THE AVIATION MAGAZINE

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Content

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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.

Do you feel addressed and want to be part of our team? We would love to publish your work too, so feel free to shoot us an e-mail to editor@TheAviationMagazine.com. Please note that we do not accept any unsolicited articles or images for publication.

The people behind THE AVIATION MAGAZINE

Publisher & Editor

Ralf Peter Walter
editor@TheAviationMagazine.com

Core Team
Ralf Peter Walter
Wolfgang Jarisch

Occasional Contributors
Santiago Anacleto
Juan Miguel Anatol
Simone Ba
Igor Bozinovski
Matteo Buono
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FROM THE EDITOR

Dear Readers,

A new year lies ahead of us – a year full of opportunities, new paths, and hopefully many wonderful moments. We wish you all the best: health, success, happiness, and above all, confidence.

For us, this year begins with a very special event that fills us with pride, gratitude, and even a little awe: the 100th issue of **THE AVIATION MAGAZINE** has been published. A milestone that is much more than just a number. It stands for countless hours of work, passion, creativity – and above all, a loyal readership that has accompanied us throughout the years.

When we published the first issue 16 years ago, we didn't know where the journey would take us. We had visions, ideas, courage – and the desire to create a magazine that would excite, connect, and inspire aviation enthusiasts. Looking back, we believe that we have succeeded in doing just that – and we want to continue building on this success.

We would like to express our thanks to all those who, with their articles, photos, research, and experience, have contributed to making each issue lively and technically sound. Your contributions are an essential part of what makes **THE AVIATION MAGAZINE** what it is.

And, of course, we would like to thank you, our dear readers. Every glance at our magazine, every piece of feedback, every recommendation is an incentive to continue with the same commitment and passion.

Here's to the next issues – and to a year full of exciting stories from the world of aviation!

Blue skies and best regards,

Peter WALTER and the team of **THE AVIATION MAGAZINE**

THE AVIATION MAGAZINE is 100% pure aviation, no advertisements, and absolutely free of charge! It is the BEST and FREE e-based, photo-centric magazine on military aviation since 2009. Imitated by so many, but never surpassed!

Ralf Peter Walter

MINI TIGERMEET AT NEUBURG AB

ARTICLE BY MATTHIAS NEUROHR

For this year's NATO Tiger Meet, the Eurofighter EF2000 '30+74' of the TaktLwG 74 received this «Castle Tiger» color schene

On 4 July 2025, the German Air Force's Tactical Air Force Wing 74 (TaktLwG 74) in Neuburg an der Donau opened its doors for an exclusive spotter hour. In preparation for the big NATO Tiger Meet 2025, which will be hosted by Portugal this year, Tactical Air Force Wing 74 welcomed numerous national and international guests.

This was a unique opportunity for aviation enthusiasts to experience operational Eurofighters and historic aircraft up close and in perfect weather conditions.

«CASTLE TIGER» – SPECIAL LIVERY WITH HISTORY

The focus was on the official presentation of the Eurofighter 30+74 in special livery. The so-called "Castle Tiger" combines medieval motifs with modern tiger elements. The design, featuring stylized walls, a black knight's helmet, and a bright yellow tiger's eye on the tail, was conceived and implemented by an advertising agency. On this day, the aircraft flew a mission with takeoff and two low passes.

In addition to the Castle Tiger, a large number of aircraft could be seen on the ground or in the air:

- Eurofighter Typhoon (TaktLwG 74 and Italian aircraft from 12° Gruppo / 36° Stormo)
- IDS Tornado (TaktLwG 51 Jagel and the specially painted "50 Years of Tornado" from TaktLwG 33)
- Saab JAS 39 Gripen (Czech Air Force)
- KC-130J Hercules of the German Air Force
- Airbus Helicopters H145 LUH SAR
- NH90 multi-purpose helicopter
- German Air Force training Eurofighter
- Hispano Aviación HA-200 D jet trainer
- Messerschmitt Bf 108 Taifun
- North American SNJ-5
- Nord 3202 (France)
- Beechcraft AT-11 Kansan (bomb trainer)
- Beechcraft Bonanza V35

The mini-meeting was deliberately much more compact than large Tiger events, which created a familiar, relaxed atmosphere: instead of large multinational exercises, presentations, PR exchanges among members of the Tiger community, and fan encounters dominated.

For the TaktLwG 74, the new «Castle Tiger» livery serves several purposes: it strengthens public recognition, promotes the squadron's recruiting and public relations work, and underscores its membership in the NATO Tiger community, which has a long tradition of visually striking paint schemes and joint appearances.


