

THE AVIATION MAGAZINE

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Nº 67 January-February 2020
Volume 11, Issue 1



- **First Combat Aviation Brigade Leaves Europe**
- **Athens Flying Week, Greece**
- **Exercise Marfibex-92 | On Board Juan Carlos I, Spain**
- **Anatolian Eagle 2019, Turkey**
- **And so much more ...**

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Cover: Turkish Air Force F-16D Block 50+ belonging to the 161 Filo at the exercise Anatolian Eagle © 2019 W. Jarisch

This page: EAV-8B on board of the aircraft carrier Juan Carlos I during exercise Marfibex-92 © 2019 Gert Trachez



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

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NEWS FROM THE EDITOR

Welcome to the first edition of THE AVIATION MAGAZINE in 2020. Let's start into this new decade with an interesting mixture of reports on exercises and airshows. Some of these are covered in our magazine for the first time, such as the report on the exercise Marfibex-92 from onboard the Spanish aircraft carrier Juan Carlos I; or the Bucharest International Airshow in Romania. Another "first" coverage is the arrival of the first operational F-35A *Lightning II* at its home base Leeuwarden in the Netherlands. But that is not all, there is much more in this edition. Just download your free copy of this 67th issue with a total of 11 reports **here** and enjoy reading!

The outlook for the next issue only reveals that the focus of the reports will be on Eastern Europe and Asia. Be curious and let yourself be surprised.

For now, I wish all our readers and contributors only the best for 2020 with tons of fun, luck, health and lot of great moments.

Stay tuned for our reports and join us by downloading THE AVIATION MAGAZINE, the BEST and FREE e-based magazine since 2009, imitated by so many, but never surpassed.

Thank you very much for reading and downloading THE AVIATION MAGAZINE.

Ralf Peter WALTER
Publisher & Editor

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FIRST COMBAT AVIATION BRIGADE LEAVES EUROPE

REPORT AND PHOTOGRAPHY
BY JORIS VAN BOVEN AND
ALEX VAN NOYE



The deployment of the 1st Combat Aviation Brigade of the 1st Infantry Division was the fourth division deployment in Europe in the context of Operation Atlantic Resolve. The unit withdrew to the United States in October 2019. As part of the European Operation Atlantic Resolve, the 1st Combat Aviation Brigade of the United States Army was active in Europe in 2019. The helicopters and many ground equipment arrived in the port of Zeebrugge in February 2019. The unit left Europe via the port of Rotterdam and was relieved by the 3CAB.

Operation Atlantic Resolve

Operation Atlantic Resolve is a military deployment in Europe. Although it is not a "real" military operation, it is an operation that means that many American units

are stationed in Europe. Operation Atlantic Resolve is an ongoing effort in response to Russia's actions in the Ukraine. It is partly about the war in Donbass in eastern Ukraine around Donetsk. Operation Atlantic Resolve is being developed by the European Deterrence Initiative. In the aftermath of the Russian intervention in the Ukraine in 2014, the United States took several immediate steps to improve deterrence along the eastern flank of NATO borders. One of them is increasing the presence of air, ground and sea forces in the region and improving previously planned international exercises with European partners. The United States is taking measures to improve NATO's military plans and defense capabilities. The country is and remains determined to maintain a permanent presence in Central Europe and Eastern

Europe. The Atlantic Resolve rotations are controlled by a regionally aligned headquarters in Europe. In March 2015, a US Army spokesperson announced in Wiesbaden that a convoy of armored combat vehicles (including Strykers) would move all over the road to their garrison in Vilseck after maneuvers in Poland, Estonia and Lithuania. The air activities are usually planned at Ämari Air Base (Estonia), Graf Ignatievo Air Base (Bulgaria), Mihail Kogălniceanu International Airport (Romania) and Papa Air Base (Hungary). These fields house both units of the American Air Force and the Army.

The deployment of the 1st Infantry Division is already the fourth division deployment of the US Army since the start of Operation Atlantic Resolve in February 2017. From January 2017, there were more than

3,500 troops of the 3rd Armored Brigade Combat Team (ABCT) of the 4th Infantry division active in Europe. There were in total 87 tanks and 144 Bradley combat vehicles at their disposal. The units first assembled in Poland before they spread to a total of seven countries ranging from Estonia to Bulgaria. The ABCT that operates for Operation Atlantic Resolve has its headquarters in Germany at the United States Army Europe. An ABCT rotates the deployment of different divisions every nine months. The equipment of this unit was permanently established in Żagań in western Poland together with a Polish armored division. Since then, the units have always been relieved by new divisions that are being sent from the United States to Europe. A total of four US Army combat regiments flew through Germany and Eastern Europe. The

HH-60M *Black Hawks* in MEDEVAC configuration assigned to Air Ambulance Company Charlie (C/2-1st AVN (AA)) "Boomer"



first unit was the Combat Aviation Brigade, 10th Mountain Division that served between February 2017 and November 2017. This unit was relieved by the Combat Aviation Brigade, 1st Cavalry Division between November 2017 and April 2018. Later the Combat Aviation Brigade, 4th Infantry Division took it over between April 2018 and February 2019. They were followed by the Combat Aviation Brigade, 1st Infantry Division from February 2019 until October 2019. Mid of October 2019, the 3rd Combat Aviation Brigade, 3rd Infantry Division from Fort Stewart,

Georgia, arrived at the port facilities of Zeebrugge, Belgium for their nine-month deployment in support of Atlantic Resolve, replacing the 1st Combat Aviation Brigade, 1st Infantry Division.

Deployment in Europe of the 1st Infantry Division

The helicopters of the 1st Infantry Division arrived in February 2019 in the Belgian port of Zeebrugge. A special compound was set up on the quay for the helicopters. The helicopters would fly via Chievres to Germany where Ansbach would become their new

temporary home. The 1CAB was equipped with no less than 50 *Black Hawk* helicopters of the types UH-60L, UH-60M and HH-60M on arrival. The brigade also contained 24 *Apaches* from the 1st Squadron of the 6th Cavalry. Finally, another 14 *Chinooks* were unloaded in Zeebrugge. In addition to the helicopters, more than 1,500 vehicles were unloaded, all of which would be moved to Eastern Europe. The 1CAB would station a total of thirteen helicopters and more than 60 staff in Latvia in the Baltic States. In addition to Latvia, 17 helicopters in Poland would also be stationed at Powidz for nine months. These helicopters were accompanied by approximately 150 soldiers. Finally, part of the helicopters in Romania were stationed at Mikhail Kogălniceanu in the east of the country. 100 soldiers were deployed in Romania to support the helicopters. The helicopters would train in all these countries with the local units of the relevant host countries. The cooperation with NATO partners in Europe ensures that the American units can collaborate much better in the future. People learn from each other by practicing procedures and they learn to deal with each other's equipment. The strengths and weaknesses of all partners become visible so that they can improve.

For the withdrawal of the soldiers and the material from the 1st Infantry Division, the Netherlands acts as host country. This Dutch Defense deployment falls under the so-called Host Nation Support. NATO allies support each other in military movements across each other's territory. It involves the relocation of more than 5,200 soldiers, 85 Abrams battle tanks, 58 helicopters and hundreds of other vehicles and equipment. The Dutch Defense supports the transports with dozens of soldiers, among others. The helicopters that are being relocated consist of more than 55 UH-60 *Black Hawks*, AH-64 *Apaches* and CH-47 *Chinooks*. The helicopters fly a route from Germany where they go via Eindhoven Air Base to the Rotterdam port area. The helicopters then travel by ship to their home base in Fort Riley in Kansas. The mechanized brigade of the 1st Infantry Division will leave the country by ship via the port of Vlissingen. This caravan travels through the Netherlands by road, by train and for the first time also with barge vessels. Dutch personnel from the army and the Defense Surveillance and Security Organization, among other things, secure the port areas in Rotterdam and Vlissingen. In addition, the Ministry of Defense supplies fuel and transports part of the American equipment with trucks. The Marechaussee guides the military columns on the Dutch roads. The Americans also use Defense locations as accommodation and office spaces. The navy provides port protection on and under water, including diving vessels with diving teams, ships, quay and port inspections.

Background 1st Infantry Division

The United States 1st Infantry Division is a combined division of the US Army and is the oldest continuous serving unit in the regular US Army. The 1st Infantry Division is part of the American III Corps. Since the organization in 1917 during the First World War, this unit was continuously active without ever being dissolved. The unit has been in all major conflicts in the world since its inception and has since achieved considerable fame during deployment. The division is based in Fort Riley in the American state of Kansas. This base is located west of the city of Kansas City. The helicopters of this division are generally based on Marshall Army Air Field, not far from Fort Riley. The division was officially nicknamed "The Big Red One" (abbreviated "BRO") and the soldiers can be recognized by the shoulder patch with the big red "1" on it. The 1st Infantry Division has also received the nickname "The Fighting First". The division has also received nicknames such as "The Big Dead One" and "The Bloody First" which are intended as puns on the original nickname due to the many efforts on the battlefield. The 1st Infantry Division is made up of a number of Brigades and Regiments. These units are: the Division Headquarters and Headquarters Battalion (DHQB), the 1st Armored Brigade Combat Team (1st ABCT) "Devil Brigade", the 2nd Armored Brigade Combat Team (2nd ABCT) "Dagger Brigade", the 1st Infantry Division Artillery "Drum Fire", the 1st Combat Aviation Brigade, 1st Infantry Division "Demon Brigade", and the 1st Infantry Division Sustainable Brigade "Durable" Brigade ".

Background 1st Combat Aviation Brigade

The flying branch of the 1st Infantry Division is the 1st Combat Aviation Brigade (1CAB). The 1st Combat Aviation Brigade of the 1st Infantry Division was originally formed from the units of the 501st Aviation Brigade of the 1st Armored Division. The unit was formally established on April 17, 1986. When the unit was established, the Brigade consisted of the 10th and 501st Aviation Battalions, the 220th Aviation Company (Assault Helicopter), the 244th Aviation Company (Command Aviation) and the 61st Aviation Company (Maintenance). The new brigade was equipped with 22 Bell AH-1 *Cobra*, 38 Bell OH-58D *Kiowa* and 30 Bell UH-1 *Iroquois* helicopters. On November 16, 1987, the 501st and 10th Aviation Battalions were renumbered to the 2nd and 3rd Battalions of the 1st Aviation. The unit was then given a regimental indication. Company A, 501st Aviation Battalion became Company Golf and Hotel under the 1st Armored Division and was again assigned to the 3d Infantry Division as the 7th Battalion, 1st Aviation. The 61st Aviation Company (Maintenance) was renamed as Company India, 1st

AH-64E *Apache Guardian* assigned to Attack Reconnaissance Troop Charlie (C/1-6th CAV (AR)) "Crusaders"



CH-47F *Chinook* assigned to Heavy Helicopter Company Bravo (B/2-1st AVN (HH)) "Diesel"



Aviation. In May 1988 the 1st Squadron, 1st Cavalry made the conversion from a pure ground unit to an air and ground squadron and moved from Schwabach to Katterbach in Germany. At the end of 1989 the 1st Squadron, 1st Cavalry surrendered its M60A3s and received more than 40 M3 Cavalry Fighting Vehicles (CFV). In July 1989, the 2nd Battalion, 1st Aviation in Germany was deactivated and the unit was reactivated as an AH-64A Apache battalion in Fort Hood, Texas.

