THE AVIATION MAGAZINE

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№ 75 October-December 2021
Volume 12, Issue 4

- Exercise Anatolian Eagle, Turkey
- Flashback – From NVA to Luftwaffe
- Exercise Hot Blade, Portugal
- Exercise Atlantic Trident, France
- Tigers Over Bavaria, Germany
- And so much more ...

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Content

Cover: Turkish Air Force F-4E 2020 of the 111 Filo performing a formation fly-by during the media at the International Anatolian Eagle exercise July 2021. *Photo Wolfgang Jarisch*
This page: Polish Air Force Su-22UM-3K *Fitter G* of the 1. Skrzydło Lotnictwa Taktycznego (1.SLT – 1st Tactical Fighter Wing) in May 2012. *Photo Ralf Peter Walter*

THE AVIATION MAGAZINE

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

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

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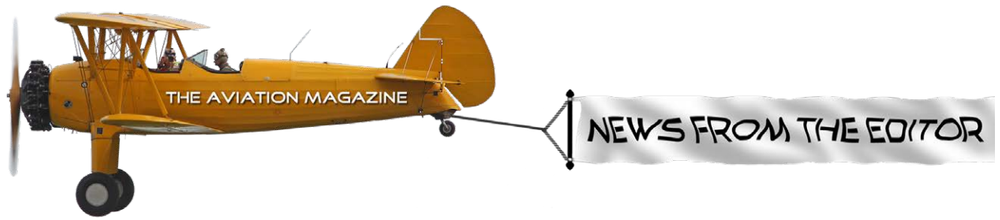

Dear Readers,

Welcome to the latest edition of THE AVIATION MAGAZINE. This issue is again packed with informative reports and great pictures of current events as well as from the past. In the report "Flashback – Decimoannu 1985", we go back to the Cold War era, when the F-104 *Starfighter* was a common sight and the U. S. Air Force's F-5 Agressors were based in England. The Danish Air Force is celebrating its 70th anniversary this year, which we have taken as an opportunity to show you a wide selection of pictures from now and then. It is probably the trend of the times that the variety of aircraft types in the air forces is steadily decreasing. At the end of 2020, for example, the Austrian Armed Forces took their Saab 105OE out of service after 50 years. You can read more about this in the report "Goodbye Saab 105OE".

For now, we wish you much pleasure in reading this new issue. Download your free copy of the 74th issue of THE AVIATION MAGAZINE **here**!

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Ralf Peter WALTER
Publisher & Editor

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ANATOLIAN EAGLE 2021

REPORT AND IMAGES BY
WOLFGANG JARISCH AND
PETER THIVESSEN

After a year's break due to the Corona pandemic, the Turkish Air Force is taking off again for another edition of the international exercise Anatolian Eagle.

The Anatolian Eagle (AE) Training Center is based 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 2,000,000.
The Anatolian Eagle Training Center (AKEM/AETC) is one of the three tactical training centers in the world with similar capabilities and the only tactical training center in Europe. The training area covers an enormous area, Lake Tuz (Tuz Gölü) and its surroundings, covering an area of approximately 300 x 400 km. This allows the participants to practice their flight tactics without being disturbed by civil air traffic.

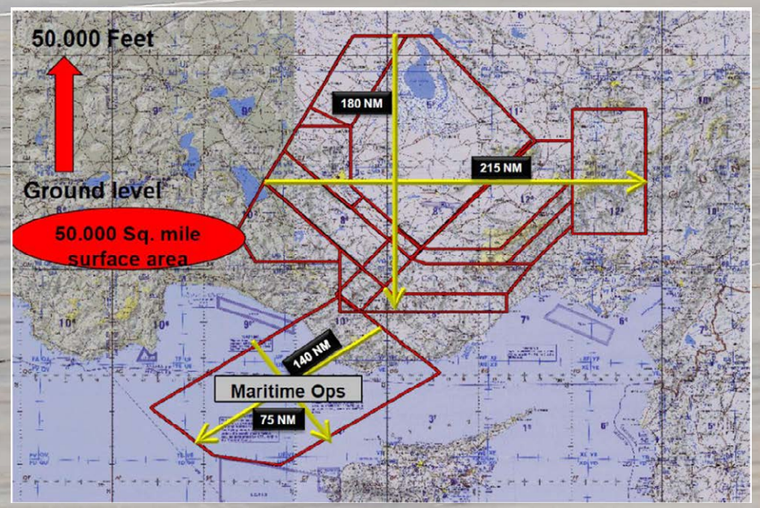
Since its establishment in 2001, 43 AE Trainings have been performed. More than 33,000 personnel and 2,000 air platforms have participated and around 24,000 sorties have been flown in these trainings. Up to this year, 15 countries participated in AE Trainings. With those standards, the Anatolian Eagle exercise is well known far beyond the borders of Turkey, and so guests from the Arab and Asian regions came again this year to compete and strengthen their skills. The exercise involved the Turkish naval and air forces as well as the air forces of Azerbaijan, Pakistan and Qatar and NATO AWACS elements. Together *Fighting for Resurrection*, so the motto of the three allies, Turkey, Pakistan and Qatar. However, the Azerbaijani Air Force was also represented at this year's edition of the international exercise for the first time ever, after having taken part as an observer two years ago. Therefore, in addition to the host country Turkey, an interesting mix of aircraft came together at 3rd Main Jet Base of the Turkish Air Force Base at Konya again this year.
The foreign contingent consisted of the following countries: Azerbaijan Air Force, Qatar Air Force, Pakistan Air Force and the NATO. In addition, the following countries sent observers to the exercise; Bangladesh, Belarus, Bulgaria, Burkina Faso, Georgia, Iraq, Sweden, Kosovo, Lebanon, Hungary, Malaysia, Nigeria, Romania, Tunisia, Ukraine, Oman, Jordan and Japan. Thus, in addition to the actively participating countries, in summary 24 countries, including the host country, were involved in the exercise, which alone shows the increasing importance of this international exercise beyond the Western alliances.

Foreign active participants

A regular visitor is the Pakistan Air Force, which participated in the exercise for the 10th time. This

Two Azerbaijani Air Force Su-25 *Frogfoot* close air support aircraft lining-up on the runway, ready for take-off

Overflight at the media day of two Azerbaijani Air Force Su-25 *Frogfoot*'s, two Turkish Air Force F-4E 2020s, and two Turkish Air Force F-16 s with SOLOTÜRK color scheme



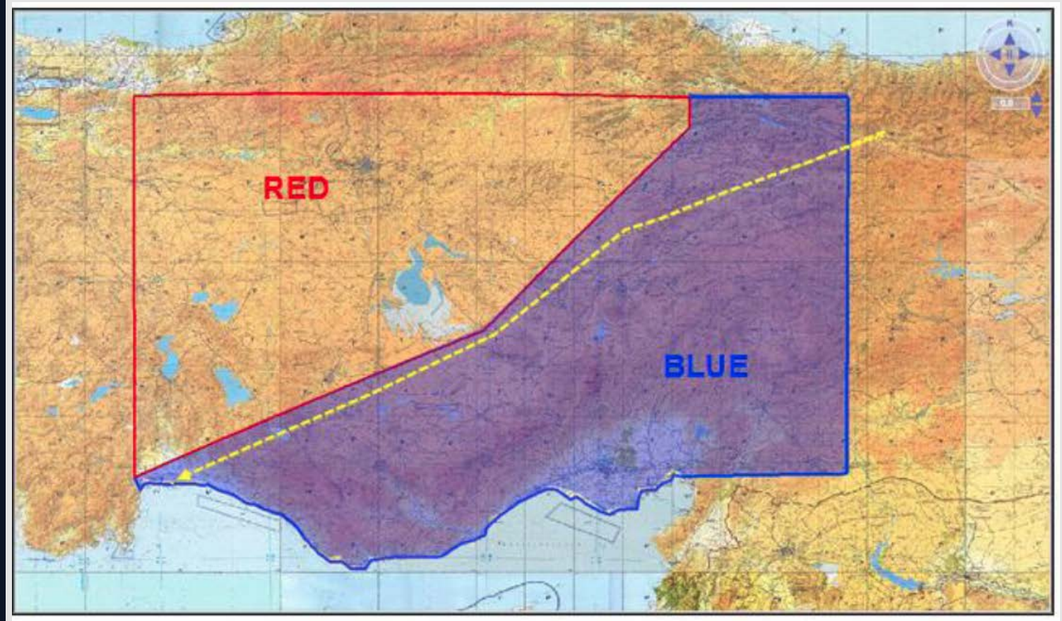
year the PAF sent five JF-17 *Thunder* of the 16th Squadron *Black Panthers*, based at Minhas/ Kamra Air Force Base, to Konya.
Another important guest this year was once again the Qatar Emiri Air Force. In recent years, the relationship between Turkey and Qatar has increased and they have expanded their military cooperation in various fields. The Qatari Air Force brought four brand new Dassault Rafale multirole fighter jets to Konya. The jets are from the 1st Fighter Wing from the Al Adiyat Squadron based at Tamin. For the Turkish Air Force, the participation of the Qatari Rafale's were probably very welcome. This could be a gradual approach to the technology and the maneuverability of these jets, which the Greek Air Force has also acquired. And the Pakistan Air Force will also have taken advantage of the opportunity to take a closer look at this jet too, which has also been acquired by the Indian Air Force.
One of the eagerly awaited "guests" for this year's edition of AE 2021 was certainly the participation of the Azerbaijan Air Force. Both countries conducted joint exercises in the past, but for the Azerbaijan Air Force this was the first time to participate in Anatolian Eagle. The Air Force transferred two MiG-29 from Nasosnaya AB and two Su-25 from Kudamir AB to Konya. A long-awaited wish of many photographers to get these two types in front of their lenses.
The NATO (NAEW&CF) E-3A Component deployed a detachment of one E-3A AWACS and 42 personnel to the exercise. The NATO Force uses Konya Air Force Base as a FOB (forward operation base), so usually a minimum of a single E-3A is permanently based here in Konya.
Additional information on Turkish Air Force participants
The host nation provided the largest contingent with 40 x F-16 C/D's (113th, 132nd, 151st, 152nd, 181st, and 191st Squadrons), 1 x Boeing E-7T (131st Squadron), 2 x KC-135R (101st Squadron) and 1 x ANKA-S (302nd Squadron. In addition, there was the Turkish Navy contingent with two vessels and two fast attack crafts.
The Red Force aggressors of the resident unit 132 Filo, were the most conspicuous F-16s at the exercise, because they where given red stripes on the vertical and horizontal stabilizers to emphasize their Red Force designation.
For the first time, the F-4E Phantom's of the Turkish Air Force, which were usually always represented in significant numbers at the exercise in the past, were not present this year. Here we are excited to learn what will happen with the Phantom in the future, since the cancellation of the F-35 program by the U.S. will leave a gap in the air defense until the first flight of the indigenously developed 5-generation multirole fighter TAI TFX.

The exercise

This exercise provides the perfect platform to perfect the skills and training of the individual pilots and to train the cooperation between the different countries with different combat aircraft to be ready for action at any time if required. This can only be practiced if the exercise was conducted in a real world scenario. Therefore, an imaginary Red Land was created. Red Land represented a country with a population of 40

Azerbaijani AF Su-25 *Frogfoot*

Azerbaijani AF Su-25 *Frogfoot* after landing with flaps and speedbrakes fully depolyed



million, a very poor economy and a high crime rate, which had been thrown off balance by a military coup. Blue Land had the task of combating the threats emanating from Red Land and ensuring stability in the region. In addition, air sovereignty had to be established. The fictional democracy Blue Land had 50 million inhabitants, a modern army and an alliance with the world's leading countries. This was the core task for this year's edition of Anatolian Eagle 2021.
During these missions, Blue Force participants were confronted with a wide variety of threats from the Red Force and several ground-based air defense systems. The individual missions were monitored by the E-7T *Peace Eagle* from the Turkish Air Force and the E-3A AWACS from the NATO, which transmitted the current status of the missions, such as the engagement of ground targets and the fight against enemy aircraft live to the AE training center. Both aircraft are able to provide a real time battlefield overview via data link such as targets, location of friendly forces in the region and tactical information do defeat enemy forces. These two surveillance aircraft and the HQ of the Anatolian Eagle Training Centre formed the White Force.
During the International Anatolian Eagle Exercise, the certification of the Turkish Air Force (TurAF) elements committed to the NATO Response Force (NRF) was also carried out for the first time. The combat readiness and interoperability of 6 x F-16s, 1 x KC-135R tanker aircraft, and 6 x Stinger Air Defense Teams, committed by the Turkish Air Force to the Very High Readiness Joint Task Force (VJTF) as part of NRF was evaluated.

Media Day
This year too, the Turkish Air Force invited to a Media Day. The commanding officer of the AE training center gave a main briefing before the first training missions started. Senior officers from the actively participating countries as well as from countries who sent observers also attended the Media Day.
Although the legendary McDonnell Douglas F-4E 2020 Terminators of the 111 Filo *Panther* did not actively participate in the exercise this year, they showed remarkable presence during the media day, the most beautiful addition to this year's edition of Anatolian Eagle 2021.
Besides, the Turkish Air Force did not miss the opportunity to present the new display program from SOLOTÜRK and the Turkish Stars to the invited official representatives from military, politics and media. During the lunch break, the well-known Turkish Armed Forces Mehteran Unit performed Mehter marches and music from the age of the Ottoman Empire to the invited guests.
Present at the media day were Commander of the Air Force of the Turkish Republic, Army General Hasan Kucukakyuz, Deputy Commander of the Azerbaijan Air Force, Major General Namig Islamzade, Chief of the Air Staff from the Pakistan Air Force, Air Chief Marshal Zaheer Ahmad Babar Sidhu only to name a view.
Turkish training exercises promote relationships.

Summary
The objective of the Anatolian Eagle exercise is

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

The Anatolian Eagle Training and Anatolian Phoenix Exercises are "the right place to be". They give the opportunity to compare and 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 Austria and Germany, the Turkish Air Force Public Affairs Office Headquarters in Ankara for the perfect organization and especially to the personnel from AETC (Anatolian Eagle Training Center) for their fantastic support and hospitality on base. See you in 2022.

The Qatar Emiri AF participated with two Rafale single-seaters (above) and two Rafale two-seaters (below) of Al Adiyat Squadron

Turkish Air Force F-4E 2020 of 111 Filo


111.Filo
"PANTERLER"
Celebrating 70th Anniversary of
70 NATO
YEARS OF


111.Filo
"PANTERLER"
60
YEARS
of SERVICE
F-4
PHANTOM

Turkish Air Force F-16D

Turkish Air Force

1 F-16D Block 40CF of 182 filo
2 F-16D Block 40CF of 191 filo
3 F-16D Block 50CF of 152 filo
4 F-16D Block 50CF of 152 filo
5 F-16D Block 40CF of 132 filo
6 F-16D Block 40CF of 182 filo
7 F-16D Block 50CF of 113 filo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TANGO-1 NEVER DIES

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Turkish Air Force

1	F-16C Block 40CF of 182 filo
2, 3	F-16C Block 40CF of 152 filo
4, 5, main	F-16C Block 50CF of 113 filo

Pakistan Air Force JF-17 *Thunder of* 16 (MR) Sqn *Black Panthers*

Azerbaijan Air Force MiG-29S of 411 IEA

Turkish Air Force E-7T *Peace Eagle* of 131 Filo *Dragons*

▲ Pakistan AF C-130E of 6 (ATS) Squadron
▼ Turkish AF C-130E of 222 Filo

Iraqi AF C-130J of 23 Transport Squadron ▲
Pakistan AF C-130E of 21(ATS) Squadron ▼

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1	Turkish AF CN235M-100
2	Turkish AF CN235M-100 of 211 Filo
3	Turkish AF CN235M-100 of 135 Filo
4, 5	Qatar Emiri AF C-17A of 10 Squadron

PARTICIPANTS

Country	Type of aircraft	Unit	Homebase
Azerbaijan	2 x Mig-29S	411 .IEA	Nasosnaya
Azerbaijan	2 x Su-25	Su-25 Eskadrilya	Kyurdamir
NATO	1 x E-3A	NAEW&CF	Geilenkirchen
Pakistan	5 x JF-17 Thunder	16 (MR) Sqn «Black Panthers»	Minhas
Qatar	4 x Rafale DQ/EQ	Al Adiyat Squadron	Tamim
Turkey	5 x F-16C/D Block 30/50	113 Filo «Gazelle»	Eskisehir
Turkey	10 x F-16C/D Block 30/50	132 Filo «Dagger»	Konya
Turkey	6 x F-16C/D Block 40/50	151 Filo «Fighting Wolf»	Merzifon
Turkey	6 x F-16C/D Block 40	152 Filo «Raiders»	Incirlik
Turkey	8 x F-16C/D Block 40/50+	181 Filo «Leopard»	Diyarbakir
Turkey	3 x F-16C/D Block 40	192 Filo «Tiger»	Balikesir
Turkey	1 x KC-135R	101 Filo «Asena»	Incirlik
Turkey	1 x E-7T	131 Filo «Dragon»	Konya
Turkey	1 x Anka-S UAV	302 Filo «Light»	Incirlik

VISITORS/SUPPORT

Country	Type of aircraft	Unit	Homebase
Iraq	C-130J-30	22 Sqn	Bagdad
Pakistan	Ce560XL	12 (VIP) Sqn	Islamabad Intl
Pakistan	C-130E	6 Sqn	Islamabad Intl
Quatar	A-17A	10 Sqn	Al Udaid
Turkey	F-4E-2020	111 Filo «Panther»	Eskisehir
Turkey	CN-253M-100	135 Filo «Fire»	Konya
Turkey	Ce650 Citation XL	212 Filo «Hawk»	Ankara
Turkey	C-130E	222 Filo «Flame»	Kayseri
Turkey	F-16C Block 30	Solotürk	Konya

NATO E-3A AWACS of AEW&CF

Pakistan AF Ce560XL of 12 (VIP) Squadron

Turkish AF Ce650 of 212 Filo

FLASHBACK

FROM NVA TO LUFTWAFFE

PART 1 MIG-21 AND MIG-29

TEXT: RALF PETER WALTER
IMAGES: AS STATED

With the reunification of West and East Germany in October 1990, a wide variety of military aircraft of the Nationale Volksarmee (NVA – National People's Army) became part of the inventory of the Deutsche Luftwaffe (German Air Force). In this photo-report we feature the MiG-21 and MiG-29 with NVA and Luftwaffe markings.

