water and medical care.

In 2001, there was an armed conflict which began when the ethnic Albanian National Liberation Army (NLA) militant group launched large scale frontal assaults on police stations, check-points and border-points in southern Serbia and Macedonia. The crisis between Albanian Fighters and the Macedonian Government forces broke out in March 2001. During the conflict the Macedonian Air Force and Air Defence Forces rapidly increased in numbers receiving an additional 20 aircraft. The first large scale delivery was made on March 23rd when Ukraine donated to Macedonia four Mi-8MT combat helicopters, that served with Ukrainian

This Mi-8MTV-2 previously served with the Ukrainian Air Force.

Between June 2001 and October 2005 the Macedonian Air Force operated three single-seat Su-25 *Frogfoots* and one two-seat Su-25UB *Frogfoot*. The aircraft were acquired from Belarusia. ***Photo via LtCol Janevski, Army of the Republic of North Macedonia***

contingent of KFOR on Kosovo, and an additional two Mi-24V Hind-E combat helicopters. Solidarity of Greece with the Macedonian Government was also shown that day with the delivery of two UH-1H Huey helicopters. Between April 15th and September 4th, 8 more Mi-24's were donated by Ukraine. In June 2001 four Su-25 (three Su-25 and one Su-25UB) arrived in Macedonia, marking them the first combat fighters for the Macedonian Air Force and Air Defence Forces. In December of that year, Macedonian Air Force and Air Defence Forces received an additional 2 Mi-24K Hind-G2 (photoreconnaissance and artillery spotting version of Mi-24) helicopters from Ukraine.

As a response to the brutal assaults of Albanian Fighters on the town of Tetovo, on March 25, Macedonian security forces launched a full scale offensive attack in order to neutralize and eliminate the Albanian Fighters. In this operation, Macedonian Security forces used Mi-17 transport helicopters and the recently acquired Mi-8MT combat helicopters. This was the first time that Macedonian Air Force and Air Defence Forces aircraft were involved in combat.

On June 23rd, one Su-25 took off from Petrovec Air Force base and was involved in a reconnaissance mission over Arachinovo village where heavy fighting were underway. This was the first time in the history of Macedonia that a fixed wing Macedonian Air Force and Air Defence Forces combat aircraft operated from a Macedonian Air Force and Air Defence Forces base. Despite the large quantities of anti-aircraft weaponry in the hands of the Albanian Fighters, no aircraft of the Macedonian Air Force and Air Defence Forces was lost as a result of anti-aircraft fire. The only loss suffered by the Macedonian Air Force and Air Defence Forces was that of an Mi-17 helicopter on March 17, which occurred because the helicopters rotor blade struck a flag pole during takeoff at a hotel in the Popova Shapka ski resort.

In December 2001, the Macedonian Air Force and Air Defence Forces were organised under a new structure. Until then, the Macedonian Air Force and Air Defence Forces Airborne Brigade was organized in the following three squadrons:

- 101. Avijaciska Eskadrila (101 Aviation Squadron),
- 201. Protiv Oklopna Helikopterska Eskadrila (201 Anti-Armour Helicopter Squadron), and
- 301. Transportna Helikopterska Eskadrila (301 Transport Helicopter Squadron).

With the changes made to the organisational structure of the Macedonian Air Force and Air Defence Forces, the Airborne Brigade became the Airborne Battalion, the 101. AE became 101. Avijaciska Cheta (101 Aviation Company), 201. POHE became 201. Protiv Oklopna Helikopterska Cheta (201 Anti-Armour Helicopter Company) and 301. TRHE became 301. Transportna Helikopterska Cheta (301 Transport Helicopter Company). As part of the reorganization of the Macedonian Air Force and Air Defence Forces, a new squadron was also established. Named as 401. Shkolsko Trenazna Cheta (401 Training Company), which operated four Zlin 242Ls, a single Zlin 143L and two UH-1Hs. Before becoming part of the 401. ShTCh, the four original Zlin 242L two-seat trainers were part of the 101. AE and UH-1H helicopters were part of the 301 TRHE.

During an exercise, this Mi-17 approaches the landing zone, marked by red and yellow smoke. ***Photo via LtCol Janevski, Army of the Repulic of North Macedonia***

In 2003 a four-seat Zlin 143L and one more two-seat Zlin 242L were acquired from the Macedonian Authority for Civil Aeronautical Transport and Traffic. Training on the new Zlins started in 2004 when the original three Zlin 242s went to Moravan Aeroplanes in Czech Republic for overhaul.

Another element of the Macedonian Air Force and Air Defence Forces is the elite 501 parachute diversion detachment (501. Padobransko Diverzantski Odred) also known as the "Falcons" (Sokoli). This elite squadron was officially promoted during the large scale military exercise that took place at Cojlija military range, near Petrovec Air Force base, on 28 May 2002.

The main tasks of the 501. Padobransko Diverzantski Odred include search and rescue (SAR) operations and combat search and rescue (CSAR) operations of pilots on hostile territory, a tactical operations called 'small diamond.' The Falcons also demonstrate capabilities in leading Macedonian Air Force and Air Defence Forces aircraft towards enemy positions (FOC – Forward Air Controllers), opening rifle fire from Mi-8MT and Mi-24V helicopters, parachute jumps and High-Altitude Low-Opening parachute jumps. During periods of peace, the 501. PDO is under the command of the Macedonian Air Force and Air Defence Forces and its main task is search, rescue and medical evacuation of the flying crew. In case of natural disasters its aim is assisting the population. Members of the 501. PDO are all experienced professional soldiers who have participated in the missions of NATO and Partnership for Peace program. The 501. PDO always aims to be the most elite unit of the Macedonian Army.

The creation of 501. PDO led to a requirement to equip the Macedonian Air Force and Air Defence Forces with a transport aircraft. As a result, the Macedonian Air Force and Air Defence Forces acquired one An-2 transport aircraft from Macedonian aviation club "Kumanovo" in 2003. The An-2 was used for parachute training of the 501. PDO. The unit also uses the Mi-24V, Mi-8MT and sometimes made use of the now retired UH-1H helicopters. Initially, there were talks that a transport aircraft may be acquired from Ukraine to be able to support the missions of the 501. PDO, however with the ongoing crisis in Ukraine this seems unlikely and new solutions may need to be studied for the future of the 501. PDO.

PRESENT DAY

Nowadays, the main mission of the Air Brigade is to provide air support and transport of the Army units as well as continuous monitoring of aircraft in the airspace of North Macedonia. Furthermore, the Air Brigade is tasked with providing the necessary support when natural disasters affect the country by performing civil search and rescue, fire-fighting and medical evacuation. In addition, the Air Brigade is also involved in training its members for participation in multicultural operations and peace keeping missions and counter terrorism as well as participation in exercises with NATO and coalition partners. The Air Brigade is composed of the following four main squadrons, all based at Skopje:

- 201 Combat Helicopter Squadron "Night Thunders" (Mi-24V),
- 301 Transport Helicopter Squadron (Mi-8MT/17),
- Training Squadron (Zlin 242L and Zlin 143L), and
- Pilot Training Center (Bell 206B-3).

301 Transport Helicopter Squadron

On 28th June 1994 the Transport Helicopter Squadron was equipped with four Mi-17 transport helicopters. Since then, basic and combat training has been performed with these helicopters. Besides day-to-day routine operations, the squadron has also participated in high level transport missions, VIP transport, fire extinguishing, MEDEVAC, search and rescue, and other missions. In 2001 the Transport Helicopter Squadron was equipped with four Mi-8 helicopters. Furthermore, the 301 Transport Helicopter Squadron participated four times in the ALTEA mission in Bosnia and Herzegovina during the period between July 2006 and July 2008.

The unit celebrates 10th June as the Remembrance Day of the unit, which is also the day of the Macedonian Air Force.

Among the main roles of the 301Transport Helicopter Squadron, the main roles include:

- Aviation support of ground forces with emphasis on transport,
- Performing search and rescue and medical evacuation,
- Maintaining an acceptable level of readiness and training according to the unit's needs,
- Execution of missions at night, using night vision flight systems,
- Training of new flight crew and maintenance personnel and flight handling,
- • Studying the NATO standards and foreign languages in order to achieve interoperability and crew inclusion in operations of NATO, and
- Operations for supporting the Ministry of Interior in dealing with threats to the security of the North Macedonia.

Mi-17 ready for the next training sortie.

201 Combat Helicopter Squadron

The first Mi-24s were delivered to Macedonia on 23rd March 2001. Since at the time, the Macedonian Air Force had only two crews qualified to fly the Mi-24, the *Hinds* of the Macedonian Air Force were initially piloted by hired pilots from the post-Soviet republics. The first combat operation of the Mi-24 was a combat flight against the positions of Albanian separatists north of the city of Tetovo on 2nd April 2001. According to reputable sources, the use of Macedonian Mi-24s in the summer of 2001 was so intense that they allegedly ran out of all 57 mm missiles that were available in the country. Macedonian *Hinds* also used about 40 Shturm-V anti-tank missiles during the conflict, sometimes during night attacks. During the fighting for the village of Aračinovo, which began on June 21st at 4:30 in the morning, the Mi-24 also dropped four 250 kg bombs. During attacks on ground targets, Hinds crews often used flares to prevent Albanian militants from shooting down helicopters with various MANPADS. After the conflict, Mi-24's versions K and V became part of the 201st anti-armour helicopter squadron. The Mi-24Ks were later decommissioned and currently the Macedonian Air Force is armed with four Mi-24V helicopters, modernized by the Israeli company Elbit. However, they are currently grounded and their future is uncertain.

The Mi-17 *Hip H* with serial *302* is one of four Mi-17s Macedonia acquired in 1994. Two of them were lost in accidents. The other surviving Mi-17 *Hip H* carries the serial 303.

Macedonia has four Mi-8VT *Hips*.

Mi-8VT *Hip*

FUTURE PLANS

In order to overcome the challenges being experienced by the Air Force of North Macedonia to carry out its day-to-day duties, the Ministry of Defence has embarked in a series of initiatives that will help modernise the Air Force and alleviate the challenges being experienced. Some of these initiatives include:

- The overhaul and upgrade of two Mi-17s and two Mi-24s.
- The conversion of one Mi-17 into a VIP configuration to be paid for by returning all Su-25s to Ukraine.
- The delivery of one transport aircraft from Ukraine.
- The delivery of two Zlin 242Ls and one Zlin 143L trainer that are currently on order.
- Equipping helicopters with NATO compatible communication systems.
- Bolstering the Macedonian Air Force with up to seven western-built utility helicopters.
- The Construction of a new air base near Sveti Nikole in the eastern section of the country.

While the Mi-8 *Hip* disembarks its troops at the landing zone, a Mi-24 *Hind* secures the area from above. ***Photo via LtCol Janevski, Army of the Repulic of North Macedonia***

In 2001 Macedonia received 12 secondhand Mi-24 *Hinds* – ten Mi-24V combat helicopters and two Mi-24K photo reconnaissance and artillery observation helicopters from Ukraine. The two Mi-24K's were reconfigured as simple attack helicopters. Today North Macedonia still operates six Mi-24V's. ***Photos left via LtCol Janevski, Army of the Repulic of North Macedonia***

CURRENT CHALLENGES

During an interview with a senior safety officer of the Air Force, who also happened to be one of the most experienced Mi-24 pilots within the Macedonian Air Force, a special mention was made to the recent wildfires that Macedonia experienced last Summer, which broke out in the beginning of August near Kocani and were the worst wildfires the country ever experienced since 2007. Following the catastrophic wildfires in 2007, in 2009 Macedonia bought three US-Built Air Tractor AT-802 'Fire Boss' aircraft that became operational in 2010. However this year, using these aircraft to fight the wildfires was not possible due to the fact that the entire fleet was grounded as a result of poor planning and administration of the maintenance of these aircraft.

Due to the fact that the entire fleet of air tractors was grounded, and the fact that the helicopter fleet of the Macedonian Police was not equipped well enough to support this cause, the Air Force ended up deploying three operational helicopters to help combat these fires (two Mi-17s serials '302' & '303' & one Mi-8 serial '307'). In addition, it also had to beg for international aid, and the first country to respond to Macedonia's plea for help came from Serbia's Ministry of Interior, that sent a contingent of five helicopters led by the latest addition to their fleet, the H145M 'YU-MUP' carrying the Serbian Minister for Foreign Affairs. While this helicopter returned back to Belgrade a few hours later, the rest of the four helicopters (two AB.212s, one Gazelle, and one H145M) started operations on August 4th flying in formation with the Macedonian Mi-17s and Mi-8. All helicopters used the bambi bucket system, however it was evident that the Serbian helicopters could not cope as well as the Mil-17s and Mil-8 due to the fact that they needed to strike a balance between the amount of water they could carry and the time they spent battling the fires in various regions of Macedonia.


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- The Mi-24V **(1)** and Mi-8MT **(2)** can be loaded with a wide variety of ammunitions.
- In the Mi-24, the pilot sits in the rear, elevated cockpit and the WSO (Weapons Systems Officer) in the front cockpit **(3).**
- View into the pilot's cockpit **(4)**.
- This Mi-24V carries two B-8V20 twenty-round FFAR (Folding Fin Aerial Rocket) pods **(5)**.
- Flight line with two Mi-24V's **(6).**

All photos this page via LtCol Janevski


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PILOT EDUCATION AND TRAINING SCHOOL

A very important element of the Air Force of North Macedonia is the Pilot Education and Training school, in which prospective Mi-8/Mi-17, and Mi-24 pilots learn the principles of flight on the Zlin 242L and Bell 206 Jetranger III aircraft. Compared to the facilities of the transport and combat units, the facilities of the pilot training school were far more modern, having been completed in 2014. This was due to the investment made by North Macedonia in 2012 where the government invested 42.4 million euros (5.3 million euros per year over a span of 8 years) in the development of a pilot training centre with the help of Israeli Company Elbit Systems, aimed at training pilots for the needs of the Macedonian Air Force, Police Force and other state institutions. Besides offices and classrooms, the building also houses two state of the art simulators used for simulator training on the Mi-24 and Mi-17.