30 74


30 74

Takeoff of EF2000 Eurofighters of the TaktLwG 74 with full afterburner

Eurofighter climbing out after takeoff with the afterburners fully engaged

This Italian Air Force *F-2000A Typhoon*, assigned to 936° Gruppo Efficienza Aeromobili (G.E.A.) came to Neuburg AB from its home base Gioia del Colle AB

The Italian Air Force sent a total of three F-2000A *Typhoons* from its 936 G.E.A. to the "Mini Tiger Meet" at Neuburg AB

Takeoff of Tornado IDS '43-92' of the TaktLwG 33 at Büchel AB. This special livery is to celebrate 50 years since the first flight of a Tornado on 14 August 1974

Czech Air Force JAS39d *Gripen* assigned to 211.tl at Čáslav AB

German Air Force '55+04' KC-130J of the French-German Binational Air Transport Squadron "Rhein / Rhin", stationed at the BA105 in Evreux

German Army Aviation H145M LUH SAR assigned to the Transporthubschrauberregiment 30 at Niederstetten Army Airfield

Pilatus P-2 trainer aircraft,ex-Swiss Air Force U-136 and now civil registration HB-RAR

CARABINIERI AIRCRAFT GROUP

ARTICLE BY SALVATORE ROCCELLA

An UH-169C (in the foreground) and an UH-139D (in the background) are departing from Pratica di Mare AB for a joint mission

THE CARABINIERI AIRCRAFT GROUP OPERATIONAL EXCELLENCE

In the complex landscape of national security, the Carabinieri Air Service represents a vital strategic resource. A highly specialized unit, it combines the operational needs of territorial control, public order, environmental protection, and investigative support with the potential offered by its air component.

This branch of the Force, operating nationwide, acts promptly and precisely in often critical contexts, ensuring timely intervention, a bird's eye view, and the ability to coordinate inter-force operations. Through modern helicopters, cutting-edge equipment, and highly trained personnel, the Air Group makes a crucial contribution to the overall effectiveness of the Force.

Telling the history, structure, and missions of the Air Service means restoring the rightful value to a component that, while often operating out of the spotlight, is at the heart of daily action to protect the community.

In a famous scene from the 1981 film "Carabinieri", General Montagnani addresses his men with words that still resonate today and which I deeply share:

"In this country, the only firm, solid foundation is the Carabinieri, because even if everything were to collapse, the people know that we will always be here, unfailingly present."

A statement that well sums up the spirit of every single Carabinieri officer and which also inspires the Air Service personnel.

A pair of RH-119As on a territorial control mission

HISTORICAL NOTES

The Carabinieri Corps flourished long before a formal air service was established. The first to embody this spirit was Ernesto Cabruna, recipient of the Gold Medal for Military Valor, who became a fighter pilot during the First World War after joining the Royal Carabinieri in 1914. Courageous and determined, Cabruna distinguished himself in the skies over the Isonzo, earning honors for his daring and for one episode in particular: on 14 July 1918, he single-handedly faced eleven enemy aircraft, downing two and forcing the others to flee. An act of extraordinary boldness, which still inspires those in uniform who serve from above. It took several decades for this pioneering intuition to materialize in an organized structure. On 15 May 1964, the first Carabinieri Helicopter Section was established at the Italian Air Force's Helicopter Flight School in Frosinone, marking the official birth of the Carabinieri Air Service. This marked a fundamental step toward integrating the air force into its operational activities at a time when the use of helicopters in law enforcement was still in its infancy.

The following year, in 1965, the Section was transferred to Pratica di Mare Airport, taking on the new name of Carabinieri Helicopter Center. From that moment, a phase of structured expansion began, with the activation of the first peripheral Helicopter Units in the strategic locations of Bolzano, Cagliari, and Palermo, placed under its direct coordination. This new operational structure laid the foundations for the current structure of the Air Group, marking the beginning of a widespread air presence of the Force across the national territory.

In the years following the establishment of the Air Service, the Carabinieri's flight line consisted primarily of light piston-engine helicopters, such as the Bell 47G2, AB-47G3, and AB-47J. These aircraft, though pioneering, offered limited performance in terms of both range and operational capacity. This configuration remained virtually unchanged until the early 1970s, when a significant qualitative leap was made.

Beginning in 1971, the first Agusta-Bell AB-205s, higher-performance helicopters intended primarily for tactical transport, were introduced. Two years later, in 1973, the AB-206 B1 Jet Rangers, intended for observation, patrol, and liaison missions, also entered service. The AB-206s proved so effective that they remained in service for decades. The AB-205s, however, were gradually withdrawn from service by 1996, after more than twenty years of operation.

With the arrival of the AB-205s, the entire Carabinieri air fleet abandoned the traditional green and brown camouflage, typical of Army vehicles, adopting the new, distinctive blue and white livery that still characterizes Carabinieri aircraft today.

Toward the end of the 1970s, the Carabinieri General Command initiated a further renewal, focusing on a medium-light twin-engine helicopter, faster and more suitable for rapid liaison and long-range surveillance missions. The choice fell on the Italian Agusta Ati09, which entered service in 1979 with the arrival of the first 26 A109A/A-II versions. These were followed, starting in 2000, by three A109E Powers, and from 2008, by seventeen A109N Nexus, equipped with advanced avionics and modern systems for night surveillance and special operations.

1984 marked the introduction of a new player in the fleet: the powerful and reliable Agusta-Bell AB-412, a four-bladed, twin-engine, multi-role helicopter. Designed to meet the most complex operational needs, it was used for personnel transport, but also in support missions for the Carabinieri's special units, such as the Tuscania Regiment, the Hunter Squadrons, and the Special Intervention Group (GIS).

