THE AVIATION MAGAZINE

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№ 77 March-April 2022
Volume 13, Issue 2

- Air-to-air With The Hungarian Gripens
- «Île de France» Turns 80
- Weapons Instructor Course 2021
- Aerobaltic 2021
- And so much more ...

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Cover: Finnish Air Force Hawk Mk.51 painted in the colours of the Finnish national flag to mark the 40th anniversary since the arrival of the first Hawk in Finland in 1990. ***Photo*** *Wolfgang Jarisch.*

This page: French Air Force Mirage 2000C with a special paint scheme for the 80th anniversary of the Escadron de Chasse 2/5 *Île de France.* ***Photo*** *Mathias Leischner.*

THE AVIATION MAGAZINE

by www.TheAviationMagazine.com e-mail: editor@TheAviationMagazine.com

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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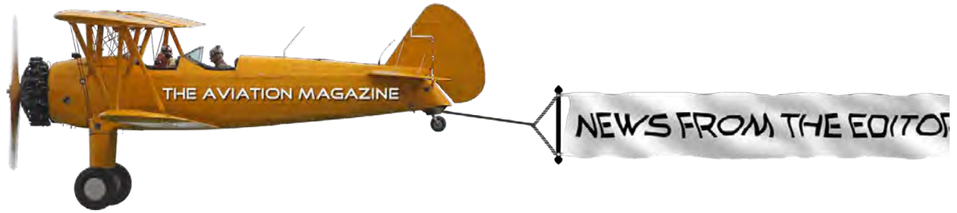

Dear Readers,

On 24 February 2022, the world has changed dramatically, not only for Europe. With Russia's attack on the Ukraine, 77 years after the end of World War II, today's Europe is once again threatened by a major war. The invasion of Ukraine ordered by Russian President Putin is not only an attack on a sovereign, democratic state of Europe, it is rather an attack on the freedom, sovereignty and democracy of Europe. We are deeply shocked by this brutal act of violence and our thoughts are with the people of Ukraine who are defending themselves and their country against the Russian oppression with their lives. Our thoughts are also with the servicemen and women of NATO and the allies who are ready to protect the highest values of our society, namely peace, human rights, democracy, security and the rule of law from the Russian aggressor.

However, we hope to bring you some joy with our new issue during these dark days. Download your free copy **here**!

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Ralf Peter WALTER
Publisher & Editor

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AIR-TO-AIR WITH THE HUNGARIAN GRIPENS OF THE 59TH TFW «PUMAS»

TEXT: BRAM MARIJNISSEN, RENÉ SLEEGERS, AND PETER DE VOS (LOWPASSAVIATION.COM)
PHOTOS: LOWPASSAVIATION.COM UNLESS STATED

One of a total of twelve JAS39C single-seat fighter jets the Hungarian Air Forced has leased until 2026.

MH 59. Szentgyörgyi Dezső Repülőbázis, Kecskemét

The Hungarian air base Kecskemét AB currently is the home to the Hungarian Air Force's 59th Tactical Fighter Wing, consisting of three squadrons. The first is 1. Harcászati Repülőszázad (1st Tactical Fighter Squadron) which are flying the JAS39C and JAS39D *Gripen*. The second is Dongó Harcászati Kiképző Repülőszázad (Tactical Fighter Training Squadron), responsible for the initial tactical training for new *Gripen* pilots. The third squadron is 3. Szallitó Repülö Század (3rd Air Transport Squadron) and they are flying the A-319s and Falcon 7Xs.

In 2001, the Hungarian Air Force started the negotiations with the Swedish company SAAB for the leasing of twelve single-seat JAS39C and two dual-seat JAS39D *Gripens* to replace the aging Russian-made MiG-29 *Fulcrums*. The first delivery of the JAS39 *Gripen* was in 2006. The lease contract was for ten years and in 2016, extended for another ten years, until 2026.

At the end of 2016, the Hungarian Government launched the ambitious "Zrinyi 2026" modernization program and since then, much has changed within the Hungarian Air Force. Two A319s and two Falcon 7Xs were bought. At the beginning of 2018, the A319s and in August the first Falcon 7X were delivered. The second Falcon 7x followed in April 2019.

1. Harcászati Repülőszázad

The nickname of this squadron is *Puma*, currently operating twelve single-seat JAS39C and two dual-seat JAS39D *Gripens*. In total, the squadron has 20 Gripen pilots. They fly about 100 hours a year in the aircraft itself and about 30 hours in the simulator. In the simulator, emergencies and new phases of tactical training are being practiced.
Since 2013, the Squadron commander is Lieutenant Colonel Sandor Kallo. After high school, he went to the military school followed by the military academy from 1993 until 1997. In 2002, after training on the L-39 *Albatros* he took part in the NATO Flying Training in Canada (NFTC) for Phase 3 and Phase 4 fighter

training on the Hawk. After this, he flew the MiG-29 *Fulcrum* fighter aircraft. In 2007, he went to Sweden to qualify as a JAS39 *Gripen* pilot. In total, he flew 50 hours on the MiG-29 *Fulcrum* and about 1,000 hours on the JAS39 *Gripen*.

Dongó Harcászati Kiképző Repülőszázad

After the basic military training, which lasts two years, the basic flying training starts on the Zlin 143 and Zlin 242 training aircraft. Then, the student goes to the NFTC where they start flying in the Harvard II. After passing this, they fly the Hawk. The transition to the JAS39 *Gripen* and this training is in Satenas, Sweden. There, they learn basic aircraft handling. When they pass this training, they go back to Hungary to resume their operational training. During this training, they learn how to fly low level and provide Close Air Support (CAS) and get their Quick Reaction Alert (QRA) qualification. This training also lasts around one year. During this training, the pilots are checked many times whether they are fit enough and also whether their medical status allows them to fly fighter aircraft.

For training at Kecskemét, there is only one simulator. If the *Gripens* are upgraded, then first, the simulator will be upgraded before the aircraft will receive this upgrade. For the tactical training, the pilots go to Sweden because there are eight connected simulators available what makes it much easier to train tactical scenarios. The Hungarian pilots also train in Sweden with live ammunition for the guns and missiles during live firing exercises.

3. Szallitó Repülö Század

The nickname of this squadron is *Camel*, currently operating two A319s and two Falcon 7Xs. The

1 Flight line at Kecskemét AB with five JASJAS39C *Gripen* single-seaters and one JAS39D *Gripen* two-seaters. ***Photo** István Kelecsényi*
2 JAS39C with an external fuel tank attached to the centerline pylon.
3 This photo was taken on 21 March 2006 when the first *Gripens* (three JAS39C and two JAS39D) arrived at Kecskemét AB. ***Photo** István Kelecsényi*

Falcon 7X

squadron has two female pilots, one on the A319 and one on the Falcon 7X. The main tasks of this squadron are passenger transport and VIP flights. The Falcon 7X is used mainly for VIP flights and support flights, the larger A319 is used for troop transport and if necessary, for support and VIP flights.

Maintenance

The JAS39 *Gripen* aircraft are overhauled every 50 and 200 flight hours. This maintenance is done at Kecskemét AB. Major maintenance, which is done every 800 hours, is carried out by SAAB in Sweden. Also, the technicians receive their training in Sweden. Minor maintenance on the A319s and Falcon 7Xs is also done at Kecskemét AB. The two Falcon 7x are sent to the Dassault Maintenance Center located in Le Bourget, France every 12 months for necessary aircraft inspections and major maintenance.

Quick Reaction Alert (QRA)

The Hungarian Air Force has 365 days a year 24 hours a day JAS39 *Gripens* on QRA stand-by. This QRA stand-by is not only for Hungary itself but also for Slovenia and periodically the Baltic States (Estonia, Latvia, and Lithuania). When an airplane has communication problems or there is no flight plan filed, the QRA is scrambled to intercept the airplane and to communicate with the pilot of the aircraft to see if everything is alright. If not, they force the plane to land. In 2022, the Hungarian Air Force will send four JAS39 *Gripens* to Siauliai, Lithuania for air policing tasks above the Baltic states. This deployment will last four months. In 2019, the Hungarian Air Force already deployed fighter jets to the Baltic States for air policing tasks. They were scrambled many times and came up close to Russian fighters, transport, and VIP flights like Su-24, Su-27, Su-30, Il-38, Il-22, and Tu-160s. The QRA in the Baltic States is similar to the one in Hungary. In the Baltic States, the pilots wear dry suits. In case of an emergency and when the pilot is in the water, these dry suits make it possible for the pilots to survive in the cold water for two hours.

Future

Under the "Zrinyi 2026" modernization program, also two Embraer multi-mission KC-390s with air-to-air refueling (AAR) capability were bought in November 2020. Those aircraft should be delivered to the Camel squadron in 2023. Another part of this modernization program is to buy training aircraft. Candidates are the Aero L-39NG and Embraer Super Tucano. There is a need for more transport and VIP aircraft but it is currently unclear whether the Hungarian Air Force will invest in this.

The JAS39 *Gripens* are currently being upgraded and

Airbus A319 ***Photo*** *Istvàn Kelecsényi*

are leased until 2026. With the upcoming end-date of the lease contract, the HuAF has chosen to update thirteen JAS39s instead of leasing new-build JAS39E Next Generation *Gripens*.

Except for one dual *Gripen*, Hungary will upgrade twelve JAS39C and one JAS39D to the newest MS20 Block 2 standard, which is also the most recent version of the *Gripen* C and D variants used by the Flygvapnet (Swedish Air Force). One of the dual-seat *Gripens*, serial 44, is ex Swedish AF and is already MS20 Block 2 standard. This fighter was delivered on 1 July 2016 as a replacement for the one that crashed.

The MS20 Block 2 upgrade significantly improves the aircraft's combat and communication capabilities by boosting Link 16 (NATO Data Link) functionality and updating voice communication to the most recent NATO secure communication standard. It also offers a wide variety of weapons that can be installed on the aircraft, including GBU-49 air-to-ground laser-guided bombs, IRIS-T infrared within visual range (WVR) air-to-air missile, and Meteor long-range radar-guided BVRAAM that outperforms other missiles. The radar will be updated to the PS-05/A Mk 4 that improves sensor capability, extending the air-to-air target tracking range and performance. The latest Identification Friend or Foe (IFF) NATO Mode 5 will also improve the identification of coalition aircraft.

Hungarian Defence Force Inspector Major General Nandor Kilian stated: "Thanks to the modernization of the *Gripen* aircraft, the operational capabilities of the Hungarian Air Force will be significantly increased. Our staff has appreciated close and fruitful cooperation with the Swedish side on this specific modernization project as well as the cooperation during the fifteen years that we have operated *Gripen* aircraft".

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DUTCH COUGARS AT 25

TEXT: CARLO KUIT AND PAUL KIEVIT | **PHOTOS:** CARLO KUIT AND PAUL KIEVIT/ BRONCO AVIATION UNLESS STATED

It has been 25 years since the first of the 17 brand new Aérospatiale AS532 *Cougars* of the Royal Netherlands Air Force (RNLAF) landed at Soesterberg Air Base, the home base of 300 Squadron at that time, for the first time. The initial contract was signed on 23 October 2013. The first AS532 was delivered on 3 May 1996, and all 17 deliveries were completed in the subsequent two years. Currently, 300 Squadron operates out of Gilze-Rijen Air Base as part of the RNLAF Defense Helicopter Command (DHC), established in 2008.

'In Mobilitate Vis Nostra'

The *Wildcats*, their usual callsign when operating in the Netherlands, of 300 Squadron have completed more than 55,000 flight hours to date which, since 1996, enabled them to participate in a very respectable number of major deployments and exercises. Active deployments all around the world, consisting of ship- and land-based operations, show that mobility is clearly within the DNA of the squadron. Something that is also embedded within the squadron's motto 'In Mobilitate Vis Nostra' (in mobility lies our power).

New Commander

At the beginning of September 2020, LtCol. Roy Hemmelder became the new Commander of 300 Squadron. He has been with the unit flying the *Cougar* helicopter ever since the beginning of this millennium. He only was away from the squadron to broaden his rotary wing experience by flying the NH90 for several years with the maritime 860 Squadron and learning the ropes as a flight instructor at the 131 Squadron. Having been deployed to Bosnia, Iraq, and Afghanistan numerous times, he proudly elaborates: "300 Squadron just breathes agility. Its people combined with the medium utility AS532 helicopter can operate in multiple domains, over land and water, supporting conventional, maritime, and Special Forces. The Defense Helicopter Command has many capabilities up its sleeve, of which agility and versatility are a major part of 300 Squadron's trademark." This also shows in the squadron's numerous partners, simultaneously operating with Special Forces, Navy Marines, and Air Mobile Infantry during various exercises and deployments. LtCol. Hemmelder adds: "Such diversity fits perfectly within in the 5th generation air force concept, where integrating and sharing knowledge between joint assets and operating in a

LtCol. Roy Hemmelder
CO 300 Squadron

One AS532 *Cougar* of 300 Squadron at Gilze-Rijen AB is parked on the apron while the other one is ready to depart for its next mission.

A key task for the Dutch *Cougar* fleet is tactical movement of underslung loads to and from the battlefield. This task is part of exercises throughout the year.

multi-domain battlefield is vital." After serving various staff functions at the Air Force HQ and Armed Forces HQ, LtCol. Hemmelder finished his Advanced Staff Training during 2019-2020. A little more than one year as Commander of 300 Squadron he reflects: "So far, this has been one of the most rewarding jobs I've experienced, mainly due to 300 Squadron's people and esprit de corps, but also the diversity. I'm enjoying every day, looking forward to what the future has in store."

History

The squadron's history dates back to 1962, at the time operating out of Ypenburg Air Base, close to the city of The Hague. First, they started operating in the training role with the H-23 Raven. By August of 1965, the transition was made to the Alouette III. From this point on, the squadron also flew the Piper L-21B *Super Cub* and the DHC 2 *Beaver*. With the retirement of the last *Super Cub* in 1976 and Ypenburg Air Base losing its operational state, the squadron moved to Deelen Air Base and operated there from 1968 to 1995. From 1996 to 2008, the squadron was based at Soesterberg Air Base after which it was relocated to Gilze-Rijen AB during the establishment of the Dutch Defense Helicopter Command.

The maximum cargo sling load of the AS532 *Cougar* is 4,500 kg (9,929 lb).

Shocking news

In 2011, after another round of Dutch Defense cuts, it was decided that 300 Squadron would be decommissioned. This came as a huge shock to the squadron, especially in light of the continuous record of accomplishments since the introduction of the 17 *Cougar* helicopters in 1996. The decision was (partly) reversed in the same year because of a shortage of SAR-helicopters (due to the replacement of the Lynx with the NH90 and the retirement of the three AB-412 helicopters, which had a dedicated SAR task). The plan was to continue to execute tasks with three *Cougars* in a dedicated SAR role in anticipation of the future maturity of the NH90 fleet. The squadron would stay operational until 2012. However, in the same year, the decision was rolled back further by increasing the number of operational AS532 *Cougars* to eight and prolonging the squadron's task up to 2018. In 2015, four more helicopters were made operational, which lead to the current fleet of twelve *Cougars* that remain in service of the squadron. In 2018, it was decided that the squadron will stay operational with the *Cougar* until at least 2030. "Being uncertain about our future, as a team, we had to endure a lot in the last decade. I believe flexibility and teamwork were

key to dealing with this situation", LtCol. Hemmelder adds. "But I also believe the medium utility helicopter in itself has contributed significantly in this regard. In the end, we are like an oiled Swiss Army knife, which has proven its added value over the years, and is quickly available when called upon."

Deployments

Since the 1990s, the *Wildcats* have been deployed during numerous conflicts and humanitarian missions all over the world. In 2001 and 2002, 300 Squadron took part in the Stabilization Force (SFOR) in Bosnia. For this mission, five *Cougars* operated out of Divulje Barracks, Croatia, for one year. The primary task was air mobility, transporting cargo and troops but also operating as an "Incident Response Platform" from Sipovo Hospital throughout the area of operation.

In 2004, 300 Squadron took over the duties in Iraq as part of the Stabilization Force Iraq (SFIR). For this, three *Cougars* operated out of Tallil Air Base. Again in the transport and MEDEVAC role.

The *Cougars* of 300 Squadron also deployed to

Top: From 2001 until 2004, several *Cougars* (here S-441) deployed to Bosnia as part of the multinational peace-keeping operation SFOR (Stabilization FORce). ***Photo*** *Ralf Peter Walter*

Right: 2004 and 2005, the squadron participated with its *Cougars* (here S-459) in the international operation SFIR (Stabilization Force IRaq). ***Photo*** *Ralf Peter Walter*

The crew of a AS532 consists of a pilot, copilot and a loadmaster. Depending on the mission the crew consists of three or four members (pilot, copilot, loadmaster, gunner).

Afghanistan several times during 2006 and 2010. Operations took place out of Kandahar Airfield in support of the Task Force Uruzgan. Besides transport of supplies, also missions to support Special Operations Forces (SOF) were executed.
300 Squadron also supports humanitarian missions like fighting forest fires (Fire Bucket Operations – FBO). In 2004, the squadron deployed two *Cougars* to Portugal and in August 2007, to Greece to support the firefighting there.