The contribution that Elbit Systems gave to the Pilot Training School is considered as a state secret by the Macedonian Government. However, based on how Elbit's training centre is marketed, one can obtain a very good idea of the value that this centre has provided to the Macedonian Air Force. Elbit's modern solutions for a pilot training centre coupled with its extensive experience in aircrew training and aircraft maintenance, ensures a high quality, efficient and safe environment for the training of military aircrews. The centre aims at managing the training process from initial candidate screening to primary, basic, and advanced training, and focuses primarily on providing a comprehensive, Classroom-to-Cockpit training solution incorporating:

- Curriculum development and customer tailored syllabus,
- Experienced flight Instructors and qualified ground school educators,
- Ground-based training facilities,
- Advanced Ground Based Training Systems,
- Training aids and debriefing, and
- Aircraft operation.

Following the expiry of the 8-year contract, Elbit Systems have transferred the entire management and ownership of the infrastructure, including hangars, classrooms and simulators over to the Macedonian Air Force. The Macedonian Air Force is proud that nowadays, it has achieved an important milestone where it can maintain the training facilities and train upcoming pilots by teaching them the principles of flight and enabling them to become frontline helicopter pilots.

The Pilot Education and Training School operates the Bell 206 *Jetranger* and the Zlin 242L.

▲ Zlin 242L
▼ Bell 206 *Jetranger*. ***Photo via LtCol Janevski***

Zlin 242L ▲▼

The Pilot Education and Training School has four Bell 206 *Jetrangers.*

LAST FLIGHT OF A DUTCH CH-47D

REPORT BY JORIS VAN BOVEN AND ALEX VAN NOIJE

On Wednesday 22 December 2021, the very last Boeing CH-47 *Chinook* type D (Delta) was taken out of the Royal Netherlands Air Force's service.

The 298 squadron from Gilze-Rijen AB arrived with the last flying *Chinook* D type (registration D-667, nickname "Rodney", with matching callsign "Grizzly47D") at the GLV5 training area near Oirschot, in the southern part of the Netherlands. GLV stands for "Gebied Laag Vliegen" or Low Flying Area, where Dutch Air Force helicopters can exercise in flying low-level and performing 'brown-out' landings.

This last *Chinook* flight was announced on various photo and spotter social media sites. About 75 photographers were present for an early (around 9 a.m.) and a cold (-5 °C) photoshoot to capture the last flight of this helicopter type.

The existing 11 Dutch CH-47Ds were replaced by 14 new Boeing CH-47F MYII CAAS (Common Avionics Architecture System) helicopters. This brings the total of helicopters to 20 *Chinooks* in total, since the existing six CH-47F *Chinooks* are being modernized and brought to the same CH-47F MYII CAAS standard as the rest of the fleet.

Apart from several low-level passes, the *Chinook* simulated a 'brown-out' landing – always spectacular to watch.

A last low pass and a last farewell wave to the photographers.

UKRAINIAN Su-25s AND L-39s

ARTICLE BY RALF JAHNKE

At the time this report and the photos were taken, no one could have imagined that a few months later, Russia would invade Ukraine with land and air forces and that the two states would be at war. Even after Russia's annexation of Crimea in 2014, this war, in the middle of Europe, could not have been foreseen by anyone in this dimension and relentlessness. It is frightening how dramatically the security situation in Europe has changed within a few days, and freedom and human rights in Europe are under massive threat.
We do not know at the moment what the situation is like at the Kubalkino-Mykolaiv base, how many people have lost their lives or have been wounded there and what has become of the planes. Rather, we fear the worst.

Nevertheless, we decided to include this report in this issue of The Aviation Magazine in a slightly modified form from our visit to the airbase a little more than half a year ago.

We wish Ukraine a speedy peace, justice, and freedom!

Night-shot of a Su-25M1

Su-25UBM1 trainer version taxiing to the runway for a late afternoon training sortie.

Kulbakino's Frontline Bomber

The Kulbakino-Mykolaiv airbase, located near the Crimean peninsula in southern Ukraine, has a special strategic role. The 299th Brigade of Tactical Aviation (299 BTA) of the Air Force is located there with its Su-25 *Frogfoot* and L-39 *Albatros* aircraft. This region was a restricted zone during the Soviet era and was home to the maritime aviation forces with Tu-16 and Tu-22M2 for securing the Black Sea area. Also located there is the Mykolaiv Aircraft Repair Plant, which carries out the overhaul of the IL-76MD, Su-24M/MR and Be-12 for the Ukrainian and other foreign armed forces. After the breakup of the Soviet Union, Ukraine initially took delivery of 70 frontline Su-25s. They were divided between two regiments: the 452nd Independent Attack Aviation Regiment (OShAP) based at Khortkiv AB in western Ukraine – this unit was disbanded in 2004 – and the 299th Attack Aviation Regiment based at Saki AB in Crimea. The last remaining Su-25 unit left Saki AB in May 2005 and found a new home at Kulbakino AB. The personnel and frontline pilots from Chortiv AB were integrated into the unit at Kulbakino AB. Furthermore, the 10th Naval Aviation Brigade with a large variety of different types, such as Mi-8, Mi-14, Ka-27, KA-29, KA-226, AN-2, AN-26, Be-12, and UAV TB-2 was based there, too.
The 299th BTA'Zs missions were naval warfare and ground attack. Since the transfer, a significant number of Su-25 aircraft have been mothballed at the airbase and reactivated and modernized as part of the buildup of the Ukrainian Air Force, and to replace losses suffered in the Donbass campaign. The number of flying hours has also been steadily intensified, with flight operations taking place several days a week, in day or night shifts. During a flight shift, up to eight Su-25s and three L-39s are on standby on the flight line. Air-to-ground attacks with live munitions were very actively trained at the Shirokolanivsky Military Range, 45km away. Simulated air attack procedures were also trained directly on airbase targets.

In 2014, during the hot phase of the fight against Russian-backed separatists in eastern Ukraine, numerous sorties were also conducted by the 299th BTA with its Su-25 strike aircraft. In total, the Su-25s were regularly engaged in the battle for Donetsk Airport on an almost daily basis with over 300 ATO (Anti-Terrorist Operation) missions flown. These missions were flown from forward reserve bases in eastern Ukraine, from Dnipropetrovsk, and from Chuguyiv. Deployments for the 299th BTA, like all other flying Ukrainian units, did not end until the February 2015 agreement known as "Minsk II", which ultimately banned the use of air support in the conflict. Despite the relatively short duration of less than a year, the use of Ukrainian air power to support ground forces was not without casualties. These were primarily due to the massive use of air defense technology of the Russian-backed separatists. In total, the air force lost one Il-76 transport, one An-26, one An-30, two MiG-29s, one Su-24, and five Su- 25s from the Mykolaiv-Kulbakino brigade. Two Su-25s were shot down by MANPADS surface-to-air missiles, two other *Frogfoots* were shot down by the air defense system PANTSIR and one Su-25 was hit by an air-to-air missile launched from a MiG-29. One Su-25 subsequently made a belly landing on a grass runway and was recovered and repaired. All five pilots were able to safely eject from their aircraft. The shooting down of the aircraft and an evaluation of the missions clearly showed that Russia has invested much more in air defense in recent years than in the acquisition or construction of new fighter aircraft. Accordingly, more than three decades after the end of the Cold War, low-level flight has again become an important issue and an indispensable tactic. This is especially true for frontline aircraft such as the Su-25.

The MiGremont Plant in Zaporizhzhia, Ukraine, is one of the most experienced facilities for the maintenance and upgrade of Soviet fighter aircraft. For the Ukrainian Air Force, which began a modernization process in 2010, Zaporizhzhia is the aircraft plant for all major modernization work. Here at the plant, all remaining single-seat Su-25s, as well as the two-seat training version Su-25UB, were gradually being modernized and upgraded to the new M1 standard. The upgrade package for the Su-25M1/-UBM1 includes improvements of the weapon control and navigation systems and provides improved accuracy in bombing and weapon drop even from higher altitudes. This resulted in new attack options such as multiple programmed attacks against a specific target. In addition, the cockpit features the SN-3307 satellite navigation system, which processes data from the U.S. NAVSTAR GPS, Russia's GLONASS and the upcoming European Galileo system. A new radio system has also been installed. In addition, a structural upgrade will allow an additional eight years of service before the next major overhaul is due. As a result, the Su-25M1 can deploy weapons widely, day and night, and in poor weather conditions, with expanded release parameters. Another minor modernization of the Ukrainian Su-25 is the Flare Dispenser System KUB 26-50-01 *Adros*, which was installed on all airworthy Sukhois. This Ukrainian

system was much more successful against infrared missiles in trials than the obsolete, original variant due to the flares with an almost double diameter. The first delivered "MiGremont" M1 aircraft did not have this defense system yet. It is therefore a real modernization based on the experience gained during the Anti-Terrorist Operation in the Donbass. The latest modernization version is now called Su-25M1K or SU-25UBM1K! From the stock of 39 Su-25 aircraft, a total of 24 aircraft were planned to be made airworthy and modernized. The remaining aircraft from the stock would serve as spare parts donors or reserves. The *Albatros* also received an upgrade program to the L-39M1 version at the OAZ (Odessa Aircraft Repair Plant) and CHAZ (Chuguev Aircraft Repair Plant). Among other things, the engine is modernized, thus receiving a significant thrust increase. Furthermore, a digital head up display, a new instrument panel and a flight recorder were installed.

Certainly, there are other areas where the Ukrainian Su-25 should be improved. First and foremost is the installation of a modern radar warning receiver. The new light gray pixel camouflage paint scheme has been painted after each overhaul since 2013. In the meantime, all the old green camouflage paints have disappeared.

This Su-25MK is heading to the runway for a night training flight.

Su-25UBM1 trainer version

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Sukhoi Su-25 *Frogfoot* – Technical Data

General Characteristics

Crew:	1
Length:	15.53 m (50 ft 11 in), incl. nose probe
Wingspan:	14.36 m (47 ft 1 in)
Height:	4.8 m (15 ft 9 in)
Wing area:	33.7 m2 (363 sq ft)
Empty weight:	9,800 kg (21,605 lb)
Gross weight:	14,440 kg (31,835 lb)
Max t/o weight:	19,300 kg (42,549 lb)
Powerplant:	2 × Soyuz/Tumansky R-195 turbojet engine, 44.18 kN (9,930 lbf) thrust each

Performance

Max speed:	975 km/h (526 kn), Mach 0.79
Range:	1,000 km (540 nmi)
Combat range:	750 km (400 nmi) at sea level with 4,400 kg (9,700 lb) of ordnance and two external fuel tanks
Service ceiling:	7,000 m (23,000 ft)
g limits:	+6.5
Rate of climb:	58 m/s (11,400 ft/min)

Armament

Hardpoints

11 hardpoints with a capacity of up to 4,400 kg (9,700 lb) of stores, with provisions to carry combinations of:

Guns

- 1 × 30 mm Gryazev-Shipunov GSh-30-2 autocannon with 250 rounds
- SPPU-22 gun pods for 2 × 23 mm Gryazev-Shipunov GSh-23 autocannons with 260 rounds

Rockets

- UB-16 rocket pods for S-5 rockets
- UB-32A rocket pods for S-5 rockets
- B-8M1 rocket pods for S-8 rockets
- S-13, S-24, S-25

Missiles

- Air-to-air: K-13A, R-60, R-73E
- Air-to-surface: Kh-23, Kh-25ML, Kh-29L, 9K121 Vikhr
- Anti-radiation: Kh-28

Bombs

- BETAB-500 concrete-penetrating bomb
- FAB-250 general-purpose bomb
- FAB-500 GP bomb
- FAN-500 bomb
- KAB-500KR TV-guided bomb
- ZAB-500 incendiary bomb

Su-25M1 (**1, 2**) and Su-25M1K (**3, 4**). Note the flare dispensers attached to the top of the rear engine housing.

This Su-25M1 was photographed in 2011. Starting in 2013, the green camouflage color scheme was replaced by a light grey "Pixel" color scheme as part of the standard overhaul process.

Su-25M1s on the taxiway.

Aero L-39C taxiing to the ramp after having returned from a training sortie. The aircraft has the new color scheme similar that of the Su-25.

left Aero L-39M1 still showing the old green camouflage colorscheme.

Below L-39C with the current light grey "pixel" colorscheme.

Aero L-39 *Albatros* – Technical Data

General Characteristics

Crew:	2
Length:	12.13 m (39 ft 10 in)
Wingspan:	9.46 m (31 ft 0 in)
Height:	4.77 m (15 ft 8 in)
Empty weight:	3,455 kg (7,617 lb)
Max t/o:	4,700 kg (10,362 lb)
Powerplant:	1 × Ivchenko AI-25TL turbofan engine, 16.87 kN 3,790 lbf) thrust

Performance

Maximum speed:	750 km/h (400 kn) at 5,000 m (16,404 ft)
Never exceed:	980 km/h (530 kn) / M0.8
Range:	1,100 km (590 nmi), internal fuel
Ferry range:	1,750 km (940 nmi), internal & external fuel
Endurance:	2 hours 30 minutes (internal fuel), 3 hours 50 minutes (internal and external fuel)
Service ceiling:	11,000 m (36,000 ft)
Rate of climb:	21 m/s (4,100 ft/min)
Time to altitude:	5,000 m (16,404 ft) in 5 minutes
Thrust/weight:	0.37
Take-off roll:	530 m (1,739 ft)
Landing roll:	650 m (2,133 ft)

Armament

Up to 284 kg (626 lb) of stores on two external hardpoints


21


35


78

NATO BALTIC AIR POLICING

REPORT: JORIS VAN BOVEN

The Baltic Air Policing (BAP), is a rotational Air Defense role taken up by the North Atlantic Treaty Organization (NATO) countries, as the Baltic countries Estonia, Lithuania, and Latvia do not have the means to maintain their own Air Defense fighters on a 24/7 basis, upon their entrance in NATO in 2004. For three to four months, NATO partners deploy their fighters to Ämari AB in Estonia or Šiauliai AB in Lithuania. In times of higher tensions, the eastern airbase of Malbork in Poland will also be used by NATO partners on rotational duty to protect the eastern NATO flank. The Malbork deployments are called Extended Baltic Air Policing (EBAP).