A total of 558 MiG-21 in ten different versions were taken over from the NVA. None of the MiG-21's entered active service in the Luftwaffe. Most of them were scrapped and some were donated to museums.

Before the reunification all MiG-29 were assigned to the Jagdgeschwader 3 at Preschen Air Base. In October 1990, all 20 MiG-29A (single-seat all-weather tactical fighter and interceptor) and four MiG-29UB (two-seat conversion-/operational trainer) became part of the inventory of the Luftwaffe. The Jagdgeschwader 3 was redesignated Erprobungsgeschwader MiG-29 (Mig-29 Test Wing), still based at Preschen AB. From 1992, after extensive modifications andin coordination with MiG/MAPO, the Luftwaffe aircraft were designated MiG-29G (single-seater) and MiG-29GT (two-seater). In early 1993 all MiG-29s were transferred to the Jagdbombergeschwader 35 (Fighter Bomber Wing 35) which in September 1997 was renamed to Jagdgeschwader 73 "Steinhoff" (JG 73 "S") at Laage AB in the eastern Part of Germany. With the MiG-29 and the F4F Phantom II the JG 73 "S" operated two types of fighter aircraft at the same time. The MiG-29 was taken out of service in August 2004, after having accumulated more than 30,000 flighthours in the Luftwaffe. Of the 24 aircraft one MiG-29G crashed on 25 June 1996.

This MiG-21M of the Jagdgeschwader 2 was registered with 22+65 before being scrapped. The aircraft carries an UB-16 rocket launcher under each wing and a centerline mounted fuelpod. ***Photo*** *Ralf Jahnke*

Versions and number of NVA MiG-21s taken over by the Luftwaffe

Version	Role	From NVA to Luftwaffe
MiG-21bis	Limited all-weather fighter	46
MiG-21F-13	Day interceptor fighter	75
MiG-21M	Limited all-weather fighter	87
MiG-21MF	Limited all-weather fighter	63
MiG-21PFM	Limited all-weather fighter	53
MiG-21SPS	Limited all-weather fighter	83
MiG-21SPS/K	Limited all-weather fighter	52
MiG-21U	Two-seat conversion-/fighter trainer	45
MiG-21UM	Two-seat conversion-/fighter trainer	37
MiG-21US	Two-seat conversion-/fighter trainer	17

This two-seat version MiG-21UM of the Jagdgeschwader 2 was used as conversion-/fighter trainer. It received the Luftwaffe serials 23+72 before being scrapped. ***Photos this page*** *Ralf Jahnke*

▲ MiG-21SPS/K of Jagdgeschwader 1, to become 22+04. ***Photo*** *Gerhard Hartmann*
▼ MiG-21SPS/K of Jagdgeschwader 7, received no Luftwaffe serial. ***Photo*** *Klaus Faber via Gerhard Lang*

MiG-21M of Jagdgeschwader 2, received the Luftwaffe serial 22+69. ***Photo*** *Ralf Jahnke* ▲
MiG-21M of Jagdgeschwader 2, received the Luftwaffe serial 22+67. ***Photo*** *Ralf Jahnke* ▼

MiG-21SPS/K of Jagdgeschwader 1 at Holzdorf AB, former NVA serial 441. ***Photo*** *Gerhard Hartmann*

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1 MiG-21UM, ex Taktische Aufklärungsfliegerstaffel 87 with NVA serial 213. ***Photo*** *Ralf Jahnke*
2 MiG-21UM, ex Fliegerausbildungsgeschwader 15 with NVA serial 205. ***Photo*** *Ralf Jahnke*
3 MiG-21US, ex Fliegerausbildungsgeschwader 15 with NVA serial 250. ***Photo*** *Ralf Jahnke*
4 MiG-21UM, ex Jagdgeschwader 8 with NVA serial 245. ***Photo*** *Gerhard Hartmann*
5 MiG-21UM, ex Jagdgeschwader 8 with NVA serial 269. ***Photo*** *Gerhard Hartmann*

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1 MiG-21MF, ex Jagdgeschwader 1 with NVA serial 510. ***Photo*** *Ralf Jahnke*
2 MiG-21bis, ex Jagdgeschwader 8 with NVA serial 873. The centerline pod contains the SPS-141 electronic jammer. ***Photo*** *Ralf Jahnke*
3 MiG-21M, ex Taktische Aufklärungsfliegerstaffel 87 with NVA serial 621. ***Photo*** *Gerhard Hartmann*
4 MiG-21bis, ex Jagdgeschwader 8 with NVA serial 900. ***Photo*** *Gerhard Hartmann*
5 MiG-21M, ex Jagdgeschwader 2 with NVA serial 493. ***Photo*** *Klaus Faber via Gerhard Lang*

MIG-29A/UB OF THE NVA JAGDGESCHWADER 3 AT PRESCHEN AB

▲ MiG-29A to become 29+12. ***Photo*** *Hans Redemann via Gerhard Lang*
▼ MiG-29A to become 29+16. ***Photo*** *Ralf Jahnke*

MiG-29A to become 29+17. ***Photo*** *Gerhard Lang* ▲
MiG-29A. ***Photo*** *Ralf Jahnke* ▼

MiG-29A to become 29+01.
Photo *Gerhard Hartmann*

MiG-29UB to become 29+23.
Photo *Gerhard Hartmann*

▲ MiG-29A of the Erprobungsgeschwader MiG-29, ex NVA serial 604. ***Photo*** *Ralf Jahnke*

MiG-29G of Jagdgeschwader 73 *Steinhoff*, ex NVA serial 785. ***Photo*** *Ralf Jahnke* ▼

MiG-29G of Jagdgeschwader 73 *Steinhoff*, ex NVA serial 676. ***Photos*** *Ralf Jahnke* ***(above)*** *and Gerhard Hartmann* ***(below)*** ▼

MiG-29A, 29+08, ex NVA serial 669 assigned to the Erprobungsgeschwader MiG-29 until 31.05.1993 **(top and below middle)** and from 01.06.1993 as MiG-29G assigned to Jagdgeschwader 73 *Steinhoff* **(below left and below right)**. ***Photos this page*** *Ralf Jahnke*

MiG-29G, 29+02, ex NVA serial 607 assigned to Jagdgeschwader 73 *Steinhoff* **(main image and inset left)** and assigned to Erprobungsgeschwader MiG-29 **(inset right)**. ***Photos*** *Ralf Jahnke*

▲ MiG-29G of Jagdgeschwader 73 *Steinhoff*, ex NVA serial 670. ***Photo*** *Ralf Jahnke*
▼ MiG-29A of WTD 61, ex NVA serial 778. ***Photo*** *Gerhard Lang*

MiG-29G of Jagdgeschwader 73 *Steinhoff*, ex NVA serial 615 with two R-73E *Archer* and four R-27R *Alamo*. ***Photo*** *Ralf Jahnke* ▲
MiG-29A of Erprobungsgeschwader MiG-29, ex NVA serial 670, lost in a crash on 25.06.1996. ***Photo*** *Ralf Jahnke* ▼

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MiG-29GT, 29+23, ex NVA serial 179 assigned to Jagdgeschwader 73 *Steinhoff*.
Photos *Gerhard Lang* ***(top)*** *and Ralf Jahnke* ***(bottom)***

MiG-29GT of Jagdgeschwader 73 *Steinhoff*, ex NVA serial 148. ***Photo*** *Ralf Jahnke*

MiG-29GT of Jagdgeschwader 73 *Steinhoff*, ex NVA serial 185. ***Photo*** *Ralf Jahnke*

HOT BLADE 2021

TEXT: JORIS VAN BOVEN
IMAGES: AS NOTED

HOT BLADE 2021, the 15th helicopter exercise organised under the umbrella of the European Defence Agency's Helicopter Exercise Programme (HEP), will kick off on 16 June 2021 at Beja AB in Portugal and ended on 30 June.

A total of 23 air assets (15 helicopters + 8 fixed wing) and some 550 military personnel from five countries – Austria, Belgium, the Netherlands, Slovenia and Portugal – took part in this exercise hosted by the Portuguese Air Force. In addition, Italy, Serbia, Slovakia, Switzerland, and several international organisations sent exercise observers.

The exercise's main focus was to allow crews to practice operations in various environments during day and night sorties, replicating the challenging conditions that participant forces are expected to encounter when deploying to different theatres of operation.

Objectives

The main objectives of HOT BLADE 2021 are to:

- enhance tactical interoperability between helicopter units from the participating countries by using the COMAO concept in a combined, joint, realistic and challenging environment and to learn and practice common helicopter Tactics, Techniques and Procedures (TTPs). The focus will be on COMAO with live firing and trooping
- train and practise TTPs with and against fighter jets and electronic warfare threats on the ground
- improve interoperability in training and operational tasks with ground forces involvement (night vision goggles operations, low level flying, formation flights, forward arming and refueling point training, gunnery, etc…) in a live/simulated, full spectrum environment.

Program

Participating crews flew diverse day and night COMAO missions and executed, among others

- Air Assault (AA)
- Special Operations Aviation (SOA), e.g. fast rope techniques; insertion/extraction and air-to-surface firing
- Combat Service Support (CSS)
- Close Air Support (CAS) including Urban CAS and Emergency CAS
- Convoy/helicopter escorts

This Portuguese Air Force EH101 deploys a Special Forces team by fast rope technique. ***Photo*** *Portuguese Air Force*

- Reconnaissance and Surveillance
- Combat Search and Rescue (CSAR)
- Personnel Recovery (PR)
- Medical Evacuation (MEDEVAC) and Casualty Evacuation (CASEVAC). SEVAC).

They also trained special procedures like marshalling procedures, fast rope and rappelling techniques, Special Patrol Insertion/Extraction (SPIE), and air-to-surface live firing (helicopter door gunnery and sniper training).

HOT BLADE 2021 also provided opportunities to practice multinational and national formation and training with the Special Operations Forces (SOF) units (infiltration and exfiltration) and enhance crews' skills in using the HEP Standard Operating Procedures (SOP) and COMAO planning procedures in the conduct of flight planning and operations.

Eight instructors from Austria, Germany, the Netherlands, and Sweden trained in EDA's Helicopter Tactics Instructors Course (HTIC) accompanied by an instructor from the Netherlands trained on the Dutch Helicopter Weapons Instructor (HWI) course jointly formed the HOT BLADE 2021 Mentor Team, ready to support the multinational crews in preparation and execution of the challenging COMAO missions. EDA's Chief Instructor (CI) Team managed and supervised the rest of the components of the Mentor Team to ensure consistency and the best possible uptake of previous lessons learned in other programmes and during deployment.

Distinguished Visitors Day

On 24 June, the Distinguished Visitors Day took place. Representatives from EDA participating Member States as well as Switzerland and Serbia attended and observed various live training sessions. The Joint Air Power Competence Centre (JAPCC), the NATO Special Operations Headquarters (NSHQ) and the European Air Group (EAG) were also invited.

Background

The Helicopter Exercise Programme (HEP) is part of EDA's wider helicopter portfolio aimed at providing Member States with a joint European framework to develop, consolidate and share best practices to meet the challenges of flying helicopters in a modern operational environment. Other components of this portfolio are the Helicopter Tactics Course (HTC) programme, the Helicopter Tactics Instructor Course (HTIC), programme and the future Multinational Helicopter Training Centre (MHTC).

A Portuguese Air Force F-16 flying over a Portuguese Air Force EH101 and a Slovenian Air Force AS532 during a COMAO exercise. ***Photo*** *Joris van Boven*

PORTUGUESE AIRFORCE

Photo *Joris van Boven*

Photo *Portuguese Air Force*

EH101 *Merlin* assigned to Squadron 751 *Pumas* **(top left & top right)** and AW119 *Koala* assigned to Squadron 552 *Zangões* **(*below*).**

PARTICIPATING HELICOPTERS AND AIRCRAFT

Country	Type	Unit
Austria	PC-7	Airplane Training Squadron
Austria	OH-58 *Kiowa*	Light Utility Helicopter Squadron
Portugal	AW119 *Koala*	Squadron 552 *Zangões*
Portugal	EH-101 *Merlin*	Squadron 751 *Pumas*
Portugal	F-16 *Fighting Falcon*	Squadron 201 *Falcões* Squadron 301 *Jaguares*
Portugal	P-3C CUP+ *Orion*	Squadron 601 *Lobos*
Slovenia	AS-532 *Couga*	151 Helicopter Squadron
The Netherlands	CH-47 *Chinook*	298 Squadron
The Netherlands	AS-532U2 *Cougar*	300 Squadron

Photo Portuguese Air Force

Photo *Portuguese Air Force*

The EDA Helicopter Exercise Program (HEP)

The European Defense Agency (EDA) was established in 2004 by several European States which believed that there was a need for a common security and defense policy. The European Union's defense capabilities are in this way linked to each other. This means conducting and supporting collaborative European defense projects and studies on technological progress are jointly realized by one European army. One of the tasks of the EDA is to facilitate a large training program in which the helicopter units in Europe work together. In consultation with the participating member states, there are several factors identified which were assumed to be the main causes of non-availabilities of the helicopters. One of the biggest show stoppers herein are a lack of properly trained crews, a lack of technical equipment for the various helicopter types, and the challenges of logistical support for deployment during operations. The EDA helped the participating member states in addressing these issues with a central training element. The EDA has launched the Helicopter Exercise Program (HEP) to solve these problems. Since the start of the HEP, the EDA has been working to integrate the lessons and experiences which were learned from previous workouts in the planning for the next editions of the HEP.

The HEP is a training program of the EDA and was launched in 2009. The program's final agreement was formally signed in November 2012. The HEP program currently has 14 participating Member States, namely; Austria, Belgium, the Czech Republic, Germany, Greece, Finland , Hungary, Italy, Luxembourg, the Netherlands, Portugal, Sweden, Slovenia and the United Kingdom (the UK left the EDA after the Brexit). To improve the operational skills of the helicopter crews throughout Europe, the HEP program plays an increasing role in the deployable helicopter capabilities for contingency operations. The exercises focus on individual, environmental and multinational training, increasing interoperability through practical experiences, sharing of operational experiences and developing common tactics, techniques and procedures. The aim of the HEP program is to be an integral part of the reinforcement of the European capacity and interoperability within a time frame of ten years. Between 2009 and 2021, many helicopters, aircrew members, and staff members in supporting roles from 19 Member States participated in the HEP exercises. Some 15 'Blade exercises' took place in several countries such as France (GAP), Spain (Ex Azor), Italy (Italian Blade), Portugal (Hot Blade), Finland (Cold Blade) and Belgium (Green Blade & Black Blade), FireBlade (Hungary). In addition to these practical training sessions., the Helicopter Tactics Symposium was held several times in which Member States discussed ideas and theories together.

Future, from HEP to MHTC

In 2019, the decision was made to establish the Multinational Helicopter Training Centre (MHTC) at Sintra Airbase in Portugal. After years of sponsoring by the EDA, the HEP will be moved to a standing organisation, the MHTC.

The objective is to make this MHTC a permanent European centre of excellence for advanced helicopter training. It will deliver administrative and training functions to serve both as a central hub for the coordination of helicopter training across Europe, but also as the provider of the next iteration of the Helicopter Exercise Programme (HEP), Helicopter Tactics Course (HTC), and Helicopter Tactics Instructor Course (HTIC) programmes currently run by the Agency.

Photo Portuguese Air Force

The centre is expected to reach initial operational capability (IOC) by the end of 2022, although the Covid-19 crisis impact may alter this date, and it is estimated it will operate for a period of 15 years, which can be extended to 30 years following the agreement of its contributing Member States.

The next major milestone in the preparation is the harmonisation of the MHTC Technical Agreement, expected in 2021, and the build-up of the infrastructures in Sintra AB which should be finished before the IOC MHTC.

The move to Sintra AB will be gradual, starting with the transfer of EDA's helicopter training centre from its traditional location, RAF Airbase Linton-on-Ouse in the United Kingdom (in the process of being dismantled), to Sintra AB which will already be operational, on a provisional basis, between mid-2020 and the end of 2022 when it will fully take over its new MHTC role. The full set of training equipment will be moved from Linton-on-Ouse AB to Sintra AB, except the helicopter simulator which is being replaced with a new one.

Sintra AB is being turned into the rotary wing hub of the Portuguese Air Force that is expected to be fully operational by 2023.

Photo *Portuguese Air Force*

A Portuguese Air Force F-16AM, directed by an FAC (Forward Air Controller), inbound on a target during a CAS (Close Air Support) mission.