The "Strike Eagles" returned to Ansbach Army Heliport on May 24, 1990. The unit became the first division with AH-64A Apache helicopters stationed in Germany. In November 1990, Company India from the 1st Aviation was renamed as the 9th Battalion, 1st Aviation. "Eagle Support". This unit was set up to provide dedicated support to the brigade. The unit later became the 603rd Support Battalion (Aviation) under the 3rd Infantry Division. In December 1990, Colonel Daniel J. Petrosky led the brigade to Southwest Asia along with the 1st Armored Division and conducted combat operations in Iraq and Kuwait. For its performance during Operation Desert Storm in 1991, the brigade was selected as the AAAA unit of the year. Shortly after the unit returned to Europe and in conjunction with the reorganization of USAREUR, the "Iron Eagle" Brigade joined the 3d Infantry Division. The 1st Squadron, 1st Cavalry was inactivated and turned in its equipment. The colors were transferred to the cavalry squadron division of the 1st Armored Division. The aviation brigade was eventually deactivated in Fort Riley, Kansas in January 1996 and was reactivated on February 15, 1996, as the 1st Combat Aviation Brigade of the 1st Infantry Division in Katterbach in Germany. The unit then became an integral part of the Great Red 1. The aviation brigade then supported numerous emergency operations throughout Europe and Southwest Asia. After a reorganization in 2003, the 1CAB welcomed the 6th Squadron of the 6th Cavalry Regiment "Six Shooters" at the brigade. The unit was now complete as it is in its current form within the United States Army.

Background 1st Squadron 6th Cavalry

The 1st Squadron of the 6th Cavalry, is like the other units of the 1CAB, based on Marshall Army Air Field in Kansas. The Cavalry is an ancient part of the American army and dates back to the early years of the United States. At that time, the Cavalry were the units of the American army that moved with horses. The American 6th Cavalry was the only regular cavalry regiment that was established during the civil war. On May 4, 1861, General Order No.16 was published and the organization plan for the regiment was prescribed. This order provided for the new



UH-60M Black Hawk belonging to the 3rd Attack Reconnaissance Battalion (3-1st AVN (ARB)) "Nightmares"

cavalry regiment to consist of three battalions, each battalion of two squadrons and each squadron of two companies. After having been a basic unit for years, this would change in the 1970s. On March 31, 1971, the regiment was based on Fort Meade, Maryland. The 1st Squadron would remain active for almost two years, when it received orders to send its equipment by rail to Fort Bliss. The squadron was inactivated on June 21, 1973. The next day the entire regiment was reorganized and redesigned as the 6th Cavalry as part of the Combat Arms Regimental System (CARS). On January 17, 1985, the 1st Squadron was reactivated as one of the groundbreaking AH-64A Apache units in the US Army. During the early 1980s, the squadron was stationed in Fort Rucker, Alabama. The unit was known as an Armor Attack Helicopter Squadron. The squadron served as a test unit during the development and validation of the AH-64A Apache until its deactivation on December 15, 1995 in Fort Hood, Texas.

Current Organization 1st Combat Aviation Brigade

Just like many other large Brigades, the 1st Combat Aviation Brigade (CAB) is composed of three large Battalions and a Cavalry squadron. The first unit that comes with this is the 1st Attack Reconnaissance Battalion (1-1st AVN (ARB)) "Gunslingers" of the 1CAB. The unit is equipped with AH-64E Apache Guardian combat helicopters. This version of the Apache is new to the US Army and is now being introduced





everywhere. The 1-1st AVN (ARB) consists of three companies, namely; Attack Reconnaissance Company Alpha (A/1-1st AVN (AR)) "Taz Devils", B/1-1st AVN (AR) "Wolfpack" and C/1-1st AVN (AR) "Ghostriders". The second unit that is assigned to the 1CAB is, like with many brigades, a support battalion. This unit is the 2nd General Support Aviation Battalion (2-1st AVN (GSAB)) "Fighting Eagles". The first company of this unit is the Command Aviation Company Alpha (A/2-1st AVN (CMD)) "Wraiths", which is equipped with the UH-60L *Black Hawk* for connection tasks. The second company is Heavy Helicopter Company Bravo (B/2-1st AVN (HH)) "Diesel" and flies the CH-47F *Chinook*. The third and last company of this battalion is the Air Ambulance Company Charlie (C/2-1st AVN (AA)) "Boomer" which flies with the HH-60M *Black Hawk* in the MEDEVAC role. The third battalion which belongs to the 1CAB is the 3rd Attack Reconnaissance Battalion (3-1st AVN (ARB)) "Nightmares". The three companies of this unit are all equipped with the UH-60M *Black Hawk* in the assault role. The three

companies of this unit, are; the Assault Helicopter Company Alpha (A/3-1st AVN (ASLT)) "Black Cats", the B/3-1st AVN (ASLT) "Black Knights" and the C/3 1st AVN (ASLT) "Black Sheep".

The 1-6 CAV nowadays consists of three troops that all fly the AH-64E *Apache Guardian*. These troops, are; Attack Reconnaissance Troop Alpha (A/1-6th CAV (AR)) "Avenger", Attack Reconnaissance Troop Bravo (B/1-6th CAV (AR)) "Bandits" and Attack Reconnaissance Troop Charlie (C/1-6th CAV (AR)) "Crusaders". The drones of this unit have meanwhile been assigned to the regular units of the 1CAB of which the 1-6 CAV forms part. The combat helicopters of the Troops Alpha, Bravo and Charlie are easy to recognize. The helicopters have stripes on the tail that indicate to which troop the helicopters belong. Helicopters with one stripe belong to Troop Alpha, helicopters with two stripes belong to Troop Bravo and finally the helicopters with three stripes belong to troop Charlie.

Two AH-64E *Apache Guardians* belonging to the Attack Reconnaissance Troop Charlie (C/1-6th CAV (AR)) "Crusaders"



▲ AH-64E *Apache Guardian* assigned to Attack Reconnaissance Troop Bravo (B/1-6th CAV (AR)) "Bandits"
▼ AH-64E *Apache Guardian* assigned to Attack Reconnaissance Troop Charlie (C/1-6th CAV (AR)) "Crusaders"



CH-47F *Chinook* assigned to Heavy Helicopter Company Bravo (B/2-1st AVN (HH)) "Diesel" ▲
UH-60L *Black Hawk* assigned to 2nd General Support Aviation Battalion (2-1st AVN (GSAB)) "Fighting Eagles" ▼



ATHENS FLYING WEEK

REPORT AND PHOTOGRAPHY BY IGOR BOZINOVSKI



Lockheed P-3H*N* Orion and a Sikorsky S-70B-6 *Aegean Hawk* helicopter of the Greek Navy Aviation Command



GREEK MILITARY AVIATION - BRIEF OVERVIEW

The mighty Greek military is currently in a process of major modernization and capability-building/increasing processes with special attention on its air force. The Hellenic Air Force (HAF) consists of: 153 Lockheed Martin F-16C/D *Fighting Falcons*, 43 Mirage 2000 (24 Mirage 2000-5 Mk.2 and 19 Mirage 2000EGM/BGM) single-engine jet fighters, 36 upgraded McDonnell-Douglas F-4E AUP *Phantom IIs* two-seat, twin-engine multi role fighters in addition to 15 Lockheed C-130B/H *Hercules* four-engine turboprop tactical airlifters (one in electronic warfare configuration), eight Alenia C-27J *Spartan* twin-engine transporters, four Embraer Eerieye EMB-145H AEW&C airborne Command and Control (C2) platforms, 45 Beechcraft T-6A/A-NTA *Texan II* single-engine turboprop trainers, 38 North American T-2C/E Buckeye twin-engine intermediate jet trainers, 12 Tecnam P2002JF low-wing, two-seat, single-engine training aircraft, 12 AS332C-1 *Super Puma* and 12 Bell UH-1H utility/CSAR-configured helicopters, as well as a strong fire-fighting fleet made of 20 PZL M-18 *Dromader*, 11 piston-engine Canadair CL-215

and eight turbine-powered Canadair CL-415GR fire-fighting aircraft.

Hellenic Army's aviation branch, or simply Hellenic Army Aviation (HAA, Ελληνική Αεροπορία Στρατού, Ellinikí Polemikí Stratou or ΕΑΣ), mainly operates from three air bases: Stafanovikio, Megara and Alexandria. It currently has around 255 frontline rotorcraft on strength: 28 Boeing AH-64A/DHA *Apache* twin-turboshaft attack helicopters, 15 (plus five on order) NHIndustries NH90 medium-sized, twin-engine, multi-role helicopters, 25 (plus five on order) Boeing CH-47D/SD *Chinook* heavy-lifters, around 85 UH-1H/AB.205A single-engine light-utility helicopters, 70 Bell OH-58D *Kiowa Warrior* single-engine armed reconnaissance helicopters, one VIP-configured AB.212 twin-engine, light-utility helicopter, 14 AB.206B *JetRanger* single-engine, light-utility helicopters and 17 Hughes HN-300C piston-powered, light-utility and elementary training helicopters.



Two McDonnell-Douglas F-4E AUP *Phantom IIs* and a Dassault Mirage 2000BG of the Hellenic Air Force in a tight formation fly-by



▲ HAF Beechcraft T-6A/A-NTA *Texan II*
▼ NAC Lockheed P-3HN *Orion*



HAF Dassault Mirage 2000BG ▲
HAF Lockheed Martin F-16C-52+ *Fighting Falcon* ▼





▲ NAC Agusta-Bell AB.212ASW



NAC Sikorsky S-70B-6 Aegean Hawk ▲
HAA Boeing AH-64A/DHA Apache ▼

Greece's Navy Aviation Command (NAC, Διοίκηση Αεροπορίας Ναυτικού Diikisi Aeroporias Naftikou or ΔΑΝ) operates one Lockheed P-3B *Orion*; a four-engine turboprop anti-submarine and maritime surveillance aircraft. It is the first Greek P-3B recently restored under a \$260 million modernization program. Launched in July 2016, the program aims to have by December 2023 five aircraft in operational status as P-3HN, the most advanced *Orion* anywhere in the world. Apart from the P-3s, NAC also has seven Agusta-Bell AB.212ASW anti-submarine warfare (ASW) helicopters and 11 Sikorsky S-70B-6 *Aegean Hawk* dedicated to anti-surface warfare (ASuW), ASW and surface surveillance with secondary use in Search and Rescue (SAR), Medical Evacuation (MEDEVAC), Vertical Replenishment (VERTREP) and special operation missions.

In July, 2019, the US approved a potential \$600 million sale of seven Lockheed Martin MH-60R *Seahawk* maritime multi-mission helicopters to Greece in order to augment its current S-70B-6 platforms and serve as a replacement for the AB.212ASW helicopters approaching the end of their service. In addition, Greece has an active \$996.8 million Foreign Military Sales (FMS) contract for modernizing its 84 most modern F-16C/D Block 52+ and Block 52+ Advanced (Block 52M) jet fighters to the latest and most-advanced F-16V configuration. The nation also considers a potential acquisition of up to 30 Lockheed Martin F-35A *Lightning II* single-seat, single-engine, all-weather conventional takeoff and landing (CTOL) multirole stealth fighters to replace its oldest F-16C/D Block 30 jets that, very likely, would be offered for sale.

ATHENS FLYING WEEK

The Athens Flying Week (AFW) took place Saturday and Sunday 21-22 September 2019 at the Hellenic Air Force air base Tanagra. Despite being a purely military air base and with a notable presence and active participation of the Greek military aviation, the AFW is indeed a commercially-organized airshow (not a trade fair!).

Athens Flying Week Day 1

The flying program began at 12:15 p.m. with three parachutists jumping from a Cessna 182L *Skylane* of the Skydive Attica sport club. One of them landed with the unfolded "I Galanolefki" (Γαλανόλευκη), the "blue-white" national flag of Greece, measuring 100 square meters. That was the largest Greek flag ever flown under a parachute.