From Wildcats to Seacats
Furthermore, the *Cougars* have also been involved in anti-piracy missions off the coast of Somalia from aboard the Royal Netherlands Navy vessel Hr. Ms. In Rotterdam. A wide variety of tasks were carried out ranging from reconnaissance flights, transportation of boarding teams (Marines), drug encounters, and even blocking suspicious ships. During 2012 and 2017, the unit has been involved in anti-piracy missions under various mission names: ATALANTA, OCEAN SHIELD and, CARIB. For amphibious overseas missions, six AS532s (serials S-419, 441, 442, 445, and 447) are available with maritime equipment, like floats to prevent the helicopter from sinking when it goes down on the water.
The incorporation of maritime capability in the "toolkit" gives the 300 Squadron personnel, technicians, and aircrew alike, the opportunity and challenge to adapt to a new environment. "Operating out of a small working place and not having the experience of being at sea for a long time were the biggest challenges", Captain Dominique added. She is one of the experienced pilots within 300 Squadron, these days putting her rotary wing experience to good use at the Air Force HQ.
Until 2015, the squadron was tasked as patient transport (air ambulance) from the Wadden Islands, which are located in the upper north of the Netherlands in the Wadden Sea, to hospitals on the mainland. In 2019, 300 Squadron deployed two AS532s for 'hurricane disaster relief' after hurricane Dorian hit the Bahamas. A naval exercise at the Bahamas changed overnight from training to a real mission. In 2020, the *Cougars* operated from the Royal Netherlands Navy vessel 'Hr. Ms. Karel Doorman' in the Caribbean for the "COVID Support 2020". Although Covid-19 remains to have an impact on the global society, 300 Squadron has been adapting to this new situation. Indeed, in mobility lies their power.

Mission Qualification Training (MQT)
As international training and exercises were largely canceled during 2020 due to COVID-19, the unit organized a six-week mission qualification training (MQT), including a tactical electronic warfare exercise (TAC EW), in the Netherlands. Captain Jimmy, one of 300 Squadron's Flight Commanders, adds: "This all is part of the continuous learning curve we enjoy during our careers. To train as a new pilot towards operational (combat) readiness takes about two years, but the learning never stops." The MQT took place during January and February of 2021. Following that precious training, in April 2021, the exercise PORT DEFENDER took place in the Port of Rotterdam with a dedicated focus on Dutch counter-terrorism activities during which 300 Squadron was further able to hone its skillset. LtCol. Hemmelder adds: "Before the year is through, we'll also have trained our environmental skills in Degraded Visual Environments during EDA HOT in Beja Portugal, and Mountain

Training in Aviano Italy. Furthermore, valuable joint training is coming during the International SOF-exercise NIGHTHAWK in Denmark and the maritime amphibious exercise JOINT WARRIOR near Scotland and Ireland. The MQT serves its purpose in laying a firm bedrock for our crews to build upon when training those various mission sets."

Maintenance

Currently, 300 Squadron maintenance crews are performing a 'Base Maintenance Inspection' on one of the *Cougars*. According to 1st Lieutenant Niels Henderson, Chief Helicopter Maintenance of 300 Squadron, this is a unique opportunity. During early 2018, Heli-One (based in Richmond, British Columbia, Canada), a leading provider of helicopter maintenance, repair, and overhaul (MRO) services signed an agreement with the RNLAF to provide on-site intermediate/depot-level maintenance on the twelve AS532US *Cougar* helicopters and to support five additional aircraft in storage. A staffing facility at Woensdrecht AB with project managers, technicians, and support crew from Heli-One Poland has been established at that time. The agreement covers inspections and maintenance above the 750 hours/2-year intervals, Engine Makila 1A2 inspections, corrosion prevention, and support to the Operational Level Maintenance organization upon request.

To be able to continue operations until at least 2030, a so-called Obsolescence Prevention Program has been acquired for the *Cougar* fleet, primarily to update the twelve *Cougars* on maintainability and serviceability. Since the introduction with the NLAF, no major investments have been made to the AS532 fleet. Several essential parts of the weapons system have aged and spare parts have become difficult to obtain. In the past, this has already had a negative impact on the availability of the 300 Squadron fleet. The Obsolescence Prevention Program will focus primarily on upgrades to the cockpit, engine instruments, communications suite, navigation system, interoperability, and the Head-Up Display (HUD) system.

The Dutch AS532s are equipped with an extensive self-protection package, the Integrated Self Protection System (ISPS). This computer-controlled system consists of the Missile Approach Warning System (MAWS), the Radar Warning Receiver (RWR), and an Advanced Counter Measures Set (ACMS). The MAWS ensures that the

Left: Landing/take-off in a dusty environment is very challenging since the crew has very little to none visual external references and thus can cause spatial disorientation and loss of situational awareness.

Since 2018 an Air Power scenario is part of the annual commemorations of the Battle of Arnhem (17-26 September 1944) which takes place on the Dropzone Y, Ginkel Heath near the town of Ede.

crew is warned in the event of an anti-aircraft missile attack. The RWR ensures that the crew is warned when they are followed by a radar system. The ACMS makes sure that the appropriate countermeasures are taken. In addition, the AS532 has flares (linked to the MAWS) and chaff (linked to the RWR).

Recent exercises

In 2021, the *Wildcats* again participated in several international training exercises. "We started in July 2021 with HOT BLADE in Portugal to retain proficiency in brown-out operations", explains Jimmy, 300 Squadron Flight Commander. LtCol. Hemmelder adds: "It has been a valuable multiship and multi-type training for us. We are able to improve and further standardize our military cooperation with our European partners who took part in HOT BLADE."
Last year, they also took part in the exercise HIGH BLAZE at Aviano Air Base in Italy. This exercise was important for the crews to catch up with operations in mountainous areas. In preparation for this exercise, in late July 2021, the squadron deployed to Laupheim airfield in Germany where an initial mountain training was organized before heading to Italy.

To support the Dutch Commandos (KCT/ Korps Commando Troepen), a rare exercise took place late 2018 in which a *Cougar* performed a so-called Helo Cast. The helicopter was maneuvering only a few feet over the water that allowed Dutch Commandos to jump into to the water. The crew of the *Cougar* is able to train SOF AIR scenarios in which the squadron has a key role.

The rest of 2021 brought the four weeks HEBRIDES ARCHER exercise out of the Royal Netherlands Navy vessel 'Hr. Ms. Karel Doorman' with two *Cougars*, together with one NH90 starting mid of September. The final exercise for 2021 was the three weeks Special Operations Forces (SOF) NIGHTHAWK exercise held in Denmark out of Aalborg Air Base, starting in the last week of September.

SOF-exercise NIGHTHAWK

According to Captain Jimmy, being part of the large scale SOF-exercise NIGHTHAWK "improves the squadron's conventional support tasks and capabilities towards the Special Operations Forces (SOF). The *Wildcats* were in direct support of the Special Operations Forces of the Netherlands and various other partners present at that exercise." LtCol. Hemmelder adds: "Obviously, much effort is being invested into the further development of SOF. Although we are no SOF-unit ourselves, throughout the year, we are supporting Dutch SOF (amongst other partners) with our rotary-wing capabilities. Working to improve our tactics, techniques, and procedures while at the same time increasing the habitual relationship with the various partners. It's a valuable combination, and it gives us experience on a steep learning curve. Experience we directly incorporate to the benefit of our other partners as well."

During 2013, a dedicated program was started to build up SOF AIR capabilities within NATO. This program was initiated by the Supreme Headquarters Allied Powers Europe (SHAPE) as part of the NATO Special Operations Headquarters (NSHQ) in Mons, Belgium. In the Netherlands, on 5 December 2018, the Netherlands Special Operations Command (NL SOCOM) was established as a dedicated command for all Special Forces activities. These forces comprise of Commandos (Korps Commando Troepen, KCT) and Maritime Special Operation Forces, (MARSOF).

The port of Rotterdam has been the host of the exercise PORT DEFENDER for a couple of years in which The Dienst Speciale Interventies (DSI/ Special Intervention Service) exercises in anti-terrorist scenarios. The DSI is part of the Dutch National Police Corps and was established on 1 July 2006.

As part of the SOF AIR task of 300 Squadron a *Cougar* supported a large-scale anti-terrorist exercise in the south western part of the Netherlands in which Marsof (Maritime Special Operations Forces) and Dutch Commandos (Korps Commando Troepen) were tasked to board a "hostile" vessel.

Deck Landing Procedures (DLP) training during exercise HYBRID ARCHER onboard Dutch Naval Vessel ZrMs Rotterdam. The exercise took place in the North Sea during the winter period of 2020. ***Photo*** *Sven Scheffers*

«ÎLE DE FRANCE» TURNS 80

TEXT: MATHIAS LEISCHNER | **PHOTOS:** MATHIAS LEISCHNER UNLESS STATED

Thursday, 14 October 2021 at Orange in southern France – a beautiful sunny autumn day and a perfect match for the 80th anniversary of the French Air Force's (Armée de l'Air et de l'Espace) oldest active squadron: Escadron de Chasse 2/5 *Île de France*!

On 20 October 1941, General Charles de Gaulle ordered to establish the Free French Squadron. Only three weeks later, on 7 November 1941, the 340 Squadron stood up in Turnhouse, Scotland. The squadron was made up of French pilots who managed to escape the German army in occupied France. Its aircraft, Spitfire Mk.II's and Mk.IX's and later Mk.XVI's were provided by the Royal Air Force. The squadron consisted of two flights: flight A *Paris* and flight B *Versailles* to be replaced in 2013 by the flights *Trident* and *Renard*. After some years of fighting side by side with their allies against the Germans in WW II, 340 Squadron soon called French ground its home. From 1951 onwards, Orange-Caritat was the home base for the 5th Fighter Wing, redesignated 2/5 *Île de*

French Air Force Mirage 2000C 115-KC received this spectacular scheme for the 80th anniversary of Escadron de Chasse 2/5 *Île de France*. ***Photo*** *Guillome Berthon*

France. They continued to serve France with its sister squadron EC 1/5 *Vendee* and later on EC 3/5 *Comtat-Venaissin* by providing air defense tasks and taking part in many conflicts.

To celebrate Île de France's 80 years of service and 70 years at Base Aérien 115 Orange-Caritat, the doors of the air base opened on 14 October 2021 for some veterans, families, friends, and also a small group of journalists. Of course, COVID-19 restrictions were in place. However, with the variety of current and past military aircraft from the French Air Force and other nations flying in some of them performing aerial displays, the event came close to being an airshow.

The *Île de France* celebrated its anniversaries with style: the French Air Force Rafale Solo Display, F-16AM solo displays from the Belgium Air Component with a colorful "80 years of 350 Squadron" paint scheme, and the Danish Air Force with its beautiful red and white painted "Dannebrog" F-16AM; historical aircraft like a Skyraider, Spitfire, and Fouga Magister; the Équipe de Voltige de l'Armee de l'Air et de l'Espace and of course, the Patrouille de France.
The highlight was the "Gusto 80" display, consisting of two EC 2/5 Mirage 2000C's performing a tactical display in the skies over their home base Orange. Not only for their flying skills, this was the best part of the show but also for the beautiful special color scheme of the Mirage 2000C 115-KC/120 which was designed for this 80th anniversary!

In addition to the flying displays attributed to the anniversary, some very interesting guests for the static display – for the most part included in the flight line – showed up. The French Air Force sent some of its current fighter jets such as a Mirage 2000D 3-IQ/666 from BA 133 Nancy still wearing the ETD 4/3 *Argonne* (SPA 31 *Archer*) badge on both sides of the tail, two Rafale C's from BA 118 Mont-de-Marsan (30-GO/136 of EC 3/30 *Lorraine* and 30-GL/133 of EC 2/30 *Normandie-Niemen*), and an EC 1/4 Gascogne two-seat Rafale B (4-HY/326) from BA 113 Saint Dizier as the spare aircraft for the Solo Display single-seat Rafale C (4-GR/139). Actually, the spare performed the Rafale Solo Display in favor to carry a guest pilot. The star of the static display nevertheless was the Mirage 2000N (no.369) that previously served with another legendary unit, the EC 2/4 *La Fayette*. Today, it is assigned to the Direction Générale de l'Armement - Essais en Vol (DGA-EV) at nearby BA 125 Istres.

Looking back at a history of 80 years of this famous squadron, this celebration was a proper one! Of course, COVID-19 did not allow for a party on a bigger scale.
Despite its rich history, the Île de France, having fought in WW II, in Indochina, the Gulf War, Bosnia, NATO Air Policing in the Baltics, and many live missions over north and central Africa, the future for now does not look very promising. In the summer of 2022, the squadron will be disbanded. It is planned to have a goodbye ceremony at Orange-Caritat in June, and then, the Mirage 2000B's will join BA 133

Mirage 2000C assigned to EC 2/5 right after take-off.

Two French Air Force Rafale's together with two Belgian Air Force F-16s (**insets)** flying in for the anniversary event and the airshow.

Nancy where the future training of Mirage pilots will take place. The Mirage 2000C in the colors of EC 2/5 will have a last operational appearance over Paris in the fly-past during the ceremony for the National Day on 14 July.

BA 115 Orange-Caritat will see major structural work and upgrades which will take at least two years before it will be ready to host a Rafale squadron.

We can only hope that the famous *Île de France* will be back then! Maybe after flying Spitfires, Kingcobras, Vampires, Mistrals, Mystère II's and IV's, Super Mystère B2s, Mirage IIIC's, Mirage F1C's and Mirage 2000C/B's we will see Rafales with the EC 2/5 badge.

In 2019, on the occasion of the 800th anniversary of the Dannebrog – the Danish national flag – this Royal Danish Air Force F-16 received a special red and white paint scheme.

Photo P. Merkel/Armée de l'Air et de l'Espace

Photo A. Perret/Armée de l'Air et de l'Espace

Mirage 2000C (**main image, inset right**) and Mirage 2000B (**inset left**) assigned to EC 2/5.

Mirage 2000N of the DGA (La Direction Générale de l'Armement), the French Government's Defence procurement and technology agency responsible for project management, development, and the purchase of weapon systems for the French Armed Forces. It has a section dedicated to military flying assets that was formerly known as CEV (Centre d'Essais en Vol).

The Rafale C aircraft with code 4-GR is the French Air Force's "Rafale Solo Display" aircraft for the 2021 season. It is assigned to ETR 03.004 based at BA 113 Saint-Dizier.

Main image and right inset: Just having arrived at Orange AB, this French Air Force Rafale C assigned to EC 02.030 taxies to its parking position on the flight line.

Left inset: French Air Force Rafale B assigned to EC 01.004 taxies to the end of the runway for the take-off for its flying display.

▲ Royal Air Force Typhoon FGR4 of XI(F) Squadron.
▼ Royal Danish Air Force F-16BM of Fighter Wing Skrydstrup.

Italian Air Force Eurofighter F-2000A of 132° Gruppo. ▲
Royal Netherlands Air Force F-16AM of 312 Squadron. ▼

▲▼ French Air Force AS555AN of EH 05.067.

French Air Force PC-21 of EPAA 00.315. ▼▲

French Air Force aerobatic team *Partrouille de France* with eight Alpha Jet trainer aircraft.

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1 Aermacchi MB339C of ARES, which provides "Red Air" services primarily to the French Air Force.
2 TBM-700A assigned to ET 00.043.
3 The Grob G 120TP is a two-seat, all composite airframe basic trainer aircraft optimized for the military training environment.

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4 Dassalut Falcon 20E of Aviation Défense Service (AVdef), equipped with two underwing winches for towing two aerial targets, successively or simultaneously.
5 Canadair CL-415 waterbomber of the French Sécurité Civile.

▲ Fouga CM-170R *Magister*. This aircraft served with the French Air Force as 2-HB/479 ▲
▼ Dassault MD-312 Flamant

WEAPONS INSTRUCTOR COURSE 2021

ARTICLE BY DANNY REIJNEN

On 3 May 2021, the Weapons Instructor Course 2021, named Banzai, exercise started at Leeuwarden AB, located in the northern part of the Netherlands and home of 322 Squadron, flying the F-35A *Lightning II*.

Every squadron that works with weapons has one or more weapons instructors. He or she determines the tactics that must be followed to carry out a particular mission. Moreover, the weapons instructor is also a source of information for other squadron members. Until the end of October, this bi-annual course took place at Leeuwarden AB. However, not only fighter pilots are trained to become weapons instructors, but also C-130 Hercules pilots. Furthermore, operators of the Patriot anti-aircraft missile, intelligence officers, and 'Air Battle Managers' also participated in the course. The 2021 course consisted of 22 students: seven F-35 *Lightning II* fighter pilots, three of whom are from Norway together with six F-16 *Fighting Falcon* fighter pilots, two from the Netherlands, and four from Belgium. In addition, five intelligence officers, three C-130 transport pilots, two combat leaders, and two Patriot specialists were participating.

In most cases, the pilots nominated for the WIC are considered among the best within their field of work. "We get already extremely well-trained people and make them better in six months", Major 'Cribs' states. Major Cribs is the commander of the Weapons School and F-35 *Lightning II* pilot. "The idea is that participants can transfer the knowledge and skills they gain here to other colleagues. We teach them how to instruct and the best way to transfer knowledge. Within a squadron, the weapons instructor is the specialist in the field of tactics and deployment of certain weapons."

The WIC was divided into three blocks. First, the focus is on expanding knowledge of tactics and weapon systems. In addition, exercises are held in increasingly large air battles. The second phase

German Air Force Tornado seconds from touchdown on runway 05 at Leeuwarden AB with a fourship formation of F-16 returning after having accomplished their mission.

German Air Force Tornado ECR asigned to TaktLwG 51 "I" **(main image)** and German Air Force Tornado IDS assigned to TaktLwG 33 **(insets)**.

focuses on attacking ground targets. The third and final part focuses on expanding leadership skills. Students lead, plan, and conduct flight operations with large formations of various types of combat and support aircraft. During this third part, all lessons learned come together in a final exercise.
However, the WIC can be considered more than just a train-the-trainer course. Major 'Kliko' is an F-16 pilot and Deputy Commander WIC: "Within the Air Force, many people think that the WIC is a tactical course. However, developing good leadership skills is just as important. It is actually a leadership course disguised as a tactical flying course. We also spend a lot of time developing non-technical skills. This skill differs from planning operational missions and working with other divisions to people skills and personal development."