In 1999, culminating the development and rationalization of the air force, the Helicopter Center was reorganized and took on its current name, Raggruppamento Aeromobili Carabinieri (Carabinieri Aircraft Group in 1999, but it only became Aeromobili in 2005 with the arrival of the P.180). The evolution continued in 2006, when a fixed-wing aircraft, the Piaggio P.180 Avanti II, was introduced for the first

Left: A former State Forestry Corps NH500D after a firefighting mission
Right: A former State Forestry Corps AB412EP is departing for a mission in the Dolomites, a UNESCO World Heritage Site

time. This aircraft, thanks to its speed and versatility, is used in institutional fast transport missions, including special operations and reserved flights for high-ranking authorities. In 2019, the Group began receiving the state-of-the-art UH-139D helicopters, next-generation helicopters intended to progressively replace the AB-412s, which will be permanently replaced by the new UH-169Cs, which entered service starting in 2023. Finally, in 2024, the Group received its first RH-119As. Thanks to their advanced operational capabilities, these new aircraft are now engaged in a wide range of missions: from support to territorial forces, to environmental monitoring, to rescue and civil protection.

The Carabinieri Air Service is a key component in ensuring efficient and rapid response throughout the country. Its organizational structure is structured across multiple levels, with distinct yet seamlessly integrated functions.

Effective 15 October 2025, a reorganization of the General Command offices created the Air and Naval Department, reporting directly to the 2nd Department, and encompassing the Air Service, Naval Service, and Aircraft Group. This represents a first for the Carabinieri, as it is the first time an operational unit – the Aircraft Group – has been placed directly under the General Command. This will allow for an even more direct flow of strategic guidelines within the division.

The operational heart of the Air Service is the Carabinieri Aircraft Group (RAC), based in Pratica di Mare (RM), which operates under the direct command of the Specialized Units Division. Within the RAC, the Pratica di Mare Flight Group plays a central role, coordinating the Training and Standardization Unit, two Helicopter Units (Pratica di Mare and Roma Urbe) and the Aeroplane Unit. Supporting operational activities is the Support Group, responsible for second-level technical maintenance and airworthiness management of the entire fleet. Efficiency and territorial coverage are ensured by 16 Helicopter Units (NEC) strategically distributed throughout the country, ensuring timely intervention in any area.

To meet contemporary operational needs, the Air Force has initiated a fleet modernization process, which includes the introduction of three new flight lines: the AW139, AW169, and AW119. These helicopters, technologically more advanced than previous models (AB412, AW109, and NH500), were chosen to enhance the Air Force's capabilities in traditional police duties, special forces mobility, and territorial control.

The adoption of these new aircraft also entails the expansion of operational functions, including environmental monitoring through multispectral sensors and cutting-edge technologies. These

An UH-139D is turning over the Italian coast during a training mission

capabilities will be made available to the Ministry of the Environment thanks to collaboration with the Forestry, Environmental, and Agri-food Units Command.

The Air Force's fleet includes fixed- and rotary-wing aircraft, including:

- Piaggio P180 Avanti;
- AW139;
- AW169;
- AW119;
- AB412;
- AW109 POWER;
- AW109 NEXUS;
- NH500.

AW139 (UH-139D)

Medium-sized, twin-engine, multi-role helicopter, suitable for personnel transport (up to 12 passengers and three crew members), SAR operations, tactical support, and special missions. It can reach a maximum speed of 306 km/h (165 knots) and is equipped with an IR camera, rescue hoist, cargo hook, fast rope/rappel capability, and NVG compatibility.

AW169 (UH-169C)

Light twin-engine aircraft used for troop transport, special operations, and public utility missions. Equipped with advanced avionics and interoperability with NATO standards, it carries up to 10 people, including crew members. Its maximum speed is 152 knots. Equipment includes an IR camera, winch, cargo hook, fast rope/rappel, and NVG compatibility.

AW119 (RH-119A)

Single-engine variant of the AW119 Koala, optimized for surveillance, training, firefighting, and rescue missions. It features large sliding doors, an HD electro-optical sensor, a cargo hook, and an ITRES environmental monitoring system. The NVG-compatible cockpit is equipped with the modern Garmin Gti000H avionics system. It can carry up to eight people and reaches a maximum speed of 152 knots.

All of the Air Force's helicopters regularly perform reconnaissance, search and rescue, and tactical mobility missions. The NH500 model, currently used for the AIB (forest firefighting) campaign, will be gradually replaced by the AW119, thus improving the performance and effectiveness of firefighting missions.

The introduction of the Piaggio P180 represented a significant leap forward for the Air Group.

The availability of a fixed-wing aircraft has significantly expanded operational coverage, significantly reducing travel times throughout the country.

Thanks to its high range and reduced fuel consumption, the P180 allows for more efficient transport and reconnaissance missions, extending its range beyond national borders to cover all of Europe, North Africa, and the Middle East.

The Carabinieri Air Service stands out among the air components of the Armed Forces and Police Forces for a series of distinctive features that define its uniqueness and effectiveness. While every state air force is created to support its own units in the scope of their assigned institutional tasks, the Carabinieri Corps boasts a dual nature – military and police – which is also reflected in the use of its aircraft.