Lovers of radio-controlled (RC) models then enjoyed performances of George Papagiannis and his colleagues of the RC Kavala Acro Team. The show proceeded with a fly-past of the Hellenic Fire Service's (Πυροσβεστικό Σώμα, Pirosvestiki Soma) FLIR-equipped AS332L1 *Super Puma* fire-fighting helicopter. It performed a water drop demo, using an underslung SEI Industries Bambi Bucket, a collapsible, multiple-drop bucket system.

The demonstration of HAF's airpower began with the Tanagra-based Mirage 2000BG two-seat fighter jet that was scrambled (an act of quick mobilizing of a military aircraft) to demonstrate the intercept of an immediate threat in form of a hostile aircraft entering Greek national airspace. This was followed by a four-



ship fly-past of the three different types of fighter jets currently serving with the HAF: the mentioned Mirage 2000BG delta-fighter, a pair of F-4E AUP *Phantom IIs* and an F-16C Block 30 *Fighting Falcon*. The formation then spread with the Mirage 2000BG and F-16C simulating a "dogfight" over Tanagra followed by the F-4E's that returned to the scene with a simulated attack on ground based targets utilizing their Rafael LITENING advanced precision targeting pods.

The show then received an adrenaline injection with a flying display of two smoke generators-equipped Fighting Falcons. The first one was an F-16AM of the Belgian Air Component's 350th squadron of the 2nd Tactical Wing at Florennes Air Base. The other one was a HAF F-16C Block 52+ fitted with conformal fuel tanks and representing the F-16 Demo Team "Zeus" that publicly displays HAF's airpower and acts as ambassador of Greece.

The Belgian pilot was extremely aggressive flying. Notably and unlike the standard-colored F-16 used by "Zeus", the Belgian F-16AM spotted a very attractive special color scheme. It was developed to mark the 75th anniversary of D-Day and the Battle of Normandy which was celebrated this June. The Greek F-16 pilot received euphoric applause when he overflew Tanagra at a high-alpha ("α" or angle of attack, AoA) near-stall speed, saluting the beautiful "Ύμνος εις την Ελευθερίαν" (Hýmnos is in Eleftherían, the Hymn to Liberty). It is the national anthem of Greece and Cyprus and the longest in the world by length of text.

The first military sequence of AFW was completed with the demonstration flight of the sole HAA aircraft flying at the show: the AH-64DHA *Apache Longbow* attack helicopter of the 2nd Attack Helicopter Battalion (2ο ΤΕΕΠ) at Megara. This helicopter was armed with two LAU-68 rocket launchers for 70 mm Hydra rockets and pylons for carrying eight AGM-114 Hellfire air-to-ground guided missiles.

The civilian side of the AFW returned with a fly-past of an Olympic Air Bombardier DHC-8-402Q Dash 8 airliner. It was accompanied by a Sukhoi Su-26MX single-seat aerobatic plane belonging to the Dutch Rush Aerobatics. With the airliner leaving the Tanagra flying zone, the Dutch pilot Frank van Houten started its performance giving extraordinary breathtaking spectacular aerobatics with his Su-26MX. Some pilots are calling the aircraft "the killer" as they are afraid

to fly it because of its power, agility and the skills needed to master it. Thereafter a Maule MXT-7-180A Star Rocket towed a PZL-Bielsko SZD-59 Acro glider into the air. By the time the 2005-produced glider was released, the sky above Tanagra was perfectly clear allowing the Swedish pilot Johan Gustafsson to fly elegantly, leaving white and blue smoke lines in the blue sky.

The international civil presence then continued with the flying-demonstration of the Airbus EC.120B Colibri helicopter and the Extra EA-330SC "Black Wolf" aerobatic plane, flown by the French aerobatic pilot Mikaël Brageot.

The show again turned into military mode when the stage was occupied by Greece's Navy Aviation Command which initially gave a flying display of a pair of helicopters – Sikorsky S-70B-6 *Aegean Hawk* and Agusta-Bell AB.212ASW. These aircraft demonstrated the infiltration of Special Forces: Four soldiers landed at Tanagra using the fast rope technique from the *Aegean Hawk* while the *Two-Twelve* provided Close



Air Support (CAS). The NAC presentation culminated with fly-pasts of the recently restored Lockheed P-3B *Orion* which showed its open internal weapons bay, capable of housing six torpedoes, to the public.

With three aircraft at the show, the participation of the famous Flying Bulls was remarkable and opened with acrobatic flying of a 1974-built Messerschmitt-Bölkow-Blohm Bo.105C light, twin-engine, multi-purpose helicopter. It was followed by a joint fly-

past and then separate flying demonstrations of two amazing historical aircraft: the 1958-build immaculately-looking Douglas DC-6B and the Chance Vought F4U-4 *Corsair*. The four-engine piston-powered DC-6B airliner was used by the President of Yugoslavia, Marshal Tito between 1958 and 1975, and then by the Zambian President Kenneth Kaunda. The Chance Vought F4U-4 *Corsair* is a World War II naval aircraft and was designed for aircraft carrier operations. It proudly showed its distinctive "inverted gull" folding wings, the high intercept speed, and the low-stall speed allowing landing on the short carrier decks.

The military returned to AFW with the flying-demonstration of the attractively blue-and-white colored Beechcraft T-6A *Texan II* turboprop trainer of HAF's "Deдалus" demo-team. It was followed by a demonstration of a water-drop by a CL-415GR fire-fighting aircraft based at Mikra air base near Thessaloniki. The military flying ended with the second appearance of the Belgian and Greek F-16s, the solo flying demonstration of the Austrian Air Force (Österreichische Luftstreitkräfte) Saab 105OE high-

F-16AM of the Belgian Air Force painted with a special color scheme to mark the 75th anniversary of D-Day and the Battle of Normandy.



- HAF Canadair CL-415GR (main image)
- Hellenic Fire Service's FLIR-equipped AS332L1 Super Puma with underslung Bambi Bucket (left)
- HAF PZL M-18 Dromader (right)



wing, twin-engine jet trainer finished in an attractive Tiger paint scheme, and the official appearance of the Royal Jordanian Falcons quartet of Extra EA-330LX aerobatic planes.

Saturday's late afternoon also saw the flying-display of the German pilot Martin Graef and his EA-300S acrobatic plane. It was followed by the Italian pilot Luca Salvadori with his 1983-homebuilt CAP-21DS "Silver Chicken" aerobatic airplane and the second appearance of the Skydive Attica parachutists as well as civilian aerobatic planes and gliders which were seen earlier that day.

The AFW Day 1 was effectively closed with a twilight flying display by Dutch Rush Aerobatics Su-26MX and the Swift S-1 glider, the latter being flown by Red Bull official pilot Luca Bertossio. These two aircraft spectacularly illuminated the dark blue skies over Tanagra with nighttime aerobatics, sparklers and fireworks and guests began leaving Tanagra at around

8:30 in the evening. For many, this was the moment when the Search and Eat (SAE) Operation "Gyro Tanagra 2019" was finally initiated.

Athens Flying Week Day 2

On the second day of the airshow, the weather was excellent with clear blue sky and lots of sunshine. The flying schedule, with some deviations, was more or less according to the announced program. Thus, the report will now only list the differences between the September 22nd airshow and the previous day-time activities at Tanagra.

Sunday's AFW gave the attendees a view of HAF's M-18BS *Dromader* twin-seat fire-fighting and training aircraft. It demonstrated a water-drop and was followed by the recently-delivered Tecnam P2002JF training aircraft.

Also notably, a different AH-64A+ *Apache* appeared in the flying-program and a different aircraft was also

Douglas DC-6B and the Chance Vought F4U-4 Corsair



▲ HAF Tecnam P2002JF

noted with the "Daedalus" demo-team with a T-6A turboprop spotting a special tail for the 50 years anniversary of HAF's 361 squadron.

Finally, the fly-past formation of the previous day conducted by Olympic Air Dash 8 airliner and Dutch Rush Aerobatics Su-26MX, was replaced by a fly-past of an Aegean Airbus A321-231 airliner. This was to emphasize the celebration of the company's 20th anniversary and was tightly followed by Tito's DC-6B. As one of the AFW highlights, the A321 made an extremely low pass in front of Tanagra-gathered crowds.

The glory of the second day of AFW, and very likely of the entire airshow, was stolen by the Patrouille de France precision aerobatic demonstration-team of the French Air Force (Armée de l'Air Française). Its eight Dassault/Dornier Alpha Jet light attack and advanced jet trainers (marked "Athos 1" to "Athos 8"), painted in three colors of blue, white, and red, performed a program which lasted over 20 minutes and showed at least 20 different formations divided in two phases. Another delight at AFW was the unannounced landing of the French Air Force Airbus A400M-180 *Atlas*, a four-engine turboprop military transport aircraft, at Tanagra on Sunday afternoon.

AFW was effectively closed at 8:30 p.m. with a twilight aerobatics provided by slightly modified performers. This time, the Dutch Rush Aerobatics Su-26MX was followed by a different glider: the neon-enlightened SZD-59 Acro.

The Static Display

AFW static aircraft display was divided in two separate sections that were dominated by Greek military hardware. The most interesting aircraft shown for the first time to the public was HAA's latest addition: An OH-58D *Kiowa Warrior* armed reconnaissance helicopter, armed with LAU-68 rocket launchers for 70 mm Hydra rockets, and a pair of inert AGM-114 Hellfire air-to-ground guided missiles. Parked next to it, there were three more HAA helicopters: CH-47D Chinook heavy transport helicopter, shown with the Bambi Bucket fire-fighting system, an AH-64A+ Apache attack helicopter, armed with a pair of LAU-68 launchers and eight AGM-114 Hellfire missiles, and a Bell UH-1H, finished in an attractive specially-designed paint scheme to mark the 20 years of HAA's 1st Army Aviation Brigade (1η Ταξιαρχία Αεροπορίας Στρατού, 1 Taxiarchia Aeroporias Stratou or 1η ΤΑΞΑΣ).



HAF Alenia C-27J *Spartan* ▲
HAF decommissioned Lockheed C-130 *Hercules* ▼





HAF McDonnell-Douglas F-4E AUP *Phantom II* (left)
U.S. Air Force Lockheed Martin C-130J *Hercules* (right)



At least five non-operationally looking HAF Lockheed C-130s, including two C-130H's (743, c/n 4665 and 746, c/n 4720) and C-130B (303, c/n 3613) were noticed. The HAF static display also included historical jet fighters: the specially-painted Mirage F1CG (115) and the Canadair CL-13A-2, a license-built F-86E *Sabre* (235). From its current inventory, the HAF displayed a T-6A *Texan II* turboprop and F-4E AUP *Phantom II* fighter, which were parked in front of two of Tanagra's many hardened aircraft shelters. In addition, a Mirage 2000-5EG Mk.2 single-seat jet fighter was displayed. It was armed with four MBDA MICA air-to-air missiles and a rarely-seen MBDA SCALP-EG (Système de Croisière Autonome à Longue Portée - Emploi Général, meaning General Purpose Long Range Cruise Missile), 1,300 kg stand-off missile featuring a 450 kg BROACH warhead and an operational range of over 560 km.

The Greek NAC static display consisted of three helicopters: A historical Aérospatiale SA.319B *Alouette III*, a FLIR-equipped and operational AB.212ASW, and a S-70B-6 *Aegean Hawk*. The AB.212ASW, spotted special painting marking the 40 anniversary (1979-2019) of type's service with the Hellenic Navy.