Every two years through 2019, Leeuwarden AB provided the Fighter Weapon Instructor Training, FWIT, a similar course for F-16 pilots. The focus was on technical skills and performing various combat missions with the F-16. With the arrival of the F-35, it wasn't just the name that changed. "Considerably more time is now spent on learning to integrate and function better as a team. Working with partners inside and outside the Air Force is essential to this. Therefore, non-flying divisions now also participate in the WIC."
With the change from FWIT to WIC, international cooperation became more important. This is not noticeable yet from the nationality of the students, but noticeable from the design and implementation of the course. In 2021, the course participants were from the Netherlands, Belgium, and Norway. Norway sent three students and four instructors to Leeuwarden. For the first time, the students went abroad with the F-35 to practice. In June, the aircraft flew for several days from the Norwegian air base Ørland to practice firing air-to-air missiles.
Cribs explained: "We have a number of American guest instructors during the WIC. Particularly regarding the Intel (intelligence) and the air battle management and air combat control courses, we don't yet have anyone available as an instructor, because this is a new part of the course. Therefore, we were more than happy to use their expertise. The guest instructor, being a B1 pilot, was a 'Nellis graduate', who completed the Instructor Course at Nellis AFB."
Kliko adds: "Recently, we had the Suppression of Enemy Air Defences (SEAD) part. This part consisted of eliminating anti-aircraft missile positions. With the arrival of the F-35, this task has been added for the Royal Netherlands Air Force. At this moment, we don't have a lot of knowledge and experience regarding this task either. Therefore, the Americans came here for a week with a number of F-16s from Spangdahlem Air Base belonging to the 480th Fighter Squadron in Germany. These pilots are specialized in SEAD. We were fortunate to learn from them and practice together with them in the air." Maj Cribs highlighted the importance of SEAD training and integration. He said: "The WIC and participating air forces greatly benefit from the integration with the Spangdahlem F16s. Especially in the SEAD role, where we can learn from each other's experiences. By learning to use fourth and fifth-generation fighters, we enhance our capabilities as a team and are ready to meet future challenges together."

German Air Force Tornado IDS assigned to TaktLwG 33 taking off with afterburners engaged.

Final Exercise

Throughout the WIC, the different disciplines and platforms practiced together more frequently. "It starts very isolated, for example, a one against one air combat for instance with F-35s. Gradually, this is expanded. Then, there is also cooperation with, for example, intelligence and combat management. Integrating the various disciplines into one team is an important goal of the WIC."

In late September and early October, the final exercise took place. This exercise was called Weapon School Integration Phase (WSINT). During this exercise, the students also took exams.

Cribs: "The WSINT is a Large Force Employment exercise with more than thirty aircraft. Each student must lead an exercise mission once as 'mission commander of the day'. Non-flyers must also be able to lead the team during such a mission." WSINT is an educational event that exposes students to a series of practical examinations. All examinations must be completed with a certain passing grade. The examinations review every student's ability to plan simulated conflict scenarios that will then be executed and evaluated immediately upon its completion.

Cribs added: "A large number of German aircraft took part in the final exercise." Especially for the WSINT, German Eurofighter Typhoons and Tornados arrived at Leeuwarden. The participation of Tornado ECR aircraft, which specialize in the SEAD task, was a valuable addition. Moreover, an A400M transport aircraft from the Germans participated.

German Air Force Commander, Lieutenant General Ingo Gerhartz, paid a visit to Leeuwarden AB. He flew across the border in a Eurofighter to speak with his own and international colleagues. "It is enormously valuable for us to keep the cooperation and integration with the Dutch Air Force. We are colleagues, allies, and friends. Even though we fly different aircraft, we must remain integrated with each other so that we can continue to act together now and in the future."

Both Cribs and Kliko hope that soon more countries can and will send new participants. "Denmark and Portugal have had trainees participating in the FWIT before. How nice would it be if Norwegian intelligence officers or Belgian air combat leaders could participate.

In addition to the six units currently participating, pilots of the unmanned MQ-9 aircraft could also join for example. But more often than every other year, a WIC would neither be feasible nor necessary. Not feasible because it takes a lot of time and energy to organize a WIC. And not necessarily because we don't need to train half of the air force to be weapons instructors."

The final exercise was followed by another concluding week with no practice flights. This week also included the "graduation ceremony," where the successful trainees received their coveted patch on October 21, 2021.

The diplomas were presented by the Commander of the Royal Netherlands Air Force and with the words "Class of 2021...well done", the students received their much wanted and well-deserved diploma and the pilots also their graduation patch. Ready to transfer their knowledge to their colleagues, to be ready for deployment anywhere in the world, and more importantly, to be able to better protect a very important asset, our freedom.

Belgian Air Force F-16AM banking to the left after take-off with afterburner engaged.

Royal Netherlands Air Force F-16s assigned to 312 Squadron, the last unit within the RNLAF to operate the F-16.

U.S. Air Force F-16CM "Wild Weasel" assigned to 480th FS at Spangdahlem AB, Germany.

German Air Force Eurofighter EF2000 assigned to TaktLwG 73 *Steinhoff.*

Norwegian Air Force F-35A *Lightning II* assigned to 332 skv.

Royal Netherlands Air Force F-35A *Lightning II* assigned to 322 Squadron.

Norwegian Air Force F-35A *Lightning II* assigned to 332 skv.

Royal Netherlands Air Force F-35A *Lightning II* assigned to 322 Squadron.

German Air Force A400M assigned to Lufttransportgeschwader 62 (LTG 62).

Royal Netherlands Air Force C-130H *Hercules* assigned to 336 Squadron.

EXERCISE CORMORAN 2021

TEXT: JORIS VAN BOVEN AND ALEX VAN NOIJE
PHOTOS: JORIS VAN BOVEN UNLESS STATED

From 27 September until 15 October 2021, the Naval Air Mobile Group (GNAM – Groupe Naval AéroMobile) conducted the Exercise CORMORAN 21 in the Mediterranean Sea. This is an exercise in projecting power from the sea to the land. Some 1,500 soldiers from the French Navy (Marine Nationale) and the Army (Armée de Terre) were engaged in this high-intensity exercise. For the first time, a GNAM consisting of two amphibious helicopter carriers, the PHA *Tonnerre* and PHA *Mistral*, deployed with two airmobile groups with a total of 24 combat helicopters, as well as a support group. This gave the exercise planners an 'ambitious' task, which was heard often during the interviews.
Two amphibious helicopter carriers will give double striking power, but also a double 'planning burden' to have all ships and helicopters at the right place at the right time. More planning, more communication, and more synchronization were needed by the French Navy, the French Army and the boarded Army helicopters of the ALAT (Aviation Légère de l'Armée de Terre).
Each amphibious helicopter carrier had 12 helicopters on board, the PHA *Tonnerre* carried the helicopters of the 1RHC, and the PHA *Mistral* a mix of 3RHC and 5RHC helicopters.

The exercise is commanded by a joint staff, deployed aboard the PHA *Tonnerre*. The staff is made up half of soldiers from the 'Force Aéromaritime Française de Réaction Rapide' (FRMARFOR, the Aeromaritime Rapid Reaction Force) and half of soldiers of the 4e Brigade d'AéroCombat (4e BAC, 4th Air Combat Brigade), based at Clermont-Ferrand in France.
The helicopter carriers were escorted by several battleships that would protect the ships from air and sea threats.

Porte-Hélicoptères Amphibie
The Porte-Hélicoptères Amphibie L9013 *Mistral* and L9014 *Tonnerre* belong to the Mistral class of French amphibious helicopter carriers. The whole class consists of three ships, together with the sistership PHA L9015 *Dixmude*. Originally, two additional Mistral-class PHAs were built for the Russian Navy but after the Russian annexation of the Crimea, these were sold to the Egyptian Navy.
These PHA's have three large diesel engines and a smaller spare diesel engine which use their power to drive alternators that produce electric power for

Three EC665 *Tigre* AHD's and one NH90-TTH approaching the amphibious helicopter carriers L9013 *Mistral* (background) and L9014 *Tonnerre*.

the ship. 100% electric power is used to drive the two large propellers and they will give the ship a speed of some 18 knots.
With a length of nearly 200 meters, the PHAs can store four embarkment barges in a submersible dock, 40 LeClerc tanks, 70-100 trucks, 400-500 armed soldiers, and some 15-20 helicopters, depending on their size.

CORMORAN leadership
The GNAM command is currently under command of Marine Admiral Christophe Cluzel, and its deputy commander is Armée de Terre General Frédéric Barbry. GNAM is responsible for the CORMORAN exercise and both, Admiral Cluzel and General Barbry, were present onboard the PHA *Tonnerre* during a press meeting, both officers mentioned the unique challenges, opportunities and ambitions to work with two helicopter carriers at the same time during the whole three weeks of the exercise.

CORMORAN exercise planning
Colonel Hubert is the CORMORAN exercise director and he explained how the GNAM prepared for and executed this exercise. More than a year was used to plan all aspects of the exercise. With a fictitious country that was invaded by another fictitious country (both countries were very conveniently located in southern France). The GNAM role was to intervene and to remove the invader.
The first ten days of the exercise were used for familiarization and integration, to learn to operate from the amphibious carriers by day and by night in large helicopter formations. Three raids were planned involving the two carriers with increasing difficulties. The first two raids were into the mainland of France, while the third and last raid would be a night raid into the Solenzara AB (Base Aérien 126 Solenzara) at Corsica.
To increase the complexity for the planners and the participants, a Forward Operating Base (FOB) had to be established on Corsica first. Transport helicopters would then set up a supply line to transfer cargo and soldiers between the two carriers and the FOB. While the other helicopters would perform the actual raid on Solenzara AB. This all during the night, with no or minimal radio transmission, under a high threat environment.
Colonel Hubert was very honest on the media day during the interview in the middle of the exercise. He said that the third and final raid was a very ambitious goal. And he was not sure if this raid would be successful or not.

Planning challenges with ambitions
The helicopters can be transported from the hangar deck to the flight deck with two elevators, one on the right side near the stern for helicopters with folded rotors and one on the stern for helicopters with unfolded or fixed rotors. On deck, there are six launch positions during daytime operations and for security reasons, only five launch positions during nighttime operations. The launch positions can only be reached from the stern of the ship. The five or six launch positions, plus the elevators with different capacities, will give planners quite a headache when a large number of helicopters need to be launched in a short time frame. As the Tigre attack helicopters cannot fold their rotors, they can only be transported via the stern elevator, but they can take-off fast because there is no time needed to unfold the rotors. Other helicopters can use the side elevator, but they need more time to unfold the rotors on deck. Also, helicopters with folded rotors can easily be moved around the flight deck, which is less easy for helicopters with unfolded rotors.
Besides the 'ambitious' deck planning, the fuel capacity of the various helicopter types requires also alot of planning as the *Gazelle* helicopters have a smaller fuel capacity than the *Tigre* and NH90 helicopters. So the *Gazelles* will be the last helicopters to leave the carrier and they will return first; while the *Tigre*, NH90, and *Cougar* helicopters can loiter around the carriers until the helicopter formation is established. And, as the launch of 12 to 16 helicopters can be planned ahead, the return of these helicopters will be at random, with various fuel states, giving even more headaches to the handlers to move the helicopter to the hangar deck fast.
With two helicopter carriers involved, the exercise planners would have more ambitious challenges to plan these raids.

An EC665 *Tigre* HAD assigned to 5RHC just lifted off from the deck of L5013 *Mistral* while the pilot of an SA342M *Gazelle* assigned to 3RHC is waiting for the take-off clearance.
Photo *©Clarisse DUPONT / Marine Nationale / Défense*

When not used for flying, the heiicopters – EC665 *Tigre* AHD and NH90-TTH **above left** and EC665 *Tigre* HAD **above right** – are lashed to the flight deck.

The flight deck of L9013 *Mistral* has six marked parking positions for helicopters, of which position #5 is used by an NH90-TTH.

The flight deck crew is making an EC665 *Tigre* HAD and two SA342 G*azelle's* ready for the next flight.
Photo *©Alexandra Alias/Marine Nationale/Défense*

Photo © *Alexandra Alias/Marine Nationale/Défense*

The PHA *Tonnerre* embarks a detachment from the 1st Combat Helicopter Regiment (1e RHC) and the PHA *Mistral* embarks a detachment composed of elements from the 3rd and 5th Combat Helicopter Regiment (3rd and 5th RCH), a total of 24 combat helicopters.
The purpose of this exercise is to strengthen joint know-how and acquire the automatisms for implementing massive bridges within a GNAM, under the tactical command of a single joint staff, drawn in part from the French Air-Maritime Rapid Reaction Force and the 4th Air-Combat Brigade.

Top: Two EC665 *Tigre* HAD's and one NH90-TTH helicopters are sitting on the flight deck with running engines, waiting for take-off clearance.
Left: Maintenance personnel is checking the two EC665 *Tigre* HAD's and two NH90-TTH's which are lashed to L9013 *Mistral's* flight deck.
Right: A member of the aircrew and one of the ground crew just arrived at the NH90-TTH to prepare it for the next flight from L9013 *Mistral*.

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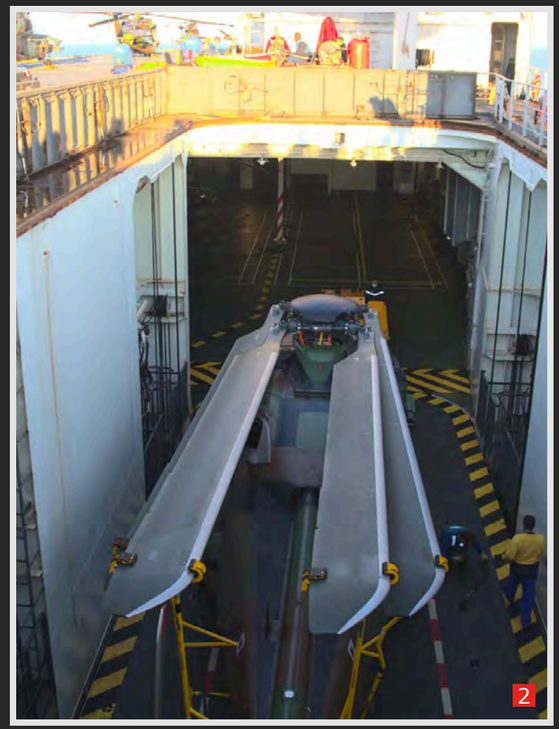

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The hangar deck is used to perform maintenance work on the helicopters and to park them until they are needed for flying.

1 SA342L of 1RHC.

2 Lift from the hangar deck to the flight deck, used for helicopters with foldable rotorblades.

3 SA342L of 1RHC.

4 NH90-TTH of 1RHC.

5 EC665 *Tiger* HAD of 5RHC.

FROM NVA TO LUFTWAFFE

PART 3 SUKHOI Su-22 *FITTER*

TEXT: RALF JAHNKE
IMAGES: RALF JAHNKE UNLESS STATED

Service in the East German Air Force

With the introduction of the MiG-21 into the East German People's Army (National Volksarmee – NVA) in the fighter role, the surplus MiG-17 aircraft were to be used in the fighter-bomber role. Fighter-bomber wing (JBG) 31 was established in 1971 with the MiG-17 equipped with two wing pylons employing unguided missiles and bombs. This was to be the first fighter-bomber aircraft of the armed forces. JBG-31 shared the home base of Drewitz with a squadron from JG-7 equipped with MiG-21 SPS *Fishbed*. Starting in 1980, the MiG-17F of JBG-31 was replaced in active service and re-equipped with the MiG-23BN (ground attack) and MiG-23UB (two-seater trainer). During the process, the wing was redesignated as JBG-37. To confuse NATO planners, these aircraft were designated by the LSK/LV as MiG-24. In the early 1980s, as part of a general expansion, components of the wing transferred to the incomplete airbase Laage, south of Rostock. On 1 December 1984, the personnel of the JBG-37 at Laage formed the nucleus of the newly established JBG-77, which was due to equip with the Su-22. Due to the incomplete infrastructure in Laage, the first ten brand-new Su-22 were delivered to Rothenburg, dismantled, and shipped inside AN-22 transport aircraft - two Su-22M4 and two Su-22UM3K at a time were delivered directly from the Soviet Union. The introduction of the Su-22M4 fighter aircraft and Su-22UM3K training aircraft was supposed to be secret even from the GDR population. The perimeter fence at Rothenburg was covered with cloth before the arrival and the area around the base was sealed by military police. Further deliveries to Laage were conducted using IL-76 transport aircraft. These could only carry one "Fitter" per flight. By March 1985, 36 aircraft had been delivered. The second lot of Su-22 aircraft was delivered between the summer of 1986 and the spring of 1987, with four additional trainer aircraft. The last two aircraft entered service with the LSK/LV in May 1987. The second wing to receive the Su-22 was Naval Wing 28 (MFG-28), which was commissioned on 1 December 1985, at Laage AB. Both wings, JBG-77 and MFG-28, had a first and second squadron (Jagdbomberstaffel - JBS or Marinefliegerstaffel - MFS) respectively. Both units were put under the direct command of the front and military transportation air forces (FOFMTFK) in Strausberg. The squadrons were allocated to the combat system of the LSK/LV on December 1, 1985. The wings received 24 Su-22M4 and four Su-22UM3K each by the end of

Two Su-22M4 of JBG-77 taxiing for take-off at Laage AB. Both aircraft carry the UB-32A-73 rocket pod. The pod can hold 32 S-5 type unguided rockets which can be fired in a single salvo.