Photo *Joris van Boven*

Swiss Detachment (Obersever)

In december 2020, the Swiss 'Bundesrat' decided that the Swiss Air Force will join EDA's Helicopter Exercise Program (HEP). For HOT BLADE in 2021, Swiss observers arrived at Beja airbase on Monday in a Swiss Airforce Challenger. Probably one of the next BLADE exercises will see the participation of Swiss helicopters.

Photo *Joris van Boven*

top Portuguese Air Force P-3C CUP+ *Orion*, operated by Squadron 601 *Lobos* and ***bottom*** Swiss Air Force Challenger 604.

Dutch Detachment

The Dutch Air Force helicopters, the Dutch Army, sent a large contingent of 11 LuchtMobieleBrigade (11 AirMobileBrigade) to Portugal to train with the various helicopters during the exercise

Interview with Dutch Capt. "SIMBA", a CH-47 Pilot Flight Commander of 298 squadron with about 1,700 hours. He had the role of 'Chief Air Operations' during the exercise:

"*The aims and expectations of this exercise were safe execution of multinational collaboration during Composite Air Operations (COMAO) and successfully complete the Qualification Training (QT) Degraded Visual Environment (DVE) landings for the Dutch Cougar and Chinook crews.*
The most special demand for this exercise was the fact that they required hot-refueling on Beja AB and on FOB Tancos. Therefore, we needed extra Portuguese and Dutch POL and fire rescue support.
The Dutch S3Air detachment consisted of approximately 66 participants. Of them, there are 30 pilots, 25 loadmasters, and 11 (crew) members of mission support. Every pilot and loadmaster must be type rated and have finished the Mission Qualification Training. Depending on the lead tasks given to the pilots during the COMAO, some need to have finished the Pilot In Command QT, Section Lead QT or Flight Lead QT.
In total, the Dutch helicopters participated 46 times with Cougars and Chinooks in the COMAO and we flew 45 DVE training missions."
Capt. "*SIMBA" described the support of the Portuguese Air force as "(…) incredible. It is very impressive how fast Beja AB is able to host all these countries, definitely during this pandemic.*"

Photo *Joris van Boven*


Photo *Joris van Boven*

The Royal Netherlands Air Force 300 Squadron at Gilze-Rijen AB deployed three AS532 to Beja AB.


Photo *Jorge Ruivo*

***Photo** Joris van Boven*

***Photo** Joris van Boven*

Photo *11LMB kpl Westerveld*

The Royal Netherlands Air Force 298 Squadron at Gilze-Rijen AB deployed CH-47s to Beja AB.

***Photo** 11LMB kpl Westerveld*

Photo *Portuguese Air Force*

Austrian Detachment

Interview with Austrian DetCo LtCol Hitzenhammer:

"The Austrian detachment consists of around 50 persons, with around 15 pilots.
Four PC-7 aircraft and three OH-58 Kiowa flew to Beja AB, while the rest of the detachment and the materials were brought by a C-130 Hercules from Austria.The Austrian pilots are a mix of young and experienced pilots. They are all trained in the HEP SOP (Helicopter Exercise Programme (HEP) Standard Operating Procedures (SOP)). Most training is done in Austria for Austrian (alpine) regions, but they also train for operations on the Balkans, where Austrian helicopters are active in Bosnia.
There is a continuous exercise program in Austria, whereby the HEP exercises play an important role as one of the chief instructors is attached to the HEP.
The goal for this exercise was to take part in international COMAO planning, for both pilots and planners.
Being deployed from home in the warm/sandy environment of Beja AB means that the Austrian detachment has to rely on themselves and on all the equipment brought to Portugal; as spare parts need to be flown-in from Austria.
The evaluation of the HB21 exercise will be done directly after the exercise, followed by a formal report a few weeks later for the Austrian staff.
Besides the helicopters, the PC-7s are present in Portugal. PC-7s are used in Austria for basic training for both helicopters as fighter pilots. The PC-7s are used for JTAC procedure training during the exercise and they are used as RED AIR."

Photo *Joris van Boven*

The Austrian Bundesheer sent four PC-7s which are used for JTAC (Joint Tactical Air Controller) procedure training and three OH-58 *Kiowa* helicopters.


Photo *Portuguese Air Force*

Photo *11LMB kpl Westerveld*

Slovenian Detachment

Interview with Slovenian Capt. Mrlak, a Cougar pilot from the 15th Wing/151 Helicopter Squadron, located at the Cerklje ob Krki Airbase. He has some 1,400 flying hours on the Cougar and about 300 hours on fixed-wing aircraft.

"*The Slovenian detachment consists of one AS-532 Cougar helicopter, out of the four Cougars in the Slovenian inventory. The detachment consists of 26 persons; five for the SA-24 (Surface to Air Missile system) simulator and 21 persons from the 15th Wing/151 Helicopter Squadron. Six pilots form three crews for the Cougar helicopter. Since 2010, the Slovenian helicopters are part of the EDA helicopter program and they have participated in all the Blade exercises since. As there are no dust/sand environments to train at home, the Slovenians like this exercise in Portugal. They are always looking forward to training with other countries, to find a common way in planning the CAMAOs. Also the challenge lies in flying with other types of helicopters and other types of aircraft, to use similar but also different (national) procedures.*"

Capt Mrlak is also an air mission commander for the next wave. He will receive the ATO (Air Tasking Order) and will start planning the mission in the afternoon. "*The planning will continue in the morning until noon, until the wave will start flying around 14:00. After the wave, a debriefing will take place to evaluate. In the Blade exercises, the HEP Standard Operating Procedures (SOP) will be followed and the participants will put aside their nation SOPs during the afternoon mission. In the morning, the participants are free to fly their own training missions in the Portuguese airspace and Landing Zones. The Slovenians use the mornings to train for 'brown-out' landings by the 'young' pilots who will not participate in the HotBlade exercise itself. In order to participate in the exercise, the pilots preferred requirement is a minimum of 500 flying hours and for night missions at least 100 hours of Night Vision Goggles is required during HOT BLADE. It is preferred to have followed one or more HEP courses before the exercise. These EDA HEP courses offer, next to theoretic courses and academics, some simulated COMAO exercises to the students.*

This year, in Slovenia, the main exercise was ADRIATIC STRIKE and the BLACKSWAN exercise in Hungary. During the year, they try to combine smaller exercises into larger international exercises, but Corona cancelled a lot of these exercises in the last couple of months. The Cougar helicopters are used for the BLADE exercises, while the older Bell helicopters have their focus on Helicopter Emergency Medical Services (HEMS) and (mountain) Search And Rescue (SAR) missions.

This exercise will train the helicopter crews to fly together. In case an international crisis occurs, the crews know each other and the procedures have been trained. They will not be 'scared of each other' during a first mission in action. During the missions, the Cougar helicopters can be armed. On the side doors, the 7.62mm machine gun. For self defence, the ISS-YS system is installed to protect the helicopter against laser, radar and infrared attacks."

The Slovenian Air Force participated with one of its four AS532 *Cougar*'s in the exercise. The techique used to depoly Special Forces over water is called HELOCASTING.

Photo *Joris van Boven*

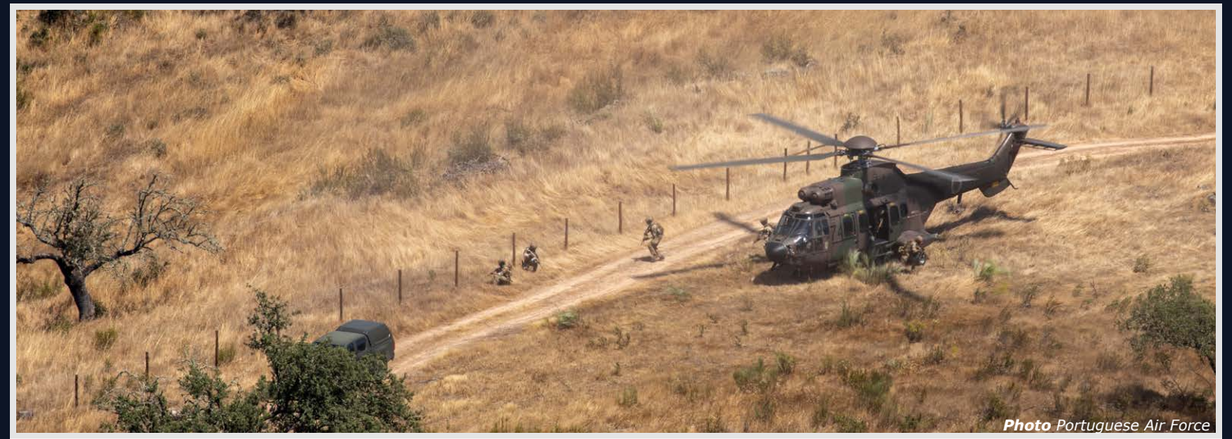

Photo *Portuguese Air Force*

Photo *Portuguese Air Force*

FLORENNES AIR BASE

SPOTTERSDAY 2021

TEXT: KRIS CHRISTIAENS
IMAGES: KRIS CHRISTIAENS AND GERT TRACHEZ

Due to the strict measures in the fight against the coronavirus (COVID-19), the planned Belgian Air Force Days in 2021 were canceled. Nevertheless, a special spotterday was organized on 24 June 2021 at the Florennes Air Base for about four hundred visitors. This event was all about the 75th anniversary of the Belgian Air Force and the 80th anniversary of the 350 Squadron which is based at Florennes AB. The spotters and aviation enthusiasts had to park their car along the secondary runway after which everyone had to stay near their car to watch the show. During the show in the afternoon, everyone could enjoy impressive demonstrations of the official demo teams of the Belgian Air Force: the Red Devils with their SIAI-Marchetti SF260M+ training aircraft, the Agusta A109 Razzle Blade helicopter, and the General Dynamics F-16AM Dark Falcon. In addition, for this spotterday, there were also demonstrations of Belgian Air Cadets Glaser Dirks DG505, a Lockheed C-130H transport aircraft, and a Spitfire warbird. Throughout the afternoon, visitors could also enjoy fly-bys of an Airbus A330 MRTT tanker aircraft and an Airbus A400M military transport aircraft. Unfortunately, the weather conditions in the afternoon were not ideal due to low clouds but as the evening came, the weather improved and everyone had the chance to drive to the other side of the air base. There, everyone had the opportunity to have a close look at the participating aircraft and helicopters. As it darkend, some F-16s, the Red Devils, and the A109 Razzle Blade helicopter were specially illuminated so that they could be photographed nicely. Despite the bad weather in the afternoon, this spottersday was very successful because it was very well organized and the aircraft were set up very well during the sunset shoot.

Nicknamed "Dark Falcon", this F-16MLU of the Belgian Air Force F-16 Demo Team was first presented to the public in 2018.

The "Dark Falcon" in action and in formation with a Spitfire LF Mk. XVIe

F-16 with a special paint scheme on the occasion of the 75th anniversary of the Belgian Air Force

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1	Royal Netherlands Air Force Airbus A330 MRTT
2	Belgian Air Force F-16MLU
3	Belgian Air Force SF-260M+ of the *Red Devils*
4, 5	Belgian Air Force A109 with special paint scheme, nicknamed "Razzle Blade"

F-16 with a special paint scheme on the occasion of the 80th anniversary of the Belgian Air Force's 350 Fighter Squadron

▲ Belgian Air Force C-130H
▼ Belgian Air Cadets L-21B

Luxemburg A400M ▲
Belgian Air Cadets Glaser Dirks DG505 ▼

SAR EXERCISE 'SATER 1-21'

REPORT AND IMAGES
BY MARCO MUNTZ

The region of Lombardy hosted this year's first edition of the Italian national search and rescue (SAR) exercise SATER on 23 June. The mountainous area just south of Lake Como, known as the Triangolo Lariano, was selected as exercise area in remembrance of the crew involved in an incident with an AB-212AM from the Squadriglia Collegamento e Soccorso di Linate on 26 April 2005. The helicopter impacted Monte Palanzone within the Triangolo Lariano on a training flight, costing the lives of five crew members. This SATER exercise in the province of Como was already planned for last year in coincidence with the 15th anniversary of the AB-212 mishap, but due to the COVID-19 pandemic, it had to be postponed. The paraglider landing field of the Monte Cornizzolo Aero Club at Suello, 10 kilometers southwest of Lecco, was chosen as the Posto Base Avanzato (PBA) or remote operating base for the duration of the exercise. SATER 1/21 (SATER – Soccorso Aereo Terreste) was organized by the Comando Operazioni Aeree (COA) of the Aeronautica Militare (AM) - Italian Air Force based at Poggio Renatico (Ferrara) in cooperation with the Corpo Nazionale Soccorso Alpino e Speleologico (CNSAS) of Lombardy. The XIX Delegazione Lariana of the CNSAS is responsible for search and rescue operations in the Triangolo Lariano area and was therefore closely involved in the planning of the exercise. The main scope of the exercise was to enhance the synergy and cooperation between the Italian Armed Forces and CNSAS units involved. The exercise provided all participants with the opportunity to train and improve procedures and

The first helicopter to arrive at the forward operating base at Suello was this UH-205A from Venaria Reale based 34° Gruppo Squadroni AVES.

The 34° Gruppo Squadroni is part of 4° Reggimento "Altair" AVES equipped with the UH-205A and primarily operating in mountainous terrain of the Alps and Dolomites. The nickname of 34° Gruppo Sqd AVES, "Toro", refers to the traditional symbol of the city of Turin which is close to homebase Venaria Reale. UH-205A "EI-319" is one of ten helicopters which were modified in 2010 for use in Afghanistan. The Mission Equipment Package (MEP) was primarily focused on enhancing self-protection of the UH-205A against ballistic threats. The UH-205A MEP is equipped with radar, laser and missile warning systems, chaff/flare dispensers, a modified engine exhaust nozzle to decrease the temperature of the exhaust gases by mixing outside air to lower its infrared signature, cabin floor reinforcement and new armoured seats. A doppler radar was installed integrated with GPS and radio altimeter for operations in darkness in combination with NVG and to provide better situational awareness during brown out landings. The upgrade also included new V/UHF radios and a new intercom system.

This UH-205A has its original exhaust nozzle re-installed. The ageing fleet of UH-205A's of the Esercito Italiano will be operated for several more years to come and will be replaced by the UH-169B from 2024.

The actual search and rescue exercise started at 15:00. Teams of the Corpo Nazionale Soccorso Alpino e Speleologico (CNSAS) were taken to the search area within the Triangolo Lariano by the helicopters present. The first one to take CNSAS rescue team members up into the mountains was the TH-500B.

methods to execute a SAR mission in mountainous terrain in the most effective way possible. Three helicopters were dispatched to Suello to support this year's SATER exercise in Northern Italy, the Esercito Italiano sent UH-205A MEP MM80690/EI-319 from 34° Gruppo Squadroni "Toro" based at Venaria Reale (Turin), while the Aeronautica Militare provided TH-500B MM81278/72-15 assigned to the Squadriglia Collegamenti - Milano Linate and a brand new HH-139B, MM81986/15-56, from 83° Gruppo CSAR at Cervia. The latter was only delivered to 15° Stormo in late 2020 and this was the first participation of an HH-139 'Bravo' in such an exercise. The HH-139B has improved operational capacity compared to the 'Alpha' version. Differences include the availability of a double winch (Goodrich Model 44316) and an operator mission console to monitor and manage the on-board equipment such as the (Wescam MX-15D) EO/IR (Electro-Optical/Infrared) FLIR sensor, providing a 360-degree search coverage around the helicopter. The infrared "thermal" high definition images generated by the system, presented to the operator on a screen, are extremely useful during search operations in darkness.

The exercise started in the early morning hours of 23 June with the set up of the remote airfield at Suello from where the CNSAS rescue teams would be launched to and recovered from the search area. The availability of such a Posto Base Avanzato (PBA) is important in case of a so-called max emergenza (maximum emergency) situation like a natural disaster with many possible casualties involved. The PBA will be established close to the search area to make use of all equipment, people, and fuel in the most efficient way possible with the least loss of valuable time during the rescue operation. The Rescue Coordination Centre (RCC) of the Comando Operazioni Aerospaziali is responsible for planning and control of the aerial operation called DIREX Aerea (Direzione delle Operazioni Aerea). The Comando Logistico AM (Italian Air Force Logistic Command) arranges all logistic and operational support which includes mobile communication systems, air traffic control, a meteo station, fire fighting coverage, fuel supply, and flight support service such as a marshaller. The CNSAS organizes the rescue operation on the ground, the DIREX Terrestre (Direzione delle Operazioni a terra) by providing a mobile operation center, support vehicles, rescue teams and their equipment and the availability of medical aid (ambulances). Both the UH-205A and TH-500B landed at Suello late morning while the HH-139B arrived early afternoon after a short delay. The actual search and rescue exercise in the Triangolo Lariano started just after 15:00. Approximately 150 men and women participated in SATER 1/21 including 60 related to the Italian Armed Forces and 50 associates, mainly volunteers, of the CNSAS Lombardy from the sections of Lecco, Como, Varese, and Pavia. In total, five different scenarios

had been prepared with the use of figurants acting as victims to make the exercise as realistic as possible. Four were conducted in daytime which included the search for lost persons during hiking, rescuers themselves who got ill or wounded during rescue operations and locating and rescuing a missing paraglider pilot. The nighttime scenario involved the search and rescue/recovery of a glider pilot after an emergency landing in the mountains. In total, five CNSAS rescue teams participated in the exercise, conducting training in different aspects of rescue operations with helicopters including embarkation and disembarkation with rescue tools, equipment, and stretchers in addition to operating the HH-139's winch. These simulated rescue missions provided the CNSAS teams and helicopter crews an excellent opportunity to work together and improve cooperation while getting a better understanding of each other's procedures and methods. From the pilots' point of view, these kinds of rescue training flights are particularly valuable as flying in mountainous terrain requires special attention and skills due to local winds and unpredictable weather patterns and the effect of high-density altitude on the helicopter's performance in combination with high weights due to the presence of the rescue teams and their equipment. After the conclusion of the night-time scenario around 22:30, comprising flights operated by the pilots using Night Vision Goggles (NVG), the helicopters returned to their home base, successfully completing the first SATER exercise after the beginning of the COVID-19 pandemic in 2020.