The Baltic Air Policing missions are controlled by Combined Air Operations Centre (CAOC) Uedem, near the city of Kalkar (Germany).

Four-ship formation of two Polish Air Force F-16C and two Belgian Air Force F-16AM. To match the slow speed of the C-27J photo-ship they have to fully extend their flaps.

BELGIAN AIR FORCE

In 2004, the Belgian Air Force was the first NATO Air Force to participate in the NATO Baltic Air Policing program and 17 years later the Belgians are one of the two current BAP contributors. The other contributor is the Polish Air Force with F-16s at Šiauliai AB in Lithuania.
The Baltic Air Policing program is under control of the NATO Allied Air Command based at Ramstein AB (Germany). For the BAP, the overall control of the Baltic Air Space is coordinated from the Combined Air Operations Centre (CAOC) Uedem in Germany, where the whole of northern Europe is controlled. The Baltic Control and Reporting Center (CRC) at Karmėlava (LT) directs the BAP aircraft to their targets.
The Belgian detachment is at 24 hours, 7 days a week readiness with two aircraft that can be airborne within fifteen minutes after the SCRAMBLE command has been issued. This is called the Quick Reaction Alert (QRA). Two aircraft that act as spare are kept at high readiness as well

The Belgian detachment consists of a 'lean' group of only 60 persons, split into three branches:

- the operational branch with the pilots and the mission planners, but also some firefighters and a meteorologist,
- the maintenance branch with the maintenance personnel for the F-16s for avionics and weapons,
- the support branch with medics and military police

The first Belgian F-16s were acquired in the 1970/1980s but the airframes have been updated and refurbished throughout the years. The Lockheed Martin F-35 has been selected as a replacement and the first aircraft are expected to fly around 2024.
Regarding the weapon load, the F-16 carries two AIM-120 AMRAAM anti-aircraft missiles (beyond visual range), two AIM-9 Sidewinder anti-aircraft missiles (within visual range), and one M61A1 six-barrel Gatling gun with some 500 rounds.
Next to the radar, the SNIPER Advanced Targeting Pod (ATP) is used to zoom in on the target even before the pilots have visual sight of it. With the targeting pod, it is easy to recognize the target and check for possible armament.

The F-16s are also equipped with flares. Normally, these are used as defense mechanisms against heat-seeking missiles. They can also be used to attract the attention of the person(s) inside the cockpit of an intercepted aircraft.
During night-flying operations, the Belgian pilots also use Night Vision Goggles (NVG) to amplify the remaining light in the sky.

The task of the Belgian Baltic Air Policing pilots is the same as at home, safeguarding the integrity of the airspace, safe for all users and all participants.

Belgian Air Force F-16AM loaded with two underwing fuel tanks, two AIM-9X *Sidewinder* and two wingtip-mounted AIM-120 AMRAAM air-to-air missiles.

Belgian Air Force F-16AMs

Belgian Air Force F-16AMs

POLISH AIR FORCE

On 25 November 2021, at the 31st Tactical Aviation Base, a solemn farewell to the soldiers of the 10th rotation of Polish Military Contingent 'Orlik' (PMC Orlik) took place. The aircraft deployed to Lithuania for a four-month combat duty over the Baltic states as part of the NATO Baltic Air Policing mission.

The contingent numbers about 150 people. Its core consists of soldiers from the 31st Tactical Aviation Base and four F-16 planes. The personnel are stationed in Šiauliai, Lithuania. For the F-16 crews from the 31st Tactical airbase, it is their third NATO Baltic Air Policing mission.

The most important task of the soldiers of the 10th rotation of the Polish Military Contingent Orlik is to intercept planes that violate the airspace of Lithuania, Latvia, and Estonia. The mission of the North Atlantic Alliance, as part of the military airspace surveillance of the Baltic states, is conducted based on a rotating system of duty hours performed by other allied states since 2004. Polish aircraft flew for the first time at Baltic Air Policing in 2006.

On 30 November 2021, at the Lithuanian airbase of Šiauliai, a symbolic handover of the key to the airspace, took place as a change of military contingents carrying out the NATO Air Policing Mission in the Baltic states. The airmen of the Polish Air Force, part of the Polish Military Contingent Orlik 10, took over the duties of colleagues from Flyvevåbnet (Danish Royal Air Force) and Força Aérea Português (Portuguese Air Force).

The ceremony was honored by the participation of Deputy Minister of National Defense of Lithuania Vilnius Semaška, Maj. Gen. pil Ireneusz Starzyński, Brig. Gen. pil. Sławomir Żakowski, May Martin Canuel, commander of Karinės Oro Pajėgos (KOP, Lithuanian air force) Col. Dainius Guzas, Danish defense attaché Col. Niels Henrik Johannes, and representatives of the city of Siauliai and other guests.

Fulfilling allied obligations, Poland implements the Baltic Air Policing military airspace surveillance mission in the Baltic states from 1 December 2021 to 31 March 2022. The mission's goal is to prevent breaches of the NATO airspace in the Baltic states, to assist crews of aircraft in the Baltic states in emergency situations, and protection of the population and troops against air attacks.

This Polish Air Force F-16C Block 52CF is carrying a SNIPER Advanced Targeting Pod in addition to the external fuel tanks, AIM-9X *Siderwinders* and the AIM-120 AMRAAMs.

Polish Air Force F-16C Block 52CF

Polish Air Force F-16C Block 52CF

Polish Air Force F-16C Block 52CF

Polish Air Force F-16C Block 52CF

NATO ALLIED AIR COMMAND

NATO Allied Air Command has its headquarters at Ramstein AB (Germany) and is led by US Air Force General Jeffrey L. Harrigian (four-star General). The Allied Air Command has various tasks, such as the defensive NATO's Ballistic Missile Defense (BMD) and the peacetime NATO Air Policing. There are some additional tasks for Allied Air Command, such as the Baltic Air Policing and the Iceland Air Policing.

The Headquarters include the Operations Centre for Air Policing, Ballistic Missile Defence, and operational control of NATO's Airborne Early Warning and Control Force as well as for NATO's Alliance Ground Surveillance Force. The Headquarters can also host a Joint Force Air Component to command and control allied air operations during crisis and conflict. The staff is permanently augmented by representatives from three of NATO's partner nations, Sweden, Finland, and Azerbaijan.

To fulfill the Air Operations task, NATO Allied Air Command has three operational units:

- Combined Air Operations Centre (CAOC) at Uedem, Germany
- Combined Air Operations Centre (CAOC) Torrejón at Torrejón aB in Spain
- Deployable Air Command and Control Centre (DACCC), at Poggio Renatico in Italy

CAOC Uedem

The Combined Air Operations Centre (CAOC) Uedem is headquartered near the city of Kalkar (Germany). The primary mission of CAOC Uedem is to plan, direct, coordinate, monitor, analyze, and report on the operations of Air Policing means assigned to it in peacetime, following the directives of NATO's Allied Air Command.

Their Area of Responsibility (AOR) reaches roughly from mid-France to the Alps, to the Black Sea, and northbound to the Baltic states, Iceland, the United Kingdom.

CAOC Torrejón

The CAOC Torrejón is headquartered at the Torrejón AB, north of Madrid, Spain.

Their Area of Responsibility (AOR) reaches roughly from mid-France to the Alps, down to Turkey and via the Mediterranean Sea, to the Canary Islands, and via Portugal and Spain back to mid-France. The skies of Spain, the southern half of France, Portugal, Italy, Greece, Slovenia, Croatia, Bulgaria, Romania, Hungary, Albania, and Turkey, as well as the Mediterranean Sea, the Black Sea, and part of the Atlantic are covered by CAOC Torrejón.

The emblem of this CAOC, which shows the columns of Hercules where Europe meets Africa in southern Spain and the Bosporus as united towers from which the silhouette of airplanes take off, reflects the broadness of this territory and the meaning of air defense in the face of the threat from beyond the Mediterranean.

A crew of 185 soldiers from 16 countries keep the CAOC Torrejón in action.

Polish Air Force F-16C Block 52CF

DACCC Poggio Renatico

The Deployable Air Command and Control Centre (DACCC), headquartered at Poggio Renatico in northern Italy, provides a capability for deployable Surveillance and Control of Alliance Air Operations. Its mission is to prepare elements for worldwide operational deployment and, together with the CAOCs at Torrejón and Uedem, to deliver well-trained and specialized experts to supplement Allied Air Command during Allied operations and exercises.

A BIG THANK YOU for this phantastic opportunity to

- NATO Allied Air Command
- Polish Air Force
  Poznan AB with two F-16C
- Lithuanian Air Force
  Šiauliai AB with a C-27J for the photo-shoot
- Belgian Air Force
  Florennes and Kleine-Brogel AB with two F-16 MLU
- Sławek 'Hesja' Krajniewski for planning and performing the photo-shoot

MEDIA FLIGHT

On Tuesday 25 January 2022, a media flight was organized by NATO Allied Air Command, the Polish Air Force, the Belgian Air Force, and the Lithuanian Air Force. In the morning, an electronic briefing was started with the photo flight directors, the Polish F-16 pilots, and the Lithuanian C-27 pilots at Šiauliai AB while the Belgian F-16 pilots joined the briefing from Ämari AB. During the briefing, the various formations, timelines, flight levels, and frequencies were discussed.

After the takeoff, the Lithuanian C-27J transport aircraft flew towards reserved airspace overhead northern Lithuania. Onboard were seven aviation reporters, securely attached to the floor. After some orbits, the Belgian F-16s joined up first for formation photos and break photos. Then, the Polish F-16s joined for a flight with all four F-16s in various formations. After the formations of four, both Belgian and Polish flight leads made a flight of two, while both flight leads had their national flags draped in the front of their cockpits. Then, the Belgian F-16s departed back to Ämari AB, while the Polish F-16s continued to fly during the beautiful sunset.

This photo flight was planned and coordinated by Sławek 'Hesja' Krajniewski, who organizes similar commercial air-to-air photo opportunities in Poland.

This Lithuanian Air Force C-27J was used as platform for the air-to-air photo shoot.

GALILEO SAR MEET 2021

REPORT BY JORIS VAN BOVEN AND ALEX VAN NOIJE

Czech Air Force PZL W3A Sokol

From 27 September until 1 October, the Galileo Search And Rescue (SAR) Meet 2021 took place at Koksijde AB, the home base of the Belgian Air Force 40 Squadron, which is responsible for helicopter rescue operations off the Belgian coast. With the participation of several helicopters and more than 100 crew members from multiple European countries, this exercise was one of the larger versions of the meeting ever held. It was organized in close cooperation with Galileo, the Global Positioning System of the European Union. The International SAR Meet is an exercise in which search and rescue teams demonstrate their missions, assets, skills, and procedures to one another. The exercise aims to share experiences to learn lessons and to make rescue operations even more efficient, safer and faster. The event has three main pillars. A symposium in which each nation presents its assets and procedures. A flight of a challenging nature where skills such as precision, speed, and agility of the entire crew are put to the test. And finally, a sports event to test the cohesion of the crew, an important factor in rescue operations. At the end of the exercise, the best team receives the prestigious SAR meet Trophy.

Galileo is the Global Positioning System of the European Union, aiming to ensure independence and autonomy in the field of navigation and timing solutions from space. Since the declaration of initial services in 2016, Galileo has been providing positioning and timing services to almost 3 billion users. By supporting the Galileo SAR Meet 2021, the EU renews and confirms its commitment to include operational SAR crews in the definition of the service evolutions to deliver the features they need to carry out their missions in the safest and most efficient way.

The Belgian 40 Squadron has a tradition of organizing this SAR event. Nevertheless, the last edition dates back to October 2016. The transition of the Sea King rescue helicopter to the high-performance and ultra-modern NH90 NFH, as well as the COVID-19 pandemic, were the reasons for this break. The 2021 edition saw a very diversified and significant international presence of rescue squads. For example, the '40th' welcomed teams from Belgium, the Netherlands, Germany, Italy, Norway, Finland, Great Britain, Cyprus, the Czech Republic, Greece, Sweden, France, and Slovenia. The Belgian Air Force 40th SAR squadron worked very hard to organize a unique international SAR meeting. Koksijde AB hosted 13 lifesaving teams and nine rescue helicopters out of 12 European countries making the event the largest SAR meet in history.

PARTICIPANTS

Belgian Air Force - NH90 NATO Frigate Helicopter

Koksijde AB is the home base of the 40th Squadron, responsible for both, search and rescue and maritime operations. The squadron is equipped with four state-of-the-art and versatile NH90 NFH helicopters. The NH90 NFH took over the SAR role of the good old Sea King MK48 in March 2019. In July 2021, the Alouette III retired as well and the squadron assumed the maritime operations with the NH90 NFH. Recently, the 40th Squadron participated for the first time in the SNMCG1 (Standing NATO Mine Countermeasures Group One) stand-by period of NATO's maritime fleet on board Belgian frigates.

Royal Norwegian Air Force - Leonardo AW101 SAR Queen

The first team arriving at Koksijde AB was the AW101 *SAR Queen* providing all-weather Search and Rescue (SAR) capability for the Royal Norwegian Air Force. Early 2021, the AW101 took over the SAR duties from the Sea King rescue helicopters. At this moment, Sola AB and Orland AB were already equipped and operational with the brand new and ultramodern Leonardo AW101 helicopters. A third base, and the most northern one, Banak AB transitioned to this versatile rescue helicopter by the end of 2021. Operating in some of the most demanding conditions anywhere in the world, the helicopters cover thousands of miles of coastline, fly inside the Arctic Circle, and are often faced with rough seas and extremely low temperatures. The 330 Squadron, based at Sola, has been operating the first six *SAR Queen* aircraft since September 2020. One member of the Squadron with vast experience on the Sea King provided first-hand insight into how the AW101 is taking SAR capability to a new level.

Belgian Air Force EH101NFH **(top)** and Royal Norwegiain Air Force AW101 *SAR Queen* ***(bottom)***

German Army Aviation - Airbus Helicopters H145 LUH SAR

The H145M is a military version of the EC145 helicopter, a twin-engine multipurpose helicopter manufactured by Eurocopter (now Airbus Helicopters). To replace the aging Bell UH-1D, a total of seven machines were put into service with the SAR Service in Germany. Among other features, the H145 LUH SAR (Light Utility Helicopter Search and Rescue) helicopters are equipped with high-performance cameras, searchlights, emergency beacon locator systems, a full suite of medical equipment, rescue winches, and load hooks that can be used for fire-extinguishing tanks for example.