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1987. The training of JBG staff took place in 1984 between May 18 and June 21 in the USSR, at an air force base in Krasnodar, south of Moscow. A second course took place from 3 September to 30 November. Eight pilots with MiG-21 and MiG-23BN experience were in each course. Another 28 pilots for both JBG-77 and MFG-28 were trained in the USSR, as part of their third and fourth years of study at the military flying academy in Krasnodar, between the autumn of 1985 and September 1987. Pilot training was later transferred to Laage. While allocating tactical codes (tail numbers) for the aircraft assigned to JBG-77, care was taken to ensure the sum of the digits would not equal 13. The color red was chosen to be applied on combat aircraft, with black for the trainers. The designation Su-22 was classified and pilots/ground crews were only allowed to talk about the "Fitter" by using its product designation S-54K for the Su-22M4 and S-52UM for the Su-22U M3K. The existence, organization, and equipment of the squadrons were to be disguised. This was a common procedure in the LSK/LV during the Cold War. With the allocation of the Su-22M4 "Fitter-K", the NVA had received, for the first time, the most modern and powerful fighter-bomber, in use with the Warsaw Pact. With the unification and the end of the NVA, aircraft 546 of JBG-77 was painted in a special color scheme of blue-yellow-red ribbons on the fuselage and "tiger" wing tanks. Su-22M4 798 of the MFG-28 received a similar painted scheme in the state colors of Mecklenburg, in blue, yellow, and red. Both aircraft were presented to the public in September 1990, one month before the GDR ceased to exist on 3 October 1990.

1,2 JBG-77 Su-22s line-up on the ramp.

3 Six Su-22s assigned to JBG-77 returning to base after a training mission.

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Photo *Gerhard Hartmann*

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Su-22M4 (product S-54K)

The Su-22M4 could be equipped with bombs, guided missiles, and rockets in addition to cannons effectively in the air to surface (ground and sea) attack role. To counter air targets, the installed cannon system NR-30, removable cannon pods SPPU 22-01, rockets such as the S-5/ S-8 fired from UB-32A-73 or B-8M1 pods, and the S-24/ S-25 rockets fired from launch rails as well as the guided missiles R-60 were used. The guided missiles KH-25/-29 and KH-58 were especially used against ground targets. A bomb load of eight 500 kg bombs, or ten 250 kg, or 20 of 100 kg, or four incendiary canisters (Napalm), or four KMG-U bomb containers could be carried. All bombs were attached to the outer stations No.1, 2, 3, 4, 5, 6, 7, and 8 up to 500 kg to the fuselage and the wings. With the 3.7 meter long multiple ejector rack MBD3-U6-68-1, up to five bombs of 100 kg each can be concentrated together on one station 1s, 2s, 3, and 4. Besides duties as a fighter-bomber, the aerial reconnaissance role was also an essential tasking of the Su-22. Equipment consisted of the complex, modularly constructed reconnaissance pod KKR-HAE (product 2-54K), which was attached to the central fuselage pylon when required. The pod had sensors, cameras for photographic reconnaissance, a radar set and an infrared line scanner, all adding to both day and night capabilities. The forward compartment contained the camera equipment, composed of; an A-39 camera, adjustable for vertical or diagonal photographs; a PA-1 panoramic camera PA-1, both for daytime use; and a UA-47 night aerial camera.

1 721 of JBG-77 parked in one of Laage AB's many revetments. Note the Q-symbol applied to the forward fuselage just behind the tactical code. The Su-22M4 carries two TP800 auxiliary fuel tanks.

2 *Fitter* of JBG-77 with UB-32A-73 rocket pods on the taxiway.

3 Su-22M4 of JBG-77 undergoing major maintenance works.

Fitter of JBG-77 parked on the ramp and ready for the next sortie.

1 The forward facing mirror on top of the rear canopy of the Su-22UM3K provides better visibility for the back-seater during take-offs and landings.

2 This Su-22UM3K trainer aircraft, black 146, is painted a somewhat non-standard camouflage scheme.

3 Su-22UM3K of JBG-77 parked in front of its shelter.

Training aircraft Su-22UM3K (product S- 52UM)

The two-seat Su-22UM3K had the front seat lowered for the trainee. In terms of fuselage shape, equipment, weapons, and handling characteristics, the training version was very similar to the single-seat aircraft. The rear canopy had a forward-facing periscope to improve vision. The Su-22UM3K was considered to be a fully combat-worthy aircraft, however, some restrictions had to be adhered to. For example, the air-to-surface missile Kh-58/AS-9 "Kyle" and Kh-29/AS- 14 "Kedge" could not be employed and only the starboard cannon was installed. There were no underwing pylons in the center of the wings, thus the maximum payload was reduced to 3,000 kg. Due to reduced internal volume, the internal fuel capacity was reduced by 870 liters. This resulted in a shorter range. The air intake had the variable air cone and variable four suction relief doors. In the Su-22M4, the additional relief doors open only to the inside of the air intake due to negative air pressure. By regulating the air pressure, a higher maximum speed of 1,900 km/h and a higher service ceiling of 15,500 meters could be achieved. The dual seat aircraft did not have the air cooler in front of the fin. Wheel brakes were cooled with medical alcohol.

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Photo *Gerhard Hartmann*

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Photo *Gerhard Hartmann*

Emergencies and particular incidents

While in service with the NVA, there were two major flight accidents involving Su-22 aircraft. On September 4, 1987, red 361 of the JBG-77 was lost over the military training area Klietz. The official accident report stated that the pilot, First Lieutenant Frank Nässe, had 250 kg bombs loaded and was flying at the rear of a formation of twelve Su-22. They were involved in practice bomb runs on targets in the bombing range. His aircraft passed through the exhaust stream of the eleventh aircraft, lost control and he was forced to eject safely 100 meters above ground. An unofficial version of this crash, gives a completely different reason for the loss of this aircraft. The asymmetrical release of an inert (concrete) bomb left Su-22 361 in a precarious situation. The emergency release of the entire payload did not work and the system for stabilizing the aircraft could not bring the aircraft back to level flight. There was probably low fog in this area and the altitude of the aircraft is said to have been below 150 meters. The crash was not noticed until the pilot walked over to range control with his parachute asking for help. The second crash happened at Laage AB, on December 12, 1989. The commander of the staff flight, Major General Zimmermann, flying red 673 of MFG-28, lost control after having stalled the aircraft. It crashed only a few hundred meters from the main gate, the pilot ejected safely. In 1987, red 824 had a landing accident when it caught the emergency arresting gear ("MiG catcher''). The pilot had accidently disconetced the brake chute from the aircraft before it could open and slow down the "Fitter." The airframe was deformed and damaged considerably. It was later repaired with usable parts from the crashed 361. In the last occasion in service with the NVA, Su-22UM3K, black , 113, went into the arresting gear at the end of the runway. The pilot, commander of the First JBS, Major Neugebauer, had activated the brake chute too late. Other less serious incidents occurred. During a flight from Laage to air-to-ground shooting ranges in the Baltic Sea area, a UB-16 or UB-32 container with rockets was lost. Ground crew members did not attach it properly and it simply fell off. In another case, the booster of a R-60 missile burnt out while attached to the aircraft, during the flight to a sea target range at Peenemünde. The missile did not come off the launch rail when fired. Fortunately, the warhead fell off the missile body, otherwise the explosion would have torn the wing oft. Besides these, it was not uncommon for auxiliary tanks, launch rails or missile pylons to be accidentally released over GDR territory.

MFG-28 personnel painted the 798 in a special commemorative scheme to celebrate the final duty day of the wing before the German re-unification on 27 September 1990.

Photo *Gerhard Hartmann*

With the unification and the end of the NVA, aircraft 546 of JBG-77 was painted in a special color scheme of blue-yellow-red ribbons on the fuselage and "tiger" wing tanks.

A New Owner for the *Fitter*

With the reunification of East and West Germany, the East German Air Force ceased to exist on 3 November 1990. Overnight the NVA insignia was painted over and replaced by tactical tail codes of the Luftwaffe. On 4 October 1990, the first Luftwaffe personnel had arrived at JBG-77 and MFG-28 respectively. They had the difficult task of taking command and integrating units into the Luftwaffe of the Federal Republic of Germany. The two squadrons remained unchanged until the end of the year. In the meantime, the German MoD had decided not to keep the Su-22 in Luftwaffe inventory as a front-line fighter. Thus, the two Su-22 wings were to disband and their personnel joined under a new restructured unit at the turn of the year. The unit was now designated Nachkommando JBG-77/MFG-28. The Su-22M4 received the tail codes 25+01 to 25+46 and the Su-UM3K 25+47 to 25+54 applied to the front fuselage section. The main task of the Nachkommando Laage was the preservation of the aircraft. All the obligatory checks and repairs on parked aircraft were continued in accordance with the technical manuals and regulations of the former GDR air force. These were kept valid although aircraft were under new management. The ongoing Su-22 maintenance aimed to keep the "Fitters" airworthy if the service of the aircraft in any form was to be required again.

Customers interested in the inheritance

At the beginning of 1991, there were two options to keep some ex-NVA Su-22 and MiG- 23, airworthy. On the one hand, the Federal Office of Military Technology and Procurement (BWB Bundesamt für Wehrtechnik und Beschaffung) in Koblenz showed interest in testing the Sukhoi at the WTD 61 (Test and Evaluation Center) in Manching, Bavaria. On the other hand, the U.S. Air Force, due to the rising Gulf Crisis, also showed great interest in both aircraft types and purchased five MiG-23ML and two Su-22M4. In Laage, the ITP (Ingenieurtechnisches Personal - technical staff) prepared the transfer of MiG-23ML 20+15, 25+16, 25+28, 25+32 and 25+36 as well as Su-22M4 25+25 and 25+33. The first evaluation flights took place in combat trainers 25+53 and 25+54. Further flights followed in the single-seat Su-22M4 under IFR conditions. Each flight included at least three practice approaches (touch and go) at Laage. On 27 March, pilots Captain Lange and Lieutenant-Commander Schneider air ferried the first "Fitters" directly to Ramstein AB via Faßberg. The Su-22 aircraft were equipped with four additional 800 liter fuel tanks each and escorted by two F-4F of the fighter-bomber squadron (JaboG) 35 from Pferdsfeld AB. Some hours earlier, a group of maintenance specialists arrived in Ramstein AB in an An-26, to execute the necessary post-flight checks on the Su-22. The complete handover of the aircraft

Photo Gerhard Lang

Su-22M4 *Fitter* 25+29 – former 629 of MFG-28 – parked in the shelter area.

and adjacent ground equipment such as ladders, intake covers, etc. were noted down by filling a "certification of transfer" form, which was later handed over to German authorities. Shortly after this ceremony, the two Sukhoi fighter-bombers vanished behind closed hanger doors. Within the same week, the transfer of the five MiG-23 was carried out in the same manner. All seven aircraft were transferred to the United States by C-5 Galaxy transports. On 25 April and 2 September 1993, the USAF received two further Su-22 airframes in the form of 25+36 and 25+22 in a dismantled state. In January 1992, a delegation of the USAF Foreign Technology Center (AFIC) from Wright-Patterson AFB traveled to Manching to receive detailed information on the fine-tuning and the damage limits of the Lyulka AL-21-F3 engine. In June 1991, Nachkommando Laage received orders to further process the aircraft technology. Accordingly, eight Su-22M4 (25+24, 25+28, 25+30, 25+32, 25+36, 25+38, 25+44,25+46) and two Su-22UM3K (25+47, 25+50) were stated to be "for sale" while remaining in airworthy condition . WTD 61 at Manching had already received Su-22 25+27, 25+45, and 25+53 in April 1991 as test-beds. The "for sale" aircraft remained in an airworthy condition and kept separate from the other aircraft. During this period they were regularly checked and maintained in accordance with the technical instructions. Additionally, spare parts packages for these aircraft were put together and stored in the base depot. Besides the Su-22, two MiG-23MF, 14 MiG-23ML and one MiG-23UB were also noted as "for sale". In August, the ITP started to remove various interchangeable parts such as air-data computers, radios, and navigation devices from the Su-22 and MiG-23 aircraft, which were not for sale and had little chance of being sold. These parts were intended for use in the MiG-29 "Fulcrum", which would remain in Luftwaffe service. The spare parts were sent to Aircraft Maintenance Unit 14 in Cottbus and later to the intended users. The remainder of these aircraft were demilitarized and some were sold to various museums. Until 1994/95 the remaining airframes were parked centrally in shelter area 4, waiting for removal or scrapping. On 27 October 1994, the scrapping commenced with the use of a tracked armored recovery vehicle, which crushed 13 Su-22M4 within minutes.

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1 This Su-22M4 25+32 is the former 716 of MFG-28. The aircraft is configured with ASO-2W chaff and flare dispensers on the top of the fuselage.

2 Su-22M4 in clean configuration photographed on 1 July 1991 at Laage AB. Before being registered as 25+29 with the German Air Force it was assigned to MFG-28 as 629.

3 This Su-22M4 25+05, former 366 of JBG-77 carries a total of four TP800 auxiliary fuel tanks. The ASO-2W chaff and flare dispensers are removed.

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Photo *Gerhard Lang*

1 Su-22UM3K 25+24, former 138 of MFG-28 carries four UB-32A-73 rocket pods, attached to stations 3 & 5 under the left wing and 4 & 6 under the right wing. Later the aircraft was transferred to WTD 61 and received the code 98+28.

2 Su-22UM3K 25+47, former 113 of NVA's JBG-77.

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Photo *Gerhard Lang*

3 This Su-22UM3K with German Air Force serial 25+50 flew with with NVA's JBG-77 and had the tactical code 146.

4 This Su-22UM3K is parked in the shelter area and ready for the next sortie. With the NVA it served as 111 when assigned to MFG-28.

Evaluation at Test and Evaluation Center 61 (Wehrtechnische Dienststelle - WTD 61)

After reunification, the WTD 61 in Manching took five Su-22M4 and two Su-22UM3K into inventory from the stock of the Nachkommando on the orders of the Federal Office of Military Technology and Procurement in Koblenz. The office received the aircraft and was ordered to examine the aircraft in detail as a weapons platform, as well as the weaponry and all active and passive electronic countermeasure devices. In April 1991, the WTD 61 was assigned three aircraft, 98+09, 98+10, and 98+11, which were flown from Laage to Manching. In July of the same year, two additional aircraft, 98+14 and 96+16, were also delivered to WTD 61, signing of a co-operation agreement between France and Germany, the need for further Su-22 arose. In February and March 1992, aircraft 98+15 and 98+17 arrived in Manching. These were to be the final SU-22 "Fitter-G /K" aircraft taken into Luftwaffe service. Former East German pilots who had been lucky enough to be selected for future duties in the Luftwaffe took part in the transfer. In Manching the maintenance of the "Fitters" was taken over by former NVA personnel.

On 26 June 1991, Su-22UM3K, 98+11 took off for its first flight into the Bavarian sky. This was followed shortly after by a further two Sukhois. These were also test flown by former NVA pilots to check them thoroughly after three months of not being flown. In the following two months, several familiarization flights were performed. In September 1991 the first series of tests were started. After only three flights 98+10 was handed over to the RAF Test and Evaluation Facility at Bascombe Down, England, on 8 August 1991. This particular aircraft was chosen as the time for the safe operation of the K-36DM ejection seat had already expired. In answer to a French government request, 98+09 was transferred to Mont-de-Marsan on 26 May 1993, leaving three combat and two trainer aircraft with WTD 61. The single-seat Su-22M4 aircraft were used to evaluate the "Fitter" and its weapons technology. The two-seat aircraft served as pilot trainers or as targets for the fighter-bomber. Test pilots from many allied countries, including France, Israel, and the USA were chosen to be trained on this particular model. The US pilots needed to convert to fly their own aircraft received from Luftwaffe. WTD 61 continued to evaluate the Su-22 until the summer of 1994. After the primary evaluation, the Su-22 fleet was inactivated for six months. After half a year and tough negotiations, the BWB decided to continue the evaluation of the "Fitter." The program continued sporadically for a few months. In 1995, employees from the Sukhoi company at Komsomolsk arrived in Manching to inspect and assess the aircraft and determine the necessary maintenance measures for the two remaining Su-22M4s (98+14 and 98+17). Both were then flown to the Polish aircraft facility WZL-2 in Bydgoszcz where they were subjected to a 24-month depot-level maintenance, which extended the service life. Su-22M4 98+14 had to be taken to the WZL-2

Su-22M4 *Fitter* 98+17 – former 25+31 and 706 with MFG-28 – assigned to WTD 61, photographed on 21 September taxiing to the runway for another evaluation sortie. Its last flight was on 24 September 1998.

in Poland again between 26 June and 11 July 1996, for the installation of an ATM flight-data analyzing aperture and again from 7 October to 20 November, to execute the 100-hour periodic maintenance interval. After each inspection, the factory pilot performed a 50-minute test flight at Bydgoszcz. The evaluation of the Su-22 and its systems at the WTD 61 lasted from September 1991 until September 1998. By late 1991, France had shown a great interest in the results of the evaluation of the Su-22 weapons systems. Many of the German fields of interest were identical to those of the requirements brought forward by France. The requested participation was approved by the German state secretary and comprised of the following fields:

- Evaluation of the infrared signature and radar cross-section of the Su-22.
- Evaluation of the effectiveness of the SPS-141 ECM-pod against ground-based and airborne radar systems.
- Testing of the reconnaissance container KKRHAE/ SRS-13.
- Evaluation of the chaff/flare dispensers.
- Weapons effectiveness examinations of the gun pod SPPU, the missiles Kh-25MR, ML, MP, -29L, T, and Kh-58AE as well as the guidance command transmitter L0-86AE for the weapon systems.

France offered the cost-free use of practice and shooting ranges, the takeover of costs for personnel involved, and the use of French test equipment in Germany. After WTD 61 had completed the first three parts of the evaluation in 1991, the test facility in Mont-de-Marsan and Cazaux took over. During the seven years of thorough tests the evaluation was expanded to include:

- Evaluation of the SPS-141 MWGAE ECM-pod against ships, anti-aircraft missiles, MiG-29, F- 4F, and F-16.
- Employment of chaff/flare cartridges using the KDS-23 and AS0-2W dispenser systems.
- Firing of the gun pod SPPU-22-01.
- Evaluation of the air-to-ground missiles Kh-58

Su-22M4 of WTD 61 with serial 98+14 – former 25+29 and 629 with the NVA's MFG-28 was photographed in June 1994 in two different configurations. Image **1** and **3 s**how the *Fitter* loaded with two TP800 auxiliary fuel tanks and the "Distance Measurement System Sidewinder EMS". To protect the aircraft against surface-to-air threats the Su-22M4 carries a single V-141 MVGKE (SPS) ECM-pod attached to the inner wing hardpoint.