The Italian national search and rescue exercise SATER is usually being organized three times annually covering North, Central, and South Italy. The region where and the season when the exercise takes place changes every year to add more training value due to various weather conditions and the presence of different kinds of high terrain. The shift of region also gives more different crews the opportunity to participate in SATER. The main objective of the SATER exercises is to develop the right synergy and cooperation between assets of the Corpo Nazionale Soccorso Alpino e Speleologico and Aeronautica Militare while constantly improving techniques and procedures to be ready for any possible SAR mission, day and night. This is being achieved by the simulation of real situations to be fully prepared when each other's expertise, knowledge and assistance are required to either recover the crew of a crashed military aircraft or the search for missing persons in mountainous terrain with support from helicopters of the Italian Armed Forces.

1, 3 The TH-500B is seen at the landing zone while two CNSAS rescue team members are vacating the helicopter. After having dropped off its "passengers", the TH-500B departs the landing zone with guidance from a marshaller.
2 TH-500B parked at its temporary spot in between flights during the exercise with the engine access panels open.

HH-139B parked at its temporary spot after arrival from Cervia.

top HH-139B MM81986/15-56 83° CSAR assigned to 15° Stormo.
bottom The HH-139 is making a left turn just before landing at its parking spot with Lago di Annole and the town of Galbiate shown in the background.

top The HH-139B during take off from its parking spot, directed by a marshaller, for a flight to the mountains of the Triangolo Lariano to pick up a CNSAS rescue team.
bottom The CNSAS rescue teams were taken back to the PBA after completion of their search and rescue mission. At the PBA, a landing zone was appointed where the helicopters picked up and dropped off CNSAS rescue teams, assisted by Italian Air Force ground staff. These photos show the HH-139B approaching the landing spot with a CNSAS rescue team on board.

main image: The Comando Logistico AM or Italian Air Force Logistic Command provided both the refuelling service and fire fighting coverage at the PBA. The refuelling truck originated from 3° Stormo while 6° Stormo sent the firetruck.

inset left: Refuelling capacity at the PBA was provided by 3° Stormo from Villafranca. The HH-139 loadmaster is assisting the refueller in disconnecting the fuel hose from the helicopter after arrival from Cervia.

inset right: The post landing checks include the inspection of the two HH-139's Pratt & Witney PT6C-67C engines.

ATLANTIC TRIDENT

17-28 MAY
2021

TEXT: JUAN MIGUEL ANATOL / ARMÉE DE L'AIR ET DE L'ESPACE
IMAGES: JUAN MIGUEL ANATOL UNLESS STATED

***Photo** U.S. Air Force/Staff Sgt. Alexander Cook*

The Exercise

The Atlantic Trident exercise was born from a strategic partnership known as the Trilateral Strategic Initiative (TSI), concluded between the American, British and French Air Forces in 2010. The first two editions took place in Langley, Virginia in 2015 and 2017. Mont-de-Marsan AFB is a key French operational base, at the forefront of France's capabilities in air combat, surface-to-air defence and innovation. As such, it is the ideal platform to host the third edition of this exercise. Halfway between a technological showcase and an operational challenge, this high-level exercise aims to test and improve the interoperability of the three Air Forces and to strengthen the technical and tactical knowledge they have of one-another 8 Through the use of latest generation fighters (Rafale for France, Typhoon and F-35 for the UK, F-35 for the U.S.), the exercise will ensure the operational readiness of their crews and facilitate the creation of common procedures for use in contested airspaces. During the exercise, the crews interact and develop tactics in order to get the best of each type of aircraft. They work together in a friendly coalition called Blue Force. They develop and conduct combined raids, in opposition to an enemy force (Red Force) made up of Mirage 2000, Alpha Jet or French Rafale. To face the future threats, they get ready together to conduct high intensity combat. A goal requiring an optimal integration between each of these latest generation fighters. For the purpose of this exercise, a fictitious scenario was established. The Blue Force must therefore fulfil repeated attacks from the Red Force by air defence missions called Defence Counter Air (DCA) to protect an area or a territory. The final objective is to obtain air supremacy in order to be able to neutralize the enemy threat by offensive in-depth air raids behind the battle lines. They develop and conduct combined raids, in opposition to an enemy force (Red Force) made up of Mirage 2000, Alpha Jet or French Rafale. To face the future threats, they get ready together to conduct high intensity combat. A goal requiring an optimal integration between each of these latest generation fighters. For the purpose of this exercise, a fictitious scenario was established. The Blue Force must therefore fulfil repeated attacks from the Red Force by air defence missions called Defence Counter Air (DCA) to protect an area or a territory. The final objective is to obtain air supremacy in order to be able to neutralize the enemy threat by offensive in-depth air raids behind the battle lines. The morning's first round is devoted to a "Main Wave" with COMAO-type missions (Composite Air Operations). These huge missions feature simulated battles using all aircraft, which have distinct roles. Afternoons will be dedicated to less complex missions with reduced participants called "Shadow Waves". The different squadrons compete on various scenarios, in which the Airmen and their allies are allies or aggressors alternatively. At the head of these missions, pilots take turns to ensure the Mission Commander function, a leader of the air raid. From the operational command, an Airboss is going to host the scenarios thanks to a visualization of the tactical air situation in real time.

Exercise Levels

Expert level: COMAO WAVE (20 vs 20)
- Planning huge international Entry Force* missions
- Conducting these missions
- Debriefing and advancing together

Basic and advanced level: SHADOW WAVE (12 vs 8)
- Visual combat
- Close air support (CAS)
- Electronic warfare
- Interference
- MFR (Mixed Fighter Element) :mixed patrol of French and foreign fighters

*Entry Force: first entry to a contested airspace into hostile territory

A U.S. Air Force F-35A *Lightning II* assigned to the 388th Fighter Wing at Hill AFB (left) and a French Air Force Rafale C of the 30e Escadron de Chasse at BA 118 Mont-de-Marsan (right)

Participants

From Mont-de-Marsan airbase 118
- 8 Rafale, 30ème escadron de chasse (Mont-de-Marsan, F)
- 4 Rafale, 4e escadron de chasse (Saint-Dizier, F)
- 12 F-35 A Lightning, 388th Fighter Wing (USAF - Hill AFB), USA

From HMS Queen Elizabeth (Royal Air Force)
- 4 F-35 B Lightning, 617 (Dambusters) Squadron (RAF)
- 4 F-35 B Lightning, United States Marine Corps Aviation (USMC)

From their home airbase
- 4 Typhoon, XI Squadron (RAF Coningsby, GB)
- 2 KC 135, 100 ARW (RAF Mildenhall, GB)
- 2 KC-30 Voyager, 10 & 101 (RAF Brize Norton, GB)
- 1 Phénix ou 1 C135, groupe de ravitaillement en vol (Istres, F)
- 1 E-3F, escadron de détection et de contrôle aéroporté (Avord, F)
- 1 E3-D, VIII Squadron (RAF Waddington, GB)
- 2 Mirage 2000D, 3e escadron de chasse (Nancy, F)
- 4 Mirage 2000-5, 2e escadre de chasse (Luxeuil, F)
- 2 Mirage 2000 RDI, escadron de chasse 2/5 « Île de France » (Orange, F)
- 4 Alphajet, 8e escadre de chasse (Cazaux, F)
- 2 Pilatus PC-21, école de pilotage de l'armée de l'air (Cognac, F)
- 4 Rafale Marine, flotille 12F (BAN de Landivisiau, F)
- 2 Caracal, escadron d'hélicoptères 1/67 « Pyrénées » (Cazaux, F)
- 1 A400M Atlas, escadron de stransport 1/61 « Touraine » (Orléans, F)
- 2 C130, 62e escadre de transport (Orléans, F)

Control units
- Escadron des services de la circulation aérienne de Mont-de-Marsan
- Centre de détection et de contrôle de Mont-de-Marsan et Cinq-Mars-La-Pile
- Centres militaires de coordination et de contrôle
- Centre de détection et de contrôle déployable, escadron de détection et de contrôle mobile

Jamming communications
- SCRIBE, escadron électronique sol (Orléans, F)

The "Lead" Units

The Rafale of the 30e Escadron de Chasse

The 30e Escadron de Chasse has been located at Mont-de-Marsan AFB since 2015. This unit is made up of 800 aviators and is outstanding due to its diverse range of missions and concurrent commitments. Its Rafale aircraft are currently engaged in the Middle East as part of the 'Chammal' operation and in the French area for the air policing missions (permanent air safety posture) but also participates in major exercises in France or abroad. The 30th Fighter Wing includes operational, maintenance, management and experimentation squadrons:

- Fighter and experimentation squadron 1/30 "Côte d'Argent"
- Fighter squadron 2/30 "Normandie-Niemen"
- Fighter squadron 3/30 "Lorraine"
- Aeronautical and technical support squadron 15/30 "Chalosse"

The sharp end of the 30th Fighter Wing is the F3-R Rafale, which will be on the front line of the Atlantic Trident exercise. With its array of technical improvements, the F3-R Rafale standard is a real revolution. Integration of the Meteor air-to-air long-range missile, Talios laser designation pod increasing detection and identification target capabilities or even air-to-ground optimized weaponry. These new capabilities increase the multi-functionality of this state-of-the art fighter. They allow it to carry out all the missions that may be entrusted to the French Air and Space Force, that is to say the airborne component of nuclear deterrence, air defence, in-the-depth strike at any time or support to on the ground troops. 102 two-seater Rafale B and single-seater Rafale C are currently being operated in the French Air and Space Force. The target at 129 Rafale provided for by the military planning law for 2025 is a key issue in order to have a critical mass of necessary aircraft to carry out all of the Air Force missions.

388th Fighter Wing and USAF F-35

The primary mission of the 388th Fighter Wing is to maintain combat readiness to deploy, employ, and sustain F-35A Lightning II aircraft worldwide in support of the national defense. The 388th FW is assigned to Air Combat Command, Joint Base Langley-Eustis, Virginia, and below that, Fifteenth Air Force, Shaw Air Force Base, S.C. ACC's mission is to provide a combat air force among the best in the world, delivering rapid, decisive air power, anytime, anywhere. There are approximately 2,000 airmen and civilian professionals assigned to the 388th FW. The wing employs 78 F-35A Lightning IIs, the Air Force's most advanced multi-role fighter aircraft. The F-35A Lightning II is the U.S. Air Force's latest fifth generation fighter. It will replace the U.S. Air Force's aging fleet of F-16 Fighting Falcons and A-10 Thunderbolt II's, which have been the primary fighter aircraft for more than 20 years, and bring with it an enhanced capability to survive in the advanced threat environment in which it was designed to operate. With its aerodynamic performance and advanced integrated avionics, the F-35A will provide next-generation stealth, enhanced situational awareness, and reduced vulnerability for the United States and allied nations. The F-35B Lightning II is the Marine Corps variant of the Joint Strike Fighter and features a vertical lift fan and pivoting engine nozzle to deliver vertical landing and short takeoff capability to expeditionary airfields. The F-35 will replace AV-8B Harrier IIs in the Marine Corps inventory.

top Rafale C of the 30e Escadron de Chasse at BA 118 Mont-de-Marsan

bottom F-35A *Lightning II* of the 388th Fighter Wing at Hill AFB

Rafale B assigned to EC 01.004 *Gascogne* at BA 113 Saint Dizier. ***Photo*** *U.S. Air Force/Staff Sgt. Alexander Cook*

▲ Rafale C of 30ème Escadron de Chasse
▼ Rafale B of 4e Escadron de Chasse

Rafale C of 30ème Escadron de Chasse ▲
Rafale B and Rafale C ▼

***Photo** Armée de l'Air et de l'Espace/E. Lerouzic*

***Photo** U.S. Air Force/Staff Sgt. Alexander Cook*

A U.S. Air Force F-35A *Lightning II* assigned to the 4th Fighter Squadron, Hill Air Force Base, Utah, flies over Southwestern France. ***Photo** U.S. Air Force/Staff Sgt. Alexander Cook*

U.S. Air Force F-35A *Lightning II* assigned to the 4th FS, Hill AF

Photo *Armée de l'Air et de l'Espace/A. Jeuland*

Photo *U.S. Air Force/Staff Sgt. Alexander Cook*

U.S. Marine Corps F-35B *Lightning II*'s with Marine Fighter Attack Squadron 211 (VMFA-211), MCAS Yuma, refuel from a Royal Air Force 101 Squadron Voyager off South West France. ***All photos this page*** *Royal Air Force/Corporal Cathy Sharples)*

Marine Fighter Attack Squadron 211

Marine Fighter Attack Squadron (VMFA)-211 "Wake Island Avengers" is based at Marine Corps Air Station Yuma, Arizona VMFA-211 and is assigned to the 3rd Marine Aircraft Wing (3rd MAW) of Marine Aircraft Group (MAG) 13. Its mission is 'to support the Marine air-ground task force (MAGTF) commander by destroying surface targets and enemy aircraft, day or night under all weather conditions during expeditionary, joint or combined operations'.

Prior to the F-35B *Lightning II*, VMFA-211 operated the AV-8B *Harrier*. The last flight of the *Harrier* was on 6 May 2016 and the first *Lightning II* was delivered only three days later, on 9 May 2016. In April this year, VMFA-211 deployed aboard HMS Queen Elizabeth II, marking the first operational deployment of an U.S. F-35B *Lightning II* unit to a British aircraft carrier.

U.S. Marine Corps F-35B *Lightning II* assigned to VMFA-211, MCAS Yuma

***All photo this page** U.S. Marine Corps, 3rd Marine Aircraft Wing*

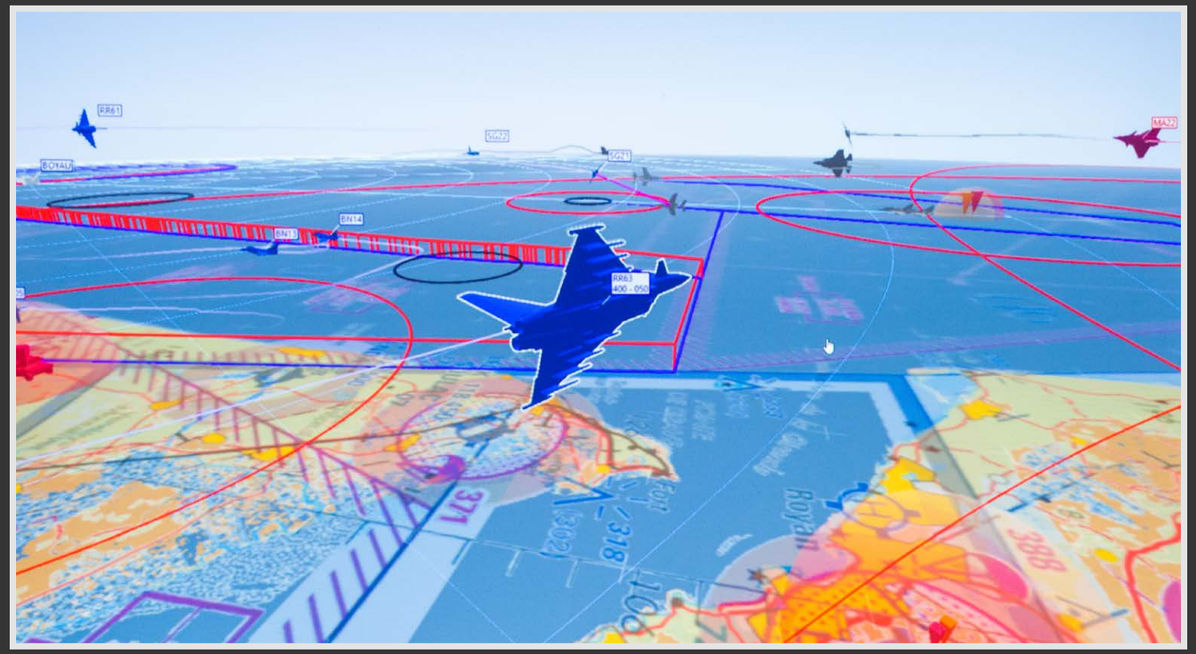
High-Tech Collaboration Tools

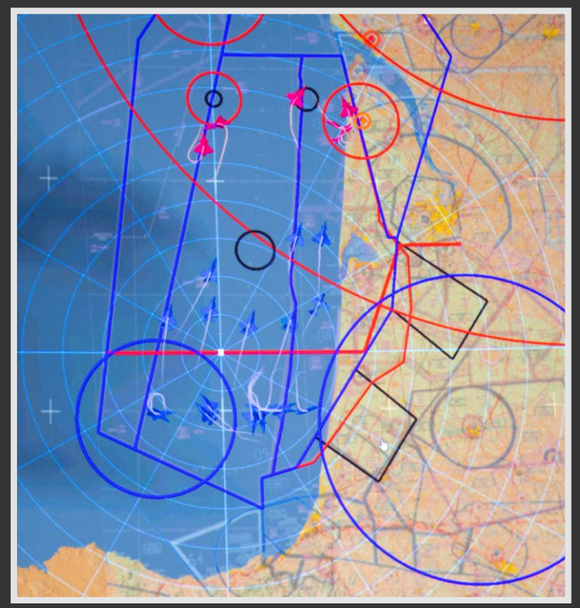
Atlantic Trident is enabled by the use of «TacView» collaborative tools including the «TacView» software, with many crews operating from software their home air base. Indeed, this specific interconnected software allows the rendering and debriefing of missions by videoconferencing. Inspired by civil software from the world of video games, it allows pilots to debrief their training sessions by screening all actions performed. «TacView» renders all their actions and trajectories in three dimensions. They are shared with all participants simultaneously by network with commentary by the mission's «Airboss». The latter, coordinator and animator of the air missions, plays the manager role. During the mission, he is located in the room dedicated to . Thus, he can «Jeannette» software suite the follow the actions of the various participants in live. The software receives and merges on a single screen the radar tracks and those related to the link 16. "Jeannette" also combines real and simulated resources by joining aircraft in flight and virtual runways. With the help of range Training Officers, he leads the mission in real time for friendly or enemy forces. These collaborative tools connect all the players on COMAO missions. They allow crews to have . make the replay as efficient as possible a common vision, exchange and debrief in order to This gain in realism leads to a high beneficial exercise. These revolutionary programs have the added benefit to the advanced training of units. These technological developments have the advantage to make aircraft delocalization possible, thus ensuring a considerable logistical but also economic gain.