German Navy - Westland Sea King Mk41

The second team from the German Bundeswehr was from MFG 5 (Marinefliegergeschwader 5 or Naval Air Wing 5) at Nordholz in German. The team is flying the Sea King MK41 and has a long history and friendship with the 40th Squadron at Koksijde AB. Technically, the Sea King is predestined for this task. It has a long-range of over 1,500 kilometers, has radar and an infrared camera, is very robust, and can fly even in the worst weather conditions. Another plus is its special design as an amphibious helicopter: The shape of the fuselage and the outrigger make it possible that it could land on calm seas. However, the crew usually uses the built-in rescue winch. If the Sea King had to make an emergency landing at sea in bad weather, floating bodies would give it the additional buoyancy it needs to stay afloat. In the near future, the NH90 NFH Sea Lion' will take over the duty of the Sea King MK41 within the German Navy. MFG 5 is responsible for the operations of all German Navy helicopters and especially the SAR service 365 days a year, 24 hours a day.

German Air Force Airbus Helicoters H145 LUH SAR **(left)** and German Navy Westland Sea King Mk41 **(right).**

GALILEO

Galileo is the Global Positioning System of the European Union, aiming to ensure independence and autonomy in the field of navigation and timing solutions from space. Since the declaration of initial services in 2016, Galileo has been providing positioning and timing services to almost 3 billion users. From the very first days, Galileo has been providing a SAR service, based on transponders installed on the satellites. The SAR service has been integrated into the Cospas-Sarsat Programme, the satellite-based distress alert detection and information distribution system, best known for detecting and locating emergency beacons activated by aircraft, ships, or backcountry hikers in distress.

Galileo is to provide a new global SAR function as part of the MEOSAR system. Satellites will be equipped with a transponder that will relay distress signals from emergency beacons to the Rescue coordination center, which will then initiate a rescue operation. At the same time, the system is projected to provide a signal, the Return Link Message (RLM), to the emergency beacon, informing them that their situation has been detected and help is on the way. This latter feature is new and is considered a major upgrade compared to the existing Cospas-Sarsat system, which does not provide feedback to the user. This gives the person in distress the mental boost to survive as the person in question knows that help is on its way. This system is a revolution for SAR. People who work at sea or go out for a hike can buy a small personal device which they can carry with them. The device is not larger than a cell phone and is affordable to pay for everybody.

Thanks to its Medium-Earth Orbit and the large number of satellites in the constellation, Galileo immediately provided an unprecedented boost in speed and accuracy of the location of distress signals. While with the former system, finding the location of a beacon could take up to 4 hours, with an accuracy of +/- 10 km, Galileo reduced this to a mere 10 minutes with a precision of 2 km. Today, Galileo/SAR is continuing to develop new life-saving functionalities. By supporting the Galileo SAR Meet 2021, the EU renews and confirms its commitment to include operational Search and Rescue crews in the definition of the service evolution, to deliver the features they need to carry out their missions in the safest and most efficient way.

A crewmember of this German Army Aviation H145 LUH SAR, assigned to Heeresfliegerregiment 30 lowers the winch cable down to his colleague on the ground to pick up a bucket filled with water as a part of the SAR challenge competition.

Czech Air Force PZL W3A Sokol **(top left)** and AS365N3 operated by Northsea Helicopters Vlaanderen **(top right)**.

Czech Air Force - PZL W-3A Sokol

This is a two-engine, turbo-shaft multipurpose helicopter, whose design is based on the Mil Mi-2 *Hoplite*. The helicopter is designed for the transport of up to 12 personnel or material up to the weight of 2,200 kg, and for air search and rescue operations. It is equipped with a new four-bladed main rotor with a vibration damper. The inner fuel tanks can take up to 1,700 liters of fuel. It is possible to attach additional fuel tanks with a total capacity of 1,100 litr res. The seats are arranged per three at four rows. The cabine is accessible by two side doors. The W-3A Sokol helicopter features sophisticated avionics that enables its day and night use under any weather condition. It has proved its capabilities during flood disasters in the Czech Republic in 1997 and again, in 2002.

Northsea Helicopters Vlaanderen – Airbus Helicopters AS365N3 Dauphin

NHV Netherlands who is in charge of the SAR in the Netherlands joint the SAR Meet with their well-known yellow *Dauphin*. The powerful AS365N3 is designed for operations in 'hot and high' climates, and introduces 635 kW (851 shp) Arriel 2C turboshafts equipped with a single channel DECU (Digital Engine Control Unit) with manual override, coupled with an upgraded main transmission for better single engine performance. The AS365N3 also features a redesigned ten blade composite Fenestron anti-torsion device with asymmetrical blade distribution, which offers further reduction in noise signature. The gross weight of the AS365N3 is 4,300 kg (9,500 lb). Production began in December 1998.

SAR Challenge

One part of the meeting was a competition where each helicopter team had to perform several tasks, such as navigating to a predetermined target location via given waypoints and flying at a specific speed and altitude. The crew was given a limited time to prepare the route and to calculate the time over each waypoint. Electronic devices such as smartphones or computers were not allowed. This had to be done the old-fashioned way with maps, aeronautical aviation charts, rulers, and protractors. The challenge was to be exact at the calculated time over the respective waypoint and target location. Every second deviating from the calculated time was deducted from the score. Other tasks were to pick up a bucket filled with water with the winch cable and then hover a course with moving the bucket between obstacles without touching the ground and not exceeding a certain height. Spilling water or touching an obstacle was penalized, too. At the end, the bucket had to be placed precisely at a certain point, and deviations were also penalized.

The winner of the 2021 Galileo SAR Meet was the German Navy team flying the SeaKing. In 2023, they will organize the next SAR Meet at Nordholz naval air base in Germany.

THE ITALIAN AMX

TEXT: SALVATORE ROCCELLA AND ALESSANDRO GANEO
PHOTOS: S. ROCCELLA AND A. GANEO UNLESS STATED

AERONAUTICA MILITARE

Two AMX ACOLs and one AMX-T ACOL with markings of Italian Air Force AMX squadrons to celebrate the AMX's 30 years of service within the Italian Air Force.

THE BIRTH OF THE AMX

The AMX fighter-bomber was born from the need of the Italian Air Force to equip itself with a new aircraft to replace the Fiat G-91R/Y and Lockheed F-104G in the fighter-bomber/reconnaissance role. In 1977, the SMA issued the CBR-80 requirement, and the following year, the Italian companies Aeritalia and Aermacchi, which were working on different projects, were invited to combine their efforts. Thus, the AM-X program (Aeritalia-Macchi-Sperimentale) was born and in July 1980, the Brazilian aircraft manufacturer Embraer joined the program. Originally, the Italian Air Force intended to buy 187 AMXs and the Força Aérea Brasileira 79, while the production was divided between 46.7% at Aeritalia, 29.7% at Embraer, and 23, 6% at Aermacchi. Due to an economic downsizing of the program, the Italian Air Force (ItAF) then ordered only 136 units (110 single-seaters and 26 twin-seater AMX-T, divided into three lots), while the Brazilian order stopped at 56 airplanes. On 15 May 1984, the first prototype (NC. A.01, M.M. 594) flew at Torino Caselle Airport. On the fifth test flight, this aircraft was lost in an accident. Test pilot Manlio Quarantelli managed to eject but died shortly after from his injuries. This aircraft was followed by four other Italian and two Brazilian prototypes, while the first AMX-T (MM 55024) flew on 14 March 1990. The operational evaluation of the aircraft by the Experimental Department (R.S.V.) began in 1988, while in the following year, the deliveries to the ItAF began. The first AMX officially was delivered to the ItAF on 19 April 1989 to 311° Gruppo of Reparto Sperimentale di Volo (RSV), based in Pratica di Mare. RSV is the ItAF's evaluation unit. The first operational unit to transition to the new aircraft was 103° Gruppo (103rd Squadron). They left the 2° Stormo (2nd Wing) and the Treviso AB to become part of 51° Stormo at Istrana AB. In the same years, the AMX received the nickname «Ghibli», which was much nicer than its nickname «mouse», attributed due to its gray color with a black nose.

The first years of service of the new fighter were not positive. The aircraft of the first batches did not yet have full operational capabilities and problems arose with the engine, which led to the loss of some aircraft and sadly also some pilots. The full operational capability was achieved with the aircraft of the third batch, which also were capable to use precision-guided munition. Since the mid-nineties, the AMX has nevertheless been used successfully in international exercises and real air operations.

A milestone in the history of the AMX was the ACOL (Adaptation of Operational and Logistic Capabilities) update which involved 42 single-seaters and 10 twin-seaters of the Italian Air Force. This program was carried out jointly by the then Alenia Aeronautica and Aermacchi with the collaboration of the Experimental Flight Department (RSV) of the Italian Air Force. ACOL allowed to extend the AMXs useful life so as to maintain the aerotactic capabilities in efficiency up to that the new Lockheed Martin F-35A and F-35B, successors of Tornado and AMX, will not reach full maturity. This upgrade, launched in 2003 and completed in July 2012, was implemented by the then Alenia Aermacchi and saw the introduction of an Inertial / GPS navigation system and the integration of new precision-guided weapons. The LITENING pod has been integrated for target illumination and laser designation, while the RecceLite reconnaissance pod has become the main reconnaissance sensor,

AMX-T ACOL assigned to 51° Stormo, 132° Gruppo.

capable of capturing and transmitting photographs and videos in real-time via digital broadband data link. The communication and identification systems 'Friend or Foe' were also updated to the NGIFF (New Generation Identification Friend or Foe) level. All cockpit panels of the single-seater aircraft were made night vision systems (NVG) compatible. To enable the pilot to effectively manage the new operational capabilities, the cockpit was updated/upgraded with a modern color LCD multifunction display, supported by a powerful Computer Symbol Generator (CSG) with digital map functions. In August 2007, the first ACOL was delivered to the operational units. Today, all AMXs of the 132nd Reconnaissance Bomber Fighter Squadron, 51st Wing at Istrana AB have received the ACOL update. Brazil is carrying out its modernization, designated as A-1M, on 11 of its 20 remaining AMXs and plans to keep the fleet operational until 2025.

THE ITALIAN AMX SQUADRONS

13° Gruppo

The 13° Gruppo (13th Squadron) was formed on 8 November 1917 in Marcon (Venice) and immediately employed in war operations on the Piave, where it quickly obtained numerous awards with the 77th 'red heart' squadron. At the end of the conflict, it was disbanded and in 1923, it was reconstituted in Venaria Reale (Turin). In 1942/43, they deployed to North Africa, today Benghazi.

In August 1943, 13° Gruppo merged into the 24° CT Gruppo and placed again in the framework position within the 2nd Wing in 1951. It was reactivated in 1953 on the Bergamo airport, operated from Brescia AB, Cameri AB, Gioia del Colle AB, and finally, in 1965, from Brindisi AB. From 1 October 1967, equipped with the Fiat G-91 aircraft, the squadron became part of the 32nd Wing at its current Amendola AB.

Among the squadrons destined to transition to the AMX, there was also the 13° Gruppo that received the aircraft in November 1994. The squadron conducted missions over Bosnia-Herzegovina and Kosovo. From

On the occasion of the 30th anniversary of the AMX in service with the Italian Air Force, four AMX's of 51° Stormo received commemorative liveries. Three of them had its tail painted with the markings of two of the six squadron that operated the AMX: MM7114/51-27 – 13° and 28° Gruppo, MM7180/51-53 – 14° and 103° Gruppo, and MM55044/51-82 – 101° and 132° Gruppo. MM7194/32-21 received a black livery with *AMX 30* lettering.

December 2009, they contributed to operation ISAF with the Task Group BLACK CATS at the Herat Forward Support Base (FSB). In the summer of 2001, the 13° Gruppo achieved 10,000 flight hours on the AMX. In December 2013, the unit again was disbanded. On 12 May 2016, it was re-established and was ItAF's first squadron to receive the ultra-modern F-35 *Lightning II*.

14th Squadron

The 14th Squadron was formed on 10 November 1917 at Ghedi AB. At the end of the First World War, after intense war activity with the Caproni heavy-bomber aircraft, the unit was dissolved. Reconstituted at Ghedi AB on 15 October 1955, the unit operated the North American F-51 *Mustang* in the role of daytime interceptor fighter.
In 1959, at Cameri AB, the 14th Squadron participated in the establishment of the «Lanceri Neri» acrobatic team, officially representing the Italian Air Force in all national and foreign air events.
On 16 March 1961, the squadron was transferred to Treviso AB with the new Fiat G-91 aircraft. On 16 October 1964, the unit rejoined the 2nd Tactical Fighter Wing (2° Stormo). In 1979, the 14th Squadron received NATO's «Winged Lion» award as the best fighter-bomber squadron in the V Allied Tactical Air Force (V ATAF) and, the following year, as the best reconnaissance squadron. These awards added to the NATO flight safety trophy already awarded to the squadron.
On 9 July 1991, the 14th Squadron took delivery of its first AMX, operating out of Istrana AB before moving to Rivolto AB on 1 March 1994.

28th Squadron

The 28th squadron was formed at Varese AB on 1 January 1931, and six months later was assigned to the 8th Night Bombing Wing. The squadron participated in operations in East Africa, the Spanish War, and the Second World War.

1, 2, 3 AMX's of 51° Stormo with painted in commemorative color schemes to celerate 30 years of service within the Italian Air Force

4 AMX of 103° Gruppo with a spectaular paint scheme

5 These special markings are to celebrate the 75th anniversary of 2° Stormo. **Photo Ralf Peter Walter**

In 1955, the 28th Squadron was transferred to Villafranca AB and in 1963, the group was adorned with the motto "melius esse quan videri" (it seems much better).
With the F/RF-104G's the squadron contributed to the redeployment of the 3rd Wing employed in the "ACE GROUND" operations in Turkey in conjunction with the first Gulf War, 1991.
In June 1993, the deliveries of the AMX began with which the group participated in the reconnaissance missions over the skies of Albania and the Balkans. On 30 October 1997, the 28th Squadron was disbanded, to be reactivated under the 32nd Wing with the Predator UAV.