The foreign military presence was not big but it provided a close view of a wonderfully painted United States Air Force (USAF) Lockheed Martin C-130J-30 *Hercules* transporter of the 37th Airlift Squadron of the 86th Airlift Wing at Ramstein airbase, Germany. It carried a special marking for the 75 years D-Day celebrations with applied W7 code, dating back to June 1944 when the 37th Troop Carrier Squadron participated in the D-Day landings.

Also in the static display was an Austrian Air Force Saab 105OE featuring a tiger tail-painting plus two

Italian Air Force (Aeronautica Militare) jets: Alenia Aeromacchi MB-339CD single-engine jet trainer and light attack aircraft, and Alenia Aeromacchi T-346A twin-engine transonic training aircraft. The appearance of Italian jets at AFW was obvious having in mind HAF's intention to soon initiate a procurement of a modern trainer which would replace the HAF's obsolete T-2E *Buckeye* intermediate jet trainers.

With general and sport aviation being seriously underdeveloped in Greece, the presence of domestic civilian aircraft at AFW was symbolic and related to the aviation brands promoted by Athens-based company Aeroservices. Thus, at the Aeroservices booth, there were Airbus H130-T2 and Airbus EC120B *Colibri* single-engine light utility helicopters, a Schweizer 269-C1 single-piston light utility and training helicopter, and Socata TB-9 *Tampico* and Socata TB-20 *Trinidad* single-engine light piston aircraft. The only foreign civil aircraft shown in the static was the DC-6B, but only on September 22nd.

The AFW, no doubt, was a good chance to see and enjoy small and selected segments of the mighty Greek military aviation up close. Unfortunately, other types of rarely-seen aircraft, such as T-2E, EMB-145H AEW&C, AS332, NH90 and HAI E1-79 Pegasus unmanned aerial vehicle (UAV), were not present. However, the Athens Flying Week well deserves the author's "Ευχαριστώ πολύ".



HAA Bell OH-58D *Kiowa Warrior* (left)
Italian Air Force Alenia Aeromacchi MB-339CD (right)



Bottom row from left to right

- NAC decommissioned historical Aérospatiale SA.319B *Alouette III*
- Austrian Air Force Saab 105OE
- SZD-59 *Acro* glider
- Dutch Rush Aerobatics Su-26MX

AIR WOLF HUNTING

2019

REPORT AND PHOTOGRAPHY BY ISTVÁN KELECSÉNYI



WE'LL FIND AND SAVE

From October 7 to 10, 2019, the AIR WOLF HUNTING 2019 complex military exercise was held at Pipishegy Sports airfield in Hungary with its 760 m long an 120 m wide grass runway. The event focused on practicing search and rescue (SAR) missions. However, it was also an excellent opportunity to fly training missions with different types of helicopters, to parachute scouts and special operations soldiers, and to educate students of the Army Military University

Ludovika.

On the first day, there was a night search and rescue exercise. Several operations were carried out on Tuesday, with parachutists being dropped from an AN-26 Curl tactical transport aircraft.

On Wednesday, three helicopters deployed from the 86th Szolnok Helicopter Base to Pipishegy. For search and rescue (SAR) and combat search and rescue (CSAR) missions, the Mi-17N Medium Transport Helicopter was used. Close air support (CAS) and also combat search and rescue (CSAR) was provided by

Mi-24P combat helicopters, whereas an AS350B light utility helicopter was tasked with scouting, support, and transport of personnel.

At the airfield, the helicopter crews did not have much time to rest. The MI-17N was continuously loading and unloading soldiers, transporting wounded, rescuing and recovering soldiers by winch, and deploying paratroopers.

Soldiers of the 24th Reconnaissance Regiment "Gergely Bornemissza" jumped from a helicopter. They were dropped from either 500 m above ground

with an US-made MC-6 maneuverable army troop parachute system or from 3,200 m with a MC-5 Static Line/Free-Fall Ram Air Parachute System (SL/FF RAPS). The jumps were conducted both during day and night.

Slovak soldiers observed the Air Wolf Hunting exercise. Maybe next year we will see Slovakian UH-60M *Black Hawks* or SAR configured Mi-17s at Air Wolf Hunting 2020.

Mi-17N of the Hungarian Air Force taking off at the Pipishegy Sports airfield



Hungarian Air Force Mi-17N's dropping paratroopers with their MC-6 steerable parachute from 400 m above ground



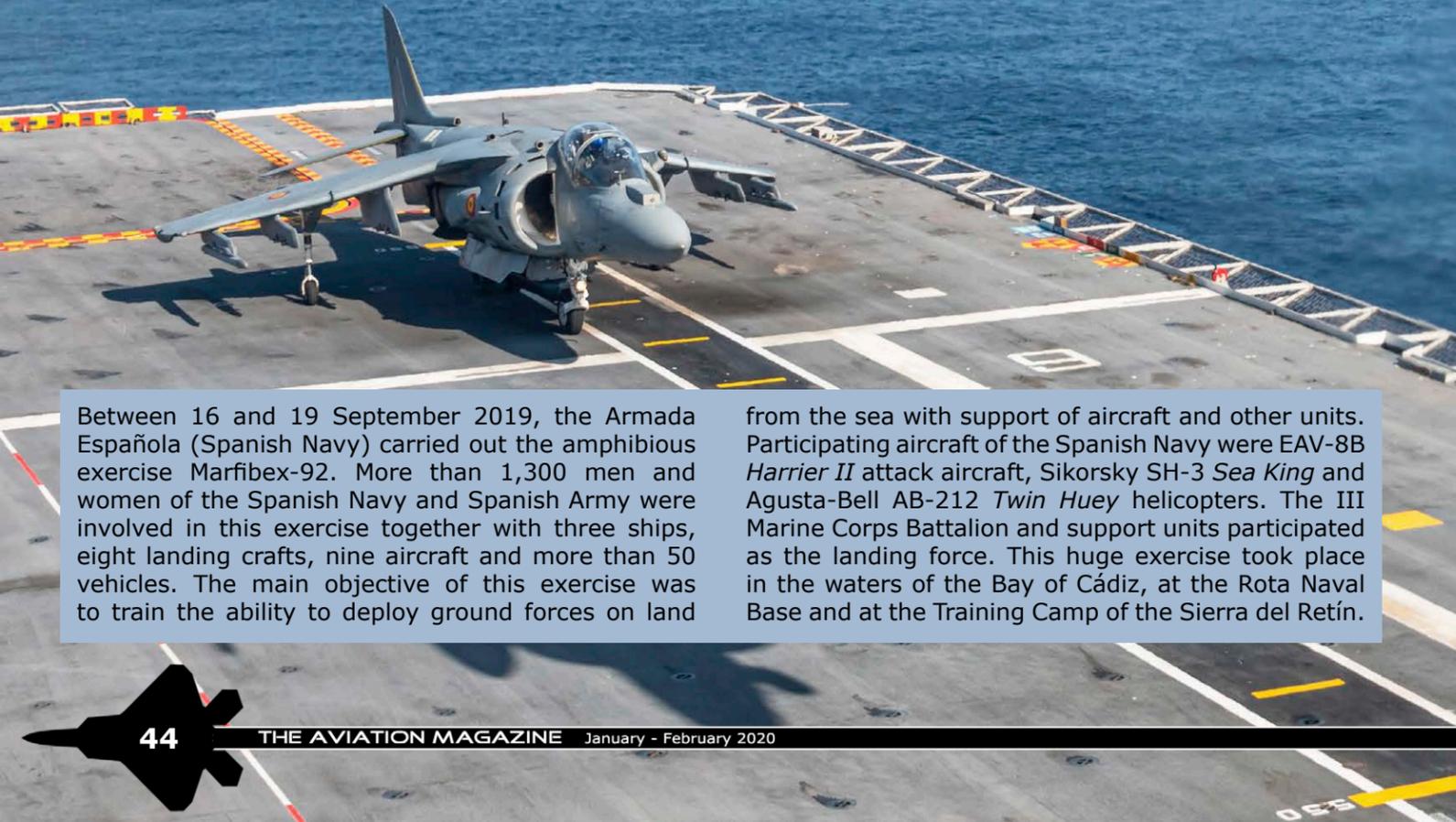
Hungarian Air Force Mi-24P *Hind* providing close air support (CAS) and combat search and rescue (CSAR)



Hungarian Air Force Mi-17N (main image) and AS350B (insets)

EXERCISE MARFIBEX-92

REPORT AND PHOTOGRAPHY BY KRIS CHRISTIAENS & GERT TRACHEZ



Between 16 and 19 September 2019, the Armada Española (Spanish Navy) carried out the amphibious exercise Marfibex-92. More than 1,300 men and women of the Spanish Navy and Spanish Army were involved in this exercise together with three ships, eight landing crafts, nine aircraft and more than 50 vehicles. The main objective of this exercise was to train the ability to deploy ground forces on land

from the sea with support of aircraft and other units. Participating aircraft of the Spanish Navy were EAV-8B *Harrier II* attack aircraft, Sikorsky SH-3 *Sea King* and Agusta-Bell AB-212 *Twin Huey* helicopters. The III Marine Corps Battalion and support units participated as the landing force. This huge exercise took place in the waters of the Bay of Cádiz, at the Rota Naval Base and at the Training Camp of the Sierra del Retín.

This type of amphibious exercise serves as a starting point for the units of the Spanish Navy in their periodic training in amphibious operations so they can respond to crisis situations and humanitarian aid operations. One of the ships that participated in this exercise was the Spanish aircraft carrier Juan Carlos I (L-61). During the Marfibex-92 exercise this ship served as an amphibious assault ship for the marines and aircraft carrier for the Spanish *Harrier* attack aircraft and *Sea King* helicopters. In addition to the Juan Carlos I aircraft carrier, the two Spanish Galicia class landing platform dock ships Galicia and Castilla also participated in the Marfibex-92 exercise.

One of the participating squadrons in the Marfibex-92 exercise was the 9th Aircraft Squadron (9a Escuadrilla Aeronaves), which is the only Spanish Navy fixed-wing fighter squadron. This fighter squadron uses the McDonnell Douglas EAV-8B *Harrier II* 'Matador' vertical and/or short take-off and landing (V/STOL) aircraft and is based at Naval Station Rota in the

Province of Cádiz, near the town of El Puerto de Santa María. The 9th Aircraft Squadron is very versatile and can perform many different missions such as Combat Air Patrol (CAP), Close Air Support (CAS), armed reconnaissance and attack against land and sea targets with an assortment of weapons and in-flight refueling capability for prolonged missions. During the Marfibex-92 exercise three EAV-8B *Harrier II*'s carried out landings and take-offs at the Juan Carlos I aircraft carrier to qualify their skills and provided support to the marines and other units involved in this exercise. Also present were the 5th Aircraft Squadron with their Sikorsky SH-3 *Sea King* helicopters and the 3rd Aircraft Squadron with a Bell UH-1N *Twin Huey* helicopter. Originally the 5th Aircraft Squadron was used for anti-submarine warfare but as of 2001, their mission changed to transport, all-weather amphibious assault, search and rescue and medical evacuation. During the exercise these helicopters were used to transport marines and logistics from the Juan Carlos

A Spanish Navy EAV-8B *Harrier* hovering overhead one of the carrier's eight landing spots for this VTOL aircraft