This *Fitter* was sold to The Old Flying Machine Company in England. On 14 January 1999 it was flown to RAF Scampton, where it was demilitarized by WTD 61 personnel before being handed over to its new owner.

with different seeker heads such as the AE, AE 1, AE 2, AS-10, and the Kh-29T missile.
- Test program radar navigation RSBN.
- Evaluation of the laser rangefinder and target designator (Klion).

The Su-22s also had other important tasks. They played the role of target in the development of the infrared seeking head for the new IRIS-T air-to-air missile and the evaluation of temperature behavior on surfaces of airframes in the subsonic and supersonic spectrum. During the latter, speeds of up to Mach 1.599 were achieved above Istres, France. Further flights included target representation for air defense radar systems with different warships and fighter aircraft. These were often flown by the remaining Su- 22UM3K trainer aircraft. During one occasion to test the seeker head of a Hawk SAM-missile in May 1994, the wings of the 98+15 were painted white, while a Mi-24 attack helicopter of the WTD 61 carried the seeker head of the missile. To keep the "Fitter" flyable and to ensure good logistical support, spare parts packages for every aircraft were packed in Laage and sent to Manching. This enabled the WTD 61 to keep the aircraft airworthy without any danger that these parts were ever in short supply. The official "last flight" of the Su-22 under the command of the WTD 61 took place in Manching on 2 October 1998 after its 740th mission. To celebrate this event, 98+14 received a black/red/gold "last flight" logo on the left side of the fuselage in addition to the tiger scheme already applied to the rudder and the auxiliary tanks for the NATO Tiger Meet in Lechfeld AB 1998. In the end, the "last flight" was not the final one. The Old Flying Machine Company in England showed interest in the "Fitter" and made 98+14 airworthy again. After two test flights, the service life of the aircraft was prolonged until 15 January 1999 and was flown over to the RAF Scampton, UK one day before the aircraft's life was to expire again. After arrival in England, the Su-22 was maintained and demilitarized by engineers of the WTD 61 and handed over to the new owners. With the 743rd flight and 767 flying hours on the airframe, the service of the Sukhoi Su-22 under the Iron Cross ended. There was only one remarkable incident in the whole evaluation phase. Su-22M4 98+14 had begun a take-off run at Mont-de-Marsan AB when the nose gear retracted with the front fuselage coming down on the concrete in a spray of sparks. Except for some slight dents and bends the accident had no major consequences.

The text of this report is gratefully printed with the special permission of our friends at AirDOC from their book «Post WW II Combat Aircraft Series No. 04 Luftwaffe Fitter».

Photo *Gerhard Hartmann*

For the evaluation of a HAWK SAM-missile seeker head, the Su-22M4 *Fitter* 98+15 – former German Air Force 25+26 and NVA 537 with MFG-28 – assigned to WTD 61 had its both wings painted white.

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1 Su-22M4 of WTD 61 with serial 98+14 – former 25+29 and 629 with the NVA's MFG-28 was photographed on 28 June 1998 in Manching. The special paint scheme was applied on the occasion of the NATO Tiger Meet 1998 at Lechfeld AB.

2 This Su-22M4 98+09 of WTD 61 – formerly registered as 25+27 with the German Air Force and as 590 with NVA's MFG-28 – was photographed on 8 May 1993 at Neuburg AB.

3 This Su-22UM3K 98+16 of WTD 61 is ex German Air Force 25+54 and NVA 138 of MFG-28.

All photos this page Gerhard Lang

1ST ACB ARRIVES IN EUROPE

TEXT: KRIS CHRISTIAENS
PHOTOS: KRIS CHRISTIAENS UNLESS STATED

In late November 2021, the US Army started the relocation of vehicles, containers, and helicopters from Europe to the United States and vice versa. Since April 2014, U.S. Army Europe and Africa has led the Department of Defense's «Atlantic Resolve» land efforts by bringing units based in the U.S. to Europe for nine months at a time.

Since the annexation of Crimea by Russia in 2014, the United States presence in Europe has been strengthened. There are approximately 6,000 Soldiers participating in «Atlantic Resolve» at any given time, conducting operations and exercises across 17 countries. These deployments of ready, combat-credible U.S. forces to Europe in support of «Atlantic Resolve» are evidence of the strong and unremitting U.S. commitment to NATO and Europe. This time about 40 helicopters – CH-47 *Chinooks*, UH-60 & HH-60 *Black Hawks*, and AH-64 *Apaches* – from the 1st Air Cavalry Brigade (1st ACB) of the 1st Cavalry Division (1st CAV) flew from the Dutch port of Vlissingen to Germany. At the same time, about sixty helicopters from the 1st Infantry Division (1ID), 1st Combat Aviation Brigade (1st CAB) of the same types traveled in the opposite direction to eventually return by ship to the United States. The helicopters that flew from Vlissingen to Germany made a stopover at the Dutch Woensdrecht Air Base, and the helicopters that returned from Germany to the United States

About 40 helicopters and more than 900 equipment items of hte U.S. Army are staged at a temporarily rented facility in the port of Vlissingen. There they are transitioned from travel to operational mode and prepared for onward movement to locations throughout the European theater.

made a stopover in The Netherlands at the Gilze-Rijen Air Base. Additionally, about 2,000 vehicles such as jeeps and trucks and hundreds of containers were also brought by the same ship. As a result of the COVID-19 pandemic, the soldiers traveling with the military transport stayed in isolation at the port of Vlissingen. After docking of the commercial ship ARC Endurance at the port of Vlissingen on 25 November, 1st CAV's helicopters were temporarily housed in a hangar of Verbrugge Zeeland Terminals. There, the helicopters were prepared one by one by military personnel for their flight to the Woensdrecht Air Base. A temporary departure and landing zone were also created on a quay of Verbrugge Zeeland Terminals from which the helicopters could depart and land. Some sixty Dutch soldiers were responsible for the security of the temporary military base at the port of Vlissingen. In addition to Vlissingen, further equipment of the 1st Cavalry Division was deployed into Europe through the port of Alexandroupoli in Greece. The ability of the United States to conduct a major deployment into Europe through two very different locations in Europe provides a strong and powerful signal to Russia. The first helicopters from the 1 ID, 1st CAB arrived from Germany at Gilze-Rijen AB on 22 November. Due to bad weather at Illesheim airfield, Germany, about thirty helicopters left later than planned and arrived at Gilze-Rijen Air Base in the late afternoon and during sunset. Especially for the stopover of the U.S., the shorter runway at the Gilze-Rijen Air Base was temporarily closed so the helicopters could be parked there. The second group of U.S. Army helicopters arrived at the Gilze-Rijen Air Base on 29 November.

On their way back home to the U.S., these CH-47 *Chinooks* and HH-60M *Black Hawk* assigned to 1ID, 1st CAB from Illesheim Airfield, Germany to the port of Vlissingen to embark on the vessel ARC Endurance made a stopover an Gilze-Rijen AB.

CH-47 *Chinooks* are being transitioned from travel to operational mode.

AH-64 *Apache* helicopter staged for maintenance operation checks at the Port of Vlissingen, Netherlands. ***Photo*** *U.S. Army by Capt. Taylor*

▲ 1st ACB helicopters are ready to be unhooked and unloaded. ***Photo*** *U.S. Army 16th Sustainment Brigade*
▼ Soldiers conduct maintenance operations checks on UH-60 *Black Hawks*. ***Photo*** *U.S. Army 1st ACB*

1st ACB manually tow their helicopters off the ship after arriving at the port. ***Photo*** *U.S. Army 16th Sustainment Brigade* ▲
Pilots and crew conduct maintenance operations checks on UH-60 *Black Hawk*. ***Photo*** *U.S. Army 1st ACB* ▼

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UH-60L *Black Hawk* followed by three CH-47F *Chinooks* ***(1)*** and HH-60M's **(2, 3)** arriving at Gilze-Rijen for a stopover on their way to the port of Vlissingen to embark on the vessel ARC Endurance.

Two AH-64 *Apache*'s arriving after sunset at Gilze-Rijen AB.

Main image: These AH-64 *Apache's* are being made ready for take-off to leave the port of Vlissingen for Illesheim AB in Germany.

Inset: 2-227th Aviation Regiment, 1st ACB soldiers and aircraft arrive in Illesheim Airfield, Germany, after an over 400-mile journey from the port of Vlissingen, Netherlands. ***Photo*** *U.S. Army 1st ACB*

ARC Endurance is a Vehicles Carrier that was built in 1996 and is sailing under the flag of USA. The ship's owner is American Roll-on Roll-off Carrier LLC (ARC). They operate a fleet of roll-on roll-off (Ro-Ro) vessels, a class characterized by ramp access and a highly optimized system of fixed and liftable cargo decks which constitute the main cargo section. This system enables the vessel to be reconfigured quickly to accommodate different cargoes and maximize lift capacity. The attached ramp systems make the vessels self-sustaining for load and discharge.

The vessel ARC Endurance brought approximately 40 helicopters and 900 equippment items from the U.S. to the port of Vlissingen.

Specification ARC Endurance

Door Height:	20.5 ft	6.25 m
Drive Width:	39.4 ft	12.0 m
Length over all:	868.1 ft	264,6 m
Width:	105.9 ft	32.29 m
Stow Area:	4,923 RT43	36.430 m²
Carrying capacity:	48.988t DWT	

AEROBALTIC 2021

REPORT BY WOLFGANG JARISCH
AND PETER THIVESSEN

The city of Gdynia is a port city in northern Poland in the Bay of Gdansk. It is located in the province of Pomerania, about 30 km north of Gdansk. With a population of around 250,000, Gdynia is the twelfth largest city in Poland. The city is home of the headquarters of the Navy of the Republic of Poland and it has two nautical colleges, the Naval Academy Akademia Marynarki Wojennej and the civilian academy, Akademia Morska.
The airfield is the home of the Gdyńska Brygada Lotnictwa Marynarki (Gdynia Naval Aviation Brigade). Stationed here is the 43 Baza Lotnictwa Morskiego with helicopters of the following types: SH-2G *Seasprite*, Mi-2 *Hoplite*, Mi-17 *Hip*, PZL W-3T *Sokol*, and W-3RM *Anakonda*.

In Darlowo, about 150 km away is another naval aviation base, which also belongs to the Gdynia Naval Aviation Brigade. Stationed there is the 44 Baza Lotnictwa Morskiego with Mi-2 *Hoplite*, Mil Mi-14PL *Haze*, Mil Mi-14PS *Haze*, PZL W-3T *Sokol*, and PZL W-3 WARM *Anakonda*.

The Gdynia Aerobaltic on 21 and 22 August 2021 was the fourth edition of this event after 2017, 2018, and 2019. In 2020, the airshow was cancelled due to the Corona pandemic. According to the organisers, it was the biggest event of its kind in Poland in 2021. The LOTOS GROUP, a stock exchanged listed Polish oil company, based in Gdansk, was once again the sponsor of this air show. 40,000 people attended the show, not least due to the good weather conditions. Those who could not be there "live" on site could also follow the airshow free of charge as a live stream on the internet. 50,000 people around the world took advantage of this offer. However, due to the ongoing pandemic, the show only took place at Babie Doly airfield. The night show, which was held in previous years on Seaside Boulevard in Gdynia, had to be cancelled due to government-imposed restrictions.
In times of the worldwide Corona pandemic, the organizer was nevertheless able to look back at the end of the day on an extremely successful event with an interesting mix of military and civilian aircraft and helicopters.

The Aviation Magazine would like to thank Mrs. Sandra Czyżma and the whole organization team of the air show for their fantastic support before and during the show.

Polish Air Force MiG 29-GT assigned to 22.BLT, 41.elt at Malbork AB.This MiG-29 served with the Germany Air Force (29+24) and was sold to Poland as part of a package of 18 MiG-29G *Fulcrum A's* and four MiG-29GT *Fulcrum B* for a symbolic price of 1 € for the complete package. Between September 2003 and August 2004, the aircraft were delivered to Poland.

Swedish Air Force JAS 39C **(above)** and JAS 39D **(top)** *Gripen* – "All good things must come to an end," said Maj. Peter Fallén **(right)** of F 7 Såtenäs (Skaraborg Squadron) in Lidköping. After 9 years of representing the Swedish Air Force with thee *Gripen* at international airshows, the airshow in Gdynia was probably the last international airshow for Maj. Peter Fallén as a *Gripen* pilot. After Sunday's demonstration, the air base fire department welcomed Maj. Peter Fallén with a water salute.

French Air Force Rafale Solo display – Based at BA 113 in Saint-Dizier, the Solo Rafale is painted in sky-blue hues to represent the colors of the Air Force and space. Display pilot for the 2020/2021 season was Captain Jérôme Thoule **(inset above)**.

Solo Türk – The occasion for the creation of a separate solo display in 2011 was the 100th anniversary of the founding of the Turkish Air Force. The paint scheme of the F-16C is black, silver and gold. It is meant to symbolize the dance of power and technology with the clouds.

The Royal Air Force's flagship, the world-famous **Red Arrows**, were back at an airshow in Poland after 2009 in Deblin. In their 57 years of existence, the Red Arrows have performed nearly 5,000 displays in 57 countries.

During their display on Sunday, the **Red Arrows** bade farewell to Gdynia with white and red smoke to present the Polish national colors.


ROYAL AIR FORCE

The white and red **Iskra aerobatic team** now is history. After the retirement ceremony in summer 2021, a flypast of three PZL TS-11 *Iskras* was planned in Gdynia. After the nose landing gear of one aircraft collapsed during take-off, in the end only two Iskras could be seen in flight.
Sixty years after the first prototype took off, the Air Force also ended the training of junior pilots on the TS-11 *Iskra* aircraft. Their tasks have now been taken over by the Leonardo M-346 AJT (Advanced Jet Trainer), which in Poland is called *Bielik*.

Finnish Air Force aerobatic team **Midnight Hawks** – established in 1997, they fly four Hawk MK51s. The Midnight Hawks are home based at Kauhava AB.

Finnish Air Force Hawk Mk.51 painted in the colours of the Finnish national flag to mark the 40th anniversary since the arrival of the first Hawk in Finland in 1990.
Currently, 32 fully modernized Hawks are in service (16 Hawk Mk.66s, seven Mk.51A aircraft and nine of the original Mk.51 variant) out of an original 50. They are planned to remain operational until 2030.

Team Orlik – The aerobatic team of the Polish Air Force was founded in 1998. The name "Orlik" comes from the name of the PZL-130 aircraft used by the team.


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The Polish Naval Air Force **PZL W-3WARM *Anakonda*** is used as an SAR helicopter by the Polish Navy at Darlowo AB and Gdznia AB on the Baltic Sea.
In total, the Polish Navy has eleven helicopters of this type in use. From 2017 to 2020 some older W-3T and W-3RM versions received an upgrade and are now designated W-3WARM.

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Czech Air Force Mil Mi-35 *Hind* **(1, 3)** und Mi-171 *Hip-H* **(2)** demonstrated a simulated combat search and rescue exercise with the old workhorse Mil Mi-171 *Hip-H*, while the Mil Mi-35 *Hind* kept an eye on the surrounding area **(4)**.

Czech Air Force **PZL W-3A SAR** helicopter demonstrating various rescue operations.

Polish Naval Air Force **Kaman SH-2G *Seasprite*** – In 2002/2003 the Polish Navy received four ship-based ASW (anti-submarine warfare) helicopters from the U.S. Navy for use at the Oliver-Hazard-Perry class frigates, which were also taken over by the Polish Navy. The helicopters are based at Gdynia-Baby Doly at the 43rd Naval Base.

Main Image: Polish Navy anit-submarine helicopter Mi-14PL *Haze*, assigned to 44 Baza Lotnictwa Morskiego at Darlowo Air Base. These helicopters will be replaced by Italian AW101 Merlin.
Inset left & middle: pilot's and co-pilot's workplace.
Inset right: station of the Tactical Officer, located in the cargo bay.

▲▼ Polish Air Force CASA C235M of 8.BLTr / 13.elt at Kraków AB.

Polish Air Force M-28B Bryza TD III of 42.Bl.S at Radom AB. ▲▼

The **Lim-2** is a Polish-built licensed version of the MiG-15 *Fagot* fighter developed in the late 1940s. There are only a few flying examples of these aircraft in Europe, two of which are in the care of the Squadron Foundation in Poland.

▲▼ This Yakovlev Yak-3 is a replica of the famous single-seat Soviet fighter plane of WW II.

Shorts SC7 *Skyvan* of Pinka Aviation Services. ▲▼

KAIVOPUISTO AIRSHOW 2021

REPORT BY MIKA VIROLAINEN

The Finnish Aeronautical Association arranged an air show in the very heart of Helsinki on 6 August 2021. As Helsinki is a city at the Baltic Sea with a park called Kaivopuisto on the shores, the site is ideal for an air show. The display line is over the sea, offering an unhindered view to spectators on the natural slopes of the shoreline. The only downside is that the ground show is limited to anything that can be transported on-site by trucks and helicopters.

The Finnish Air Force F/A-18 Hornets are approaching the end of their usable life in the Finnish Air Force service, having been in service since the mid-'90s. The program to find their replacement, called "HX", was nearing decision-making with five contenders still in the race at that time: F-18 Super Hornet, F-35, SAAB Gripen E, Dassault Rafale, and Eurofighter Typhoon. Of these, all but the Super Hornet were visibly present in the show with flying aircraft as well as large promotion booths with full-sized mock-ups of their aircraft on the show-grounds. It is speculated that after the decision is made, there will be a draught in show-comers for a couple of years.