The main characteristic that differentiates the Corps from other agencies is its territorial coverage and the breadth of its functions. The Air Service is integrated into a unique ground structure, consisting of over 5,000 Carabinieri Stations distributed evenly throughout the country. This is complemented by highly specialized sectoral expertise, such as the protection of cultural heritage, environmental protection, and the safeguarding of the agri-food sector. Air support also extends to the mobile component of the force, operating alongside Regiments and battalions, as well as elite units such as the GIS (Special Intervention Group), the "Tuscania" Paratrooper Regiment, and the hunter squadrons of Calabria, Sicily, Sardinia, and Puglia.

Unlike other armed forces, such as the Italian Air Force, access to pilot training in the Carabinieri

Left: Flight line at Pratica di Mare Carabinieri AB: P180, UH-139D, UH-169C, and AW109 Nexus (left to right)
Right: Formation of an UH-139D, UH-169C, and RH-119A returning from a training sortie

Main: RH-119A departing for a joint mission with personnel from the mobile radio unit
Inset: The the cockpit of an UH-169C

is granted only after significant service in local organizations. This unique training program ensures that pilots and specialists have a thorough understanding of the operational needs of ground units, promoting effective and coordinated use of aircraft. Field experience translates into greater tactical awareness and more effective functional integration during missions.

The absorption of part of the State Forestry Corps in 2017 with the reform known as the "Madia Decree" marked a significant phase of growth for the Aircraft Group. Although integration was not without initial challenges, it led to the development of new operational skills, particularly in the field of environmental protection.

The contribution of former CFS personnel, now part of the Forestry, Environmental and Agri-food Units Command (CUFAA), has significantly strengthened environmental monitoring activities, already partially initiated with the Ecological

The last remaining operational A109 *Power* helicopter

An UH-139D is flying over the surrounding areas of the beautiful country to ensure surveillance of rural areas, in the mountains, in the maritime area, and in the city

Operations Unit. One of the most significant innovations was the use of NH500 helicopters in forest firefighting campaigns (AIB), a capability previously outside the scope of the Corps' functions. This deployment benefited from the decades-long experience of former forestry operators and will contribute to the training of Corps personnel with the introduction of the AW119.

Cooperation between the Air Service and other Corps departments is a strategic strength. The combination of "third dimension" capabilities and the Corps' widespread presence throughout the territory allows the operational potential of the aircraft to be fully exploited, making it an effective multiplier in all institutional activities.

Particularly significant is the interaction with highly specialized military units, such as the GIS, the "Tuscania", and other mobile units. Joint activities include specific training aimed at developing advanced operational techniques such as airdrops, fast-roping, and infiltration into hostile areas. This synergy, built over time through intense teamwork, ensures effectiveness and safety even in the most complex operations.

At the same time, air support for the activities of the Carabinieri's territorial and special forces is essential to the success of daily operations. Thanks to their performance in terms of speed, maneuverability, and ability to reach remote areas, the aircraft are an indispensable tool in search, territorial control, and public safety. The onboard technological equipment – IR cameras, night-time lights, hyperspectral sensors – completes a top notch operational framework.

In a world characterized by rapid change and new threats, the Carabinieri have demonstrated an extraordinary capacity for adaptation. The Air Service is no exception and is preparing to face future scenarios by focusing on technology, training, and versatility.

Over the course of its history, the Carabinieri Air Service has played a key role in numerous events of national importance, distinguishing itself for its

readiness for intervention, operational capacity, and spirit of service. Working in synergy with the other components of the Corps, it has contributed decisively to the success of numerous missions, often determining the favorable outcome of operations thanks to its versatility and readiness for deployment.

One of the most significant episodes dates back to December 1980, when Italy was experiencing a period of intense political and social tension. During the prison riot in Trani (Bari), the Air Service provided essential support to the newly formed Special Intervention Group (GIS), deploying three helicopters: two AB205s to transport the operators who were disembarked on the roof of the penitentiary, and an AB206 in constant flight to ensure the aerial safety of the ground forces.

Even in civil emergencies, the Air Service's contribution has proven crucial. This was the case during the Vajont disaster, which occurred in October 1963. The Carabinieri helicopters, operating alongside other Armed Forces and State Corps assets, participated intensively in the rescue operations: they transported medicines, essential supplies, and specialized personnel, also contributing to the evacuation of survivors from the Longarone area to safe areas.

More recently, in June 2024, the crews of the Air Group were instrumental in responding to the flood that struck the town of Cogne (Aosta). In just 12 hours of uninterrupted operations, the Air Force's helicopters alone evacuated approximately 300 people, left isolated and without essential services, while also ensuring the transportation of their personal belongings.

The list of operations in which the Air Service's contribution has been instrumental is vast. They range from the capture of dangerous fugitives to anti-narcotics operations, the discovery of illicit cannabis cultivation, and the repression of environmental crimes. These are all concrete examples of the potential of the Air Force's air assets.

UH-169C multirole helicopter circling over the city during territorial control operations with a video camera

Throughout a career in the Air Service, the reasons for pride are numerous and profound. Some are experienced firsthand, others are witnessed during the preparatory phase, and still others are passed down through the stories of older colleagues no longer serving. Regardless of the nature of the operation – whether combating crime or providing disaster relief – all these events are united by the same founding values of the Force: a sense of state, a spirit of service, self-sacrifice, and the desire to contribute concretely to the collective well-being.