I aircraft carrier and the amphibious transport docks Galicia (L51) and Castillia (L52) to their training site. The L-61 LHD Juan Carlos I (Landing Helicopter Deck) plays a very important role in the fleet of the Spanish Navy. This vessel, which is named in honor of the former King of Spain Juan Carlos I, has a 12° ski jump for STOVL (short take-off and vertical landing aircraft) operations and a flight deck of 202 meters in length. It weighs 26,000 tons and is 230.8 meters long. The

flight deck has eight landing spots for EAV-8B Harrier attack aircraft or medium-sized helicopters and four spots which can be used by heavy helicopters such as the CH-47 *Chinook* or V-22 *Osprey*. After slight adjustments to the flight deck, the Juan Carlos I could also be used in the near future as an aircraft carrier for F-35B *Lightning II* fifth generation fighter jets. Underneath the flight deck there is a multi-functional garage and hangar on two levels which can be used as



maintenance area for the aircraft or as storage zone during amphibious assault missions. When it's used in the aircraft carrier mode, this vessel can carry up to 30 aircraft. Juan Carlos I is capable of transporting 144 containers as well as evacuated civilians. It has two operation theatres, a dentist's room, a sick bay, a consulting room, a first aid room, an ICU, an injury selection area, an X-ray room, a lab and a chemist's room. An elevator connects the dock, flight deck

and cargo decks to the hospital to transport invalid personnel. The stern well deck of the Juan Carlos I measures 69 by 16.8 meters and can accommodate four LCM-1E amphibious mechanized landing crafts. These can transport marines and ground vehicles like tanks to a beach. The ship provides accommodation for 900 marines and can carry 46 Leopard type tanks or similar battle tanks. Construction of the Juan Carlos I began in May 2005 simultaneously at the Navantia

Shipyards in Ferrol and in Fene, Galicia. After 3,1 million hours of production and 775,000 hours of engineering this flagship of the Spanish Navy was launched in March 2008 and was commissioned on September 30, 2010. On June 20, 2007 the Prime Minister of Australia announced that Australia would purchase and build two ships of the same design as the Juan Carlos I to become the Canberra-class landing helicopter docks. The first of these ships (HMAS

Canberra) was commissioned on 28 November 2014, the second ship (HMAS Adelaide) was commissioned on December 4, 2015.

We would like to thank the Spanish Navy – Comandante del LHD Juan Carlos I Francisco José Asensi Pérez and his entire crew, for their hospitality and most interesting tour on the ship during this exercise.

Bell UH-1N *Twin Huey* belonging to the 3rd Squadron





Sikorsky SH-3 Sea Kings belonging to the 5th Squadron





EAV-8B Harrier II returning to the carrier after having completed its mission

ANATOLIAN EAGLE 2019

REPORT AND PHOTOGRAPHY
BY WOLFGANG JARISCH AND
PETER THIVESSEN



From June 17 to 28, 2019, the Anatolian Eagle (AE) Training Center conducted an international Anatolian Eagle exercise at the 3rd Main Jet Base at Konya. The city of Konya is located in the central region of Turkey, 1,200 m above sea level with a population of approximately 2 million.

The AE Training Center is located at Konya AB. It is a high-level tactical training center, providing realistic combat training opportunities in a high threat environment. It is more sophisticated than the unit level trainings on aspects such as the size of airspace, tactical ranges, threat emitters and number of participants. The AE airspace with a dimension of 120 nmi by 216 nmi, allows more than 60 aircraft to simultaneously employ their tactics away from the

effects of any traffics around.

Since its establishment in 2001, 41 AE trainings have been performed. More than 33,000 personnel and 2,000 aircraft have participated and around 24,000 sorties have been flown in these trainings. Up to this year, 14 countries have participated in AE trainings.

Next to the host nation and one NATO AWACS crew, there were five other countries – Italy, Jordan, Pakistan, Qatar Emiri, USA – actively involved with aircraft in this year's edition of Anatolian Eagle. The Azerbaijan Air Force sent one observer. The Azerbaijan Air Force is a well-known visitor at Konya Air Base for the yearly held bilateral exercise Turaz-Falcon. In comparison with the last held Anatolian Eagle exercise from 2016, this year, there were more

sorties. In 2016, there had been between 33 and 45 sorties per day; in 2019 this increased to between 40 and 48. According to statements from several foreign pilots, "the exercise is a very big enrichment to train the skills in a realistic, up-to-date and ever-changing environment."

The AE training is an interesting place to see multinational crews working hard together in the planning and with so many different kinds of aircraft fulfilling the most diverse tasks to achieve one goal. The AE Training is not only an important step taken in meeting the training requirements of Turkey, but also an initiative to contribute to international reliance and cooperation by sharing the resources it possesses, gifted by its unique geographic situation. Anatolian Eagle is intended to:

- Increase the operational training level of the pilots and air defense personnel in a most realistic operational environment,
- Exercise and develop joined and combined operational procedures,
- Decrease the losses to a minimum level and to increase mission effectiveness to a maximum level in real operation environment
- Give fighter pilots a chance to execute their planned tactics in large force compositions
- Provide a forum to exchange ideas and lessons learned
- Train the participants as they fight and teach them how to survive.

All this will enhance the training level of the

Eight F16 *Fighting Falcons* of the Turkish Air Force taxiing to the runway for take-off



participants by creating a realistic combat theatre within a specific scenario, "blue" forces conduct COMAO attacks against the targets on the "red" land defended by SAM systems and fighter aircraft simulating aggressor tactics.

In the AE operations center, all airborne aircraft, threat systems, AWACS and GCI cross telling can be visualized on a real-time basis and post-mission assessments can be made in a realistic way.

In the context of the training, electronic warfare test and training range in Konya with a wide array of threat emitters, integrated with recognized air picture and Air Combat Maneuvering Instrumentation system (ACMI) are used to expose aircrews to a high threat environment.

In addition to the surface-to-air assets, fighters of the "red" force will give the "blue" participants a hard time in a simulated war environment and compel

them to stay away from the target area in order to get the best training in a realistic scenario.

"The Anatolian Eagle Training and Anatolian Phoenix Exercises are 'the right place to be'. They give the opportunity to compare/improve capabilities & tactics, techniques and procedures for all the participants", so the Anatolian Eagle Training Center Squadron Commander.

The Aviation Magazine would like to express our thanks and appreciation to the Turkish Embassies in Germany and Austria, the Turkish Air Force Public Affairs Office and especially to the personnel from AETC (Anatolian Eagle Training Center) for the perfect organization on the base and for their support and hospitality.

See you again in 2020!

U.S. Air Force F-15E Strike Eagle
right after take-off



U.S. Air Force F-15E Strike Eagles assigned to the 494th Fighter Squadron based at RAF Lakenheath





111'inci Filo
"PANTERLER"

F-4 1958-2018
PHABOLOUS
PHANTOM

60
YEARS
of SERVICE

TEHLİKE
DURDURMA KANCASI

Four-ship formation of Turkish Air Force F-4E 2020 Phantom IIs assigned to the 111th Filo



Turkish Air Force F-4E 2020 Phantom IIs assigned to the 111th Filo





Two Italian Air Force AMX ACOL assigned to GEA 51° Stormo and a Turkish Air Force F-4E 2020 *Phantom II* returning to Konya AB after having their mission completed



Italian Air Force AMX ACOL ▲ assigned to GEA 51° Stormo ▼





▼ Turkish Air Force E-7T Wedgetail assigned to 131 Filo

NATO E-3A assigned to the NAEW&CF ▲





Pakistan Air Force JF-17 Thunder assigned to the 28(MR) Squadron



▲ Royal Jordanian Air Force
▼ F-16BM of No. 1 Squadron



Royal Jordanian Air Force ▲
F-16AM of No. 1 Squadron ▼





▲ Turkish Air Force F-16D-50+ fitted with
▼ conformal fuel tanks, assigned to 161 Filo



Turkish Air Force F-16C-50 and
F-16D-50, assigned to 113 Filo ▲ ▼





- Turkish Air Force C-160 *Transall* assigned to MIT/SIB (main image)
- Qatar Emiri Airforce C-17A *Globemaster III* assigned to No. 12 Squadron (left)
- Qatar Emiri Airforce C-130J *Hercules* assigned to No. 12 Squadron (left)



▲ Turkish Air Force Cessna 650 assigned to 212 Filo
▼ Turkish Air Force AS532UL Cougar assigned to 135 Filo



Turkish Air Force CASA CN235M assigned to 212 Filo
U.S. Air Force Beechcraft C-12C assigned to U.S. Embassy Ankara ▲





- Formation fly-by of the Turkish Stars aerobatic team with F-5 *Tiger II*'s and F-4E 2020 *Phantom II*'s (main image)
- Turkish Air Force F-16C-30 of the **F-16 Solo Türk** display team (inset)





Turkish Air Force F-16D-50 and F-16C-50 assigned to 113 Filo in formation with an U.S. Air Force F-15E assigned to the 494th FS

AIR PARADE OVER BUDAPEST

REPORT AND PHOTOGRAPHY
BY ISTVÁN KELECSÉNYI



On 20 August, 2019, the Hungarian Army celebrated the Hungarian State Foundation with a spectacular air parade of the Hungarian Defense Forces Air Component at the Danube river. The nearly one-hour demonstration featured all types of troops and most of their aircraft.

In Budapest, the area between the Chain Bridge and the Margaret Bridge, with Parliament as its focal point, was designated as the display center. Starting at 9:15 a.m., a Eurocopter AS.350B light

utility helicopter and a Zlin Z-242L, followed by the Mi-8T medium transport helicopter and a Zlin Z-143LSi training aircraft, flew over the Danube river. They were followed by three Mi-17 medium transport helicopters and two Mi-24P combat helicopter pairs. The Hungarian Air Force's latest acquisition followed under foreign flags in the form of two German Army H145M light multi-purpose helicopters. In November 2019, the first two H145M of a total of twenty have been delivered to the Hungarian Defence Forces. The H225M, an advanced successor to the

AS.532, will be added to the Hungarian Armed Forces in the next few years.

The helicopters were followed by transport planes. The first was an AN-26 medium-transport aircraft. Currently, the old Antonov is the only cargo and troop transport aircraft. To replace it, three Embraer KC-390 heavy strategic transport and refueling aircraft are under negotiation. Next were two Airbus A319-113 and a Dassault Falcon7x. Thereafter, a total of five JAS-39 *Gripen* fighter jets flew by, deploying flares when passing the Chain Bridge Parliament section.

The two JAS-39Ds and three JAS-39C, two of which were AIM-9L Sidewinder equipped QRA *Gripens*, took off from Papa AFB. They returned for another fly-by in a five-ship formation, split up and then said goodbye to the people of Budapest in single passes. The air parade ended with three solo demos: First was the AS.350B *Ecureuil* (Squirrel), followed by the Mi-24P and finally the Mi-17.

Mi-17 assigned to MH 86.HE



Mi-24P assigned to MH 86.HE



- Slovenian Air Force AS532AL *Cougar* assigned to 151.HEESK (top left)
- German Army H145M (top middle)
- Hungarian Air Force AS350B2 *Écureuil* assigned to MH 86.HE (top right)
- Hungarian Air Force Mi-17 assigned to MH 86.HE (main image)



Hungarian Air Force, assigned to MH 59. Sz.D. R.

- Airbus A319 (main image)
- Falcon 7X (left)
- Antonov AN-26 (right)



Hungarian Air Force JAS-39D and JAS-39C assigned to MH 59. Sz.D. R.

BIAS 2019

REPORT AND IMAGES
BY IGOR BOZINOVSKI



This year's Bucharest International Air Show & General Aviation Exhibition, commonly known as BIAS airshow, took place at the Bucharest Aurel Vlaicu airport located in the Băneasa district, about 8 km north of Romania's capital Bucharest, on 24 August. In its 11th edition, BIAS was attended by around 100,000 visitors that enjoyed over 12 hours of uninterrupted program. It officially started at 09:10 hours and ended at 22:00 hours with an open stage concert that was boosted by spectacular fireworks and night aviation fly-pasts.