101st Squadron

Established at Varese AB on 5 March 1941, flying the Ju-87B/R «Stuka» dive-bomber, the 101° Gruppo saw immediate action against Greece and Malta. Between 1949 and 1952, they transitioned to the "F-47D" and were designated 101st Fighter Bomber Squadron. The Squadron's crest depicts a red lightning bolt that pierces a blue snake from which a yellow gall spurts out. The meaning of the symbol can be traced back to the student's spirit among different flying squadrons and ironically wanted to represent the superiority of the pilots of the 101st Squadron «Lampo». On 14 October 1967, then flying the F-84F aircraft, the squadron was transferred to the 8th Wing at the Cervia AB and then converted to the G-91Y. On 31 July 1995 at Amendola AB, the squadron group assumed the role of the AMX OCU (Operational Conversion Unit) thus, starting the important standardization activity of the AMX and the training of pilots transitioning to the new aircraft. Given the important role of the squadron, the best pilots of those units already operating the AMX – 13th Squadron «I Falchi», 14th Squadron «Nibbi», 28th Squadron «Streghe», 103rd Squadron «Guzzi», and the 132nd Squadron «Grappa» – were assigned to 101st Squadron. The 101st Squadron took part in numerous national and international NATO exercises such as the TLP, SYRIO 97, and MAPLE FLAG 31.
In 1999, they participated in many missions aimed at resolving the crisis in Kosovo and, in the autumn of the same year, in the exercise BRIGHT STAR in Egypt which was followed for the first time by a deployment in Israel. The pilots and specialists of the 101st Squadron have been engaged with enormous success in the Italian Air Force including in Afghanistan with the task group BLACK CATS and over Libya in support of operation UNIFIED PROTECTOR.
In 2014, after twenty years with the 32nd Wing at Amendola AB, the 101st Squadron relocated to Istrana AB and the 51st Wing. On 3 November 2016, the 101st OCU Squadron was inactivated.

103rd Squadron

Established in February 1943 at Varese AB, the 103° Gruppo was initially engaged in the defense of Sardinia, subsequently redeployed to Sicily in a desperate attempt to stop the allies from invading the island. With the precipitate of events and the armistice that arose, the squadron was dissolved.
On 15 June 1952 in the Cold War, the 103rd Fighter Bomber Squadron was re-established with the P-47D *Thunderbolt* at Verona AB. In the following year, the 103rd Squadron was re-equipped with the OF-84G.
In 1958, the 103° Gruppo was the first to receive the G-91. A year later, they moved to Treviso AB, being re-designated to 103° Gruppo of poacher's reconnaissance bombers.
Attributed to the fact that G-91 was able to operate from semi-prepared grass runways and the squadron's various field deployments with the personnel often housed in tents similar to those used by Native

AMX 51-10 with a special paint scheme, assigned to 51° Stormo – 132° Gruppo C.B.R. *Buscaglia*, photographed during the 2nd Reconnaissance Meeting end of July 2003 at the Belgian airbase Florennes. ***Photo Ralf Peter Walter***

AMX of 32° Stormo with special paint scheme to mark the 90th anniversary of 13° Gruppo **(inset right)** and an AMX of the same unit with a special tail marking on the occasion of 30,000 AMX flight hours **(inset above).** The aircraft were photographed in 2008 at the Royal International Air Tattoo at RAF Fairford, GB. ***Photos Mathias Leischner***

Americans, the 103rd Squadron was nicknamed "Indians".
From 1 January 1989, the 103rd Squadron was transferred to the 51st Wing where it was one of the first units to receive the AMX-T, replacing the G-91.
In May 1991, they were the first AMX squadron achive to "combat ready" status.
The 103rd Squadron took part in many national and international exercises. In the 1990s, they participated in the first missions over the Balkans and Kosovo. In Afghanistan, they supported ISAF (International Security Assistance Force) as part of the BLACK CAT task group at the Herat FSB. In summer of 2011, they were part of Operation UNIFIED PROTECTOR, an international air and sea operation enforcing UN Security Council resolutions 1970 and 1973 to protect civilians and civilian-populated areas from Gaddafi's and pro-Gaddafi forces in the Libyan civil war.
On 22 September 2016, the 103rd Squadron was disbanded, waiting to be reactivated soon to return to being again one of the top units of the Italian Air Force.

132rd Squadron

The 132nd Squadron «Buscaglia» was established on 1 April 1942 at Littoria (Latina) AB as an autonomous torpedo bombing unit. It was dissolved and subsequently reconstituted at Lecce-Galatina AB as a bombing squadron. In 1945, they moved to Roma Urbe AB, in 1946 to Guidonia AB and finally, in 1954, to Verona Villafranca AB. In 1990, the 132nd CBR Squadron began the transition to AMX fighter-bombers. When the 3° Stormo was dissolved in 1999 and is since then assigned to the 51° Stormo at Istrana AB.
The squadron is named after Carlo Emanuele Buscaglia, a WW II S.79 torpedo-bomber pilot who was awarded the gold medal for military valor.
The 51st Wing is the only Italian Air Force unit to have two different types of combat aircraft: the AMX and the Eurofighter Typhoon, even if the first one is expected to be retired shortly.
This makes the 132nd one of the most operational squadrons. It has participated and continues to do so, in multiple types of national and international missions, military as well as humanitarian such as performing aerial photographic reconnaissance of areas devastated by earthquakes. Since 2019, the Eurofighter F-2000A (about 10 aircraft) has also joined the large family of the 132nd Squadron, which thanks to its role as interceptor constitutes the QRA cell (Quick Reaction Alert) and guarantees the safety of the national airspace 24 hours a day, 365 days a year.

The ground crew performs a pre-flight check of an AMX-T ACOL prior to a night training sortie.

EXERCISES

The AMXs participated in a wide variety of national and internaional exercises, such as

Arabian Stallion

It was the year 1993, with the start of a new year, when 10 AMXs deployed to Al Dhafra AB in the United Arab Emirates, to participate in ARABIAN STALLION. The aircraft carried two 1,100 liter external fuel tanks and after two stopovers they arrived at Al Dhafra AB. This exercise was very valuable to the pilots and all the personnel involved. Thanks to almost no flight restrictions, a wide variety of missions and operational tactics could thus be tested, resulting in 427 sorties and 530 flight hours. Missions were flown to the shooting range dropping numerous MK82 bombs and trying multiple types of attack and evasive maneuvers.

Bright Star

The exercise BRIGHT STAR in 1999, which saw the participation of a substantial number of men, 300 aircraft, and 53 naval units from 11 nations (Egypt, United Arab Emirates, France, Germany, Jordan, Great Britain, Greece, Italy, the Netherlands, Kuwait, and the USA) took place from 13 October to 4 November 1999 at the Cairo West AB.
On 3 October, the ItAF deployed six single-seater AMXs, one BR1150 Atlantique, and one Boeing 707 tanker to Cairo West AB. This was the first exercise in which the AMX used laser-guided ammunition.

Goose Bay

From the end of May until the middle of August 2004, the ItAF deployed 14 AMXs to the Canadian Forces Base Goose Bay in Newfoundland, Canada.

The complex and articulated training campaign involved almost all the AMX squadrons. This training was extremely valuable as missions were carried out at altitudes as low as 100ft above ground, with the aircraft carrying Mk 82 bombs in various configurations. The AMXs totaled 700 flight hours and 413 sorties.

Blue Flag

In November 2013, this very complex exercise took place in the Negev desert in southern Israel. Greece, Israel, Italy, and the U.S. participated in this international exercise. BLUE FLAG did not intend to simulate any particular Middle Eastern scenario but to establish the Israeli air defense system and evaluate the ability to cooperate with air assets belonging to allied countries.

The Air Force participated with a total of eight Tornado and AMX aircraft and about 140 men and women who operated jointly with the air forces of the other participating countries.

Anatolian Eagle

In June 2019, AMXs of the 132° Gruppo deployed to Konya AB in Turkey to take part in the ANATOLIAN EAGLE exercise. The purpose of this exercise is to integrate the activities of all the participating units and to train the crews to operate jointly in a complex international environment. The type of mission assigned to the Italian aircraft has allowed them to train in the best possible way, to achieve a good level of operation, and have the possibility of simulated use of JDAM precision ammunition, in scenarios with a wide range of air-to-air and surface-to-air threats.

Two AMX ACOLs assigned to GEA 51° Stormo.

In August 2009, the 132° Gruppo took part in the exercise RED FLAG 2009-5 at Nellis AFB, Nevada. ***Photos Ralf Peter Walter***

REAL OPERATIONS

During their time in service with the ItAF, the AMX made important contributions to multinational operations in many trouble spots, such as

Bosnia

Between 1993 and 1998, with UN mandate, NATO conducted several military operations to end the civil war that broke out in Yugoslavia, in particular in Bosnia-Herzegovina.
Italy contributed to these operations in the Western Balkans with Tornado and AMX aircraft. During the DELIBERATE FORCE operation six AMXs accumulated 777 flight hours in 359 sorties.

Albania

On 28 March 1997, the United Nations authorized the deployment of a multinational protection force to restore the rule of law and security for citizens in Albania. Likewise, a secure environment was to be created for international organizations operating there after the collapse of the dictatorship in 1990 and the country plunged into a deep economic, social and institutional crisis.
The Air Force participated in "ALBA" with AMXs, Tornados, Tornado ADVs, and F-104s. The 10 AMXs totaled 33 sorties and about 61 flight hours.

Kosovo

In March 1999, NATO launched operation ALLIED FORCE which aimed to end the armed repression of Kosovar minorities by the Serbian military and paramilitary forces. The air campaign lasted 78 days, with intense bombardments of Serbian positions. Italy contributed

The Italian Air Force participated with two AMX's and two HH-3F helicopters in the 2010 Combined Joint Personnel Recovery Standardization (CJPRS) Course at the German Air Force Lechfeld AB. ***Photos Ralf Peter Walter***

over 50 aircraft, including the AMXs that were based at Amendola AB, about an hour's flight from the operational area.
In support of ALLIED FORCE, 12 AMXs dropped 517 Mk 82 bombs, 39 of them with the "Opher Kit". They conducted 252 missions with a total of 667 flight hours.

Opher Kit

This guidance kit, fitted on a Mk 82/83 GP (General Purpose) bomb body, is made up of an IIR seeker, a computer-control group, a forward section assembly with control surfaces and a tail assembly with foldable fins. After releasing, the weapon performs an initial ballistic trajectory and, after a certain delay, the IIR seeker starts scanning for a target. When it locks on a target with a suitable IR signature the guidance & control system makes the necessary correction to home the weapon to the target. The Opher is a fire-and-forget weapon and doesn't need an external designation system like the GBU-16; it's an excellent performer against MBT and other armored vehicles. *Source: http://nibbio14.altervista.org*

Afghanistan

On 4 November 2009, four AMXs with the ACOL update deployed to Herat Forward Support Base (FSB) as part of ISAF, the UN-authorized NATO mission to support the Afghan government at the creation of a peaceful and stable state.
The ItAF provided three task groups, one of them was task group BLACK CATS with AMX fighter-bombers. The name BLACK CATS was is inspired by the badge of the 51st Wing.
The task group's mission was to provide close air support (CAS) and tactical air reconnaissance (TAR) to coalition troops. For CAS, they initially used their 20mm M61 Vulcan cannon until they were authorized to use the 1,000 lb laser-guided Paveway II bomb. With the centerline mounted RecceLite pod, the AMX conducted TAR missions on land targets from medium and high altitudes, day and night. The RecceLite system was able to send in almost real-time images to ground troops or Joint Terminal Attack Controllers. These operations demonstrated the synergy between the AMX and other ISAF air and ground assets. At

the end of January 2012, the BLACK CATS had exceeded 4,000 hours of flight, conducting 1,500 surveillance and reconnaissance missions on 3,700 different sites and producing over 41,000 images.

Libya

March 2011, the UN authorized the use of force by the international community in Libya and the creation of a No-Fly-Zone to protect civilians and inhabited areas, the target of forces loyal to the Gaddafi regime.
Italy joined the U.S.-led coalition and among the assets provided by the Italian Air Force were four AMXs. They were tasked with attack missions to neutralize military targets and with photographic reconnaissance. The AMXs were authorized to use the GBU-12 Paveway, GBU-38 JDAM, Lizard bombs, and the LITENING III multi-sensor targeting and surveillance pod. For reconnaissance, the RecceLite pod was used. In 150 sorties, of which 72 were offensive counterair missions with 128 munitions released, the AMX flew a total of 550 hours.

The Italian Air Force frequently participated in the Tactical Leaderrship Program (TLP) with several AMX ACOL's. ***Photos Ralf Peter Walter, September 2006***

Offensive Counterair

Offensive operations to destroy or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, and as close to their source as possible.

Kuwait

On 14 June 2016, as part of operation PRIMA PARTHICA, four AMXs were deployed to Ahmed Al Jaber AB in Kuwait to support the international coalition in their fight against ISIS in Iraq and Syria. With this deployment, the task group "BLACK CATS" was reactivated, this time at Ahmed Al Jaber AB. The AMX conducted reconnaissance missions on terrestrial targets throughout Iraq, using the advanced RecceLite pod.
The AMX has again proven to be effective and reliable. Thanks to its low fuel consumption in combination with air-refueling large time windows over assigned targets were possible.
On 27 March 2019, after almost three years of redeployment with more than 6,000 flight hours accumulate, the BLACK CATS of 123rd Squadron returned home.