To all this, those who belong to the Air Service add another source of motivation: a passion for flying. Not flying as an end in itself, but as part of the mission of an institution deeply rooted in the local community, one that has always operated "with its feet on the ground" – and, at one time, even on horseback. For the Carabinieri of the Air Service, flying is synonymous with responsibility, dedication, and, above all, continuous personal and professional growth.

The future of the Air Group promises to be full of challenges, the most significant of which is undoubtedly technological. The evolution of aircraft, both in terms of performance and in terms of reducing crew workload, represents only part of the ongoing innovation. An even more significant aspect concerns the evolution of mission systems, which will increasingly rely on sophisticated sensors, advanced graphic representations, and, last but not least, artificial intelligence to support operational software.

Although the Air Group's participation in missions abroad has so far been limited – only a few experiences in bilateral territorial control operations in Albania – the potential for more structured international deployment is real.

In the near future, it cannot be ruled out that the Air Service may be called upon to provide its contribution in multinational contexts or in more

An RH-119A departing for a land control mission along the Lazio coast; in the background, an UH-169C just returned from a control mission over the city of Rome

An AB412 MFD departing for a night mission

complex missions under the aegis of international organizations, especially in areas where the versatility of the Carabinieri – and therefore also of its air component – could constitute an added value in terms of security, stabilization, and support for the population.

Second Lieutenant Ernesto Cabruna, a highly decorated hero of the First World War, remains an inspiration to the Carabinieri Air Service.

Since then, despite the evolution of technologies, equipment, and operational scenarios, what has remained unchanged is the spirit that drives those who fly in the service of the Carabinieri. Each crew approaches their tasks with the same enthusiasm, dedication, and unwavering sense of duty that distinguished the pioneers of flight. It is this intangible heritage of values—passion, discipline, selflessness – that continues to give strength and identity to the Carabinieri Air Service, today as it did then.

With pride and profound gratitude, we can affirm that the Carabinieri Air Service represents not only operational excellence, but also a symbol of dedication, courage, and innovation in the service of the safety and protection of citizens. Every member of this unit, like every Carabiniere in Italy, carries with them the honor of being part of an organization that, with passion and professionalism, works daily to ensure peace and justice in our country. It is this spirit of belonging and sacrifice that makes the force an irreplaceable point of reference for our nation.

An RH-119A turning at sunset on its way back from a training mission

ROSKILDE AIRSHOW 2025

ARTICLE BY RALF JAHNKE

The Roskilde Airshow has become the new flagship event of the Royal Danish Air Force after they announced they would no longer organize their own open days. The last major Danish Airshow took place at Karup AB in 2022

On 23 and 24 August 2025, the Roskilde Airshow took place at the air base of the same name near the capital Copenhagen in the Zealand region. This time, many aviation enthusiasts flocked to the Roskilde Airshow, which also set a new record with 21,000 visitors. At first glance, this may not seem like much, but for the small exhibition area, given the existing infrastructure, it is a remarkable number. This year, the event celebrated its 30th anniversary and at the same time bid farewell to the Royal Danish Air Force (RDAF) F-16s, as there will be no more Fighting Falcons in active service at the next airshow. The official decommissioning at Skrydstrup Air Base was scheduled for the end of 2025, and the remaining 24 F-16AM/-BMs have been sold to the Argentine Air Force for $300 million. The handover to the Fuerza Aérea Argentina (FAA) will take place in four tranches by 2028. The first delivery of six Fighting Falcons (four F-16BMs and two F-16AMs) in Have Glass V paint scheme, a dark gray finish that reduces radar signature and thus increases the F-16's stealth capability, was already made in early December to Argentina's Rio Cuarto maintenance base of the FAA. This base will initially receive the transferred Fighting Falcons, and at a later date, they will finally move to the 6th Air Brigade at the Tandil Military AB near Buenos Aires. This air base is to be modernized within two to three years. According to the Argentine Ministry of Defense, the order also includes the delivery of four flight simulators, eight engines, and a five-year spare parts supply. In addition, the contract provides for the training of pilots and technicians.

The RDAF announced last year that it would no longer hold open days at its bases in Skrydstrup, Karup, and Aalborg for organizational and financial reasons. This leaves RDAF fans with only the Roskilde Air Show in Denmark, where the RDAF (Flyvevåbnet) presents most of its aircraft on the ground and in the air. The show is Denmark's largest civilian-organized air show, featuring many different civilian and military aircraft from Denmark and abroad, and is a major event for the whole family. The Roskilde Airshows have been held every two years at Roskilde Airport since 1995 and have developed further from

The Royal Danish Air Force conducted a solo demonstration flight with its special livery F-16AM 'E-006'. Demonstration pilot Captain Troels «TEO» Vang showcased the *Fighting Falcon*'s impressive capabilities. Here, the F-16AM is seen taking off from Runway 29 to the Flying Display Area

year to year. The Airshow aims to promote interest in aviation in the broadest sense. The event appeals to audiences of all ages, young and old alike. It is an exciting experience covering civil and military aviation in the past and present. The goal is always to have at least one well-known international air show team participate. The Danish Armed Forces displayed their military aircraft and helicopters, and numerous foreign military aircraft were also represented. There was also a large participation of civil passenger aircraft, business aircraft and helicopters, military aircraft from World War II, aerobatic aircraft, and a large selection of home-built aircraft and vintage aircraft. In addition, gliders, hang gliders, ultralight aircraft, drones, model aircraft, and skydivers were also on display. In particular, aircraft types from abroad were present that are not normally seen here in the far north. The Roskilde Airshow is organized by the

The F-16AM's appearance was also the last demonstration of the *Fighting Falcon* in Denmark. The delivery of the first F-35A *Lightning II*s has already begun. On 6 December last year, six F-16AM/BMs landed in Argentina at Rio Cuarto AB. The Argentine Air Force (Fuerza Aérea Argentina) will receive a total of 24 aircraft from the RDAF by the end of 2028. The F-16AM/BMs will be delivered in four batches of six aircraft.