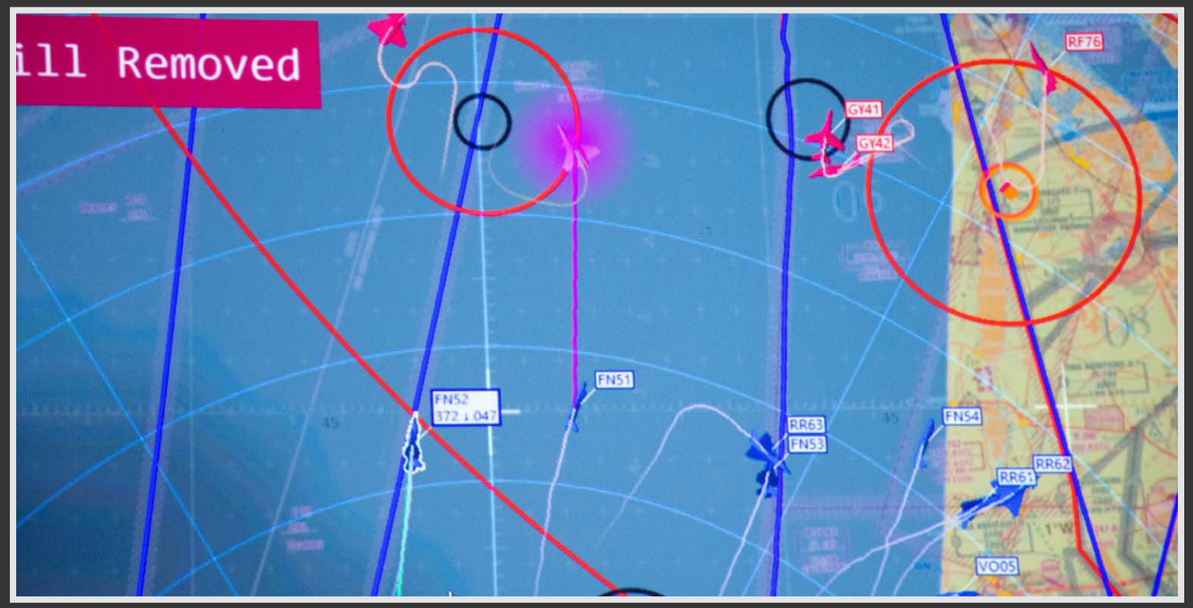
Tactical Data Links

Once connected, the combat systems communicate with each other by automatically transmitting their positions and data from their different sensors. No need for authentication: access to the network, which requires having the right encryption keys alone, ensures the «friend» identification. Tactical data links can significantly reduce the decision loop thanks to the superiority of communication and the application of one of the founding principles of network warfare: «Centralized Command / Decentralized Execution». The best known of these is Link 16, a NATO-defined standard for the exchange of tactical information between military units, whether air, sea or land. It is now a real prerequisite for access to an international theatre of operations and is even essential in air operations. In the end, this allows a machine to have a much more complete air situation than it would have with its only embedded sensors.

Thanks to satellite relays, all the forces involved in an operation, be it at the tactical or operational level (on the theatre or even in France) will have a unique and coherent overview of the situation. In operation, Air Force fighter jets, transport aircraft and airborne control aircraft exchange tactical information on a daily basis with coalition aircrafts, ships of the French Navy, ground-to-air defence equipment, and all systems, French or allied, connected to the L16 network. Link 16 considers two types of platforms: C2 (command and control) platforms which contribute to the development of a common tactical image (E-3F Awacs, E-2C Hawkeye, Aircraft Carrier, etc.) , and the non-C2 platforms that participate in the network only as a "sensor" and «weapon» of the C2 under whose control they carry out their mission (Mirage 2000D, Rafale, Mamba). The operation concept of Link 16 has therefore changed the use of the Air Force. Previously, for fighters AWACS were exclusively considered as mobile radar. Today, all the players using Link 16 can exchange information in real time. This tactical image feeds all platforms.







A U.S. Air Force F-35A *Lightning II*, two Dassault Rafales and a Royal Air Force Eurofighter Typhoon break formation. *All photos this page U.S. Air Force/Staff Sgt. Alexander Cook*

Photo Armée de l'Air et de l'Espace

SPOTTED AT SWIDWIN

PRESENT AND PAST

PHOTO-REPORT BY RALF JAHNKE AND RALF PETER WALTER

The 21. Baza Lotnictwa Taktycznego (21.BLT - 21st Tactical Air Base), commonly called Swindwin Air Base is a major air base of the Siły Powietrzne Rzeczypospolitej Polskiej (Polish Air Force). Swidwin AB is home to the 1. Skrzydło Lotnictwa Taktycznego (1.SLT – 1st Tactical Fighter Wing) with two tactical fighter squadrons, the 8. Eskadra Lotnictwa Taktycznego (8.elt) and 40. Eskadra Lotnictwa Taktycznego (40.elt). Both squadrons fly the Su-22M-4 *Fitter K* and Su-22UM-3k *Fitter G*. Also based at Swidwin AB is the 1. Grupa Poszukiwawczo-Ratownicza (1.gpr – 1st Combat Search and Rescue Group) with Mi-2 and PZL W-3 Sokol helicopters.

Su-22 *Fitter* with old (inset) and new (main image) color scheme overhead the 21. Baza Lotnictwa Taktycznego (21st Tactical Air Base) Swidwin with wings fully swept forward for flying at low speed.

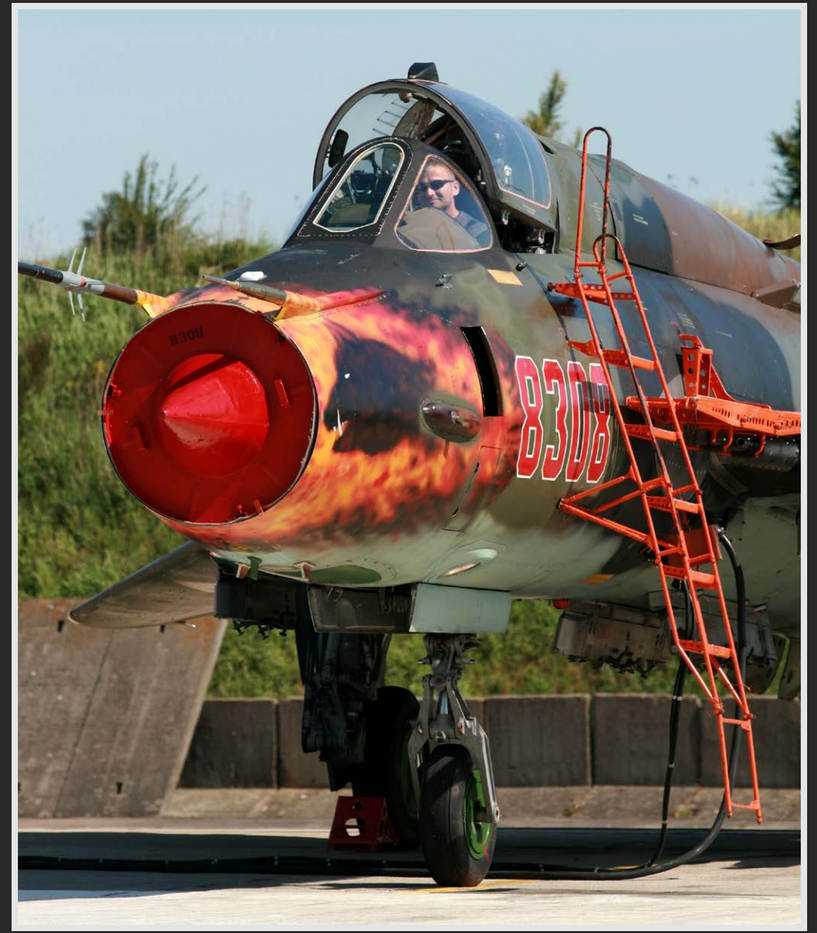
Low pass inlanding configuration of a Su-22M-4 *Fitter K* (2021)

The Su-22UM-3K *Fitter G* is a two-seat conversion-/fighter trainer (2021)

Su-22M-4 *Fitter K* with serial 3817 photographed in 2021 **(above)**, 2009 **(below left)**, and 2001 **(below right)**.

Su-22M-4 *Fitter K* with serial 3920 photographed in 2021 **(top)** and in 2012 **(middle row and bottom row)**.

Su-22UM-3K's *Fitter G* with special color schemes photographed in 2011 **(above)** and in 2012 **(below)**.



Su-22M-4 *Fitter K, photographed in 2011*


8101
KLUCZ OSPRZETU
PRZEWRACAC


508


9409


605


9616

A fully loaded Su-22M-4 *Fitter K* entering the runway for take-off (2012).

- Su-22M-4 *Fitter K* banking to the left after a simulated missed approach (**main image**, 2012).
- Two Su-22M-4 *Fitter K's* taking off in formation (**inset left**, 2011).
- This Su-22UM-3K *Fitter G* just landed with its brake-chute fully deployed (**inset right**, 2012).

▲▼ Su-22M-4 *Fitter K* photographed in 2011.

Su-22M-4 *Fitter K* photographed in 2009. ▲
Su-22M-4 *Fitter K* photographed in 2011. ▼

1

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3

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5

MiG-29M *Fulcrum* of 23.BLT, 1.elt at based Lotnicza AB (2001)

▲ Mi-2RL (2001).
▼ W-3RL (2009).

W-3RL **(above)** photographed in 2011. The same helicopter in SAR configuration with external winch photographed in 2021 **(below)**. ▲ ▼

M-28B/PT of 33.BLTr, 14.el in 2009 **(top)**, TS-11-bis DF of 41.BLSz in 2012 **(above left)** and in 2001 **(above right)**.

BASE AÉRIENNE 115 ORANGE

REPORT AND IMAGES BY PATRICE DOCHAIN

The roots of the 2/5 Île-de-France fighter squadron go back to World War II. On 20 October 1941, by order of General de Gaulle the "Air Marine" Fighter Group was established in England and the "Free French Air Forces (FAFL)" were born! In November 1941, the first Free French Squadron was created at Turnhouse in Scotland as the No. 340 Free French Squadron of the Royal Air Force. The squadron consisted of two flights – A Flight Paris and B Flight Versailles - equipped with different versions of the Spitfire (Mk.II and Mk.IX and later on the Mk.XIV). On 6 June 1944, French pilots in their Spitfires, showing black & white invasion stripes on their wings provided fighter cover in the skies of Normandy during "Operation Overlord" on D-Day. For its outstanding actions the squadron was awarded many decorations and citations.

In May 1946, the group received Bell P-63 King Cobra fighters and was incorporated into the 5th Fighter Wing based in Reghaia in North Africa. From July 1949 to January 1951, they resumed combat and participated in the Indochina War. In January 1951, the unit was renamed to Escadron de Chasse 2/5 (EC02.005) Île-de-France and joined base aérienne 115 (BA 115) Orange-Caritat, now operating the De Havilland Vampire MK1 jet fighter.

From 1954 to 1966, the unit finally flew on jet aircraft designed and manufactured in France: Mistral, Mystère II, Mystère IV then Super Mystère B2. 1966

saw the arrival of the first Mirage IIIC's. The unit used Marcel Dassault's Mirage IIIs until they were replaced by the Mirage F.1C on July the 3rd 1975, these were later being followed by the Mirage F.1C-200 equipped with an in-flight-refuelling-probe. In 1989, EC 02.005 took delivery of its first Mirage 2000C-RDI and subsequently took over the task of an Operational Conversion Unit (OCU - 1997 taken over from EC 02.002 Côte d'Or)) for the training and operational transformation of all Mirage 2000 pilots. It was with this aircraft that in September 1992, the unit became the first French Air Force unit to be deployed to Saudi Arabia to enforce the no-fly zone over Iraq. EC 02.005 also participated in the air war over Bosnia and despite being an air superiority squadron it also had to fly CAS (close air support) missions with "dumb" iron Mk.82 bombs as very few of the new Mirage 2000Ds were available. In 1997, following the standardization of the fighter squadrons within the French Air Force, the squadron received a third Flight, the "Vincennes" which it lost in 2008 to the benefit of the Flight SPA124 "Jeanne D'Arc". On May 24th 2013, the historic Flights "Paris" and "Versailles" were decommissioned and replaced by the two Flights C46 "Trident" and SPA84 "Renard".
In 2007, 2010 and 2011 the squadron took its turns in providing providing the Permanence Opérationnelle, the Baltic Air Policing in Šiauliai, Lithuania.
Several famous personalities came from the EC02.005, such as Jean-Louis Chrétien, the first French astronaut, and Caroline Aigle, the first French female fighter pilot.

This Mirage 2000B of EC 02.005 is one of two QRA (quick reaction alert) aircraft armed with live weapons and ready to be in the air within a few minutes after being scrambled.

Mirage 2000B of EC 02.005

Mirage 2000D of EC 03.003

Mirage 2000B/C RDI

The squadron has a mixed fleet of Mirage 2000C/B's. The Mirage 2000C RDI fighter, a single-seater aircraft intended for external operations and air policing missions. Thanks to its Snecma M53-P2 engine, it is capable of reaching Mach 2.2 at an altitude of 15,000 meters with a rate of climb of up to 18,000m / min. The aircraft is equipped with an Intercept Doppler Radar (RDI "Radar Doppler d'Interception" - Doppler Radar optimised for Air-Air operations) with Look Down / Shoot Down capability. The Mirage 2000C carries two DEFA 554 30mm cannons with 125 rounds per cannon and has a fairly wide range of weapons such as R550 Magic II (and Super 530D air-to-air missiles - now retired) or even braked bombs (theoretically even 68mm unguided rockets – but this was never used). All Mirage 2000 Variants are equipped with the Martin Baker Mk.10 ejection seat. 124 units of the Mirage 2000C were built, some 37 of them were converted to the Mirage 2000-5, and after losses, storage and aircraft being sold to Brazil (10 M2000C and two M2000B) only 12 are still operational at EC 02.005 (plus very few for test purposes).

The two-seater Mirage 2000B is dedicated to the initial training of young trainee pilots designated for the Mirage 2000 fleet (Mirage 2000C, Mirage 2000D and Mirage 2000-5). The Mirage 2000B's (like all Mirage 2000 double seaters) are not equipped with the two internal DEFA 554 guns. However, it can still carry the typical air-air missile Magic II. Of the 30 Mirage 2000B's built (serials 501-530) seven are still in active service (serials 523, 524, 525, 527, 528, 529 and 530 – 501 is a radar test bed at DGA-EV for the Rafale).

Squadron and Pilots

EC 02.005 has 3 Flights. First, the C46 "Trident" squadron (1ére Escadrille - "Trident"), second the SPA 84 "Fox Head" (2éme Escadrille – "Tête de renard"), and finally the SPA 124 "Joan of Arc" (3éme Escadrille – "Jeanne dArc") flights. About 25 pilots serve with the squadron. The pilots "patrol leaders" are all instructors. With several thousand flight hours, they are the experts to train the French Air Force's future Mirage 2000 pilots. Basic flight training on the Mirage 2000B takes about 4 months, the young pilots have spent intensive flying training in the dedicated basic flying squadrons before (at Cognac and Cazaux on TB30/PC-21 and Alpha Jet E). The young fighter pilots assigned to the unit undergo an intense training leading them to the qualification of patrol leader, i.e. leader of four aircraft. This whole progression takes about four years, with the most part of the training being done in their designated active squadrons. About 20 fighter pilots for the Mirage 2000 community pass through Orange each year before continuing their training in their designated squadron.

The squadron's pilots and and its Mirage 2000 could not carry out their missions without the support of a whole team of expert technicians. In Orange, the Mirage 2000s are operated by the personnel of the Aeronautical Technical Support Squadron ESTA 02.005 "Baronnies" (Escadron de Soutien Technique Aèronautique). Among these, there are mechanics called "Pistards" (Specialite Vecteur "21") who take care of airframe maintenance and assist pilots from departure to the return from their missions. The proper functioning of the navigation and armament system is ensured by electrician-avionics specialists, the "22" (Specialite Electricien/Avionique "22") while the "Pétafs" (Specialite Armurier "23") or gunsmith specialists are responsible for maintaining the on-board weaponry, such as cannons, missiles, and bombs in operational condition.