30 YEARS OF AMX

2019 was a special year for the AMX, as it celebrated 30 years of flying. It was 29 September 1989, when the first of these aircraft touched down on the Istrana AB's runway to be assigned to the 103rd Squadron. On 13 September 2019, the Italian Air Force celebrated the 30th anniversary of the AMX entering service and the 80th anniversary of the establishment of the 51st Wing at Istrana AB. For this occasion, four special liveries were created to represent the six flying Squadrons in which the AMX served:

AMX MM7114/51-27 – 13° and 28° Gruppo, MM7180/51-53 – 14° and 103° Gruppo, and MM55044/51-82 – 101° and 132° Gruppo. The fourth AMX MM7194/32-21 featured a complete commemorative livery, full black, with repeated references to the 30th anniversary and a large dorsal logo. The AMX boasts a historic record: With more than 18,000 hours flown in real operations, this aircraft holds a very respectable record, namely that of being the aerotactic aircraft of the Air Force most used in missions outside national borders, over two-thirds of its operational life.

All this proves that the AMX was and remains a perfect airplane for the task for which it was designed and we are sure it will continue to be so in the last years of its life.

In May 2000, over the Mediterranian sea, a pilot is flying with his AMX next to a U.S. NY ANG tanker aircraft waiting until it's his turn to top off the fuel tanks.
Photo collection Ralf Peter Walter

AMX 51-07 in May 2000 over the Mediterranian Sea receiving fuel from as U.S. New York Air National Guard KC-135 tanker aircraft. ***Photo collection Ralf Peter Walter***

1 On a hot, sunny day this AMX parked in the shelter area with the canopy open to prevent the cockpit from overheating.

2 Ground crew members are making an AMX ready for the next mission. Note the hose that is plugged into the aircraft's belly and is attached to an Aircraft Air Start Unit (ASU). As soon as the ASU is turned on, the aircrafts jet engine fan, compressor and turbine blades start rotating with the help of power received from ASU. This rotating speed keeps increasing until the pilot turns the fuel injection system on that produces fire in the combustion chamber. This is the point from where the jet engine can sustain itself and the air start unit is disconnected.

3, 5 Shown here are some of the weapons the AMX can carry, such as unguided (dumb) and precision guided bombs as well as a reconnaissance pod.

A rarely seen six-ship formation of four AMX's assigned to Gruppo Efficienza Aeromobili (GEA) 51° Stormo and two Eurofighter F-2000A's assigned to 51° Stormo, 132° Gruppo.

FRISIAN FLAG 2022

TEXT BY KRIS CHRISTIAENS
IMAGES AS STATED

Photo Kris Christiaens

The French Air Force participated with Mirage 2000D's from each of the three Fighter Squadrons (EC01.003, EC02.003, and EC03.003) based at BA 133 Nancy.

Between 28 March and 8 April 2022, the international military fighter jet exercise FRISIAN FLAG was held at the Leeuwarden AB in The Netherlands. This is one of the biggest military exercises in Europe with participating aircraft coming from The Netherlands, France, the United States, the United Kingdom, Germany, Italy, and Canada. During Frisian Flag, a large military training area over the North Sea and the northern part of the Netherlands is used for training missions. Because Leeuwarden AB is in the middle of this training area, no training time is lost and flight time can be effectively used for various training purposes. The airbase has years of experience as a knowledge center for flight operations and also has the infrastructure to operate with a large number of different aircraft including support personnel.

According to the Dutch Ministry of Defense, the Russian invasion of Ukraine again showed the necessity of these kinds of exercises. The situation on the eastern border of NATO territory makes it clear that soldiers and aircraft must always be ready for deployment or any kind of assignment. One of the main goals of this large-scale exercise is the international cooperation between several air forces as this has proven to be valuable in several military operations in the past such as in Kosovo, Afghanistan, and Iraq. Thanks to exercises like FRISIAN FLAG, pilots and their crews are prepared and trained for threatening situations involving international action. In addition, such exercises also demonstrate the close relationship between allies and friendly member states of NATO.

Because of the dimension of this exercise, the list of participants is always very impressive. In addition to F-16 and F-35 fighter jets of the Royal Netherlands Air Force from the Leeuwarden AB and Volkel AB (312 Squadron and 322 Squadron) this year also two Eurofighter Typhoons participated in FRISIAN FLAG from the 51° Stormo and two Panavia Tornado IDS aircraft from the 6° Stormo of the Italian Air Force. France sent a large delegation to Leeuwarden with five Mirage 2000D fighter jets from BA133 Nancy (French Air Force) and three Rafale M fighter jets from BAN Landivisiau (French Navy). This was the first time the naval version of the French Rafale participated in FRISIAN FLAG. The French Mirage 2000D's were the only participants that always lined up nicely

together on the runway before they took off with their familiar thunderous noise. The United States Air Force was also well represented with twelve F-16s from the 510th Fighter Squadron *Buzzards* which is stationed at Aviano AB in Italy. Notable among the USAF participants was that one F-16C had been fitted with a new, monotonous dark gray paint scheme which is made with a special radar-absorbing paint capable of reducing the aircraft's radar cross-section.

The most impressive participants this year were undoubtedly the six McDonnell Douglas CF-18 *Hornet* fighter jets from the 425 Squadron and 433 Squadron of the Royal Canadian Air Force. A striking feature of this Canadian variant of the famous *Hornet* fighter jet is that a 'fake canopy' is painted at the bottom of the cockpit. During a dogfight, it is more difficult for the enemy to see which way the *Hornet* is turning. However, the journey of these Canadian fighter planes across the Atlantic was not without problems. During a stopover at Prestwick in the United Kingdom, it appeared that some aircraft had technical problems which caused them to arrive later at Leeuwarden AB.

In addition to the fighters which were temporarily stationed at Leeuwarden, Eurofighter Typhoon fighter jets from England and Germany also took part in FRISIAN FLAG 2022, departing from their home bases. Another loyal participant in this exercise is the Dassault Falcon 20C Mystere, which was provided by the British company Cobham plc to jam the reception of radio signals during the execution of the missions. Draken Europe took over the Aviation Service branch of the British Cobham Group in 2020 after which, from spring 2021 the aircraft were provided with official "Draken" titles. Under the wings of this remarkable aircraft are four blue "jammer pods" (jammers) developed for the NATO Joint Electronic Warfare Core Staff (JEWCS). This department is responsible for all NATO electronic warfare.

Photo *Kris Christiaens*

Photo *Kris Christiaens*

Photo *Danny Reijnen*

French Air Force Mirage 2000D.

French Air Force Mirage 2000D assigned to EC03.003 loaded with two 2,000 liter fuel tanks and a laser guided air-to-ground bomb.

Photo *Danny Reijnen*

Photo *Kris Christiaens*

Photo *Peter Thivessen*

French Air Force Mirage 2000N assigned to EC01.003 *Navarre* **(top left)** and EC03.003 *Ardennes* **(top right)** returning to base from a morning mission.

Photo *Kris Christiaens*

Italian Air Force Tornado IDS MLUs assigned to 6° Stormo GEA are cleared for takeoff.

Photo *Ralf Jahnke*

Photo *Kris Christiaens*

Photo *Peter Thivessen*

Photo *Peter Thivessen*

Photo *Kris Christiaens*

Photo *Peter Thivessen*

Photo *Danny Reijnen*

Italian Air Force F-2000A *Typhoon* assigned to 51° Stormo, 132° Gruppo, based at Istrana AB.

Photo *Ralf Jahnke*

Photo *Kris Christiaens*

Photo *Kris Christiaens*

Royal Netherlands Air Force F-16AM

Photo *Kris Christiaens*

Photo *Peter Thivessen*

Photo *Danny Reijnen*

U.S. Air Force F-16CM Block 40CFs assigned to 510th Fighter Squadron *Buzzards* of the 31st Fighter Wing at Aviano AB, Italy.

Photo *Danny Reijnen*

Photo *Danny Reijnen*

Photo *Peter Thivessen*

Photo *Kris Christiaens*

French Navy Rafale M with a colored tail to celebrate to anniversaries: Ten years of the Rafale M in the Flotille 11F *La Furieuse* and 60 Years of the NATO Tiger Association.

The 322 Squadron at Leeuwarden AB is the first frontline unit of the Royal Netherlands Air Force that received the fifth generation fighter F-35A *Lightning II*.

Photo *Danny Reijnen*

Photo *Kris Christiaens*

Photo *Kris Christiaens*

Photo *Kris Christiaens*

The Royal Netherlands Air Force currently operates 17 Lockheed F-35A *Lightning II*s.

Royal Netherlands Air Force F-35A *Lightning II* assigned to 322 Squadron. In the stealthy air-to-air configuration the aircraft can be loaded with two AIM-9 *Sidewinder*s (one each in a side weapons bay on either side of the fuselage) and six AIM-120 AMRAAMs in the internal centerline main weapons bay.

Photo *Ralf Jahnke*

Photo *Ralf Jahnke*

Photo *Kris Christiaens*

Photo *Kris Christiaens*

Royal Netherlands Air Force of 322 Squadron Lockheed F-35A *Lightning IIs*.

Photo *Danny Reijnen*

Royal Canadian Air Force CF-188 *Hornets* (F/A-18A *Hornet)* assigned to 425 Tactical Fighter Squadron at CFB Bagotville.

Photo *Danny Reijnen*

Photo *Kris Christiaens*

Royal Canadian Air Force CF-188 *Hornet*.

Photo *Ralf Jahnke*

Photo *Kris Christiaens*

Photo *Danny Reijnen*

Photo *Ralf Jahnke*

Photo *Danny Reijnen*

Photo *Peter Thivessen*

Photo *Peter Thivessen*

Photo *Danny Reijnen*

▲ French Air Force A400M assigned to ET01.061 *Touraine* based at BA 123 Orléans.

Photo *Kris Christiaens*

Dassault Falcon 20 of Draken Europe carrying radar jammer pods. ▲

Photo *Danny Reijnen*

Photo *Peter Thivessen*

U.S. Georgia Air National Guard C-130H *Hercules* assigned to 165th Airlift Wing, 158th Airlift Squadron based at the Savannah International Airport.

RELIEF SUPPLIES FOR UKRAINE

REPORT RALF PETER WALTER

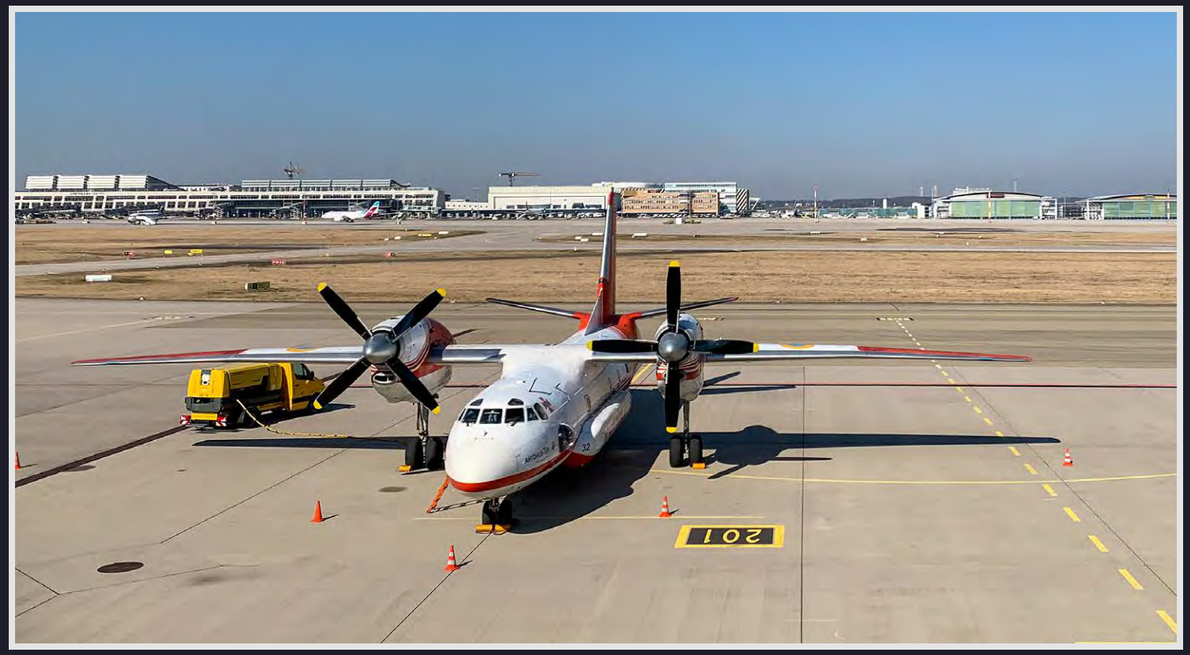
Antonov An-26 assigned to the State Emergency Service of Ukraine parked on the ramp at Stuttgart International Airport.

After engine start-up is completed **(1)**, the An-26 taxies to runway 07 for takeoff **(2)**. Among the many relief supplies were urgently needed power generators **(3, 4)** as well as a remote-controlled firefighting robot **(5)**, but also such simple things as firefighter helmets or fire hose nozzles **(6)**.

Initiated by the local volunteer fire department, about 250 pallets of equipment were collected in a state-wide donation campaign. Many donated not urgently needed and decommissioned equipment that has been put into storage but is fully functional, such as pumps, high current generators, hydraulic and manual rescue equipment, firefighting fittings and extinguishers, stretchers, beds, even an emergency ambulance, and the prototype of a fire extinguishing robot.

On 4 March 2022, the State Emergency Service of Ukraine sent two An-26 and one An-32P to Stuttgart International Airport in the southern part of Germany to pick up urgently needed material for the Ukrainian fire departments and civil protection units. The first Antonov, an An-26, landed at Stuttgart airport at about 8 a.m., and the last, the An-32P left at about 3 p.m. to the eastern part of Poland close to the Ukrainian border. From there, the material was transported into Ukraine by land.

ANTONOV AN-32P



Antonov An-32P **(top)** and Antonov An-26 **(above)**

KLEINE BROGEL 2021

REPORT AND IMAGES
BY PETER THIVESSEN

The German Air Force Eurofighter 30+01 received this spectacular scheme in 2021 for the 60th anniversary of the Taktische Luftwafffengeschwader 74 (Taktical Air Wing 74) as well as for five years of full membership in the NATO Tiger Association.

From 10 to 13 September 2021, the Sanicole Airshow was held in Belgium. However, since Sanicole only has a grass runway, the aircraft performing at the airshow took off and landed at the nearby Belgian Air Force base Kleine Brogel. On this occasion, as in previous years, the Belgian Air Force organized a spotter day at Kleine Brogel AB.