The honor to informally open the event was given to Aeroclubul României (Romanian Aeroclub) that launched 10 aircraft: a pair of Industria Aeronautică Română (IAR, Romanian Aeronautic Industry) IAR-46S very-light, two-seat airplanes for flight schools,

training and tourism, a four-ship formation of a Zlin 242L, Zlin 142, Zlin 50LS and a Zlin 142 single-engine sport, aerobatic and training piston planes, and a quartet of Extra 300L single-engine aerobatic planes of the 2007-formed "Hawks of Romania" civil aerobatic display team that is also part of the National Aerobatic Team.

Aeroclubul României warmed-up the atmosphere with precise formation fly-bys and follow-on tight and aggressive acrobatics. The opening hour of the show then saw a presentation of Romania's leading research establishment in aerospace sciences, the Bucharest-based Institutul National de Cercetari Aeronautice (INCAS, the National Institute for Aerospace Research). INCAS showed two rarely seen and globally little known research aircraft: A

Beechcraft C90GTx King Air twin-turboprop that was tightly followed by a 1976-produced Britten-Norman BN-2A-26 *Islander* in a synchronized take-off and follow-on flying program. Notably, being the first flying lab that entered the Romanian civil aviation register, the C90GTx was equipped with advanced underwing systems for atmospheric studies and earth observation. The other INCAS aircraft is one of three Islanders that were recently restored in Romania. Over 500 BN-2s were manufactured under license in Romania by the Bucharest-based Intreprinderea de Reparatii Material Aeronautic – IRMA (Enterprise for the Repair of Aeronautical Material). Today, the company operates under the name Romaero.

The official start of BIAS was effectively marked by an aggressive take-off and immediate barrel roll manoeuvre of a Forțele Aeriene Române (Romanian Air Force, RoAF) Mikoyan-Gurevich MiG-21MF-75 *Lancer C* single-engine, single-seat jet fighter. The

aircraft belongs to the 861st Fighter Squadron that is subordinated to the 86th Air Base "Locotenent Aviator Gheorghe Mociorniță" and operates from Mihail Kogălniceanu airport, near Constanța. The attractive and roaring flying demo of the Aerostar/Elbit-modernized, Soviet-era *Fishbed J* fighter was followed by a group of Romanian military paratroopers that were launched from a RoAF C-130 *Hercules* four-engine turboprop military transport aircraft.

The presentation of RoAF continued with an impressive fly-past of seven IAR-330 four-bladed, twin-engine medium-size helicopters, a Romanian license-built version of the Aérospatiale SA.330 *Puma* helicopter manufactured by IAR's at Ghimbav, near Brașov.

The helicopter formation gave the public a very rare opportunity to see different RoAF-operated IAR-330 versions in one place. It was lead by national flag waving, medical evacuation (MEDEVAC) configured

This Romanian Air Force MiG-21MF-75 Lancer C kicked-off the flying display of the BIAS 2019

IAR-330M of the 903rd Transport Helicopter Squadron that operates within the 90th Airlift Base "Comandor Aviator Gheorghe Bănciulescu" from Bucharest-Otopeni airport. Flying behind were IAR-330M and IAR-330L utility helicopters and two VIP-configured IAR-330M's, all from the same squadron. These helicopters were followed by a pair of IAR-330L *Puma* SOCAT (Sistem Optronic de Cercetare și Anti-Tanc or Antitank Optronic Search and Combat Systems) anti-tank and close air support helicopters of the 952nd Combat Helicopter Squadron, subordinated to the 95th Air Base "Erou Căpitan Aviator Alexandru Șerbănescu" operating from Bacău; and two United Nations-marked, FLIR and Night Sun-equipped IAR-330L *Puma* helicopters featuring engine intakes sand/dust protective filters.

The military opening of BIAS was concluded with a demonstration flight of a RoAF IAR-99C *Șoim* (Hawk) single-engine, twin-seat advanced jet trainer and light attack aircraft also capable for performing close air support and reconnaissance missions.

The switch of the airshow into civilian mode was made by a fly-past of an Airbus A318-111 airliner belonging to the Romanian flag carrier Compania Națională de Transporturi Aeriene Române – TAROM. This aircraft was tightly escorted by the "Hawks of Romania" formation of five Extra 300s, including the Extra 300SC.

As the airshow approached noon-time, it completely turned into aerobatic mode. It was boosted by the extraordinary demonstration of the Latvian, Tukums-based "Baltic Bees" civilian aerobatic display team flying with six Aero L-39C *Albatros* single-engine jets. Once in the air, the "Baltic Bees" display lasted for around 20 minutes and included formation flying, opposition passes, solo routines, and synchronized manoeuvres. The aircraft then landed and on their way to their parking positions, they stopped in front of the crowds giving smoking salute that caused very positive vibrations at BIAS.

The aerobatic euphoria was further boosted by Jurgis Kairys, a Lithuanian aerobatic pilot and aeronautical engineer who demonstrated extraordinary flying skills and executed the very demanding "hovering" and "cobra" maneuvers with his Sukhoi Su-31 single-engine aerobatic aircraft.

With BIAS already being in international waters, the show continued with the display of a SOKO G-2A *Galeb* (Seagull) single-engine, twin-seat jet trainer and light ground-attack aircraft owned by "Aero Klub *Galeb*" from Belgrade, Serbia. This aircraft was finished in the colors of the Ratno Vazduhoplovstvo

i Protivvazdušna Odbrana – RV i PVO (Air Force and Air Defence) of the former Yugoslav People's Army. It was followed by Romanian Aeroclub's acrobatic demonstration group "White Wings" which showed elegant flying using two locally-produced IAR/ICA IS28B2 twin-seat sailplanes. They were towed in the air by a 1999-produced Maule MT- 7-235 *Super Rocket* single-engine light STOL aircraft owned by the US company Plane Fun Inc.

The new group of parachutists was then launched by a pair of Romanian Aeroclub immaculately-looking PZL-Mielec An-2 biplanes. Before the "Blue Wings" parachutists even landed, a new aerobatic sequence was again provided by Extra 300s followed by amazing flying manoeuvres from Red Bull's official pilot Luca Bertossio and his Swift S-1 glider.

With aviation nostalgia being already initiated with Serbian G-2A, the feeling became even stronger with the flying display of Aero Vodochody L-29 *Delfin* single-engine military jet trainer operated by the Slovak company "Slovenské krídla" (Slovak Wings). This brought back memories of the first indigenous jet aircraft built in former Czechoslovakia. Being developed for the Czechoslovakian and Soviet air forces, the L-29 was produced in 3,665 examples that for decades were pillars for pilot training to many global air arms including RoAF which retired the type in 2006.

The afternoon flying program again put the RoAF into focus with two hours of Romanian air power demonstration starting with a fly-past of six MiG-21s belonging to the 861st Fighter Squadron: one MiG-21UM *Lancer B* two-seat trainer and five fuel tanks-equipped MiG-21MF-75 *Lancer C* single-seat air superiority fighters. Having left the formation, the *Lancer B* then gave an impressive flying display and was shortly after followed by the *Lancer C* which took-off for that day's second flying demonstration.

The military program then proceeded with a flying display of a trio of Aerostar Iak-52 (a Romanian license-built Yak-52) single-engine primary trainers which serve with the 1st Air Training Squadron AI-A Phase of the Școala de Aplicație a Fortelor Aeriene (S.A.p.F.A.) "Aurel Vlaicu", a RoAF Application School located at Boboc.

The highlight of the RoAF's presentation, however, was the tactical demonstration in which the UN-marked IAR-330L helicopters extracted soldiers caught under enemy fire. In this operation, the close air support was provided by IAR-330L SOCAT helicopters in a combat scenario that saw Romanian air superiority being secured by a single-seat F-16AM and a twin-



RoAF AN-30 "Open Skies" surveillance aircraft ▲
RoAF C-130B *Hercules* ▼





seat F-16BM. These jets are assigned to the 53rd Fighter Squadron which is subordinated to the 86th Air Base and operates from Fetești-Borcea air base.

The tactical demonstration was related to the then upcoming deployment of approximately 120 people (pilots, technical and medical personnel) and four IAR-330L SAR-configured helicopters in the United Nations Multidimensional Integrated Stabilization Mission in Mali (MINUSMA) in October 2019. The mission is to support the implementation of the Peace Agreement, the protection of civilians and to prevent the hostile armed elements from returning to the populated area in the Republic of Mali. The four-helicopter detachment "Carpathian Pumas" from the Mihail Kogălniceanu airbase is expected to conduct MEDEVAC/CASEVAC missions, troop and material transportation, passenger transportation missions, air patrolling and observation missions in the landlocked country of West Africa.

The military dominance at BIAS continued with fly-pasts of RoAF's heavy-weights belonging to the 90th

Airlift Base at Bucharest-Otopeni: the C-130B Hercules of the 901st Tactical Air Transport Squadron plus one An-30 twin-engine "Open Skies" surveillance aircraft and three C-27J *Spartan* twin-engine turboprop transporters of the 902nd Operational Air Transport and Aerophotogrametric Squadron.

In another impressive fly-past, RoAF showed six fuel tanks-equipped IAR-99 jet trainers, a mix belonging to the 951st Advanced Air Training Squadron of the 95th Air Base "Erou Căpitan Aviator Alexandru Șerbănescu" in Bacău and the Boboc-based S.A.p.F.A. One of these gave a solo flying display which was followed by a pair of IAR316B helicopters, a Romanian license-built Aérospatiale SA.316B *Alouette III* airframes currently serving S.A.p.F.A..

For those who missed BIAS's first half, the afternoon gave the opportunity to see the performances of almost all aircraft that were in the air in the morning, except the G-2A which did not repeat its performance. In the afternoon there was the opportunity to see the flying display of the probably strangest aircraft of the

show - the Kamov Ka-26 light utility helicopter with two co-axial rotors.

Symbolizing the past and the future of RoAF's fast jet component, the BIAS closing hours provided a chance to see fly-bys of a rarely seen formation of four MiG-21MF *Lancer C*'s and two F-16AM fighters. The F-16s then thrilled the crowds with a simulated "dogfight" overhead the airport. The "dogfight" experienced a sequel when another single seat F-16AM armed with AIM-120 AMRAAM medium-range air-to-air missiles appeared at BIAS clashing with the twin-seat F-16BM, both aircraft impressively shooting flares on the clear sunset skies.

RoAF operates 12 F-16 Block 15 MLU fighters (nine single-seat F-16AM's and three twin-seat F-16BM's) acquired secondhand from Portugal. These refurbished aircraft joined the 53rd Fighter Squadron during 2016-2017 and reached initial operational capability in March 2019. The 12-strong fleet will be further boosted through the incoming acquisition of five F-16s from Portugal. The package will consist of

four single-seat F-16A's and one two-seater F-16B, all of which except one F-16A will be modernized to the F-16AM/BM standard. The sole F-16A not passing modernization will be used as a source of spare parts.

The additional F-16s from Portugal would help completing RoAF's 53rd Fighter Squadron that would then operate 16 Fighting Falcons. Another two F-16 squadrons (18 aircraft each) should become available to the RoAF according to plans for the procurement of an additional 36 such newly build or second-hand aircraft aimed to replace RoAF's obsolete MiG-21 *Lancer* single-engine jet fighters.