Missions

The pilots of the Île-de-France squadron carry out different types of missions out of BA 115 Orange. The unit, which is on alert 24 hours a day, 365 days a year, ensures the Permanent Security Posture (Posture Permanente de Sûreté aérienne—PPS). To do this, two Mirage 2000s are ready to take off in just a few minutes to intercept any aircraft that no longer responds to air traffic controllers (in France usually only one aircraft will scramble, leaving the second on the ground as a spare).

Alongside this air policing mission, the squadron is also responsible for the basic training of future fighter pilots assigned to the various active Mirage squadrons in France (today these are: EC01.002 "Cigognes" on Mirage 2000-5, EC v01.003 "Navarre", EC02.003 "Champagne", EC03.003 "Ardennes" all on Mirage 2000D - EC 01.030 is a test unit and solely recruits its pilots from active duty squadrons). These trainees will then continue their specialized training – air-to-air or air-to-ground - at their future home base. The squadron has several simulators to cover the different types of missions assigned to Mirage 2000 pilots: initial training, training in normal ("check verte" / green) and emergency ("check rouge" / red) procedures, flight without visibility, air/air interception or air/ground fire passes. As a result of shifting training to "digital" also six stations of DCS Flight simulators are used to prepare for real flight missions. A live mission can be gone through there in advance with minimum costs and gaining effeciency on the real flight. Also available and used regularly on schedule is an ejection simulator, here the pilots can train all sequences prior to an ejection and also the procedures for an emergency exit from the aircraft on the ground. To date, more than 500 pilots have been trained by the EC 02.005.

In addition to air policing and training missions, the unit is regularly engaged in foreign operations in the Sahel as part of Operation Barkhane flying mixed patrols with Mirage 2000Ds. Another role is the supply of "red air" (Aggressor) which is regularly requested in order to maintain the high skill level of the pilots of the French Air Force's active fighter units.

Future

The operational end of the Mirage 2000C within the French Air Force is close. After more than 40 years of service, the aircraft is expected to be retired from active service by 2022 and replaced by the Rafale. Currently the Île de France squadron operates 18 Mirage 2000C of the S5 standard (of which six aircraft are in storage) and seven Mirage 2000B.

The remaining seven Mirage 2000B's will experience a new life within the 3rd Fighter Wing at BA 133 Nancy-Ochey. There embedded in the EC 02.003 "Champagne" they will take over the training for future Mirage 2000 pilots from both, the EC 02.005 "Île de France" at Orange and ETD 04.003 "Argonne" which was disbanded this year on May the 27th at BA 133 Nancy.

BA 115 Orange, however, will have to be upgraded to be able to accommodate the Rafale from 2025. The runway will be completely renovated while new hangars, larger, more modern, and better suited to Rafale aircraft will be built. The duration of the work is estimated at 24 months. The future of EC02.005 is not yet known. Will it be retired or preserved, will other squadrons be reactivated? Only time will tell.

Mirage 2000-5F **(left)** and Mirage 2000B **(right)**

Mirage 2000B

Mirage 2000-5F

TIGERS OVER BAVARIA

REPORT BY RALF PETER WALTER AND IMAGES AS STATED

Photo Ralf Peter Walter

With the decommissioning of German Air Force Fighter-Bomber Wing 32 (JaboG 32) at Lechfeld AB, the two squadrons of Fighter Wing 74 (JG 74) jointly took over the "Tiger Tradition / Tiger Spirit" from 1st Squadron (321 Tigers) of JaboG 32, thus forming the *Bavarian Tigers* on 18 March 2013. Three months later, the Eurofighter with registration 30+29 received the Bavarian Tiger's first "Tiger Tail" and flew with two other Eurofighers to the NATO Tiger Meet at the Norwegian airbase Ørland AB. There, the application for membership on probation in the NATO Tiger Association (NTA) was made and accepted. From 20 to 24 June 2013, the JG 74 participated in a Tiger Meet for the first time – as an observer. On 1 October 2013, with the new structure of the German Air Force, Jagdgeschwader 74 was renamed to Taktisches Luftwaffengeschwader 74 (TaktLwG 74).

***Photo** Bundeswehr / Tokunaga*

The following year, the NATO Tiger Meet was held at Taktisches Luftwaffengeschwader 51 "Immelmann" at Schleswig AB in northern Germany. From 16 to 26 June 2014, the *Bavarian Tigers* were in Schleswig with seven aircraft. With around 1,000 hours of work in four weeks, Eurofighter 30+09 received an impressive special paint job, which was rewarded with the "Best Painted Aircraft" award.

***Photo** Bundeswehr*

***All photos this page** Ralf Peter Walter*

For the 2016 Tiger Meet in Spain at Zaragoza AB – the 2015 Tiger Meet was held in Turkey on a very small scale and without the participation of the Bavarian Tigers – the 30+29 received the spectacular "Cyber Tiger" paint scheme. A total of nine EF2000s were in Zaragoza from 16 to 27 May 2016. On 17 May, right after their arrival in Spain, the Bavarian Tigers were promoted to "Full Member" of the NATO Tiger Association, successfully following in the footsteps of the 321 Tigers.

***Photo** Ralf Peter Walter*

Photo *Ralf Peter Walter*

Photo *Bundeswehr*

Photo *Ralf Peter Walter*

In 2017, the *Bavarian Tigers* were only present with a small delegation of four aircraft at the NTM at BAN Landivisiau, France. Eurofighter 30+26 was painted with the "Atlantic Tiger" tail for this purpose.

***Photo** Bundeswehr*

In early April 2018, Eurofighter 31+00 received the "Ghost Tiger" livery. From 14-25 May 2018, TaktLwG 74 participated in the NTM at Poznan-Krzeseny AB in Poland with four aircraft. The *Bavarian Tigers* won the 'Best Painted Aircraft' trophy for the second time after 2014 and the 'Tiger Games' trophy for the first time.

***Photo** Bundeswehr / TaktLwG 74*

BAVARIAN TIGERS

In 2019, only two Eurofighters were at the NTM at Mont-de-Marsan AB in southern France, this time, as visitors. For this occasion, the Eurofighter 30+66 received a plain, monochrome "Tiger Tail".

Due to the COVID-19 pandemic, there was no NTM in 2020. For the 2021 NTM in Beja, Portugal, the TaktLwG 74 had cancelled its participation.

***All Photos this page** Bundeswehr / TaktLwG 74*

With the 60th anniversary of the Wing in May this year as well as five years of full membership in the NATO Tiger Association, there was sufficient reason to paint an Eurofighter with a large special livery again after 2018; the 30+01 "The Bavarian Tiger" is now the seventh "flying Tiger" of the TaktLwG 74.

***Photo** Bundeswehr / Andreas Zeitler*

***All photos this page** Ralf Peter Walter*

On 11 May 2021, this formation flew over the City of Neuburg and Neuburg AB to celebrate the 60th anniversary of the Taktisches Luftwaffengeschwader 74. Participating in this formation were an Airbus A400M *Atlas* assigned to the Lufttransportgeschwader 62 and a C-160D *Transall* assigned to the Lufttransportgeschwader 63. This *Transall* has a special livery on the occasion of the decommissioning of this type of aircraft within the German Air Force in the course of this year.

***All Photos this page** Bundeswehr / Lars Iwersen*

DÉFILÉ MILITAIRE DU 14 JUILLET

REPORT AND PHOTOGRAPHY BY JORIS VAN BOVEN
AND ALEX VAN NOYE UNLESS STATED

Photo French Air Force

As every year, on 14 July, the annual Bastille Parade was held at the 'Avenue des Champs-Élysées' in the center of Paris. Soldiers marched and tanks drove in tight formations through the streets of Paris. Overhead Paris flew formations of aircraft and helicopters, led by the 'Patrouille de France' with smoke trails in the French national colors blue, white, and red.

In the weeks before, the preparation flights started overhead Base Aérienne (BA) Orleans with the various section leads. Later, the final preparations were performed overhead the city of Paris, to finetune the timing. On 14 July, aircraft and helicopters took off from various bases near Paris and their home bases all over France for the "Défilé Aerien" over Paris. The Marine Nationale aircraft flew from their home bases, Base Aérienne Navale (BAN) Landivisiau with Rafales, and BAN Lann-Bihoue with Br1193 Atlantic, E-2C Hawkeye, and Falcon 50M. The larger Armee de l'Air aircraft also flew from their home bases; the E-3F from the temporary airport Châteauroux (due to construction works at BA Avord), the A400M from BA Orleans, and finally, the A330 MRTT from BA Istres. The Rafale fighters from BA St-Dizier also flew from their home base. Smaller aircraft like the Alpha Jets, including the Patrouille de France, and the PC-21 flew from BA Villacoublay. Armee de l'Air and Aeronavale helicopters flew from BA Villacoublay. Finally, the Armee de Terre helicopters (ALAT) departed from the military academy terrain of St-Cyr-l'Ecole, west of Paris.

Six Mirage 2000D of the 3rd Fighter Wing train to fly in formation over the central region for the 14 July flypast. ***Photo*** *French Air Force*

Photo *French Air Force*

All other French fighters used BA Evreux, about 90 km west of Paris, as their take-off base. Therefore, this year, Rafales from BA Mont-de-Marsan, Mirages 2000D from BA Nancy, Mirages 2000C from BA Luxeuil, and BA Orange deployed to BA Evreux for their participation in the Bastille Parade. In the early morning, some 20+ fighters started their engines for the take-off. Special guests this year were the DGA delegation and the new Beech 350 surveillance aircraft. Locally based CASA CN-235s were the first to take off from BA Evreux.

Main image View at the impressive flightline of the aircraft taking part in the Paris flypast.
Inset Take-off of two Mirage 2000-5F assigned to GC 01.002 for a training flight for the Paris flypast.

Above left The second of a total of two Beechcraft 350ER/ALSR (Avion Léger de Surveillance et de Reconnaissance - Light Surveillance and Reconnaissance) in the inventory of the French Air Force. The aircraft is assigned to EEA 01.054.

Above right CN235-M200 assigned to ET 01.062.

Right Alpha Jet E

Mirage 2000D assigned to EC 01.003 (***above***)
and Mirage 2000C assigned to EC 02.005 (***below***)

A Mirage 2000B from EC 002.05 *Île-de-France* flies over the Champs Elysées with the Eiffel Tower in the background on 14 July 2021. ***Photo*** *French Air Force*

Mirage 2000C's assigned to EC 02.005

***All photos this page** French Air Force*

DGA

La Direction Générale de l'Armement (DGA, Directorate General of Armaments) is the French Government Defence procurement and technology agency responsible for project management, development, and purchase of weapon systems for the French Armed Forces. It has a section dedicated to military flying assets that was formerly known as CEV (Centre d'Essais en Vol). After the closure of the BA Brétigny, the DGA moved to BA Cazaux and BA Istres. The DGA operates some Alpha Jets, several Mirage 2000C/D/Ns, a few PC-7s and Fennec, Dauphin, and Puma helicopters. For the 2021 Paris over-flight, the DGA sent two Mirage 2000 and three Alpha Jets to BA Evreux. One Mirage 2000 and two Alpha Jets took off, while one Mirage 2000 and one Alpha Jet remained as backup aircraft.

▼ Mirage 2000D

Mirage 2000B with Rafale nose cone ▲
Alpha Jet E ▼

Five Rafale B's of the 4th Escadron de Chasse in line-abreast formation during a training session for the Paris flypast. ***Photo*** *French Air Force*

▲▼ Rafale B's of the 4th Escadron de Chasse

Rafale C's of the 30th Escadron de Chasse ▲▼

***All photos this page** French Air Force*

St-Cyr-l'Ecole

The helicopters of the Armée de Terre (Aviation Légère de l'Armée de Terre, ALAT) normally participated in the "Défilé Aerien" from the former airbase of Creil, north of Paris. However, in 2021, the helicopters were based at the military academy terrain of St-Cyr-l'Ecole, west of Paris. After the "Défilé Aerien", the ALAT helicopters were refueled at the academy, with the nearby aerodrome St-Cyr-l'Ecole as a backup location. Several ALAT helicopters flew via the aerodrome to the academy terrain and afterwards returned to their home base.

above AS532UL *Cougar* of 3 RHC

left NH90-TTH of 5 RHC

A Tigre HAD of the 5 RHC just lifted off while an AS532UL *Cougar* of the 3 RHC approaches for landing.

▲ E-3F AWACS of EDCA 02.036 in formation with three Mirage 2000-5 of EC 01.002
▼ AS332L1 *Super Puma* of EH 03.067

A330MRTT of ERVTS 01.031 ▲
AS555AN of EH 05.067 ▼

***All photos this page** French Air Force*

BELGIAN NH90s SUPPORT SALVAGE OPERATIONS AFTER FLOOD DISASTER

REPORT AND IMAGES
BY MARTIJN VENIX

Belgian Floods

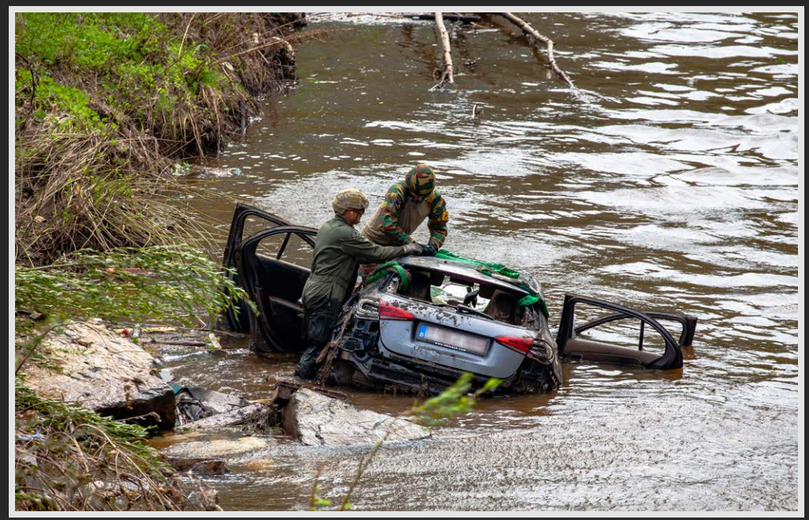
During the severe weather and the subsequent flood disaster on 14 and 15 July 2021, the east of Belgium was hit hard by severe flooding, resulting in enormous havoc.
Entire villages seemed wiped out and the material and humanitarian damage was enormous. Many people have lost almost all of their possessions or even have no home at all.
At least 35 people died as a result of this terrible natural disaster and during my visit to the hard-hit village Pepinster on August 4, there were still 10 to 20 missing persons.

Power to the Nation

It is only during disasters of such magnitude that it becomes clear that having a well-equipped defense apparatus is essential. People sometimes forget that defense means much more than just having an army for warfare. Ensuring the safety of its citizens in the event of natural disasters is at least as important a task as other activities. The latter was the case after the tragic events.
Where Belgium has been making huge cutbacks on defense for years, there was an enormous need for help from the Belgian army after this disaster. The army was deployed where possible and necessary to provide aid to the country and the population. Clearing debris, evacuating and bringing victims to safety, setting up field kitchens to provide meals to the affected local population, setting up mobile sanitation facilities, and searching for missing citizens are some of the army's main achievments.

MAOT and 18th Squadron

The very enthusiastic and passionate men of the Belgian MAOT and the 18th squadron of the Belgian air component started working in this area together with the NH90-TTH (Tactical Transport Helicopter) for three weeks. Mainly for salvaging (car) wrecks out of rivers or from



locations that are difficult to reach where these wrecks have been dragged. The aim was to bring these wrecks to places where they could be picked up with a tow truck. The aim was, of course, to help clear up the enormous devastation that has been caused there, as well as the possible rescue/recovery of missing citizens who may still be in the vehicles. The men of MAOT and the 18th squadron managed to salvage more than 20 wrecks over three weeks, including a boat and a motorbike. Mounting the so-called slings that hang under the helicopter is quite accurate work. For each vehicle, one has to look at how these slings can best be attached. Depending on how and where the vehicle is located, it is important that the slings are attached to the vehicle in such a way, that water and mud can drain out of the vehicle when it is pulled up. This is due to the weight because a car itself is already quite heavy for the NH90, but if it is also soaked with water and mud, then the wreck is much more difficult to move because it is simply too heavy.

NH90-TTH and NH90-NFH

Earlier during the floods, hoist evacuations were already carried out by the NH90-NFH (NATO Frigate Helicopter) version. This is the type that the Belgian navy flies from Koksijde and is mainly active for evacuations and missions over the sea. Unlike the

TTH version, the NFH does have a hoist function. Previously, the TTH version also had this option, but unfortunately, that function has also been canceled due to the hard cutbacks within the Belgian defense. A feature that might have come in very handy in these extreme circumstances. Both the navy and the air component have four NH90's at their disposal, four in the green TTH version for the air component and four in the grey NFH version for the navy.