Roskilde Airshow Association. All profits from the airshow go towards promoting interest in aviation, including through the Roskilde Flyveklub, for example, for training private pilots, lectures, maintaining pilot licenses, further training, etc.

On Saturday evening, there was a twilight airshow, which is becoming increasingly popular and is therefore an integral part of the event. This show was a special experience, with the aircraft equipped with pyrotechnics/fireworks and various LED lights and lasers. A fantastic sight that simply has to be seen.

Among the main attractions were undoubtedly the display teams, the Red Arrows from the Royal Air Force and Team Orlik from the Polish Air Force. Other highlights included several solo displays by fighter aircraft from the Swedish Air Force from F17 Ronneby AB with two JAS-39Cs, from Germany by TaktLwG 74 with the Castle Tiger EF2000 Eurofighter, and the Typhoon FGR.4 from the Royal Air Force's No. 29 Squadron in Coningby,UK. The German Army Aviation Corps also demonstrated its Tiger combat helicopter and NH-90 transport helicopter in flight. A special treat was a KC-390 Millennium from the Portuguese Air Force. It made the longest journey to Roskilde but could only be admired in the static display. Unfortunately, the RDAF did not display its new 5th-generation fighter aircraft, the F-35A Lightning II, either on the ground or in the air. It is now striking that the F-35 is absent from public events held by all European air forces. Could this be a result of the special security regulations imposed by the Americans when dealing with the Lightning II?

It was the largest airshow the organizers had ever put on. Over the years, they have built up a strong network in the field of airshows, making them an interesting partner. Not because they are huge, but because they run the show pleasantly and professionally. In the past, the organizers had to ask the pilots themselves if they wanted to participate. Now, interest in this event is so great that they register for the Roskilde Airshow on their own. This year, the large presence of military aircraft was unique. The German armed forces sent a total of ten aircraft (EF2000 (2), Tornado PA200, A400M (2), NH-90 (2), EC 665 Tiger (2), and AS 532 Cougar) to Denmark.

Roskilde Airport serves general aviation and belongs to Copenhagen Airports A/S, which operates Roskilde as well as the main airport in Copenhagen-Kastrup. The airport is also used as a military airfield by the Danish Flyvevåbnet. It is home to the Air Defense Wing, whose task is ground-based air defense. The squadron is affiliated with Roskilde Airport to the south and is known as Skalstrup Air Base, although this military property does not have its own airfield. A detachment of Squadron 722, equipped with AugustaWestland EH101 Merlin SAR

Fighter Wing Skrydstrup sent this two-seater F-16BM 'ET197' to Roskilde. It served both as a static display aircraft and as a spare for the specially painted F-16AM 'E-006'. However, it did not have to participate in the four planned demonstration flights

Unfortunately, the the German Air Force's TaktLwG 33 from Büchel AB did not send its specially painted Tornado "50 Years of Tornado". Instead, the unit deployed aircraft 45+66, equipped with an LDP pod and two chaff/flare dispensers. The conversion to the F-35A Lightning II is scheduled to begin in 2027 and currently includes 35 aircraft, but more could certainly be added in the future.

helicopters, is permanently stationed at Roskilde Airport. From here, the eastern part of Denmark is covered by the SAR service around the clock. The Home Guard Squadron 225 (HVE225) of the Danish Home Guard also uses this airfield with its two DHS-6-300 Twin Otter patrol aircraft. The main task of the Air Home Guard is to guard and defend Air Force facilities. It is also part of the general readiness to support civil society in environmental and disaster situations.

The next Roskilde Airshow is planned for August 2027, and it remains to be seen whether participation by military aircraft can be increased further.

The Royal Air Force's display pilot put on a fantastic flying display with his Typhoon FGR.4. 'ZK324' belongs to 29 Squadron and is based at RAF Coningsby

Squadron Leader Nathan Shawyer was the official RAF demonstration pilot in 2025. He showcased the full performance range of his Typhoon FGR.4. With afterburner engaged, the demonstration offered an impressive and dynamic performance

In 2025, the German Air Force's TaktLwG 74 dedicated the paint scheme of its Eurofighter to the Neuburg an der Donau Castle Festival. Hence the name "Castle Tiger." With its black and gold tiger livery, the squadron also referenced the NATO Tiger Meet. Here, display pilot «NOBLE» shows off his "tiger skin" to the assembled photographers upon arrival at Roskilde AB

A steep climb after arrival in Roskilde. Before landing, aircraft '30+74' performed two flybys