Currently, 26 MiG-21s (20 single-seat MiG-21MF/MF-75 *Lancer C* interceptors and six twin-seat MiG-21UM *Lancer B* trainers) are serving with the 711th Fighter Squadron at Câmpia Turzii and the 861st Fighter Squadron at Fetești.

With the MiG-21s slowly but steadily approaching the day of its retirement in Romania, the third BIAS appearance of MiG-21MF *Lancer C* symbolically

This RoAF F-16BM *Fighting Falcon* formerly served with the Portuguese Air Force



Romanian Air Force

- MiG-21UM *Lancer B* two-seat trainer (left)
- MiG-21MF-75 *Lancer C* (below)
- F-16AM *Fighting Falcon* (right)



marked the inevitable fate of the old warrior. Flying in the dusk, the legacy jet gave another extraordinary flying demonstration. This time, it was spectacularly illuminating the dark blue sky with the flares and the afterburner of its roaring Tumansky jet engine.

BIAS static aircraft display was dominated by NATO's Boeing E-3A *Sentry* airborne early warning and control aircraft, commonly known as AWACS. The foreign military presence was not big but still provided close view to a pair of Portuguese Air Force single-seat F-16AM's, a Hungarian Air Force twin-seat JAS-39D *Gripen* and an U.S. Army UH-60 *Black Hawk* helicopter. The latter type reminded the public of the partnership between Romaero and Sikorsky established in 2018. This Lockheed Martin-owned company had built a regional center for logistical support, modernization and maintenance of *Black Hawk* helicopters in Romania.

As expected, the static display was dominated by RoAF equipment: AN-30, IAR-330L *Puma* SOCAT, Iak-52, C-27J, MiG-21MF-75 *Lancer C*, F-16AM, IAR-99C, IAR316B, MIM-23 Hawk PIP IIIR medium-range surface-to-air missile system, PIAP Gryf mobile robot for explosive ordnance disposal (EOD), and Med-Eng EOD-9 bomb suit and helmet. Also on display were an Inspectoratul General de Aviație (General Aviation Inspectorate) Mi-17-1V transport helicopter equipped with external MiG-21 fuel tanks, and an Intervenții

aeromedicale SMURD (Romanian Emergency Rescue Service) EC135T2i helicopter.

The civilian static display showed two very interesting aircraft: the Romaero-owned RomBAC One-Eleven airliner, Romania's first license-build BAC 111 which was restored last year when the plane received its missing left wing back; and the brand-new Silver Airways ATR 72-212A airliner wearing the name "Conch

Republic" and the temporary delivery registration F-WWEL. The aircraft was deployed to BIAS to show the Romanian taxpayer the type of aircraft which the nation's state-owned carrier TAROM will acquire in nine examples in order to soon begin replacing seven ATR 42-500 and two ATR 42-500 of their fleet.

Also shown in the static was the impressively colored Iacarii Acrobati Yak-52TW single-engine aerobatic

aircraft. Its tail showed a painting of Cpt. Av. Constantin "Bâzu" Cantacuzino, one of Romania's leading World War II fighter aces and a member of the Cantacuzino aristocratic family. In addition, about 30 other sport and general aviation planes, helicopters and gliders were in the static display.

The globally and rapidly growing UAV community was also present at BIAS with special attention being attracted by the Slovenian company ElevonX that presented its SkyEye vertical take-off and landing (VTOL) multipurpose platform for which Slovenian military signaled interest.

All in all, BIAS was a very well organized airshow. Being blessed by clear sky and bright sun, this year, BIAS was a resounding success. The excellent whole-day airshow smoothly turned into an open stage concert with superb performance of Romania's popular dance music group "3rei Sud Est". BIAS's music segment, although short, was an amazing experience and it was significantly boosted by many pyrotechnics and related night acrobatic flying. As such, the airshow was an unforgettable experience and an open invitation for another BIAS-related visit to Count Dracula's picturesque homeland.



Romanian Air Force two-ship formation of an IAR-330L *Puma* SOCAT anti-tank and close air support helicopter (background) and a VIP-configured IAR-330M



- Sukhoi Su-31 aerobatic aircraft (top, left)
- RoAF Iak-52, a Romanian license-built Yak-52 single-engine primary trainer (top, middle)
- Extra 300SC aerobatic aircraft (top, right)
- TAROM air line Airbus A318-111 with the "Hawks of Romania" aerobatics team flying the Extra300 (main image)



Romanian Air Force
■ MiG-21MF-75 *Lancer* C (left)
■ FLIR-equipped IAR-330L *Puma* (right)



Romanian Air Force
■ IAR-99 jet trainer (left)
■ IAR316B light utility helicopter (right)



Romanian Air Force
■ MiG-21MF-75 *Lancer* C (left)
■ IAR-330L *Puma* SOCAT anti-tank and close air support helicopter (right)





- SOKO G-2A *Galeb (Seagull)* trainer and light ground-attack aircraft (left)
- Beechcraft C90GTx King Air (right)



- PZL-Mielec An-2 (left)
- Kamov Ka-26 utility helicopter (right)



- Aero Vodochody L-29 *Delfin* single-engine military jet trainer (left)
- Britten-Norman BN-2A Islander (right)



EXERCISE COBRA WARRIOR

REPORT AND PHOTOGRAPHY BY DANNY REIJNEN



D1 20

From September 1 to 20, 2019, RAF Waddington was the temporary home of Italian, Israeli and German fighters participating in the exercise COBRA WARRIOR.

RAF Waddington is the RAF's Intelligence Surveillance Target Acquisition and Reconnaissance (ISTAR) hub. It is home to a fleet of aircraft composed of the Sentry AEW1, Sentinel R1, Shadow R1, RC-135W *Rivet Joint* and operating base for the RAF's MQ-9 *Reaper*.

Formerly named Exercise CQWI (Combined Qualified Weapons Instructor), the annual Cobra Warrior is the RAF's largest collective-training exercise. It aims to develop the tactical leadership skills of aircrew and supporting elements within a complex air

environment. The exercise has seen the participation of several foreign air forces in the past, including Saudi Arabia in 2015, Germany in 2016 and Italy in 2018. Special participants during this exercise were the F-15 *Eagles* from the Israeli Air Force. Three F-15C *Baz* and four F-15D *Baz* fighters, a KC-707 *Re'em* tanker and a C-130J *Hercules* deployed from Tel Nof air base to RAF Waddington.

According to Brigadier General Amnon Ein-Dar, the Israeli Air Force Head of Training and Doctrine Directorate, "the cooperation with England over the years, and especially this past year, has become warmer and stronger". He added that the two air forces have taken part in several joint drills, including

in June, when Israeli F-35 fighter jets from Israel, the US and UK conducted training flights over the Mediterranean Sea in the Israeli aircraft's first-ever "Blue Flag" international exercise. RAF pilots took part in Israel's Blue Flag international exercise in 2017, but as observers and not with their own aircraft. The British air force may fully participate in the upcoming Blue Flag exercise in 2020, which would be the first time RAF pilots openly fly in Israeli airspace.

The Italian airforce and German Air Force participated with the well known Eurofighters. The U.S. Air Force joined the exercise with F-15s flying from RAF Lakenheath and B-52s from RAF Fairford. The Royal

Air Force was flying from RAF Marham and Coningsby with F-35s and Typhoons.

With the overall success of Cobra Warrior 2019 there is a very good chance that the international participation for Cobra Warrior 2020 increases further. Time will tell.

Two F-15C and two F-15D assigned to No. 106 Squadron of the Israeli Air Force lining-up on runway 20 at RAF Waddington, ready for take-off



"We are happy and proud to participate in the "Cobra Warrior" exercise. This is the first time IAF fighter aircraft are deployed to and flying in Britain. The deployment will help improve IAF readiness and capability. We view this exercise as the highest standard of training, an excellent opportunity for mutual learning and bolstering cooperation between partners."

Brigadier General Amnon Ein-Dar, Israeli Air Force Head of Training and Doctrine Directorate



- F-15D Baz (top) and F-15C Baz (left) of the Israeli Air Force No. 106 Squadron
- No. 106 Squadron Patch (above)



Royal Air Force aircraft
■ Sentinel R1, No. 5(AC) Squadron (left)
■ Shadow R1, No. 14 Squadron (right)
■ Sentry AEW1, No. 8/54 Squadrons (below)





"We are honoured to participate again in this very demanding and well organised international exercise. It will be a chance to fly with a selection of the best Weapon Instructors of the participating countries. Sharing our experiences will mutually increase our capabilities."

Colonel Urbano Floreani
Commander 4th Wing
Italian Air Force

Italian Air Force EF2000 *Typhoon* of
36 Stormo / 12 Gruppo (main image)
and 37 Stormo / 18 Gruppo (insets)



"The RAF welcomes the participation of our Air Force colleagues from other nations and we welcome the opportunity to train alongside all of the participating nations' forces on this challenging exercise."

Group Captain Robert Barrett
Exercise Director
Royal Air Force



Eurofighter EF2000 assigned to the TaktLwG 73 "Steinhoff" of the German Air Force. Note the paint scheme on the tail of the Eurofighter above.



FESTA AL CEL

REPORT AND PHOTOGRAPHY BY PACO JOVER AND DAVID MAZÓN GÓMEZ

After 27 years of the first edition of the Festa al Cel airshow celebrated in Barcelona, it continues getting the attention of Spanish aviation enthusiasts. The 2019 edition was held during the weekend of September 21st and 22nd at Lérida-Alguaire's airport's new location.

Although the most optimistic weather forecast predicted rain, the weather was perfect for flying and enjoying the event. The flying schedule was as planned except for some last-minute cancellations due to operational reasons.

The airport of Lérida-Alguaire proved to be the perfect location for the Festa al Cel: It has a large tarmac and plenty of airspace for the operation of the participating aircraft.

During Saturday morning, the airport platform was open to the public for visiting the aircraft and meeting the crews.

The Aerospax team with two Grob 109B motor gliders equipped with lighting and pyrotechnics made a colorful display. They are from the United Kingdom and perform all over the world. Guy Westgate and Rob Barsby were the pilots.

The Spanish Army (FAMET, Fuerzas Aeromóviles del Ejército de Tierra) presented the Boeing CH-47D *Chinook* and the Eurocopter EC665 *Tiger*.

The *Chinook* is a twin-engine transport helicopter with tandem rotors. It showed its external cargo capacity, and it was also used for the launching of the paratrooper brigade (BRIPAC).

The EC665 *Tiger*, designation HA.28 in the Spanish Army, is an attack helicopter. It has a tandem glass cockpit where the pilot is placed in the front seat and the gunner sits in the elevated rear seat. The *Tiger* is the first all-composite helicopter developed in Europe and it entered service in 2003.

The Airbus A400M joined the Spanish Air Force at

the end of 2016, belonging to the 31st Wing and operating from Zaragoza air base. The A400M will replace the C-130 *Hercules* as a transport aircraft. It was very spectacular to see such a big aircraft in action. The aircraft has a wingspan of 42.4 m, a top speed of 825 km/h, a maximum takeoff weight of 141 tons and a maximum payload of 37 tons. It needs only two A400M's to transport the six helicopters and equipment including all the personnel of the Spanish air force's helicopter display team Patrulla Aspa to any place worldwide. The A400M can also be configured for air-to-air refueling.

Also coming from Zaragoza air base was a McDonnell Douglas EF-18 *Hornet*. Its pilot impressively demonstrated the aircraft's performance between stalling and transonic speed.

Fundació Parc Aeronàutic de Catalunya (FPAC) is an aviation museum located in Sabadell's airport. They make great efforts to keep some of their aircraft in airworthy condition. During the airshow, they displayed the Dornier DO-27, Zlin Z526-A *Akrobat* and the Hispano Aviación HA-220 *Super Saeta* military training jet manufactured in Spain in 1971. The HA-220 was designed by Willy Messerschmitt.