Phasing out the NH90-TTH due to budget cuts

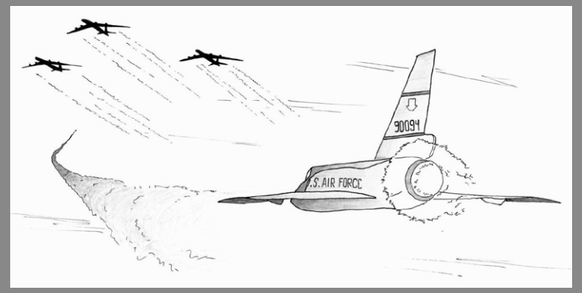
Unfortunately, there are rumors that in 2020 the TTH versions of the air component have been nominated to be divested. The rumors are going there is a chance that the NH90-TTH helicopter will be retired of Belgian service in 2024.
This while the TTH helicopters only entered the Belgian air component seven years ago and can therefore still be regarded as new, and then this super modern helicopter just had a few opportunities to prove itself well. Reportedly there are plans to purchase the much lighter H145 helicopter, which should then replace the NH90-TTH and the A109. However, there are doubts whether the H145 can deliver the same performance as the NH90-TTH has now proven to be able to do. Hopefully, for the Belgian soldiers who depend on the capacity an capability of the helicopters, they are now looking at it from Brussels and they realize that such helicopters as the NH90 are simply indispensable and that they should be operational as much as possible!

Hopefully, the achievements of the highly motivated men from MAOT and the 18th squadron from Bevekom have opened the eyes of the politicians during all those weeks. Just imagine if these helicopters and crew were not available …..
Until then, the men within the Belgian defense are doing their best to do what they can and with the resources they have and they do it very well and with dedication and passion! Keep up the good work.

The author and *The Aviation Magazine* would like to thank both the MAOT and the 18th Squadron for allowing to watch this special work and making this report possible.

HISTORY – MONEY TO SPEND: THE BOMBER GAP AND U. S. AIR FORCE INTERCEPTORS

BY A. T. ROBERTS



Artist's sketch of a late Cold War intercept. (author)

In the immediate wake of WWII, the Soviet threat—seen by some visionaries well before the conflict—was quickly realized. With the advent of jet aircraft, atomic weaponry, and their subsequent proliferation, a new era of warfare loomed ahead with the Soviet Union poised as America's new supervillain. Though conflict on the Korean Peninsula offered an eerie prelude to the nature of future "limited" military engagements throughout the Cold War, the constant threat of the two major superpowers engaging in a full-scale conventional war was ever-present; and keeping the technological military edge was paramount. One early manifestation of the capabilities-obsessed paranoia in the nascent days of the Cold War was the development of the now-infamous "bomber gap" theory.

Originally stemming from an *Aviation Week* article, the theory gained speed during an air power demonstration over Moscow in 1955 when a wave of Soviet bombers overflew the city. To make the display appear more impressive, the bombers flew out of sight, circled, and made multiple passes; giving the illusion of waves of bombers approaching in succession. American and allied governments were duped by this simplistic trick and began the process of bolstering their air arms' capabilities to combat this imaginary fleet of enemy bombers.

One way to counter this threat was the continued development of interceptor aircraft. Well before the 1955 Soviet air show, the U.S. Air Force initiated project WS-201A, the purpose of which was to have an advanced interceptor fielded by 1954. Air Defense Command, whose nominal mission was to defend the continental United States, obviously championed the idea of newer and better interceptors. ADC was having difficulties with their existing fleet of late model F-86 *Sabres*, F-89 *Scorpions*, and F-94 *Starfires*, and a reinvigorated need for this type of aircraft would be the answer to their problems. What the program would produce has now become synonymous with ADC and the Cold War-era Air Force more generally—the century series fighters.

Though not all century series aircraft were purpose-built interceptors, and many were flown by commands other than ADC—whether it was the Tactical Air Command, Strategic Air Command, or Air National Guard—each individual aircraft had the long-lasting impact of the bomber gap built into their DNA; regardless of the theory being generally disproved as early as 1959. Since the Cold War thankfully never turned hot, no ADC interceptors were required to zorch from their coastal bases and shoot down waves of Soviet bombers. However, as tensions mounted throughout the 1950s and 60s, the Air Force continued to order 1,000s of interceptors. At the time, technology was advancing faster than production could compensate for, resulting in aircraft becoming obsolete before the final airframe of an order rolled off the assembly line. Furthermore, as mentioned above, none of these aircraft fulfilled their intended role, and as the next Cold War limited conflict escalated, in Vietnam, the Air Force attempted to get every bang for their buck out of some of their arsenal.

Four century series aircraft in flight. Interceptors were derived from three of the airframes pictured; the McDonnell F-101A-5-MC Voodoo, Lockheed XF-104A Starfighter, and Convair F-102A-20-CO Delta Dagger. Also pictured is a North American F-100A-20-NA Super Sabre. (NACA Dryden Flight Research Center)

A perfect example is the Convair F-102 *Delta Dagger*. Though the airframe suffered several design flaws and operational setbacks, 1,000 were ordered. In the mid-1960's, the Air Force sent their Mach 1.25, delta wing, poorly maneuverable interceptor to Southeast Asia for two missions, bomber escort and close air support. Needless to say, it's performance was less than adequate and it's tenure in theater was steadily minimalized; replaced by aircraft more suited to those roles. While the F-102's kinks were worked out during its development, Air Force brass also ordered an interim interceptor, a heavily modified variant of McDonnell's contribution to the century series aircraft, the F-101B *Voodoo*. Though this aircraft also never saw use in its intended role, a tertiary modification to a photo-reconnaissance variant, the RF-101C, saw extensive use over the skies of Vietnam. Another fighter/bomber-turned-interceptor was the Lockheed F-104 *Starfighter*. Distance and fuel made this a dubious choice, but its speed and climb rate enticed decision makers to modify it for the task.

As mentioned above, the bomber gap theory was largely disproved by the end of the 1950s, but newer, cutting edge interceptors were already well into development and production. Another delta wing aircraft, the Convair F-106 *Delta Dart*, would debut in 1959. Though ICBMs replaced bombers as the primary delivery method of nuclear weapons for the United States and Soviet Union by the 1960s, the F-106 stayed in service well into the 1980s as a dedicated interceptor.

Though no purpose-built interceptor aircraft shot down enemy bombers, they were armed to do so with a bizarre weapon. Several interceptors carried the AIR-2 Genie, an unguided air-to-air rocket tipped with a nuclear warhead. The idea was that an interceptor—whether it was a *Scorpion*, *Voodoo*, or *Delta Dart*—would shoot the rocket into the midst of a wave of Soviet bombers, with the devastating nuclear blast making up for the weapon's lack of accuracy. It was only detonated once, fired by an F-89, exploding in the skies far above the American desert during Operation Plumbbob.

A Convair F-106 Delta Dart assigned to the California Air National Guard fires an inert AIR-2 Genie. (USAF)

Luckily, weapons as outrageous as the Genie were never utilized in a combat scenario, but interceptors did frequently fulfill their mission in an escort capacity. The cat-and-mouse game of the aerial Cold War was all about keeping tabs on the enemy, and allowing Soviet bombers to come close to American airspace or overfly sensitive locations without an escort wouldn't bode well for continental defense; and it was the interceptor that prevented this from happening at home as well as abroad.

An F-106 Delta Dart intercepts a Soviet TU-95 "Bear". (USAF)

By modern standards of weapons development and procurement, it's bizarre to realize just how many aircraft were built and dollars spent to combat a threat that never existed to the degree believed. So grandiose was the U.S. response to the theory, aspects of it are parodied in Stanley Kubrick's *Dr. Strangelove*, and it represents a sort of case study in military industrial complex free-reign. Regardless, the bomber gap theory and the Air Force's reaction to it produced some of the most capable, well-known, and beautifully built interceptors of the Cold War.

A Lockheed F-104 Starfighter with wingtip fuel tanks flying over the American desert. (USAF)

VIPER VAREWELL AT LEEUWARDEN AB

REPORT AND IMAGES BY
JORIS VAN BOVEN AND
ALEX VAN NOYE

Of the four F-16s painted in the original 1980's colors, this aircraft had a specially painted tail: the dragon, which is the symbol of Leeuwarden AB.

The Royal Netherlands Air Force (RNLAF) air base Leeuwarden said goodbye to the F-16 Fighting Falcon, also nicknamed "Viper". Originally scheduled for 1 July 2021, the fly-out was delayed due to a crash of a Belgian Air Force F-16 at Leeuwarden AB during the Weapon Instructor Course (WIC). On 5 July, the RNLAF F-16s finally left Leeuwarden AB after 42 years at this Frisian air base.

In 1997, Leeuwarden was the first air base of the Royal Netherlands Air Force to receive the F-16 Fighting Falcon. The 322 Squadron was the first unit to operate this type of aircraft and is now the RNLAF's first unit in the Air Force to replace the F-16 with the F-35A *Lightning II*. This is a huge milestone for the Air Force, as the F-16 was the backbone of the Royal Netherlands Air Force for many years. As part of an international coalition, the F-16 were engaged in many conflicts auch as those in Kosovo, Iraq, Afghanistan, and Syria.

For the "F-16 Fly-Out" or "Viper Varewell", the unit painted four aircraft in the original colors of the Frisian airbase from the 1980s. Three of which had the original Frisian markings of the based squadrons. These aircraft are the J-509 with the full color badge of 322 Squadron nicknamed "Polly", the J-144 with the full color badge of 323 Squadron nicknamed "Diana", and finally, the J-201 with the full color badge of the Transition and Conversion Department (TCA). The fourth aircraft, the J-871, carries the dragon on the tail, which is the symbol of Leeuwarden AB.

After the aircraft left Leeuwarden for the last time after 42 years, the F-16s landed at their new home base Volkel AB in the south of the Netherlands. Before this landing took place, the four F-16s made a tour along to almost all Dutch military airfields to say goodbye to the Leeuwarden F-16s. The last F-16 flights are planned for 2024 when Volkel will also have its "Viper Varewell", and the F-16 at the Royal Netherlands Air Force will come to a definitive end.

This F-16 carries the badge of 323 Squadron nicknamed "Diana".

F-16 with the Transition and Conversion Department (TCA) badge.

This F-16 carries the badge of 322 Squadron nicknamed "Polly".

MACEDONIA ON FIRE

TEXT: IGOR BOZINOVSKI
PHOTOS: AS STATED

The summer of 2021 was one of the worst in decades when it comes to open space fires that are devastating land, forests, houses, and tourist accommodations not only in Turkey and Greece but also in Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, and Serbia. During July and August 2021, all of these Balkan nations suffered hundreds of injured people and, unfortunately, some even lost their lives in the fires. One of the main reasons for this was that the Balkan governments seemed to pay very little or almost no attention to the civil protection systems. As a result, the budgets to build, maintain, and constantly upgrade the capability and capacity to quickly and effectively fight summer wildfires were extremely limited. The most important means of fighting wildfires in a very early stage, before they turn into national or even international disasters, are appropriately equipped and available aircraft and helicopters.
In addition, most of the few airtankers and helicopters in the Balkan nations' inventory were, and still are, in very poor condition. In the case of Macedonia, for example, all of its three highly-capable Air Tractor AT-802A Fire Boss amphibian fire bombers were grounded in the middle of the summer. This put the citizens, properties, and forests in very great danger. Virtually overnight, a nation that had excelled at fighting wildfires on its own for decades thus had to turn to the international community for aerial firefighting support.

From national celebration to the state of crisis

The "Day of the Republic" or simply "Ilinden" is a major national holiday of Macedonia that on 2 August

Macedonian Air Tractor AT-802A Fire Boss aircraft.
Photo *Dragan Cvetic via Igor Bozinovski*

every year, commemorates two key events in the establishment of the state of the Balkan nation which took place on this date: the "Ilinden Uprising" of 1903 against the Ottoman Empire and the First Anti-fascist Assembly for the National Liberation of Macedonia, a 1944 political gathering which laid the foundation of the Socialistic Republic of Macedonia within the borders of the now non-existent Yugoslavia during World War II.

This year's 2 August began with nation-wide celebrations and ended with Macedonia entering its worst wildfire crisis since August 2007. At that time, it became evident that the highly varying operational availability of the Macedonian Air Force's (Makedonsko Voeno Vozduhoplovstvo) three Mi-17 and four Mi-8MT helicopters combined with the Air Force's primary operations (two Mi-17s were deployed to Bosnia and

Macedonian AF Mi-17 seen at Trabotivište. ***Photo*** *Dragan Cvetic via Igor Bozinovski*

Macedonian Air Tractor AT-802A Fire Boss fleet at Skopje airport. ***Photo*** *Igor Bozinovski*

Herzegovina as part of the European Union mission EUFOR Operation Althea in 2007) would hardly ever be able to cope with the wildfires regularly burning the precious forests without the support of government-owned dedicated aerial fire-fighting planes and, if necessary, international assistance. Following the example of Croatia, Montenegro and Cyprus, which each promptly bought the US-made Air Tractor AT-802 fire-fighting planes as a result of the 2007 wildfires, Macedonia also opted for that extremely capable 3,104 liters water bomber. Three such aircraft in amphibious configuration (with floats), known as Fire Boss, had been ordered in March 2009 and were operational in June 2010.

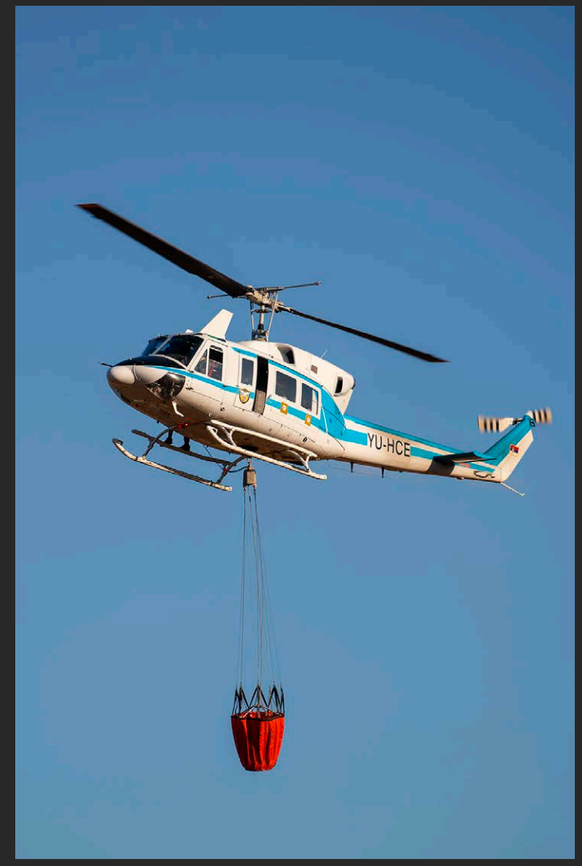
With its fleet of three Air Tractors left unserviceable in the middle of a summer season and with only three Mi-8MT/17 helicopters available for fire-fighting missions, Macedonia, this year, found itself in a much worse crisis than in 2007. It was a "déjà vu" when in the afternoon of 2 August, after weeks of high temperatures combined with strong winds, a lighting storm caused a strong wildfire on the mountain above Kočani, a small city located 70 km south-east of the capital Skopje. By midnight, the city was encircled by fires from three sides and some houses along the mountain slope were engulfed by the fire. By then, the panic already spread over social networks with local authorities and citizens appealing for airtankers to come and save Kočani. Faced with the enormous public pressure, the government officials shocked the nation and caused an avalanche of public condemnation and anger when they brought into light that the nation's fire-fighting planes would remain grounded at the Skopje international airport for the entire summer. As a reason, they stated their scheduled maintenance, worth around 400,000 Euro, was not done on time due to repeated complications with the public procurement process.

On the morning of 3 August, despite the Kočani wildfire was contained, it became obvious that Macedonia is on the verge of a crisis that would be worse than the one of 2007. It couldn't count on its Air Tractors and the only remaining national aerial fire-fighting assets on disposal were only two Mi-17 and one Mi-8MT military helicopters. The police helicopter fleet was not in the best condition either with one Agusta Bell AB 212 and one Mi-171E operational, but only configured for liaison and transport purposes.

The crisis escalated when a weeks-long tremendous heatwave resulted in many wildfires across Macedonia reaching their full strength on 3 August. The situation went out of control despite the efforts of air force helicopters and the very poorly equipped fire-fighting units. The government in Skopje mobilized the Army to fight the fires and imposed a complete ban on movement in forest areas, while at the same time, requesting international aid in aerial and ground fire-fighting assets. Ultimately, a 30-days nationwide state of crisis was declared on 5 August.

Macedonian-Serbian aerial fire-fighting brotherhood

The first country to promptly respond to Macedonia's call for help was neighboring Serbia. After a telephone



Serbian Police AB 212 at Trabotivište. ***Photo*** *Dragan Cvetic via Igor Bozinovski*

call between the political leaders of both countries on the night of 2 August, an order was issued by the Serbian Ministry of Interior (Ministarstvo Unutrašnjih Poslova - MUP) to immediately deploy four helicopters to Macedonia.On 3 August, a group of five helicopters, lead by MUP-newest Airbus H145M, carrying Serbian interior minister Aleksandar Vulin departed Belgrade. In the early morning, they landed at Skopje International Airport, demonstrating extremely rapid deployment capabilities of Serbian police aviation.

The aircraft that brought the Serbian interior minister to Skopje did not stay in Macedonia long as it returned its VIP passengers to Belgrade in the afternoon of 3 August. Left behind to fight the Macedonian wildfires, were one H145M, one SOKO SA342 Gazelle, and a pair of AB 212s helicopters. All of them belong to MUP's Helicopter Unit (Helikopterska Jedinica), a Serbian police aviation unit, subordinated to the Police Directorate (Direkcija Policije) and based at Belgrade Nikola Tesla international airport.