Main: Castle Tiger's final flyover before landing at Roskilde. The aircraft's underside carries the emblem of the TaktLwG 74

Left: '30+74' on final approach to Roskilde AB

Right: Touchdown on runway 29, exactly on the painted number '29'

Main: Takeoff and retraction of the landing gear with the spare aircraft '31+09'
Inset: At the end of the runway, a sharp and low right turn initiated the display

Main: JAS-39C '39210' had a special «3,500 flight hours» marking on its tail
Inset: Takeoff clearance for the solo display *of Gripen* '39210'

The Swedish Air Force sent three *Gripen* fighter jets of F-17 from Ronneby AB to Roskilde AB. Two different flying displays were presented

JAS 39C '39281' performed a second flying display in the skies above Roskilde. The Swedish Air Force still operates approximately 90-95 of the JAS 39C/D *Gripen* aircraft at three air bases: Luleå (F21), Satenäs (F7), and Ronneby (F17). An additional 60 more powerful *Gripen E* aircraft are currently being introduced.

Main: ***Gripen*** **in inverted flight over the airfield**
Left: **Final approach to runway 29 after the solo display**
Right: **Floating over the runway**

The JAS 39D *Gripen* '39810' upon arrival. The aircraft was moved to the static display area, showcasing the *Gripen*'s armament range with the IRIS-T and AIM-120 AMRAAM missiles

Flying display of the Luftwaffe's A400M. LTG 62 from Wunstorf flew two transport aircraft to Roskilde. Aircraft number 54+04 was demonstrated in flight

Main: Sharp turn at the end of the airfield
Insets: A flyover with the rear ramp and side jump doors open. This configuration is used for dropping parachutists

The A400M turning onto the runway after the display. The German Air Force has received 51 of 53 ordered A400Ms

The Royal Danish Air Forde demonstrated the C-130J-30 *Hercules* 'B-583' from the 721 Esk based at Aalborg AB in flight. Last year, the *Hercules* celebrated 50 years of service in the Royal Danish Air Force. To mark the occasion, all *Hercules* aircraft received special markings on their tails. In 2004, the aging C-130H aircraft were replaced by the current version

The 36th Combat Helicopter Regiment from Fritzlar deployed two Tiger attack helicopters (74+60 and 74+68) to Roskilde AB. One of them was also demonstrated in flight to the public

Main: The Polish Orlik team on their way to their flying display
Left: The PZL-130TC II *Orlik* '042' is taxiing to the runway
Middle and right: An Orlik pair is lined-up on the runway for the takeoff of the complete team

The Polish Air Force Orlik Aerobatic Team was founded in 1998 and consists of six PLZ-130TC II *Orlik* trainer aircraft. The aircraft are flown by flight instructors from the 42nd Training Air Base based in Radom

Main: The main part of the performance consists of various formations of six *Orliks*

Insets: The team's flight program also includes a solo demonstration by two individual *Orliks*

Main: A three-aircraft formation of *Orliks* over Roskilde

Insets: After the demonstration, aircraft number '029' and '045' coming in to land at runway 29

The German Federal Ministry of Defence's air transport wing sent an AS 532 U2 Cougar '82+02' to the airshow. This transport helicopter is used for VIP transport within the Air Force

A Challenger CL-604 in the VIP version on approach to Roskilde AB. The C-215 was acquired in 2014 in addition to the three aircraft already in service with the 721 Esk in Aalborg

Top: A DHS-6-300 Twin Otter '22/ OY-FHD' of Home Guard Squadron 225 (HVE225) on final approach. The Danish Home Guard has two aircraft permanently stationed Roskilde

Above: A flyover during the arrival of KC-390 Millennium '26902'. This type of aircraft made its debut in Roskilde. The Portuguese Air Force has ordered a total of ten aircraft from Embraer in Brazil. Portugal is the first export customer and has received three KC-390s to date

Main: Team Baby Blue of the RDAF Flight School (FLSK) with four SAAB T-17 Supporter aircraft in the waiting area

Left: T-17 'T-431' of the flight school at Karup AB

Middle and right: A paired landing of the T-421 and T-426. The special paint scheme on the tail is the team's distinguishing feature

The main component of the Baby Blue flight program consists of flying in a four-ship formation, as well as a solo program with the T-17. The RDAF still operates a total of 27 T-17 support aircraft at the flight school and the base flights of the air bases. The aircraft are undergoing a modernization program for continued service, including the installation of digital instruments

Top: In addition to the Baby Blue Team, other T-17 from Karup AB also attended the event

Above: The T-17 'T-402' shortly before touchdown. The training aircraft bears the emblem of the flight school

ANATOLIAN EAGLE 2025-2

ARTICLE BY WOLFGANG JARISCH

TURKISH AIR FORCE – F-16C/D *FIGHTING FALCON*

Due to construction works at the 3rd Main Jet Base Command in Konya, the Anatolian Eagle international exercise took a one-year break. But this year was time again, and the 2025 edition of the Anadolu Kartalı (Anatolian Eagle) exercise took place from 23 June to 4 July at the Anatolian Eagle Training Center (AETC), located in the command area of the Third Jet Air Base (3'üncü Ana Jet Üs Komutanlığı) in Konya. As usual, the Turkish Air Force invited spotters and the press to this exercise so that they could follow the events live and thus satisfy the hearts of aviation enthusiasts who had traveled to Central Anatolia from all parts of the world.