The show was again very well organized and interesting. The original date of the show (in June) had to be postponed due to the COVID-19 –pandemic and restrictions imposed due to it. When the postponed date drew closer, so also the number of the infected rose.

The base of operations for the flying aircraft was Helsinki Airport (HEL/EFHK) about 15 km north of Kaivopuisto park, where participating aircraft arrived during the week. Operating from the airport was much easier than would have been pre-pandemic, as traffic numbers were significantly lower than normal.

Images showing aircraft on the ground were taken on the previous day during their rehearsal. Some aircraft used other airports as their starting points, like the F-35 which flew in for a couple of passes from Ämari AB, Estonia.

From a photographer's point of view, the show was a success, too. As the sea is basically to the south of the city, there was a risk of backlit photos. The display line ran on a southwest – northeast orientation which helped. Also, the days are long during summer, and the show started late in the afternoon so that the sun was well in the western sector already when the main show started.

The previous airshow in the same location was held in 2017 when an estimated 110,000 spectators visited the free show. This time the number of spectators did not break the 100,000 mark, but still, tens of thousands of spectators were estimated to have visited the site during the show.

In 2022, the show will be held at Pori airport (POR/EFPO) in June.

Finnish Air Force Hawk Mk51 assigned to HävLLV 41 with "40 Years Hawk" special markings.

French Air Force «Rafale Solo Display» Rafale C, assigned to ETR 03.004 at Base Aérien 113 Saint-Dizier.

Swedish Air Force/Saab JAS39E *Gripen NG* (**main image, inset right)**. In November 2021, the first six serial production aircraft for Sweden and Brazil left the factory and entered the delivery phase.

Swedish Air Force JAS39C *Gripen* assigned to Skaraborg Air Force Wing (F7) at Såtenäs AB **(inset left)**. F7 will be the first unit to receive the *Gripen NG.*

Italian Air Force F-35 *Lightning II* assigned to 13° Gruppo at Amendola AB.

Finnish Air Force F/A-18C assigned to HävLLV 11 deploying flares.

German Air Force Eurofighter EF2000 single-seater and an Eurofighter EF2000(T) two-seater assigned to TaktLwG 73 *Steinhoff* at Laage AB.

Main image: French Air Force C-130J-30 assigned to ET 02.061 at Base Aérien 123 Orléans.

Insets: Royal Air Force Typhoon FGR4 assigned to No. 29 Squadron at RAF Coningsby.

The Finnish Border Guard operates five *Super Pumas* – two Airbus Helicopters H215 and three Aerospatiale AS332L1e modified to the new H215 multirole configuration.

Finnish Air Force NH90-TTH assigned to 1.HK/HekoP

German Army NH90-TTH assigned to Heeresfliegerregiment 10. To increase its range, the helicopter is fitted with an external fuel tank on either side of the fuselage.

French Air Force national aerobatic team *Patouille de France* with eight Alpha Jets.

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1,2,3 North American SNJ-3 *Texan*, built in 1942

4,5 SAAB B-17A, delivered to the Swedish Air Force in July 1943. Originally, the B-17 was designed as reconnaissance aircraft. However, it was mainly used as dive-bomber. This aircraft is owned by the Swedish Air Force museum. Its registration is SE-BYH.

SIAF 2021

SLOVAK INTERNATIONAL AIR FEST AUGUST 2021

REPORT BY ISTVÁN KELECSÉNYI

The Slovak Transport Air Base Malacky is located thirty-five kilometers north of the Slovak capital Bratislava, between Malacky and Kuchina. The airfield was formerly a strike base equipped with Czechoslovak Su-22 aircraft, as the Su-22M4 fighter-bomber on display at the entrance reminds the visitor. The Slovak International Aviation Festival (SIAF) was held at several airports and bases over the past decades, from Bratislava to Pöstyń and Sliačač.

The two main Slovak transport aircraft types today are the Letov L-410 light cargo and troop transport aircraft and the two Alenia Aermacchi C-27J *Spartan* combat transport aircraft, which arrived in 2018. Slovakia also has an Airbus A319 and a Fokker 100 for troop and VIP transport.

Out of epidemiological reasons, the Malacky area was divided into different zones. Those protected by vaccination were not allowed to mix with those who had already had the disease or those who had confirmed it by PCR tests on the spot.

The flying day was excellently organized and attracted participants from many countries. The participation of the Slovak Air Force was very low. The airshow started with the display of a C-27J *Spartan* transport aircraft accompanied by a MiG-29B *Fulcrum* fighter and an L-39CM *Albatros* trainer aircraft. There were no solo displays of either MiG-29 or L-39CM. In the next group flew a Mi-171 *Hip* helicopter of the Ministry of Interior and two UH-60M *Blackhawks*. Slovakia is trying to get through the period until their F-16V Block 70 aircraft, purchased from the United States, are in service without major overhauls, service life extensions, and spare parts at a minimal cost. A Mi-171 and a Bell helicopter took to the air, but these were disaster relief and Ministry of Interior helicopters.

For his outstanding flight demonstration with the JAS39 *Gripen*, Hungarian Air Force Lieutenant Majerik Máté was awarded as the best demo pilot. The Czech Air Force presented a Mi-171 and a Mi-35M *Hind*, the latter with a spectacular scheme to celebrate the 80th anniversary of the establishment of the 311th Czechoslovak Bomber Squadron of the RAF in 1940. The W-3 *Soko* performed a SAR demonstration.

Czech Air Force Mil Mi-35 assigned to 221.vrl at Čáslav AB.

Two L-159 ALCAs simulated an airfield attack and used some pyrotechnics on the ground to give it a somewhat realistic touch. Aero Vodochody had to fly the new L-39NG separately, so one could not see the serious performance difference between the L-39NG and the L-159 ALCA. One of the highlights was the display of the Belgian Air Force F-16 'Dark Falcon' with Captain Stefan "Vador" Darte at the controls.

The Italian Air Force sent two Eurofighter EF2000(T) two-seaters for the static display and a Eurofighter EF2000 single-seater for a dynamic display. Also from Italy present were an M-346 *Master* advanced jet trainer and light combat aircraft and a C-27J transport aircraft. Two jet display teams presented their formation-flying skills: the Italian Air Force «Frecce Tricolori» with nine MB339PAN and the Polish Air Force «Orlik Team» flying with five PZL-130TC2.

Among the civilian participants, Zoltán Veres dazzled the audience with his MXS aerobatic aircraft, as did Imreh "Lujó" Lajos with his Mi-2 *Hoplite* helicopter. The most silent display was flown by «Bacovia of Ocovska» (the shepherds of Ocovska), who with their Blanik aerobatic gliders once again showed that they are still at the forefront of unpowered flight.

In addition to current aircraft types, there were also some old-timers actively participating in the flying program: representing the time of World War 2 was a P-38 *Lightning*, a B-25 *Mitchell*, an F4U *Corsair* all from Red Bull, and a Hawker *Hurricane* Mk.IV. The early post-war period was represented by two beautifully restored L-29 *Delfíns*. However, the highlight of the veteran aircraft category was the display of two Polish licensed MiG-15s. Not for their maneuvers, but for the fact that they flew at all left a lasting impression on many of the spectators.

The static display was very interesting and varied. The German Air Force was there with two Eurofighter EF2000s of the Taktisches Luftwaffengeschwader 71 'Richthofen'. The Royal Air Force brought two Puma HC Mk.2 and next to the Hungarian H145M was a Croatian Air Force OH-58D *Kiowa* helicopter. A Belgian Air Force and a Danish Air Force C-130 *Hercules*, a German A400M Atlas, and the Czech's brand new CASA C-295M transport aircraft were also part of a static display. From the U.S. Army in Europe, a CH-47F *Chinook* and AH-64E *Apache* helicopter came to Malacky.

Main image: Slovak Republic Fokker 100 followed by an Airbus A319-115CJ assigned to the Slovak Ministry of Interior, based at Bratislava-Ivanka.
Inset: Slovak Republic Fokker 100.

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1 German Air Force Eurofighter EF2000.
2 Italian Air Force Eurofighter TF-2000A.
3 Italian Air Force Eurofighter F-2000A.
4,5 Czech Air Force L-159A.

Hungarian Air Force JAS39C *Gripen* piloted by Lieutenant Majerik Máté.

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1, 2 Privately owned Mil Mi-2 *Hoplite*.
3 Slovak Air Force Mil Mi-171 SAR.
4 UH-60A Blackhawk of the Slovak Training Academy at Kosice.
5 Slovak Government Flight Service Bell 429 *Global Ranger*.

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1 Polish Air Force C-130E *Hercules*.
2 Royal Danish Air Force C-130J *Hercules*.
3 Belgian Air Force C-130E *Hercules*.
4 German Air Force A400M *Atlas*.
5 Slovak Air Force C-27J *Spartan*.

Belgian Air Force F-16 Solo Display

Italian Air Force aerobatic team «FRECCE TRICOLORI» with nine MB339/PAN.

Polish Air Force aerobatic team «ORLIK» with five PZL-130TC2.

The «FLYING BULLS» presented their beautifully restored warbirds: Lockheed P-38L *Lightning*, built in 1944 flying in close formation with a 1945 built Vought F4U-4 *Corsair* **(main image)** and a North American B-25J Mitchell, built in 1945 **(inset)**.

Main image and inset top: The Lim-2 is a Polish-built licensed version of the MiG-15 *Fagot* fighter developed in the late 1940s.

Left inset: This Aero L-29 *Delfin* left the production line in 1972 and entered service with the Soviet Air Force.

Right inset: Privately owned Aero L-29 *Delfin*.

ITALIAN AIR FORCE AT SIGONELLA

ARTICLE BY MILITARY AVIATION REACHOUT

During World War II, Sigonella was selected as an alternate airfield for the 281 st Torpedo Bombers Squadron flying the Savoia-Marchetti SM.79 Sparviero aircraft based at Catania-Fontanarossa and Gerbini. After WWII, the airfield was abandoned but in 1952 the 87 Squadron of the Italian Air Force started flying from Catania-Fontanarossa with Harpoon PV-2 aircraft, using Sigonella on occasions as an alternate base. On 25 June 1957, the Italian Government signed an agreement with the US Government for the use of Sigonella as a Naval Air Facility (NAF). This was a result of an expansion problem in Hal Far, Malta when plans were made to base U.S. Navy P2V Neptunes. By the end of August 1959, operational activity began at the NAF airfield. Immediately thereafter,the Italian Air Force 87th Gruppo started flying from Sigonella with Grumman S2F-1 Tracker for maritime patrol. The 41st Wing was reactivated on 1 st October 1965, after the 87th and the 88th Antisom Squadron based at Catania, both equipped with the S2F-1 joined together to form the 41st Antisubmarine Wing. In 1971, the 88th Antisom Squadron based in Catania also moved to Sigonella. In 1982, the Italian Air Force bought 18 Breguet BR1150 Atlantic aircraft to replace the aging Trackers. Nine of them were assigned to the 41° Wing and nine to the 30° Wing based in Cagliari, Sardinia. In 1978, the 41° Wing moved from Catania-Fontanarossa to Sigonella and the 87th Gruppo was disbanded. In 2002, the 30° Wing in Cagliari was disbanded and the Antisom component was merged in the 41° Stormo in Sigonella which was followed by the creation of the 86° Centro Addestramento Equipaggi (Training Crew Squadron). Therefore, the 41 ° Stormo until this day has one Operational Squadron and one Training Squadron. In 2007, the flag of the 41 ° Stormo was decorated by the President of the Italian Republic with the Silver Medal for the meritorious and incessant work carried out, in the period from 1990 to 2005, to protect maritime traffic and the search and rescue of refugees and shipwrecked people in the Mediterranean Area. Since 31 December 2013, the 41° Stormo Commander is also in command of the "Cosimo Di Palma" airport of Sigonella which includes wing operation, flight safety and personnel. In 2015, the NATO Alliance Ground Surveillance Force (NAGSF) started operating with RQ-4 Global Hawks from Sigonella and at present are still building their facilities. In 2016, the first of four ATR P-72A arrived in Sigonella to replace the obsolete Atlantic. The new asset is not antisubmarine capable and is specifically used for maritime patrol. In 2017, the 61° Gruppe was reactivated after 74 years and operates the APR General Atomic MQ-1 C Predator from Sigonella. On 22 November 2017, the last Breguet 1150 Atlantic took off from Sigonella. Summing up, although the U.S Navy operates from Sigonella, it is important to note that until this day, the airfield is still an Italian Air Force airfield. The Comando Aeroporto (Air Base Command) is responsible for the Operational, Technical, Logistic and Administrative Support to all Italian Units who also offer Host Nation Support to all foreigners and International Units such as the US Navy, NATO AGS FORCE and EUNAVOR Med task force. The Italian Commander is the person through whom the State expresses and confirms its full sovereignty and the non-extraterritoriality of the Base.

This F-104S-ASA *Starfighter* (c/n 783-1116) left the production line at Turin, Italy in 1973 and was delivered to the Italian Air Force on 26 September 1973. On 21 September 2001 it was taken out of service after having accumulated 4,363 flight hours. Today this iconic aircraft serves as "Gate Guard" at Sigonella air base.

61° Gruppo Volo and MQ-1C Overview

In 2017, the 61° Gruppo was reactivated after 74 years and started operating the APR General Atomic MQ-1 C Predator "A+" from Sigonella. The strategic position of the 61st UAV Squadron on the Sigonella Air Base is decisive for carrying out the missions entrusted to the department, in particular for national security activities in the Mediterranean Sea. Although the squadron receives logistical support from Sigonella, the 61° Gruppo falls under the command of the 32° Stormo based in Amendola.

The 61° Gruppo received their MQ-1 C UAVs when the squadron was reactivated in 2017 and the Italian Air Force has been operating the type since 2001. In 2009, the system was updated to the A-Plus version to improve performance and replacing some obsolete components. The MQ-1 C is a remotely piloted aircraft that can fly up to 25,000ft for over 20 hours. It can reach a maximum speed of 230 km/h, but usually operates at 155 km/h. The crew consists of a Pilot and Sensor Operator who control the aircraft by means of a ground station known as GCS (Ground Control System) using advanced data-link and satellite links, even at very long distances, as in the current case in which the missions are managed directly from the Amendola base. They are flanked by a Mission Monitor who is responsible for managing communications with the superordinate authorities, during the carrying out of the mission. Moreover, in the Squadron, there are technicians who take care of the maintenance of the UAV which are divided into avionics and mechanics.

The Predator can fly at greater distances and longer times without risking the safety of personnel involved in a particular mission. The MQ-1 C has on-board sensors which make it possible to carry out electro-optical and IFR (infrared) footage of the area, transmitted in real time to an operator or even another aircraft and carefully analysed by qualified personnel. The IFR sensor can pick up any thermal changes, such as the body heat released by individuals or the heat from a car engine which can determine if the vehicle was running recently. The peculiar and consolidated ISTAR (Intelligence, Surveillance, Target Acquisition and Reconnaissance) capabilities of the Predator make it one of the most sought-after Air Force assets

The Italian Air Force has acquired a total of seven MQ-1 *Predators*. Although six were originally ordered, only five were delivered in late 2001 and in 2002. One was written off due to a training accident. In 2015, two more *Predators* were delivered, one to replace the attrition and the other to fulfill the original order of six *Predators*.

for "dual use" in favour of community. The type of missions that the 61° Gruppo can carry out include ISR (Intelligence, Surveillance and Reconnaissance), Maritime Patrol, CAS (Close Air Support), Force Protection, and FAC (Forward Air Control). In this context, the collaboration agreement signed in 2014 with the public security forces is included in order to contribute to the security framework on the occasion of events of international importance. In 2017, the MQ-1 Cs of the 61° Gruppo supported the activities of the G7 summit held in Taormina by acting as an extra eye in the sky to ensure the safety of the airspace and surveillance on ground whilst coordinating with the respective bodies. They have also taken part in operations "Mare Aperto", "Mare Nostrum" and "Mare Sicuro". They have been of support to the EUNAVFOR MED operation Sophia, a military operation of the European Union that was established as a consequence of the April 2015 Libya migrant shipwrecks with the aim of neutralising established refugee smuggling routes in the Mediterranean. The MQ-1 C was also used to ensure the safety of the airspace over Rome on the occasion of the Jubilee year and in various activities related to environmental monitoring.

41° Stormo and ATR P-72A

The Italian Air Force operates a total of four P-72A maritime patrol aircraft which are assigned to the 41° Stormo. What makes the 41° Stormo so unique is the fact that the crews of the P-72A are made up of pilots and operators who belong to both the Navy and the Air Force, a trait which the wing has had for many years. Although mixed, both the Navy and Air Force get along very well and have been a perfect example of a synergetic team who deliver goals and execute missions efficiently. The P-72A, designed and built by Leonardo's Aircraft Division, was developed from the ATR 72-600 to carry out a vast range of missions. It combines the layout, reliability, maintainability and low life-cycle costs of the typical civilian ATRs with a cutting-edge mission system, manufactured by Leonardo, advanced sensors and a comprehensive communications suite with excellent Command, Control, Communication and Intelligence (C3I) capabilities. The first aircraft was delivered on 2 November 2016 to replace the aging BR1150 Atlantic aircraft. With over 250,000 flight hours and no accidents in 45 years of operational activity, the Atlantic has left a heavy legacy for the P-72A to carry on. After the retirement of the Atlantic on 22 November 2017, the P-72A obtained operational status the following month on 7 December. The P-72A took on the role of ISTAR (Intelligence, Surveillance, Target Acquisition and Reconnaissance) activities and Search and Rescue operations at sea. Although replacing the Atlantic, the P-72A is only an interim solution aimed at bridging the capacitive gap until the introduction of a Long-Range Maritime Patrol Aircraft capable of Anti-Submarine Warfare. Currently the Italian Air Force is looking at three options which are the P-8 Poseidon, Kawasaki P-1 or an all-new modified Leonardo C-27J configured for ASW activities. On the apron at Sigonella, two P-72A's were present with serials 'MM62279/41-01' and 'MM62280/41-02', with the latter being the fourth and final P-72A delivered to the 41° Stormo on 11 February 2021. This last aircraft differs from the other three because it was delivered in the most effective Final Plus configuration, which involves the implementation of several updates on sensors, on the mission system and on integration and communication capabilities.