Serbian Police H145M refilling the 800 liter Bambi Bucket with water at Trabotivište. **Photo** *Dragan Cvetic via Igor Bozinovski*

Serbian helicopters began their operations on 4 August always flying in coordinated formations led by Macedonian Air Force Mi-18/17s, equipped with an underslung multiple-drop SEI Industries Bambi Bucket system with a capacity of 2,500 liters. MUP helicopters used the same fire-fighting system but with smaller capacity appropriate to the size and the performances of the helicopters. Each AB 212 carried one Bambi Bucket, holding 1,200 liters, and each H145M carried 800 liters. The single, rarely-seen camouflaged, Gazelle helicopter was used in aerial assessment, guidance, liaison, and transport roles.

The first day of operations saw MUP helicopters engaged in extinguishing wildfires near the village of Drenok, in the vicinity of the famous Kokino megalithic observatory, some 40 km north-east of the Skopje airport. During these operations, Macedonian and Serbian helicopters took water from a small lake near the wildfire zone with 21 flights and 22,000 liters of water being dropped by MUP crews. The following three days, the helicopters were redirected to the far east of Macedonia where a devastating fire was raging in the pine forests between the cities of Berovo and Pehčevo, near the Macedonian-Bulgarian border, some 105 km south-east of the Skopje irport.

Forced to return to Skopje International Airport for refueling in the first two days of operations, and with wildfires on different distances from the refueling hub, the MUP pilots were taking off on missions with different quantities of fuel. This was to balance the need for staying in the wildfire zone as long as possible while at the same time, keeping the aircraft as light as possible to carry a maximum of water. Thus, the operations in the area of Kokino were launched with semi-full fuel tanks, while full fuel tanks were used on 5 August when operations focused on saving the village of Nov Istvenik. This involved two Serbian helicopters that managed to drop 24,000 liters of water despite working in extremely hot conditions of over 40°C.

The 6 August efforts focused on saving the Budinarci village. 38,000 liters of water were dropped from MUP helicopters. At this time, the overall efficiency of Macedonian and Serbian helicopters was significantly improved after the government in Skopje approved 15,000 liters of Jet-A1 fuel from the state reserves to be used for refueling the non-Macedonian fire-fighting aircraft. A Macedonian Army fire truck established a forward operating refueling post on a field near the wildfires, allowing "hot refueling" (aircraft engines running on idle and rotors turns) of Serbian helicopters. In parallel, on advice by the Austrian 136-strong fire-fighting contingent that arrived in Macedonia in the early hours of 6 August, engineering mechanization was used to build improvised dams and dig pits in and near the shallow Bregalnica River. This created stations where the helicopters could fill their Bambi Buckets. All this drastically shortened the time between two water drops.

Serbian Police Gazelle YU-HFF at Petrovec air base. **Photo** *Igor Bozinovski*

MUP helicopters were overnight parked at the so-called Northern platform of the Petrovec air base alongside Macedonia's An-2R Colt transporter, Mi-8MT/17, and Mi-24V helicopters. The visiting helicopters, however, were moved in the air force hangars on one afternoon when potentially dangerous burst winds that could damage the Serbian helicopters were forecasted.

The MUP deployment to Macedonia marked the second fire-fighting operation for Serbian Police helicopters outside national borders, after two AB 212s and a

Romanian C-27J returning from Macedonia on 13.08.2021. **Photo** *Valentin Ciobîrcă, Romanian Ministry of National Defence*

Gazelle helicopters were sent to neighboring Bosnia and Herzegovina on 31 July 2021. There, they assisted in containing the Stolac mountain wildfire, near the city of Višegrad in Republika Srpska, one of the two entities of Bosnia and Herzegovina.
MUP Helicopter Unit Commander Nenad Nedić said that Macedonia was critical and tough for the unit that flew between seven and nine hours a day. "We flew a lot, but the water collecting points were often far away from the wildfires and so the quantity of dropped water is far lower than it should be", Nedić explained, adding that 92 flight hours were flown by MUP helicopters that managed to attack the wildfires with between 180,000 and 190,000 liters of water.
The Serbian mission to Macedonia ended on 7 August when the helicopters shortly returned to Belgrade before two AB 212s and one H145M were sent to the Hellenic Air Force base of Tanagra on the following morning to take part in the international efforts to extinguish the catastrophic wildfires at the Greek island of Evia.

Romanian fire-fighting Spartan in the Macedonian skies

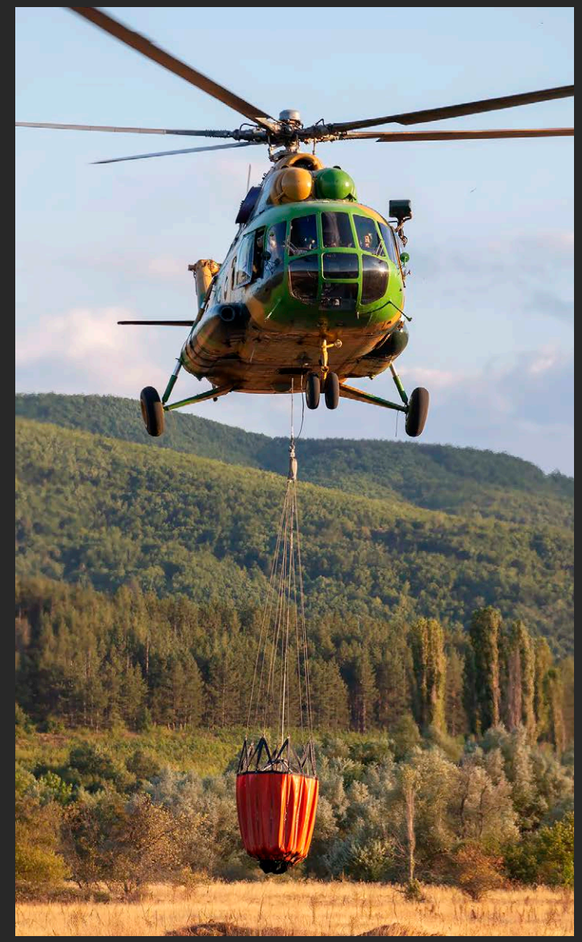
By the time Serbians left Macedonia, the EU Civil Protection Mechanism (EUCPM) was already mobilized. On 5 August, a team of 46 firefighters and 16 firefighting vehicles from Slovenia arrived in Macedonia and were deployed around the city of Berovo. At the same time, 25 Bulgarian firefighters, organized in four groups with two fire-fighting trucks, began fighting wildfires around the villages of Umlena, Robovo, and Mitrašinci, all located near the city of Pehčevo.
With devastating wildfires raging across the country and only three Mi-8MT/17 military helicopters, out of which no more than two were used at any given time, Macedonia had no other option than to request further support by EUCPM. Romania responded immediately and deployed two Romanian Air Force (Forțele Aeriene Române - FAR) transport aircraft. The first one was an Alenia C-27J Spartan of the 902nd Operational Air Transport and Aerophotogrametric Squadron configured to carry up to six 1,000 liters droppable cardboard containers. The other one was a C-130B Hercules of the 901st Tactical Air Transport Squadron which was sent to Skopje to provide the necessary logistical support.
The Romanian transporters left their home base – the 90th Airlift Base at Bucharest-Otopeni airport – on 7 August at 10:00 hours local time and landed at Skopje international airport some 90 minutes later. A total of 15 FAR servicemen were deployed to Macedonia to ensure that the Spartan's first fire-fighting mission was executed around the city of Delčevo on the afternoon on the very same day. The Romanian operations continued with the C-27J over the following days, attacking wildfires in Divlje, a village near the Skopje international airport; in all still critical areas in south-east Macedonia, along the border with Bulgaria, and in Raovikj, in the vicinity of Skopje.
Romanian C-27J Spartans are the first ever users of Alenia's Caylym Guardian innovative firefighting system that allows the in-flight drop of up to six cardboard biodegradable containers that can also be recovered by firefighters on the ground. The containers with standard A22-type dimensions can be installed on both, C-27J and C-130 transporters, without any special equipment or modification. They can be launched from altitudes of 460 meters (1.500 feet), thus, significantly increasing the mission safety and even allowing night operations.
Between 7 and 12 August, the Romanian C-27J flew

Montenegrin Bell 412EPI XHB033 with 1,600 liters Bambi Bucket. ***Photo*** *Dragan Cvetic via Igor Bozinovski*

18 aerial fire-fighting missions. About 100 containers of water were dropped in daylight conditions and 15 flight hours were accumulated by C-27J crews. Depending on the mission requirements, four to six containers were dropped. The logistics of the mission made the deployment of another Romanian C-130B to Skopje necessary.
The demanding and promptly organized deployment to Macedonia marked the second international fire-fighting mission for FAR aircraft, with the first one taking place in July 2018 in Greece. Since 2017, the Romanian Air Force's C-27J had also extinguished two domestic wildfires: one in the area of Șvinița, in the Mehedinți county, and the second one in the area of Buceș, Vulcan Mountains, at the border between Alba and Hunedoara counties.
On 13 August, the Romanian Air Force's deployment to Macedonia ended with a ceremony held at Bucharest-Otopeni airport. Medals of Honor were awarded to mission members, the 90th Airlift Base, and the Romanian Air Force itself.

The Montenegrins for the end

Even before the Romanians left, the Montenegrin Armed Forces (Vojske Crne Gore – VCG) Bell 412EPI helicopter landed at Petrovec AB on 11 August arranged within the Euro-Atlantic Disaster Response Coordination Centre (EADRCC), NATO's principal civil emergency response mechanism in the Euro-Atlantic area.
This first-ever international fire-fighting mission for a VCG helicopter lasted until 18 August when its two crews and the support personnel returned to Golubovci AB, located near the Montenegrin capital Podgorica. In the seven days of active flying in Macedonia, the Montenegrin helicopter flew two missions per day and accumulated about 20 flight hours. A total of 80,000 liters of water was dropped, using 1,600 liters Bambi Buckets. The Bell 412EPI always flew in formation with a Macedonian Air Force Mi-8MT or Mi-17. Until the arrival of the Montenegrin Bell 412EPR, the Macedonian helicopters already accumulated over 80 flights and made over 300 drops delivering more than 650,000 liters of water on the wildfires across Macedonia.
The Macedonian-Montenegrin helicopter duo extensively worked together on containing and extinguishing wildfires all over Macedonia. 50 members of the Macedonian special police forces assisted. They were supported by seven French wildfire experts equipped with drones carrying special thermal cameras allowing detection of hotspots hidden by the smoke rising from the burning forests. The Macedonian wildfire crisis ended with long-awaited rains, finally extinguishing most wildfires during mid-August. In total, 106 big wildfires burned 9,907 hectares of forests in Macedonia in the first half of August, half of these being pine forests. The damage is estimated to be over 10 million Euro. This is a huge loss, especially when considering that the 2021 maintenance and ADS-B avionics modernization of Macedonia's three Air Tractor AT-802A Fire Boss planes would cost the nation around 400,000 Euro or only 4% of the damage that the Balkan nation suffered this year. With their combined 9,300 liters



Macedonian AF Mi-17 seen at Trabotivište with 2,500 liters Bambi Bucket. ***Photo*** *Dragan Cvetic via Igor Bozinovski*

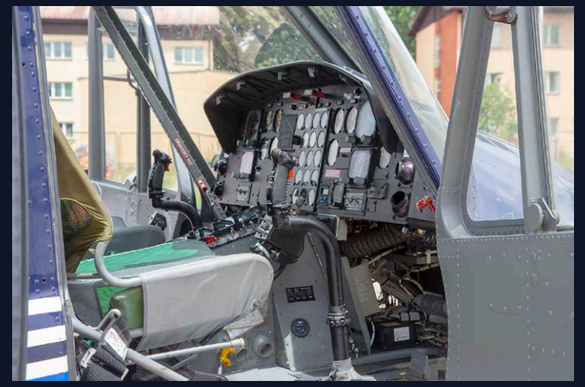
of water/foam/retardant capacity, these little yellow planes would have made the call for international support unnecessary.
The 2021 wildfire season was tragic, very painful, instructive and an expensive lesson for Macedonia. It is to be hoped that the politicians have learned from this for 2022 and the following years.

NEW LIFE FOR MACEDONIA'S SOLE AB 212

REPORT: IGOR BOZINOVSKI | **PHOTOS:** DAGAN CVETIC

The Macedonian Ministry of Interior's (Ministerstvo za Vnatrešni Raboti, MVR) sole 1978-produced, 43-years-old Agusta Bell AB 212 (registered MAP-7751, ex Z3-HHB and YU-HBP) twin-engine utility helicopter was brought back into service on 24 June 2021. That same day, the aircraft returned from extensive maintenance, airframe modification, and avionics upgrade works performed by Patria Helicopters AB, a Swedish helicopter maintenance, repair and overhaul service facility based at Stockholm-Arlanda International Airport. The aircraft, accompanied by MVR's sole 1973-produced, 48-years-old AB 206B *JetRanger II* single-engine utility helicopter (MAP-7750, ex Z3-HHA and YU-HBD) departed Skopje on 12 December 2019 towards Patria Helicopters in Sweden where they landed on 23 December 2019. After 18 months abroad, the AB 212 finally returned to its home base – the police complex located in the village of Idrizovo, some 11 km southeast of the Macedonian capital Skopje. Having landed at Idrizovo with almost 4,000 hours total flight time since being produced, this low hour helicopter immediately showed two eye-catching novelties: a completely new color-scheme that replicates the one used by MVR's sole 2000-made, 21 years old Bell 412EP (MAP-7752, ex Z3-HHC and N9026S); and a brand-new BLR Aerospace FastFin tail boom designed to dramatically enhance safety, handling and overall performances of the helicopter. While in Sweden, the AB 212 was disassembled and passed full refurbishment. That, apart from the scheduled inspection and execution of due service letters, bulletins and directives also meant a deep structural inspection and necessary repairs of the

aircraft and its components. Once reassembled, it also featured brand-new Pratt & Whitney Canada PT6 Twin-Pac engines and composite (carbon fiber) main rotor blades. The aircraft also received new high skids and a provision that would now allow MVR to interchangeably use its sole Breeze-Eastern HS-20200 rescue hoist system that, being in service since November 2007, was so far exclusively used in Search and Rescue (SAR) missions by the Bell 412EP helicopter. In addition to being repainted, the cabin received new seats, plexiglas windows, and a rugged floor of kydex/rubber laminate. The aircraft's traditional use in special operations was further emphasized by the installation of a Fast Rope Insertion Extraction System (FRIES) with a Quick Release Mechanism (QRM). In the AB 212's cockpit, analogue instruments were replaced with digital ones and an Automatic Dependent Surveillance-Broadcast (ADS-B) In/Out system comprising of Garmin GTN 650, and Garmin GTN 750 multi-functional displays with GPS/NAV/COMM capabilities and Garmin GTR 225 Comm radio was installed. Being considered for sale only for a few years, the Macedonian AB 212 is now back in service in an excellent condition and with capabilities that will keep it in service with the police for many more years. Being ordered from Agusta in the late 1970s when Macedonia was part of former Yugoslavia, the aircraft is an Italian-made helicopter only by its documents. Namely, as Agusta had problems with planning its production, the company faced tight delivery deadlines and was forced to improvise to fulfill the contractual obligations towards Macedonia. Thus, a brand-new Bell Helicopter-produced Bell 212 was acquired from the U.S. and promptly shipped to Agusta's factory in Cascina Costa, some 45 km northwest of Milan. Once in Italy, the aircraft was assembled, customized, and tested before its delivery to Skopje wearing Agusta's construction number 5626 and entering the Yugoslav civil aviation register as AB.212 YU-HPB on 26 October 1978. Due to the very limited service that the Italian company Leonardo provided for the AB.212 over the past 30 years, MVR has decided to return the AB.212 to its historic roots. The helicopter was transformed into a Bell-supported aircraft and officially obtained the Bell 212 designation and the original Bell construction number 5626. This ensures that MAP-7751 is fully aligned to the proven logistical support system of the Texas-based company. Furthermore, the transformation of the AB.212 into Bell 212 significantly raises the commercial value of the aircraft, regardless of whether MVR will ever decide to sell this helicopter in the future. This process is now almost completed with MVR only waiting to receive the final confirmation documents being issued by Bell. Until that happens, the AB 212 remains serving MVR's Oddel za vozduhoplovni edinici (Department of Aviation Units) that is a police helicopter unit that being established in 1969 is commonly recognized under the nickname "Jastrebi" (Hawks). This 52 years old police aviation structure is currently made of two subordinated helicopter units: the Idrizovo-based Helikopterska Edinica za Policiski Nameni (HEpolN, Helicopter Unit for Police Purposes "Hawks") operating one each AB.206B, AB 212 and Bell 412EP; and the Petrovec/Brestbased "Helikopterska Edinica za Posebni Nameni" (HEposN, Helicopter Unit for Special Purposes) operating two Elbit-upgraded helicopters: a 14 years old Mi-171E (MAP-7710) manufactured by Ulan-Ude Aviation and a 13 years old Mi-17V-5 (MAP-7714) produced by Kazan Helicopter. In expectation for the AB 206 to soon also return from Sweden, the MVR is in final preparation to again send its Bell 412EP to Patria Helicopters AB where it will pass the scheduled 5-year/5,000- hours inspection that the Swedes last time performed on that aircraft between February and June 2016. Also scheduled for its first-ever general overhaul is the non-airworthy Mi-17V-5 helicopter that during 2022 should be restored into flying condition by the Czech LOM Praha maintenance, repair, and overhaul facility.



The helicopter now features a modern cockpit instrumentation (***above***). Externally, the FastFin tail boom of the "new" 212 (***top right***) is immediately noticeable compared to the "old" 212 (***top left***).

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