At the same time, the NATO Tiger Association held the 'XT-Roar-dinary Tiger Meet – Joint Jubilee' (XTM 21) there. Due to the COVID-19 pandemic, the 2020 NATO Tiger Meet was cancelled and made up for on a smaller scale in May 2021 at Beja AB, Portugal. The 2021 Tiger Meet, originally planned as a full Tiger Meet, was then held as an additional, shortened Tiger Meet, renamed Extra Tiger Meet – Joint Jubilee with a small number of participants. Unfortunately, again due to COVID-19, operational flying had to be cancelled. The joint jubilee was the 60th anniversary of the NATO Tiger Association and the 70th anniversary of 31 Squadron of the Belgian Air Force based at Kleine Brogel AB.

XTM 21 Participants

Unit	Air Force	Aircraft
31 Smaldeel	Belgian AF	4x F-16 A/B MLU
ECE 01/30 and EC 03/30	French AF	3x Rafale B/C
11 Flotille	French Navy	2x Rafale M
211 Squadron	Czech AF	1x JAS-39 Gripen
221 Squadron	Czech AF	1x Mi-24 and 1x Mi-171
511 Squadron	German AF	2x Tornado ECR
74 Wing	German AF	2x EF2000
12° Gruppo	Italien AF	4x EF2000
301 Squadron	Portuguese AF	2x F-16 A/B MLU
6 Eskadra Lotnicza	Polish AF	4x F-16 C/D Bl 52+
335 Mira	Hellenic AF	2x F-16 C/D Bl 52+
2. Staffel	Austrian AF	2x EF2000
59/1 Squadron	Hungarian AF	2x JAS39

German Air Force Tornado IDS(T) loaded with two external 410 gal fuel tanks and two HARM anti-radiation missiles.

German Air Force Tornado IDS(T) assigned to Taktisches Luftwaffengeschwader 51 «Immelmann» (Tactical Air Wing 51) based at Schleswig AB.

Italian Air Force F-2000A *Typhoon* assigned to 36° Stormo / 936° Gruppo Efficienza Aeromobili (GEA).

Austrian Air Force Eurofighter EF2000 assigned to the Überwachungsgeschwader at Zeltweg AB.

French Navy Rafale M assigned to Flotille F11 at BAN Landivisiau

Italian Air Force F-2000A *Typhoon* assigned to 36° Stormo / 936° Gruppo Efficienza Aeromobili.

French Air Force Rafale C **(left inset)** and Rafale B **(right inset)** assigned to EC03.030 at BA 118 Mont-de-Marsan.

Finnish Air Force F/A-18C *Hornet* assigned to HävLLv 11.

Hungarian Air Force JAS39C assigned to MH 59.
Sz.D. REB / 58 th TFW at Kecskemét AFB.

Czech Air Force JAS39C assigned to 211. tl (211.taktická letka – 211th Tactical Squadron) at Čáslav AB.

Polish Air Force F-16C Block 52CF of 31.BLT (31 Baza Lotnictwa Taktycznego – 31st Tactical Air Base), 6.elt (6th Tactical Squadron) at Poznań-Krzesiny AB.

Hellenic Air Force F-16D of 335 Mira **(left inset)**, Portuguese Air Force F-16AM assigned to 201/301 Squadron **(right inset)**, and Belgian Air Force F-16AM of the 31 Smd **(main image)**. All units are members of the NATO Tiger Association.

Hellenic Air Force F-16C Block 52+CF of 340 Mira at Soúda AB.

Belgian Air Force F-16BM assigned to the 10th Wing.

Czech Air Force Mi-35 *Hind* of 221 LtBVr at Náměšť AB with a special paint scheme to commemorate the 80th anniversary of the 311th Czechoslovak Bomber Squadron.

Czech Air Force Mi-171Sh *Hip* of 222 LtBVr at Náměšť AB.

1


2

3

4

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1, 4 German Army NH90 TTH of the THR 10 (Transportfliegerregiment 10)

2, 5 Belgian Air Force NH90 NFH of 40 Squadron

3 Czech Air Force W-3A of 243.vrl

1

2

3

4

5

1 French Navy E-2C *Hawkeye* of Flotille 4F at Base Aéronavale de Lann Bihoué

2 Royal Netherlands Air Force CH-47D *Chinook* of 298 Squadron at Gilze-Rijen AB

3,4 T-346A 61° Stormo / 212° Gruppo at Lecce AB

5 Belgian Air Force A109BA of 1 Wing at Beauvechain AB

▲ Swiss Air Force CL-604 and
▼ Falcon 900EX-EASy of LTDB

Hungarian Air Force A319-112 ▲
assigned to MH 59. Sz.D. REB ▼

50 years ago, this C-130 *Hercules*, serialled CH-01 was the first C-130 that entered service in the Belgian Air Force. To celebrate this milestone, the aircraft received this special color scheme.


CH-01
TENACITY


CH-01

▲ Polish Air Force C295M of 8.BLTr, 13.el
▼ Finnish Air Force C295M of TukiLLv

Czech Air Force C295MW of 242.tsl ▲▼

This Italian Air Force C-27J *Spartan* is operated by Reparto Sperimental Volo (RSV), the Italian Flight Test Wing.

▲▼ Privately owned Hunter F.6A, built in 1956 and until 1995 in service with the Royal Air Force.

Privately owned OV-10B *Bronco*, built in 1971 and used as target tug by the German Air Force ▲▼

Swiss Air Force aerobatic team «Patrouille Suisse» with F-5E *Tiger*.

NEW FIGHTERS FOR SERBIA

REPORT BY IGOR BOZINOVSKI

Serbia negotiates the acquisition of 24 Western-made fighter jets

On 9 April 2022, Serbian President Aleksandar Vučić unveiled that Serbia negotiates the acquisition of 12 brand-new Dassault Rafale multirole fighter jets for the Serbian Air Force and Air Defense (Ratno Vazduhoplovstvo i Protivvazduhoplovna Odbrana, RV i PVO) from France: "*For the past year I am personally negotiating the procurement of 12 new Rafale jets [from France], and we also plan to buy another 12 used Rafales from another country*",said Vučić. He also informed that further investments will be made in Serbia's unmanned capabilities through acquisitions of the Turkish Baykar Bayraktar TB2 unmanned combat aerial vehicle (UCAV) and the Chinese-made CH-95 Medium Altitude Long Endurance (MALE) armed unmanned aerial vehicle (UAV).

Vučić's statement confirmed the previous, 5 April writing of the Paris-based La Tribune weekly financial newspaper that Serbia, after Greece and Croatia, would very likely become the third European export customer for the French jet fighter with 12 new-produced aircraft being the subject of talks between Paris and Belgrade. However, it also caused confusion concerning the second-hand aircraft. No export nation using Rafale – those being India, Qatar, Egypt and Greece – is known to have expressed intention or has requested and received Paris' approval to re-sell its jets.

The created ambiguities were partially resolved on 11 April when Reuters news agency quoted Serbian President as having said that the required aircraft would be Western-made although he kept the type of these aircraft secret. The Belgrade-based media, however, reported on 14 April that Serbia is interested in buying a squadron of used Rafale planes from Egypt, which Cairo would then replace with a new order of new aircraft from the French's Dassault Aviation.

On 16 April 2022, Serbian defense minister Nebojša Stefanović unveiled in an interview given to the Serbian national TV station RTS1. "*What is interesting for me and for what I talked about with RV i PVO experts are the abilities that a potential partner [nation] can offer us. If Great Britain offers us a missile that has twice the range of a plane with similar characteristics as Rafale, that is a huge advantage for RV i PVO - when it can fire a missile at 300 km, then when it can shoot at 120 or 150 km. If one partner [nation] does not offer us such a rocket, and it owns it in use but says it is not ready to sell it to Serbia, that should also be taken into account,*" Stefanović said confirming that for Serbia's declared need for 24 jet fighters negotiations are underway with few different nations with the primary focus being on comparing the offers of weapons as one of the key deciding factors.

Stefanović's interview confirmed 13 April reports in Belgrade media that Serbia had already approached the United Kingdom (U.K.) with interest in 12 surplus Royal Air Force Tranche 1 Typhoons. The jets are scheduled to be retired by 2025, according to the U.K. Ministry of Defense's Command Paper published in March 2021. Previously, Dassault Aviation of France and the Egyptian Air Force were mentioned by Serbian officials and media close to the government in Belgrade as the potential suppliers of the RV i PVO with 12 new and 12 used Rafale fighters, with Cairo filling up the Rafales it would give to Serbia with newly built aircraft from France.

With Rafale and Typhoon obviously being the main candidates for Serbia's new jet fighter, and although

Serbian Air Force MiG-29A (Serbian AF designation 9-12A) assigned to 101.lae (101st Fighter Squadron).

Serbian Air Force MiG-29UB (Serbian AF designation NL-18) assigned to 101.lae (101st Fighter Squadron).

Serbian Air Force G-4 (Serbian AF designation N-62) assigned to 252.štae (252nd Training Squadron).

the defense minister Stefanović did not name the missile that could be deciding on which of these two fighters (and nations behind them, in this case France and UK) would win the Serbian deal, it is almost certain that the minister has referred to either (and very likely) the MBDA Meteor beyond visual-range air-to-air missile or the (less likely) MBDA Storm Shadow/SCALP cruise missile.

Serbia's plan to buy 24 aircraft is driven by the need to keep two fighter squadrons operational within RV i PVO beyond 2030 when Serbia should begin the gradual retirement of its Soviet-era MiG-29s, the Yugoslav-made SOKO J-22 Orao (Eagle) twin-engine subsonic ground-attack and aerial reconnaissance aircraft, and its SOKO G-4 [N-62] Super Galeb (Super Seagull) single-engine advanced training and light ground-attack jets.

Should the procurement of 12 new F4-standard Rafale planes materialize, it is expected that Serbia would equip both squadrons with the same type of aircraft and, like Croatia, would consider the French Air and Space Force (Armée de l'Air et de l'Espace) as a source for an additional 12 F3-R Rafales. Alternatively, the replacement for the J-22 and G-4 combination could be found in a smaller one that is less expensive to procure and operate. The Leonardo M-346FA light combat jet, optimized for advanced training and with multi-role capabilities, including close air support missions, would meet all RV i PVO's requirements and is an option Serbia is considering very seriously.

The announced UAV acquisitions, on the other hand, indicate that Belgrade intends to further expand the unmanned component of the RV i PVO. Currently, they operate six Chinese-made CH-92A armed UAVs. This year, Serbia expects the delivery and entry into service of the Pegaz (Pegasus) tactical drone, developed Military Technical Institute in Serbia. Earlier this year, Pegaz completed flight testing in China and underwent a process of design and performance improvement and integration of the Chinese-made electro-optical system, autopilot, datalink, and software.

As a nation with candidate status for European Union (EU) membership, Serbia is under constant political pressure from the EU, as well as the United States. to end its close ties with Moscow. This means that Belgrade is expected to begin a process of gradually reducing the Serbian military's dependence on Russian influence. This has already been initiated with the RV i PVO which is driving the process of westernization of the Serbian military. For example, Airbus H145 helicopters, Airbus C295 transport planes, and MBDA Mistral 3 man-portable air defense systems were recently procured. The relevant agreements were heavily influenced by France which is a traditional ally of Serbia and obviously the nation working closely with Belgrade to bring the Balkan nation politically and militarily even closer to the West.

Serbia is a country where memories of the 1999 NATO bombings are still alive and where 82% of the population is still against their country joining NATO. It is therefore necessary for local politicians to personally explain that the need for the replacement of Russian MiG-29s with Western aircraft types between 2030 and 2035 is not driven by the desire to get rid of Russian influence. Rather, this is an essential strategic requirement of militarily neutral Serbia to adequately compensate for the upcoming entry into service of ten single-seat and two two-seat Rafale jets by neighboring NATO-nation Croatia.

Serbia's key military procurements over the past six years have been carefully planned and executed to enable serious and well-thought-out modernization and increase the strength of the nation's military through the acquisition of modern weapons and military equipment from key global players: Russia, China, the U.S., and the EU-nations France, Germany, and Spain.

These investments have weighed heavily on the Serbian economy. However, they are considered necessary because they are undoubtedly driven by Belgrade's need to secure the political support, or at least the understanding, of the major powers for its foreign policy and regional security objectives. This is especially so in light of Serbia's continuing policy of not recognizing the independence of Kosovo, which Serbia recognizes as its southern province of Kosovo and Metohija, and Serbia's interest in the continued existence of Republika Srpska, the Serb-dominated part of Bosnia and Herzegovina.

AN-225 MRIYA IN AUSTRIA

REPORT BY WOLFGANG JARISCH

In October 2021, the world's largest aircraft, the Antonov An-225 *Mriya* landed at the Austrian Airport of Linz, delivering 110 tons of COVID-19 testing kits from China. The An-225 is/was operated by Antonov Airlines which is headquartered in Kyiv in Ukraine. Before the Russian invasion, the airline's fleet included one AN-225 *Mriya*, seven AN-124-100 *Ruslans*, one AN-22 *Antei*, two AN-12s, one AN-26, and one AN-74T.

The only An-225 that ever flew was developed based on the An-124 to carry atop its fuselage the Buran orbiter, the Soviet space shuttle. With its six Progress D-18T turbofans with 229.5 kN thrust each, a wingspan of 88.4 m (290 ft), and the main landing gear with 32 wheels, it is capable of transporting a payload of up to 250 tons. The maximum takeoff weight is 630 tons, and the range is 15,400 km (9,600 mi) with maximum fuel or 4,000 km (2,500 mi) with a payload of 254 tons. The first flight of the *Mriya* was on 21 December 1988, its last flight probably was in early February 2022, when it flew to its home base Hostomel Airport at Kyiv for routine maintenance work. With the Russian invasion of Ukraine and the Russian attack on Hostomel Airport, the An-225 was severely damaged, most probably beyond economical repair.

The An-225 can only be loaded/unloaded via the nose ramp. It uses the An-124-100s nose gear which allows the aircraft to 'kneel' so that the cargo can be easily loaded/unloaded. Some of the main landing gear's wheels are dirigible and enable this giant aircraft to make a full turn on a 60m wide runway.