The other two P-72A's with serials 'MM62298/41-03' and 'MM62281/41-04' were in Turin to also receive this Final Plus configuration which will bring the whole fleet to full operational capability.

This P-72A has an illuminator/search light attached to right side of the fuselage. It is operated manually by the oberver and can also be operated automatically in conjunction with the FLIR turret.

Equipment

V/UHF - HF
The aircraft is fitted with a number of antennas such as the High Frequency antenna which is (backup for SATCOM) in order to establish long distance communication. Thanks to this, the crew can remain in contact with Rome Information even when flying close to the Libyan Coast whilst on a mission.

ASARS DF
The ASARS DF (Airborne Search and Rescue System Direction Finder) is equipment designed for SAR and Combat SAR operations. It is a V/UHF direction finder that operates on 360° and is able to identify the direction of radio stations in a range from 30 MHz to 410 MHz. ASARS DF information can be viewed both on the ATOS mission system consoles and in the cockpit on the main cockpit displays.

SATCOM
The antenna of this system is placed in a large white radome placed on the top of the fuselage. The system allows the use of both the Ku band (for which the aircraft must rely on commercial satellites), and the Ka band (using the Franco-Italian military satellite Athena-Fidus). Thanks to this apparatus and to the various data links (Link 11, Link 16) the aircraft can exchange mission data with other aircraft or friendly ships and with ground control centers.

Electro-optical turret FLIR Systems Star Satire 380 HD
Thanks to the FLIR turret, the crew can remain at a constant altitude to collect data and imagery of ships or targets up to a range of 20 miles. The infrared technology in the FLIR turret can also detect temperature changes in the sea, such as the body heat of stranded civilians in open waters. Captured video images from multiple sensors can be transmitted simultaneously over a single data link for further processing, storage and viewing. With the Star Satire it is possible to identify surface targets at short and medium range, in all weather conditions during the day as well as at night providing high-definition digital images and videos to the operators.

SURFACE RADAR
Capable of long-range detection, monitoring and identifying targets, covering 360°. The radar is optimized to perform operations against sea-surface targets, providing excellent tracking and simultaneous scanning capabilities. Depending on the size of the target or ship the crew is looking for, the radar is capable of pinpointing its target from up to 200 miles. To support targets identification, a friend or foe interrogator and/or an automatic target classifier can optionally be coupled with the radar.

DATA LINK
As already mentioned above, the aircraft can also function as a flying command post using its DATALINK capabilities for the in-flight management of complex airborne missions involving several air and naval assets. This gives the aircraft the ability to transmit information and footage in real time to other assets.

Characteristics

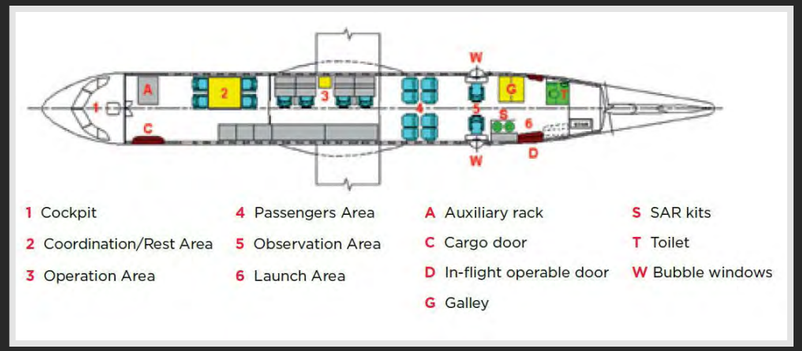
Weights	
Max Take-off Weight	50,706 lb
Max Landing Weight	49,273 lb
Maxi Zero Fuel Weight	46,297 lb
Maxi Fuel Capacity	11,023 lb
Powerplant	
PW127M Engine Take-off Power (1 engine out)	2,050 kW
Performance	
Maxi Cruise Speed	250 KTAS
Maxi Operational Altitude	25,000 ft
Max Endurance (at 5,000 ft)	10.00 h (+45' hold)
Take-off Distance (MTOW, SL, AEO, ISA)	4,482 ft
Landing Distance (MLW, SL, ISA)	2,100 ft

INSIDE THE ATR P-72A

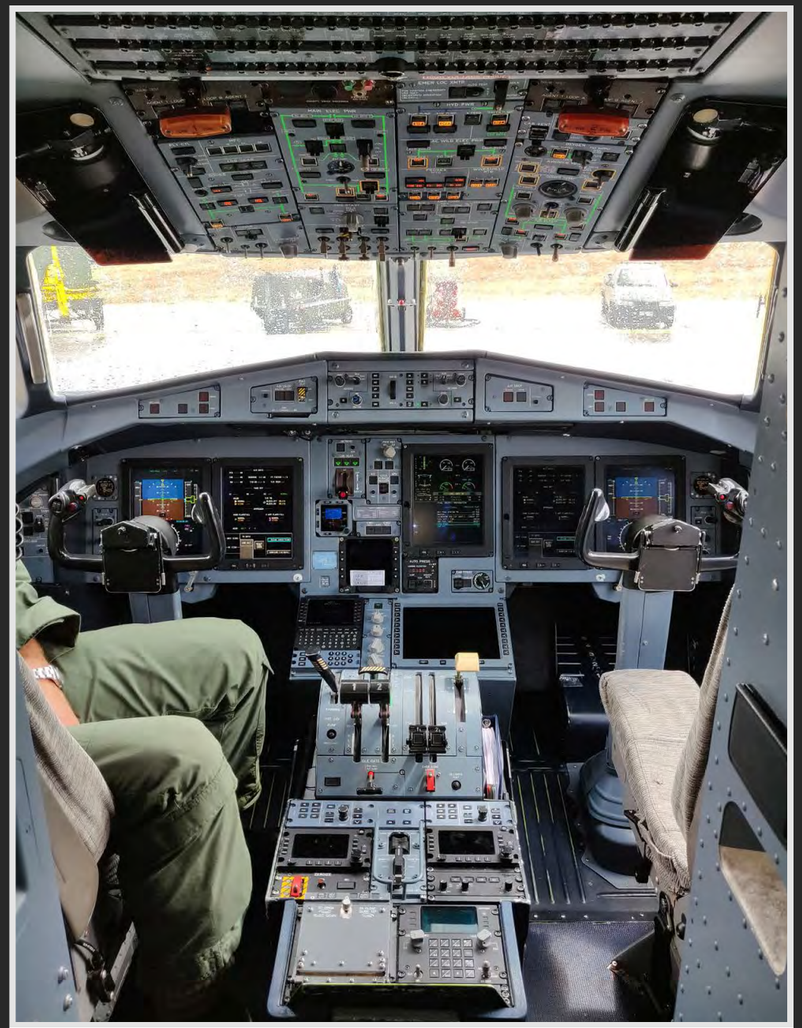
Crew

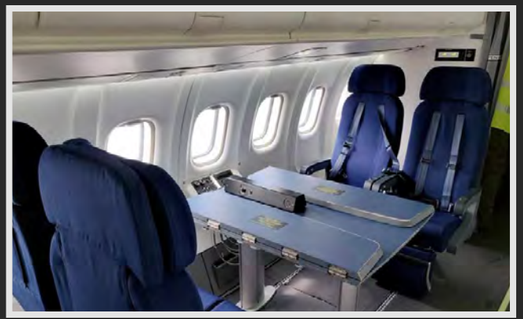
The core of the P-72A mission suite is its modular Airborne Tactical Observation and Surveillance (ATOS) mission system. Designed by Leonardo Electronics Division, ATOS manages the aircraft wide array of sensors, combines the information received in an overall tactical situation (performing true data fusion) and presents the results to the mission system operators in the most suitable format, providing excellent situational awareness. Thanks to an advanced human machine interface, only two mission system operators are needed to fully exploit the ATOS in the ATR 72MP baseline configuration. Besides the two pilots and two mission system operators, the aircraft crew includes two observers, whose main tasks are to look out from the two large observation bubble windows to perform visual search and airdrop emergency equipment through the in-flight operable door for SAR missions. Apart from that, the observers can also operate chaffs/flares through a remote situated beneath the bubble window. The observer on the right-hand side can operate an illuminator/search light attached to side of the aircraft manually. The illuminator/search light pictured below can also be operated automatically in conjunction with the FLIR turret.

In the Coordination Area, as shown below, a crew member is always present who is tasked with supervising the mission whilst assigning tasks and maintain constant communication with both the pilots and mission operators.



1 Cockpit
2 Coordination/Rest Area
3 Operation Area
4 Passengers Area
5 Observation Area
6 Launch Area
A Auxiliary rack
C Cargo door
D In-flight operable door
G Galley
S SAR kits
T Toilet
W Bubble windows





AIRCRAFT OF THE SPANISH

DÍA DE LA FIESTA NACIONAL

TEXT: MARCO MUNTZ | **PHOTOS:** MARCO MUNTZ UNLESS STATED

After one year of absence due to the Covid-19 pandemic, the annual military parade held in Madrid on 12 October to celebrate the Día de la Fiesta Nacional was organized again in 2021. The day coincides with the arrival of Christopher Columbus on the American continent in October 1492 and nowadays, this Spanish National Holiday symbolizes the cultural and linguistic expansion of the country beyond European borders. The paseo de La Castellana in Madrid is traditionally the centre of this event and after the Spanish national flag had been raised, the air parade graced the Madrilenian skies followed by a large parade of men and vehicles on the ground. The military ceremony was reviewed by King Felipe VI and his Royal Family, military high-ranking staff, members of the government and regional officials. Over 2600 men and women as well as 115 vehicles participated in the 2021 parade while 68 aircraft and helicopters formed the air defilé. They flew in 17 different groups in a northerly direction using the paseo de La Castellana as reference.

Depicted here is SF-5M AE.9-29/23-18 at Talavera one day after its participation in the air parade over Madrid, on 13 October 2021. Ala 23 still operates 19 SF-5Ms in the advanced training role for at least some years to come as there is no replacement available yet and the aircraft performs very well in its role as advanced training platform.

According to the procedures, the canopies of the F-5 should be closed during taxiing. However, the decision to either keep them closed or open both canopies is made by the instructor, depending on environmental conditions. Depicted here is SF-5M AE.9-29/23-18 returning to its parking shed after a training flight.

Air parade

The 2021 air parade over Madrid consisted of 17 different formation flights, all with a certain theme. The line-up started with the fighter force:

- *Advanced (combat) training*
  Two EF2000(T) Ala 11, Moron and two SF-5M Ala 23, Talavera-La Real.
- *Ejército del Aire combat aircraft, Eurofighters*
  Three EF2000 and 1 EF2000(T) from Ala 14, Albacete.
- *Ejército del Aire combat aircraft, Hornets*
  A mix of four Ala 12 and Ala 15 EF-18Ms based at Torrejón and Zaragoza respectively.
- *Armada Española Aviación embarcada*
  Three AV-8B+ and one TAV-8B from Rota based 9a Escuadrilla.
- *Air refuelling capability*
  One A400M from Ala 31, Zaragoza, in formation with two Hornets, one EF-18BM, Ala 12 and one EF-18M from Ala 15.
- *Transport*
  One Ala 31 A400M and two C295M's of Ala 35, Getafe.
- *Strategic outreach, medical, evacuation, and reconnaissance*
  One Grupo 45 Airbus A310, escorted by one Falcon 900B, also from Grupo 45, Torrejón, and one Cessna Citation V of the Centro Cartográfico (CECAF) based at Getafe.
- *Maritime patrol and surveillance*
  One P-3M Orion of Ala 11, Moron, and two maritime surveillance CN235M's of the Guardia Civil (Civil Guard) and Salvamento Marítimo (Coast Guard).
- *Aerial fire fighting*
  Two CL-215Ts and one CL-415 of Grupo 43, Torrejón.
- *Tactical transport*
  One CN235M of the Grupo de Escuelas de Matacán and two CASA C-212's of both 371 and 721 Escuadrón from Villanubla and Alcantarilla respectively.

- *Ejército del Aire helicopters*
  Three AS332 Super Puma's and one NH90TTH. The formation was led by a utility AS332M1 of 402 Escuadrón, Cuatro Vientos, followed by two SAR AS332B1s from two different units, Gando based 802 Escuadrón and 803 Escuadrón at Cuatro Vientos and the NH90TTH, also from the latter unit.

- *Ejército del Aire helicopter training*
  Five EC120 Colibri's of Patrulla Aspa, Ala 78, Granada-Armilla

- *Fuerzas Aeromóviles del Ejército de Tierra*
  Three EC135T2's of the Academia de Aviación del Ejército de Tierra and another EC135P2 of the Batallón de Helicópteros de Emergencias II (detachment), all based at Colmenar Viejo, one Tigre HAD of the Batallón de Helicópteros de Ataque I, Almagro, one NH90TTH Caiman of the Batallón de Helicópteros de Maniobra III, Logroño, one AS332B1 Super Puma of the Batallón de Helicópteros de Maniobra IV, El Copero and one CH-47D Chinook of the Batallón de Helicópteros de Transporte V, Colmenar Viejo.

- *Armada Española helicopters*
  One SH-60B of 10a Escuadrilla, escorted by one AB-212, 3a Escuadrilla and one SH-3H, 5a Escuadrilla, all Rota based.

- *Helicopters of Servicio Aéreo de la Guardia Civil*
  One EC135P2 and two SA365N-3 from Torrejón.

- *Helicopters from state run organisations*
  One EC135 from the Cuerpo Nacional de Policía (National Police Corps), one SA365 from the Agencia Estatal de Administración Tributaria (Tax

Main image: Formation «Transport» – One A400M and two C295M's.

Inset top: Formation «Ejército del Aire helicopters» – Three AS332 Super Puma's and one NH90TTH.

Inset bottom: Formation «Ejército del Aire helicopter training» – five EC120 Colibri's of Patrulla Aspa

and Customs Administration) and one EC225 of the Sociedad de Salvamento y Seguridad Marítima (Maritime Safety Agency).

- *La Patrulla Águila*
  The final formation consisted of seven CASA C-101EB's of Patrulla Águila of the Academia General del Aire (AGA) at San Javier which traditionally closed the air parade over Madrid with smoke in the colors of the Spanish national flag.

In the days ahead of the parade, the transport aircraft had gathered at Getafe, south of Madrid, while both the Spanish Air Force and Navy helicopters operated out of Cuatro Vientos, western Madrid. The Spanish Army helicopters are believed to all have flown from Colmenar Viejo, north of Madrid to join the formation.

By December 2021, 803 Escuadrón had retired its last two legacy AS332B Super Pumas in favour of the new NH-90TTH. Both Super Puma's are likely to be transferred to 801 Escuadrón at Son San Juan Air Base, the military part of Palma de Mallorca airport. The photo shows AS332B HT.21-01/803-13, a former 803 Escuadrón Super Puma operated by 801 Escuadrón. It flew to Murcia-San Javier on 19 October 2021 to train helocasting with special forces at the Mar Menor lagoon in front of the Los Alcázares military facility. The next day, the Super Puma already returned home. Two months later, in December, the same helicopter was seen in storage at Maestranza Aérea de Madrid (MAESMA) at Cuatro Vientos, either awaiting overhaul or retirement as it is the oldest Super Puma in the inventory of the Ejército del Aire.

Torrejón de Ardoz

Roughly half of the participating combat aircraft operated from Torrejón air base, south-east of Madrid. Non-resident fighter aircraft included three SF-5Ms which had arrived at Torrejón the day before, one acting as spare aircraft. On 12 October, the two SF-5Ms participating in the parade returned to Talavera after their flight over Madrid, while the spare aircraft had left Torrejón in the meantime. Four AV-8B Plus and one TAV-8B flew to Torrejón two days prior to the parade, again one aircraft was present as spare. After their four-ship formation in the fly past, two single seat Harrier II's returned to Torrejón while the third one and twin-stick flew straight to Rota. The remaining three AV-8B Plus departed in the early afternoon of 12 October. The participating TAV-8B is the most recent addition to the Spanish Harrier fleet and has only been acquired in 2020 from the US Marine Corps. The twin stick EF2000(T)s and one single seater operated temporary from Torrejón, the Albacete based aircraft returned home after lunch on 12 October. The Ala 15 Hornets presumably operated from their home base Zaragoza except for the sole EF-18BM which returned together with two Ala 12 duals. Other Spanish Air Force aircraft based at Torrejón which participated in the parade were one CL-415 and two CL-215Ts from Grupo 43 while Grupo 45 provided one Airbus A310 and one Falcon 900B. The Guardia Civil contributed with one CN235M VIGMA assigned to the GRUPAV and three GRUHEL helicopters, one EC135P2 and two SA365N-3 Dauphins, all Torrejón based. The CN235M made a low pass upon return before a full stop landing at Runway 23. Some in-depth information and history of three specific aircraft types not often seen outside Spain are highlighted.

EF-18BM CE.15-12/12-75 of Ala 12 was the last of twelve twin-stick Hornets to be delivered to the Ejército del Aire. Torrejón based Ala 12 disposes of four EF-18BMs for training purposes.

The first aircraft to return to Torrejón after the fly past over Madrid was EF2000(T) CE.16-14/11-14 of Ala 11, the latest EF2000(T) in the inventory of the Ejército del Aire. From fourteen EF2000(T)s in Spanish military service, Moron based Ala 11 has twelve EF2000(T)'s on strength.