The flying program included three planes (Tecnam P-2006T and two Cessna 182T Skylane) of the Aero Club Barcelona Sabadell fleet, two Air Tractor AT-802 from the firefighter service flying very low while discharging water, three para-gliders flying in formation and a COZY III, aircraft with canard configuration, designed by Nat Puffer and based on Burt Rutan's Long-Ez design.

An Eurofighter EF2000 *Typhoon* from the 142nd squadron, 14th wing based in Albacete, with a special tail livery for celebrating the 2018 NATO Tiger Meet, was in the static display together with a C-130H

Hercules of the United States Air Force. Both were accessible to the public. Unfortunately, they did not fly until the airshow was over, then they took off and made some low passes as a farewell.

Patrulla Aspa is the unique aerobatic team displaying with helicopters, celebrating its 15th anniversary in 2019. The team consists of six (one in standby) Eurocopter EC120 *Colibrí* (Hummingbird) light utility helicopters. Pilots and helicopters belong to the 78th wing located in Armilla (Granada) and its main mission is to train future Air Force pilots. The EC120 is manufactured by Eurocopter (Airbus Helicopters)

and it is equipped with a smoke system to make the display more visible and spectacular. The Patrulla Aspa with its evolutions and figures was a magnificent end to the airshow.

The next Festa al Cel airshow will be on September 26 and 27, 2020. The organization team is working hard to get more and new aircraft and aerobatic teams for the flying and static display next year.



An Eurocopter EC665 *Tiger* (Spanish Army designation HA.28) flying into the sunset



- Spanish Air Force Airbus A400M *Atlas* (main image)
- Ohio U.S. Air National Guard Lockheed C-130H *Hercules* (inset)



The Patrulla Aspa team flies with five Eurocopter EC120B (Airbus H120) Colibri helicopters





- Spanish Army Boeing CH-47D *Chinook*, Spanish designation HT-17 (main image)
- Spanish Army Eurocopter EC665 *Tiger*, Spanish designation HA.28 (insets)



- Zlin Z526-A Akrobat (left, top)
- Cozy III, 3-seat homebuilt aircraft (left, middle)
- Air Tractor AT-802 (left, bottom)
- Grob G 109B (right, top)
- Hispano Aviación HA-220 Super Saeta (right, bottom)



FIRST DUTCH F-35 ARRIVES AT HOME

REPORT BY BEN GORSKI WITH IMAGES BY BEN GORSKI AND DANNY REIJNEN





The time has come! On 31 October, 2019, at 3:30 p.m., the first operational F-35A *Lightning II* of the Royal Netherlands Air Force arrived at its Leeuwarden Air Base. With the F-35A as successor of the F-16, the RNLAF now has a 5th generation aircraft in its inventory. Together with its predecessors, it made a formation fly-by with more than 2,000 spectators watching on the ground.

While the F-35 was taxiing to the platform, the fire brigade was ready for a water salute. However, this didn't go entirely as planned.



Instead of water, one firetruck used foam. This happened because a few minutes earlier, an F-16 from Volkel AB reported smoke in the cockpit and had to make an emergency landing at Leeuwarden AB. The firemen prepared for this by switching the fire extinguishing agent from water to foam. However, after the F-16 had landed safely, they did not switch back to pure water.

The first F-35A with the tailcode F-009 was presented to the Netherlands Airforce on 12 September, 2019, at

Cameri, Italy. At Cameri, Leonardo's Aircraft Division operates the "Final Assembly and Check-out Line" for Italian and Dutch F-35s. Leonardo most probably will assemble the remaining 38 Dutch F-35A's on order. The Netherlands will perform the engine maintenance of at least the Italian and Dutch F-35s at its Logistics Center of Woensdrecht AFB. This is also the location of the European warehouse, where all parts for the F-35 are stored.

At Cameri, the four main components of the F-35 are assembled. All wings for F-35 partner and Foreign Military Sales (FMS) nations including Italy are manufactured by Leonardo at Cameri. The majority of the wings goes to the Lockheed Martin factory in the United States. There they are used for the F-35 from America, Australia, Denmark, Norway, and South Korea. For the Netherlands, the other F-35s are currently on the production line in Italy at various stages. In total, the Netherlands' Air Force will receive 46 F-35A's. Thirty-eight of them will be stationed at the Leeuwarden and Volkel air bases. The Netherlands' air force already has eight F-35A's, all are stationed in the United States. The first Dutch F-35A with production number AN-1 and tail number F-001 was transferred to the RNLAF on 25 July, 2013, by the U.S. government in Fort Worth, Texas. The Netherlands ordered it in 2009 to participate in the operational test phase of the F-35 program. The production of the second F-35A (tail number F-002) was completed in 2011. The first two test aircraft were based at Eglin AFB in Florida.



On 6 November 2014, the first squadron for the F-35 was activated as the 323 Test and Evaluation Squadron at Edwards AFB, California. The F-35A's F-001 and F-002 transferred from Eglin AFB to Edwards AFB and joined their partners from the U.S. and UK. On 23 May, 2016, the Netherlands' air force was the first that performed an eastbound transatlantic ocean crossing with the F-35 to Europe for three weeks. With this, the Netherlands was introduced to the aircraft with experience flights and test flights at Leeuwarden and Volkel AFB, and they also participated at the Airforce Days at Leeuwarden AFB.

On 30 November 2018, the 308th Fighter Squadron "Emerald Knights" was established at Luke AFB, Arizona. The squadron is responsible for the training of Dutch F-35A pilots and received six airframes (tail numbers F-003 to F008). In mid-2019, the actual training started and in the same period, the operational test and evaluation program at Edwards was coming to an end with F-001 and F-002 also going to Luke AFB by the end of 2019.

In May 2019, two Dutch F-35A deployed from the U.S. to the Netherlands to drop the first practice bomb. Military aviation history was written with the dropping of a 500-pound practice bomb at the Vliehors shooting range. The "covert long range strike operation" is a mandatory part of the



operational testing and evaluation phase. This tests whether the F-35 can do everything it should be able to do. One of those tasks is an unseen bombing operation at a great distance.

The F-35As successfully dropped four inert bombs. These are exact copies of real bombs, in this case two "smart" GBU-49s with GPS guidance and two laser-guided GBU-12s. The explosive material has only been replaced by concrete. Thanks to the excellent sensors of the 5th generation aircraft, the "inerts" could be thrown unseen from a great height and at a great distance from the target. After this, aircraft went to Volkel AFB to be present at the Air Force Days.

The first F-35A for Leeuwarden will be hangered for a while so the air force can perform acceptance checks and check whether the foam did any damage to the aircraft. Thereafter, it will be formally handed over to the 322 Squadron "Polly Grey". The current timeline is that the 322nd Squadron is fully operational in the second half of 2021. The first F-35A at Volkel AB is expected to arrive in June 2022 and being fully operational in 2024.

One Formation - Four Generations

Fly-by of the F-35A *Lightning II* joined by a Lockheed Martin F-16 *Fighting Falcon*, a Supermarine Spitfire and a Hawker Hunter



One of the fire trucks accidentally used foam instead of water to welcome the F-35A at its new home base (main image and right insets)



BRAY AIR DISPLAY

REPORT AND IMAGES
BY JASON PHELAN



The 14th Annual Bray Air Display took place over the weekend of July 27 - 28, 2019, in the spectacular setting of Bray seafront, Co Wicklow, Republic of Ireland. A short hop from Dublin City centre, Bray is easily accessible by the DART service. Bray 2019 had a mix of solo aerobatics, Formation Teams and unique flypasts and the weather attracted a record-breaking crowd.

The highlight of the weekend's activities was the very special opening formation flypast of an Aer Lingus A320 in the new corporate livery and no less than five PC9M's from the Irish Air Corps. Sunday's display was opened with a rear crowd arrival to a cheering and enthusiastic crowd. Several flypasts followed with the Air Corps in forming onto the A320 in various formations.

The Irish Air Corps have always been a big supporter of Bray and 2019 was no exception. Following the magnificent opening flypast, the traditional 4-ship PC9's "Silver" flight delighted the crowd with a tight formation display and a solo routine. With a CASA CN235 demonstration, the Irish Air Corps Black Knights Parachute Team jumping from a height of 5,000ft from a Eurocopter EC-135, and the latter then giving an extremely tight solo display and completing

the services contribution.

Throughout the weekend a variety of solo aerobatic aircraft showed off some high energy manoeuvres. With Richard Goodwin in the Pitts S2S, Eddie Goggins in the Mudry CAP232 and Dave Bruton's Sukhoi SU31. Team Raven also wowed the crowds with their 5-ship display in their home built RV4/RV8 aircraft of aerial ballet and formation flying. The Irish Parachute Club contributed six jumpers on the Sunday in gusty winds having dropped from a height of 5,000ft from their aircraft, a Pacific Aerospace 750XL.

The Royal Air Force (RAF) have been regular supporters of the show over the years and in 2019, Flt Lt Liam Matthews of No. 72 Squadron, Linton-on-Ouse represented the RAF in the very last display season of the Shorts Tucano. The Tucano retired at the end of 2019 after 30 years and is replaced by the Texan II.

John Dodd flew a very impressive display in the Duxford based, 1944 manufactured built P51 Mustang (Miss Helen), bringing a very vintage and classic sight and sound to the display. Not to be out done the Irish Historic Flight Foundation (IHFF) executed a beautiful display with two Chipmunks and a Boeing Stearman. For many, the highlight of the show and the show-

closer for both days was the Royal Jordanian Falcons. This is the team's third consecutive year to attend Bray and the crowds were not disappointed with a very impressive and spell binding routine for 2019. The combination of the commentary, music, display, setting and enthusiastic crowd made for a real show-stopper.

It was unfortunate that the Strikemaster Pair and the Blades got stuck in the UK for the Sunday show, the latter due to the poor weather conditions. This is now the fourth year that The Blades team have been unable to make it to Bray and it is hoped that the team will be fifth time lucky in 2020 in entralling the Bray spectators.

Sé Pardy, Director, Bray Air Display said, "The weather certainly didn't let us down and was the perfect backdrop to another spectacular aerobatics display. Pilots and aerobatic teams love performing in Bray thanks to the carnival atmosphere and spectacular backdrop of sand, sea and Bray Head. Thanks to everyone who came to Bray to support the event and cheer on the participants." "Sincere thanks to our supporters, Bray.ie, the Irish Aviation Authority and Wicklow County Council whose support makes this event possible," continued Sé. "We also could not run

the Bray Air Display without the wonderful volunteers who give their time and expertise so willingly. We're looking forward to doing it all again next year which will be a very special 15th year of the Bray Air Display." Bray Air Display was recognised as 'Best Festival / Event Experience over 50,000 people' at the prestigious, national Irish Tourism Industry Awards 2017. In 2018 and 2019 it won silver in the 'Best Tourism Initiative' category at the All-Ireland Community and Council Awards.





▲ Irish Air Corps Eurocopter EC-135
▼ Irish Coast Guard Sikorsky S-92A



Irish Air Corps CASA CN235 ▲
Royal Air Force Tucano T1 ▼





- Fly-by of an Aer Lingus A320 in the new corporate livery with five PC9M's from the Irish Air Corps (main image)
- Douglas DC-3 painted in 1956's Aer Lingus colours (inset)





▲ Pitts Special S-2S
▼ Mudry CAP232



Irish Historic Flight Foundation Chipmunk & Stearman ▲
North American P-51D Mustang "Miss Helen" ▼





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