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МРІЯ

Was Flight 93 Shot Down?

by Warren Gray

"For my part, whatever anguish of spirit it may cost, I am willing to know the whole truth, to know the worst and provide for it."

Patrick Henry, 1736-1799

"(Flight 93)…was shot down by an F-16…there were parts found five miles away…there were eyewitnesses to it being shot down…heard the rapid…cannon fire hitting the fuselage…They couldn't possibly reveal this information because…It was something they had to do…once the passengers got control of the airplane, there was no way to communicate."

John Lear, veteran pilot with 17 aviation world records, flew for the CIA and special ops in the Vietnam War

On the fateful morning of September 11 ("9/11"), 2001, two terrorist-controlled airliners struck the World Trade Center towers in New York City, a third aircraft struck the Pentagon in Arlington, Virginia, and the fourth, United Airlines Flight 93, was apparently bound for the U.S. Capitol Building in Washington, D.C. President George W. Bush formally issued the grim order to shoot it down, and Vice President Dick Cheney repeated it three times at approximately 9:55 AM. According to The 9/11 Commission Report, Flight 93 crashed into the ground near Shanksville, Pennsylvania, for no apparent, stated reason.

Flight 93, a Boeing 757 airliner, took off from Newark, New Jersey, at 8:42 AM, with 44 people aboard. It flew westbound, across Pennsylvania and into Ohio at 35,000 feet altitude, where the four terrorist passengers killed the pilot and copilot by 9:37 AM, and seized total control of the aircraft. They next turned southeast, toward Washington, D.C., passing just south of Pittsburgh, Pennsylvania, at 9:54 AM.

The 9/11 Commission Report later inaccurately stated that only five jet fighter aircraft took off before the Flight 93 crash, and none were ever in a position to shoot it down. These included two F-15A Eagles from Massachusetts, and three F-16A Fighting Falcons from Virginia. The F-15s took off at 8:52 AM, bound for New York City at Mach 1.5 airspeed, each armed only with training missiles and an M61A1 Vulcan Gatling gun loaded with non-explosive, 20mm training ammunition. Later, three F-16A Fighting Falcons based in Virginia took off at 9:30 AM, bound for Washington, D.C., where American Airlines Flight 77 was about to hit the Pentagon at 9:37 AM.

Vice President Cheney told NBC's "Meet the Press" on September 16th that "We decided to do it…put a flying, combat air patrol up over the city; F-16s with an AWACS…our pilots were authorized to take them out…that's a horrendous decision to make…you're going to, in fact, shoot it down."

The Northeastern Air Defense Sector (NEADS) log book for September 11th clearly shows that an E-3C Sentry AWACS aircraft, callsign "Sentry 40," was, in fact, flying that day. The AWACS pilot, First Lieutenant Anthony Kuczynski, told the Saint Thomas Aquinas University newspaper, The Aquin, in April 2002, that he flew toward Pittsburgh alongside two F-16s on September 11. 2001: "I was given direct orders to shoot down an airliner (Flight 93.) It was one of those things where it was an absolutely surreal experience."

One of the radar officers in the main cabin of the AWACS later reported on April 16, 2008, that, "On September 11, 2001, the plane I was assigned to, an E-3 Sentry (AWACS) based out of Andrews Air Force Base…received orders to loiter between Washington and Pittsburgh…We received a report about a fourth plane (Flight 93) heading straight for Washington from inside Pennsylvania…and spotted the plane on radar… NORAD (the North American Aerospace Defense Command) authorized us to direct two F-16s toward the airliner and eliminate the threat…I vectored the planes behind the 757 and instructed them to hold position…At approximately 10:00 AM, we received a hurried order from NORAD to down the airplane.

"I nodded and informed the lead F-16 that he was authorized to use deadly force, and ordered him to eliminate the target…it descended rapidly toward the ground…I personally gave the order to down Flight 93…(We were) then informed…that by order of the president…knowledge of Air Force involvement in the destruction of Flight 93 was to be highly-classified and not disclosed to anyone, ever…our data tapes, backups, and anything that suggested we were operational on September 11 was removed. I left the Air Force in 2006."

These F-16s were likely assigned to the 121st Fighter Squadron of the D.C. Air National Guard at Andrews Air Force Base, Maryland, flying F-16C Fighting Falcons that, due to the ongoing exercise, were armed only with 20mm training ammunition in their guns, and very few missiles. The two light-gray F-16Cs flying alongside the E-3C AWACs certainly had training ammunition only, and either no missiles, or training missiles at the very most.

So, we had the Vice President of the United States, the E-3C pilot himself, and a radar officer all telling us that there were "F-16s with an AWACS…between Washington and Pittsburgh," all of which The 9/11 Commission Report somehow neglected to mention, especially since United Flight 93 was flying in exactly the opposite direction at precisely that same time! They quite literally had to have seen each other at some point!

The Washington Post reported on January 27, 2002, that at 9:55 AM, with Flight 93 only one minute past Pittsburgh, enroute toward Washington, "A military aide approached the vice president. 'There is a plane (Flight 93) 80 miles out. There is a fighter in the area. Should we engage?' 'Yes,' Cheney replied without hesitation." Asked twice more, Cheney confirmed the shootdown order two more times.

At approximately 9:58 AM, the passengers of Flight 93 began a revolt against the hijackers, initially led by Todd M. Beamer, Thomas E. Burnett, Jr., and Jeremy L. Glick, a judo champion. During a phone call, Beamer said, "We have to do something now… Are you guys ready? Let's roll!" Burnett told his wife via telephone that, "I know we're all going to die. There's three of us who are going to do something about it."

The 9/11 Commission Report, supported by the FBI and NORAD, states that Flight 93 impacted the ground at 10:03 AM, but these are the only sources using that particular time, and they provided no evidence whatsoever to prove it. Seismic signals recorded by U.S. Army seismic observatories at Soldier's Delight, Maryland, and Millersville, Pennsylvania, pinpointed the true time of impact at 10:06:05 AM. Official, Federal Aviation Administration (FAA) transcripts also show 10:06 AM, when a supervisor says, "Okay, we've lost radar contact with United 93."

Seven eyewitnesses nearby clearly saw the aircraft falling. Terry Butler said, "It just went flip to the right and then straight down." When that many eyewitnesses or sources all say the same thing, the statistical probability of them telling the truth is 99.2 percent.

Meanwhile, near Shanksville at 10:06 AM, at least 12 eyewitnesses saw a very-low-flying, fast jet near the impact site before and after Flight 93 crashed. This mystery jet appeared from the southeast, exactly where the two F-16s and the AWACS were flying, circled the crash site, and departed toward the northeast.

Meanwhile, inside the Flight 93 passenger cabin, the revolt only lasted for five minutes, until 10:03 AM. They apparently rolled a food cart forward to use it as a battering ram against the cockpit door. The official, cockpit voice recorder (CVR) tape ends at 10:03, with the terrorists repeating "Allahu akhbar!" ("God is great!") nine times before the crash. But the extra problem here is that the family members who listened to the same tape on April 18, 2002, said that there were no shouts of "Allahu akhbar!" at all!

So, the 9/11 Commission version of the tape ends abruptly at 10:03 AM, the claimed impact time, with no explosion, just a loud rushing of air. Thus, according to the government, the passenger revolt failed, and they never breached the cockpit door.

Indeed, the official findings of The 9/11 Commission Report were puzzling to many. John Farmer, the senior counsel to the 9/11 Commission, and author of The Ground Truth: The Story Behind America's Defense on

9/11, had this to say: "I was shocked at how different the truth was from the way it was described….The (NORAD air defense) tapes told a radically different story from what had been told to us….This is…a whole different order of magnitude than spin. It simply wasn't true…there was an agreement not to tell the truth about what happened…Many still believe that… the military actually did shoot down United 93."

Thomas H. Kean, Chairman of the 9/11 Commission, stated in 2006 that, "We think the Commission, in many ways, was set up to fail…There is significant evidence that the false statements made to the Commission were deliberately false…We, to this day, don't know why NORAD told us what they told us."

When confronted with evidence from the tapes that contradicted his original testimony, NORAD General Larry Arnold actually replied to 9/11 Commission staffer that, "The real story is actually better than the one we told!"

John Lear, the son of Learjet founder Bill Lear, was a veteran pilot with 17 aviation world records, who flew for the CIA and special ops in the Vietnam War. Based upon his still-secret contacts within the Air Force and intelligence community, he bluntly stated on November 2, 2003, that, "(Flight 93)…was shot down by an F-16…there were parts found five (actually eight) miles away…there were eyewitnesses to it being shot down…heard the rapid…cannon fire hitting the fuselage…They couldn't possibly reveal this information because…it was something they had to do…once the passengers got control of the airplane, there was no way to communicate with…whoever was directing the attack for the Air Force." Wow!!!

Rowland Morgan's breakthrough, 2006 book, Flight 93 Revealed, states that, "Flight 93 may well have been deliberately shot down…Witnesses…saw an F-16 move closer in and fire…Sidewinder missiles… those brave passengers just might have retrieved the controls from fanatical hijackers. For the U.S. military to have snatched victory from their grasp was unthinkable."

Why would the U.S. government go to such great lengths to bury the truth regarding Flight 93? First of all, the hero story was already available, mostly true, a lot more palatable, and much better for public morale in wartime. Who would want to hear, "Well, the heroes did great, but we shot them down?" This way, there are no lawsuits against the government for shooting down American citizens, regardless of the circumstances. The hero story also covers-up any NORAD incompetence on 9/11, such as failing to shoot down United Flight 175 at the South Tower at 9:03 AM.

The scientific principle known as Occam's Razor, or the Principle of Simplicity, states that given a number of competing hypotheses, the simplest explanation that accounts for all of the known facts is the most-likely to be correct. Let's examine the simplest-possible scenario that fits in with all of the known facts and evidence, to determine what really happened to Flight 93 on that terrible morning.

We know for certain that the aircraft passed Pittsburgh at 9:54 AM, and the passenger revolt began four minutes later, at 9:58 AM. At exactly this same time, the airliner was still bound from Pittsburg toward Washington, while an E-3C Sentry AWACS aircraft and two F-16 fighters were westbound on a reciprocal heading, from Washington toward Pittsburgh. By approximately 10:00 AM, Flight 93 and the three military aircraft all had to have seen each other in a head-on encounter.

The AWACS and F-16 pilots instantly realized that United Flight 93 was their terrorist-controlled, target aircraft, and they immediately received orders to shoot it down. By 10:03 AM, when the revolt ended at the cockpit door with a loud whooshing of air, the airliner was just east of New Baltimore, Pennsylvania, and the lead F-16 likely attacked it from below and behind with his 20mm cannon.

He fires a 50-round burst at the underside of the cockpit area, where most airliners have traditionally stored the U.S. mail. This certainly explains why there were burned papers, documents, and U.S. mail items found on the ground at New Baltimore. The fighter attack is successful, and the cockpit is perforated by dozens of non-explosive, 20mm rounds, which viciously kill the terrorists inside, and create a very loud, whooshing noise of air rushing in. This is where the official, cockpit voice recorder tape ends, because the government does not want you to hear what comes next.

The most-likely explanation for the next sequence of events is that the passengers breach the battered door and rush into the cockpit, confronted with a ghastly and horrific scene of blood and carnage, with the radios destroyed by the cannon attack, the terrorists all dead or dying, and blood and debris everywhere in sight.

The passengers are now completely successful, and Donald F. Greene, age 47, an experienced pilot, the CEO of Safe Flight Instrument Corporation, now slips into the pilot's seat, while Andrew "Sonny" Garcia, age 62, an experienced air traffic controller, takes the right seat.

Greene and Garcia can now see the circling F-16s through their blood-splattered windows, and they realize that they are flying directly toward Washington, D.C. In order to appear non-hostile, since they cannot use the destroyed radios, they immediately turn around and head toward the nearest airport to land. But the F-16 pilot cannot know what has just transpired, and they must naturally assume that the terrorists are still alive, and are taking evasive action.

By the time that Flight 93 reaches Indian Lake, five and half miles farther west, the lead F-16 pilot thunders toward the cockpit again with his 20mm cannon, but from above this time. Once again, he makes a devastatingly-accurate, gun strike on the cockpit area, instantly killing Garcia and Greene. Pieces of the pilots' seats break off, and debris and a human rib rain down on Indian Lake, but the huge aircraft continues to fly onward on autopilot alone.

At this point, they execute a standard, fighter maneuver known as a "shooter-eyeball," in which the lead pilot holds back for a distance and fires a missile (the "shooter"), while his wingman zooms in very close to the target to visually confirm its impact and destruction (the "eyeball.")

The heat-seeking, training missile unerringly strikes Flight 93's right engine, ripping it off the wing of the airliner, which flips over, spinning vertically toward the ground, and impacting in a remote field near Shanksville at 10:06:05 AM. The "eyeball" F-16 dips down to just 40 feet above the field to absolutely ensure that the target aircraft has been destroyed.

The 9/11 Commission had to invent the bogus, inverted, 40-degree impact angle in order to explain the engine fan located 301 yards farther south, claiming that it "bounced" there during the aircraft impact, instead of being torn away by a missile. Unlike most of the other evidence, this engine fan was never photographed or shown to the public, in order to conceal any possible evidence of an aerial attack.

Is this the way that it really happened? We'll probably never know with total certainty, but it truly is the simplest explanation that accounts for virtually all of the known facts, and is therefore more likely to be true than any other hypothesis. Will the U.S. government ever admit to shooting down Flight 93, especially in the context of our nation's history and the awful, terrorist attacks of September 11, 2001? Why not simply tell the truth? As Patrick Henry once observed, "For my part, whatever anguish of spirit it may cost, I am willing to know the whole truth, to know the worst and provide for it."

* * *

Warren Gray is a retired, U.S. Air Force intelligence officer with experience in joint special operations and counterterrorism. He served in Europe and the Middle East, earned Air Force and Navy parachutist wings, four college degrees, and was a distinguished graduate of the Air Force Intelligence Operations Specialist Course, and the USAF Combat Targeting School. He is currently a published author and historian (also investigating historical mysteries.) You may visit his web site at: warrengray54.vistaprintdigital.com.

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