EF2000 C.16-76/14-34 of Ala 14 on short finals of Torrejon's Runway 23 after having participated in the second formation during the air parade over Madrid.

Airbus A310 T.22-1/45-50 is one of two in service with Grupo 45 based at Torrejón. Both A310s are former Air France aircraft and were acquired in 2003 as replacement for the Boeing 707.

Ce 560 TR.20-03/403-21 is one of three Citations operared by 403 Escuadrón from Madrid-Getafe. One of these Citations participated in the air parade over Madrid on the occasion of the Día de la Hispanidad on 12 October 2021. A major task of these Ce 560s is the calibration of radio navigation aids throughout Spain. On 7 October 2021 Ce 560 "403-21" flew patterns at Salamanca airport to calibrate a VOR radio beacon.

The theme of the 10th formation flight of the 2021 air parade over Madrid was tactical transport which included one CASA CN235M of 744 Escuadrón of the Escuelas de Matacán. Students at the Academia General del Aire at San Javier who are selected to fly transport aircraft in the future will be relocated to Salamanca to train on the CN235. In the morning of 7 October 2021, engine tests were performed on CN235M T.19B-18/74-18 of 744 Escuadrón at home base Salamanca-Matacán.

Guardia Civil CN235M VIGMA

Three fixed wing aircraft are currently operated by SAER – Servicio Aéreo (Air Service) of the Guardia Civil (Civil Guard), all assigned to GRUPAV (Grupo de Aviones) stationed at Torrejón de Ardoz. Two new-build CN235M VIGMA (Vigilancia Marítima – maritime surveillance) were delivered mid 2008 and spring 2009 while more recently, in November 2020, a Beechcraft B350 ISR was added to the fleet. Main tasks are search and rescue (SAR) and maritime surveillance which include pollution, illegal fishery, anti smuggling and immigration control. The CN235M VIGMA is equipped with different sensors providing data to the on-board Full Integrated Tactical System (FITS). This system integrates all sensor information together with navigation and mission specific data which is displayed to the operators at their consoles. The primary sensor is the AN/APS-504 search radar attached to the lower fuselage providing a 360 degree azimuth coverage. Other sensors and equipment include a nose mounted Forward Looking Infra Red (FLIR) pod, two Rockwell-Collins ARC210 and HF-9000 radios, Immarsat satellite communications (SATCOM), datalink, automatic identification system (AIS) and an IFF Interrogator. Two 180 degree bubble windows are present on each side of the fuselage for visual observation. On search and rescue missions life rafts and rescue kits can be dropped from the rear ramp while a smoke marker rack and launch system are present in the back of the aircraft as well. The Ejército del Aire (Spanish Air Force) operates eight CN235M VIGMA's, all converted former transport aircraft. After conversion, their military designation changed from T.19B T – transporte (transport) to D.4 D – usos diversos - salvamento (utility - rescue). However, both CN235M VIGMA's for the Guardia Civil were brand new and designated T.19B instead of D.4 (T.19B-21 and 22).

CN235M VIGMA T.19B-22/09-502 is one of two maritime surveillance CN235M's in service with the Servicio Aéreo of the Guardia Civil. This CN-235M VIGMA was delivered in spring 2009 and is seen here making a low pass at Torrejón after its participation in the fly past over Madrid.

Spanish Amphibians

The Ejército del Aire currently operates an amphibian fleet of 14 Canadair CL-215Ts and 4 CL-415s, all assigned to Grupo 43 at Torrejón de Ardoz. In Spanish military service, the CL-215T is designated UD.13 UD – usos diversos (utility) while the CL-415 is nominated UD.14. However, all CL-215Ts (serials running from UD.13-15 to UD.13-30) and one CL-415 (UD.14-04) are officially owned by the Ministerio de Transición Ecológica y Reto Demográfico – MITECO (Ministry of Environment), the former Ministerio de Agricultura (Ministry of Agriculture) but maintained and operated by the Ejército del Aire, the other three CL-415s (UD.14-01 to UD.14-03) were acquired by the Ministerio de Defensa (Ministry of Defence).

From the 14 CL-215Ts still in use, the oldest three entered service in 1979 (UD.13-15 to UD.13-17), one in 1984 and 1987 (UD.13-19 and UD.13-20 respectively), six in 1989 (UD.13-21 to UD.13-26) and three in 1991 (UD.13-27, UD.13-28 and UD.13-30).

In August 1989 the Ministerio de Agricultura signed a contract for the conversion of 15 piston powered CL-215s to CL-215Ts. Most significant part of the retrofit was the installation of two new turboprop engines, the Pratt & Whitney PW123A. Other structural improvements included the addition of winglets and modified horizontal stabilizers to enhance directional control in case of an engine failure. A minor cockpit upgrade entailed enhanced flight controls, new avionics, changes to the electrical system and the installation of an airconditioning system. Eleven CL-215Ts were converted from CL-215s in the early nineties while the last batch of four aircraft (UD.13-27 to UD.13-30) was already delivered in the new configuration in 1991. The four CL-415s were a welcome addition to the amphibian fleet and entered service in 2006 (UD.14-01), 2008 (UD.14-02 and UD.14-03) and 2014 (UD.14-04). Compared to the CL-215T, the CL-415 has a more advanced cockpit including an EFIS avionics suite and a slightly higher maximum take-off weight. Furthermore, the CL-415 has a four-door bomb bay configuration instead of two doors. The primary mission of Grupo 43 is obviously fire fighting but also the provision of SAR is an important assignment.

Between 1 June and 31 October the majority of the Canadair fleet is scattered all over Spain to be on fire alert. In this period, aircraft and personnel are deployed to Pollensa on the eastern part of Mallorca island, Zaragoza, Albacete, Málaga, Talavera, Salamanca and Santiago de Compostela. During the fire-fighting season, Grupo 43 requires at least 13 operational Canadairs with an additional two to three aircraft as spare. As maintenance time and cost continue to increase for the CL-215T in particular, the Ejército del Aire is working on a plan to modernise the amphibian fleet. The actual plan is to retire the oldest four CL-215Ts and put them up for sale, the remaining 10 CL-215Ts would be modernised, both structural reinforcements and a cockpit upgrade including new avionics and flight instruments in order to comply with the latest European civil aviation regulations. The retired CL-215Ts would be replaced by either four second-hand CL-415s or the preferred option, four new CL-515s. However, the acquisition of CL-515s from the Canadian company Viking might not be easy as the production line is currently closed and is likely to re-open only if sufficient number of aircraft are on order. Since 1971, the Ejército del Aire has been operating 34 different Canadairs, 30 CL-215/CL-215Ts and 4 CL-415s. From the fleet of 30 CL-215(T)s, eight were lost in incidents, seven piston engined CL-215s were sold on the civilian market, one CL-215 was handed over to the Museo del Aire at Cuatro Vientos while the remaining fourteen are still operated by Grupo 43.

Right: This CL-215T is one of the oldest Ejército del Aire Canadairs still flying and is earmarked for retirement due to high maintenance cost. The aircraft entered service in 1979 as CL-215 and upgraded to Tango version in the early nineties. Note the open sliding window on the left hand side of the cockpit.

Below: Canadair CL215T UD.13-30/43-30 was part of a three ship of Grupo 43 Canadairs in the ninth formation over Madrid's paseo de La Castellana. This Canadair was already converted to CL-215T upon delivery to 43 Grupo in 1991.

Torrejón based Grupo 43 operates 14 CL-215Ts and four CL-415s in total. During summer, the majority of the 43 Grupo's Canadairs are scattered all over Spain including Salamanca-Matacán to be put on alert to fight any bush or forest fire. At the end of the fire fighting season in October, they all return to home base Torrejón de Ardoz or transfer to Maestranza Aérea de Albacete (MAESAL) for maintenance. The photo shows CL-215T UD.13-22/43-22 parked on the apron in front of the old control tower building at Salamanca on 6 October 2021, shortly before finishing its seasonal detachment.

Matadors and Cobra's

The vertical and/or short take-off and landing (V/STOL) characteristics of the Harrier did not remain unnoticed by the Armada Española or Spanish Navy when the type was inducted into service in both the United Kingdom and United States in January 1969 and May 1971 respectively. When operating from a carrier, the Harrier could defend Spanish naval vessels when they were out of reach for land based (combat) aircraft. Early November 1972, a British Harrier GR.1 conducted trials from the Spanish helicopter carrier Dédalo (Daedalus) to test the type's compatibility on-board and to demonstrate the effect of vertical take-off and landings on the wooden deck. These tests were successful and in July 1973 an order for eight Harriers was placed by Spain. Due to the Spanish political circumstances, the contract was signed with the United States where Harriers were built under license by McDonnell Douglas as a British embargo did not allow manufacturer Hawker Siddeley to sell them directly to Spain. The order consisted of six single seat AV-8A's (the export version to Spain was given US designation AV-8S while Hawker Siddeley referred to this specific Spanish version as Harrier Mk.53) and two double-seat TAV-8A's (TAV-8S/Mk.56), designated VA.1 and VAE.1 VAE – vertical ataque enseñanza (vertical attack and training) respectively in Spanish military service and named Matador. Upon delivery, the Harriers were flown by Spanish pilots to the carrier Dédalo in October 1976 which had docked in the harbour of Naval Station Mayport in Florida for the occasion. The Dédalo took seven Matadors (VA.1-1 to VA.1-5, VAE.1-1 and VAE.1-2) back home as the second AV-8S built for Spain (BuNo 159558) crashed after take-off from Whiteman AFB, Missouri in June 1976 on a training flight. Meanwhile, the 8a Escuadrilla had been formed on 29 September 1976 at Naval Air Station Rota to operate the Matador fleet. In 1980 another five Matadors (VA.1-6 to VA.1-10) joined Eslla 008, delivered directly by Hawker Siddeley as the embargo had been lifted. These Harriers were actually Mk.55 models and differed only slightly from the earlier batch due to the presence of additional VHF antennas. To replace the fleet of (T)AV-8S, twelve AV-8Bs "Harrier II" were ordered from McDonnell Douglas by the Spanish government in March 1983 at a cost of 370 million USD. Compared to the AV-8A, the AV-8B had a larger, completely redesigned fuselage, an elevated cockpit for better all-round visibility, larger wings made of carbon fiber composites reducing weight and increasing warload, higher capacity wing fuel tanks, modified engine intakes and exhaust nozzles, a new Rolls-Royce Pegasus F-402-RR-406 engine and a completely revised, digital cockpit based on the F/A-18 Hornet. The first batch of three aircraft arrived at Rota on 6 October 1987 after a 9 hour non-stop ferry flight from the McDonnell Douglas factory at St. Louis, Missouri to equip the newly established 9a EscuadrilIa. The remaining nine EAV-8Bs (E – España Spain) were delivered in batches of three aircraft each in December 1987, April and June 1988 and were registered VA.1A-13 to VA.1A-23 and VA.1A-32. These new generation Harriers, nicknamed "Cobra", would be operated from Spain's new carrier Príncipe de Asturias (R11) commissioned in 1988 to replace its predecessor Dédalo (R-01). The vessel was equipped with a 12° ski-jump and could accomodate up to eight Harriers and fourteen helicopters. The R11 was subject to trials carried out by British Aerospace test pilots in July 1989 in preparation for future Harrier deployments. It was not until 21 October 1996 when the last of the first generation Matadors was retired, TAV-8S VAE.1-1, while their squadron, 8a Escuadrilla, disbanded on 24 October 1996. The remaining nine aircraft were sold to Thailand, 7 AV-8S and two TAV-8S, to be operated by 301 Squadron of the Royal Thai Navy from the Spanish-built carrier HTMS Chakri Naruebet (911). During 20 years of Matador operations, three single seat AV-8S had been lost in separate incidents. In

AV-8B+ VA.1B-29/01-919 of 9a Escuadrilla was one of two Harrier II's to return to Torrejón after having participated in the air parade over Madrid. This AV-8B Plus was assembled by CASA at Sevilla-San Pablo and delivered to 9a Escuadrilla at Naval Air Station Rota in the first half of 1997.

September 1990, Spain signed a memorandum of understanding (MOU) with the United States and Italy to develop an advanced version of the Harrier, the AV-8B Harrier II Plus. The Plus upgrade featured a more powerful engine, the Rolls Royce F402-RR-408A, the Hughes AN/APG-65 multi-mode pulse Doppler radar, the (upper) nose mounted AN/AAR-51 FLIR device and advanced avionics. All cockpit instrumentation was made compatible with the AN/AVS-9 Night Vision Goggles (NVG). The new equipment enabled the Harrier II Plus to be operated in low-visibility conditions or at night while combat capability was significantly enhanced including the carriage of AIM-120 AMRAAM beyond-visual-range missiles. For self-defense, the AN/ALE-39 chaff-flare dispenser and AN/ALQ-167 active ECM systems were installed. Spain signed for the acquisition of eight AV-8B+ in March 1993, all were assembled by CASA at the Sevilla-San Pablo factory where also related components for the new type were manufactured. The first Harrier II Plus was delivered to 9a Escuadrilla de la Flotilla de Aeronaves (FLOAN) in February 1996 followed by another four during the same year while the final three aircraft had been assigned by the end of July 1997, the new AV-8B+ were registered VA.1B-24 to VA.1B-31. The MOU signed by Spain also included the conversion of the remaining ten EAV-8Bs to Plus standard. The actual contract between Boeing and Naval Air Systems Command (NAVAIR) finalized in May 2000 included the upgrade of up to nine EAV-8Bs as meanwhile one had been lost in an incident. Initially, two conversions were confirmed with an option of an additional seven airframes. In the end five out of nine available EAV-8Bs were modified to Plus standard from early 2001, the last modified Harrier II returned to Rota from Sevilla on 5 December 2003. They had been re-registered VA.1B-35 to VA.1B-39. The four EAV-8Bs which were not upgraded to Plus standard (VA.1A-15, 19, 20 and 22) were modified to SNUG (Spanish Navy Upgrade) variant. Modifications were quite similar to the Plus upgrade except for the installation of the APG-65 radar. The SNUG upgrade was carried out by EADS CASA between 2009 and 2012 under a 11.5 million euro contract. Unresolvable software compatibility problems followed by budget constraints led to the early retirement of the four SNUG modified EAV-8B's in 2014. The latest addition to the inventory of the 9a Escuadrilla is a former US Marine Corps VMAT-203 TAV-8B. The training aircraft arrived in Cádiz harbour at the end of 2020 and was re-assembled at Rota before commencing test flights. The "new" TAV-8B received serial VA.1B-40 and flew for the first time from Rota on 3 March 2021, still in its former USMC dark grey color scheme and Spanish markings applied. The aircraft was subsequently transferred to Sevilla where it received a fresh grey paint scheme by EADS CASA before being redelivered to Rota at the end of March. The Harrier II trainer VA.1B-40 replaced the previous TAV-8B operated by 9a Escuadrilla, VA.1B-33. The latter, acquired in 2000, was a former USMC test aircraft built in 1988 and operated by the Naval Air Test Center (NATC) at Patuxent River, after major overhaul it was delivered to Spain in May 2001. In the end the trainer was retired in 2018 due to the high maintenance costs related to its Pegasus F402 engine. The current inventory of the Novena Escuadrilla comprises twelve AV-8B Plus of which two are believed to be in kept in storage and one TAV-8B, one AV-8B Plus was lost when it crashed into the Gulf of Cádiz after a technical problem in April 2003. In October 2014 the Spanish government authorised the extension of the Memorandum of Understanding for ten more years to support AV-8B Plus operations until 2024 (and likely even beyond) at a cost of close to 47.7 million euro. The Spanish Harriers are expected to end their operational life between 2025 and 2027. The Spanish Navy has a requirement of a maximum of twelve F-35Bs to replace an equal number of AV-8B+ to be operated from the LHD (Landing Helicopter Dock) Juan Carlos I (L-61), an amphibious assault ship and helicopter carrier commissioned in September 2010 to succeed the Príncipe de Asturias. The Spanish Ministry of Defence made an official Request for Information (RFI) in May 2021 for the F-35A and F-35Bs as a possible replacement of the EF-18M fleet and the AV-8B+ respectively. Although various sources mentioned a number of 50 aircraft with an equal split between both versions, the amount of F-35s to be purchased does not apply at this stage. However, Spain is already involved in the European FCAS fighter program which likely rules out any purchase of the F-35 in the future. This could well mean the end of the V/STOL capability of the Spanish Navy once the Harrier II Plus are retired at the end of this decade.

TOP: AV-8B+ VA.1B-29/01-919 of 9a Escuadrilla is seen just after take-off from Torrejón Runway 05 for the annual fly past over Madrid on the occasion of the Día de la Hispanidad. This Harrier II Plus is one of eight aircraft assembled by CASA at Sevilla-San Pablo and assigned in 1997.

Bottom: TAV-8B VA.1B-40/01-999 of 9a Escuadrilla slowly banks away from Torrejón air base to participate in the air parade over Madrid. This Harrier II trainer is former US Marine Corps 164114/KD 00 of VMAT-203 and was purchased in 2020 to replace another TAV-8B which was retired in 2018 due to high maintenance cost.

BRITISH APACHE STOPOVER

PHOTOREPORT BY JORIS VAN BOVEN

Four AgustaWestland (now Leonardo) Apache AH1 helicopters of Royal Army Air Corps 4th Regiment made a fuelstop at Eindhoven AB, Netherlands. After the fuelstop and subsequent departure, the helicopters returned to Eindhoven AB due to bad weather over Germany. Due to technical issues, two of the Apaches stayed for some days at Eindhoven AB, while the other two departed for the SPRING STORM exercise in Estonia.

Two British Apache AH1 helicopters taxiing to the runway for take-off to Estonia. for the exercise SPRING STORM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