The city of Konya is located about 200 kilometres south of the capital Ankara at an altitude of about 1,200 metres above sea level and is almost in the geographical center of Anatolia. In the surrounding area, it is overlooked by several mountains up to 2,300 metres high in the northern continuation of the Taurus Mountains. The Anatolian Eagle Training Center is one of the four tactical training centers throughout the World, but the only one in Europe.

PARTICIPANTS OF THE TRAINING

Even before the event, there was a flood of reports about which countries had already confirmed their participation, but unfortunately, shortly before the exercise began, there were several last-minute cancellations due to the tense situation in the Middle East and in the border region between India and Pakistan. In the end, Pakistan, the United Arab Emirates, Egypt, and Oman canceled their participation. This was, of course, very unfortunate, as Oman and Egypt would have been participating in this exercise for the first time. But despite the cancellations, a large number of aircraft still gathered:

- Turkish Air Force F-16 C F-16D / E-7Tand KC-135R. And In addition, a wide range of UAVs like, Anka-S, Anka III, Akinci and Aksungur. In total 45 aircraft and UAVs from the Turkish Air Force were involved.
- NATO with 1 x E-3 AWACS from Airborne Early Warning & Control (NATO uses Konya as a permanent FOB.)
- U.S. Air Force with 12 x F-16C / F-16D from 31st Fighter Wing at Aviano AB
- Azerbaijani Air Force with 2 x Su-25 from Su-25 Eskadrilya at Kürdamir AB
- Royal Jordanian Air Force with 3 x F-16AM/BM from 1 SQN at Al Asraq AB
- Royal Saudi Air Force with 6 x F-15SA from 92 SQN at Hafr Al Batin AB
- Qatar Emiri Air Force with 3 x EF2000 from 1st Flying Wing at Tamim AB

Low level pass of an F-16D *Fighting Falcon* of 151 Filo at Merzifon AB

An F-16D (above) and an F-16C (right) assigned to 152 Filo at İncirlik AB are taxiing for takeoff

- Hungarian Air Force with 3 x JAS-39C from 101st AW at Kecskemét AB

In addition to the active participants listed above, Malaysia, Oman, Singapore, and the United Arab Emirates acted as observers. This demonstrates the cohesive influence of Anatolian Eagle on multinational air forces. But the exercise also aims to contribute to strengthening regional stability.

But despite the cancellations among the active participants, there were still a few surprises. Hungary was present at this exercise for the first time. The Qatar Emiri Air Force participated for the second time with its Eurofighters, and the crews clearly felt at ease with the more than 1,000 spotters. The crews of the Royal Saudi Air Force and the Royal Jordanian Air Force also enjoyed the attention, which was clearly evident from the gestures coming from the cockpits.

The U.S. Air Force F-16s surprised when they brought some of their combat proofed crews and aircraft, as could be seen from the mission markings on the F-16s, to Konya. The mission markings showed pretty much the entire portfolio of what the F-16 can fire. Some aircraft had used the Vulcan cannon very often, which was reflected in the number of drones shot down. Some F-16s bore markings indicating that they had dropped Mk82, GBU-39, and GBU-53 bombs.

A total of 11 units from the Turkish Air Force were involved. The 311 Squadron participated with their UAVs from their home base in Eskişehir. The 101 Squadron participated with one KC-135R but also flew from its home base in İncirlik.

The Turkish Navy actively participated in the exercise with four warships (TCG Akar, TCG Gediz, TCG Zipkin, TCG Bafra), all with an ASUW (Anti-Surface-Warfare) role.

THE CENTREPIECE OF THE EXERCISE IS THE SALT LAKE

Centerpiece of the exercise is the Salt Lake with a training area of 120,000 square kilometers (300 x 400 km), the Salt Lake of Tuz (Tuz Gölü) which is the "heart of the Anatolian Eagle Training Center" (AETC). All scenarios can be simulated one-to-one

F-16s assigned to 113 Filo at Eskişehir AB

F-16Cs assigned to 162 Filo at Bandırma AB

with the corresponding threat situation on the ground and in the air. The exercise provides an interesting opportunity for the participating Turkish and foreign air forces to conduct joint combat training in real-life scenarios, including Combined Air Operations (COMAOps) on tactical and strategic targets defended by aggressor aircraft, and Surface-to-Air Missile (SAM) threats of all types. During Anatolian Eagle, a variety of missions are planned and executed, ranging from CAP (Combat Air Patrol), Fighter Sweep and SEAD/DEAD (Suppression/Destruction of Enemy Air Defenses) to AI (Air Interdiction), CAS (Close Air Support), and CSAR (Combat SAR). All exercises can be conducted without restrictions and without interfering with civilian air traffic. Flights will take place at an altitude of up to 50,000 ft. State-of-the-art monitoring and analysis systems, such as the Air Combat Manoeuvring Instrumentation (ACMI) System and the Post-Mission Analysis System, evaluate the missions in real time. Anatolian Eagle flies complex air operations that demand everything from the pilots. For an air combat of 30 minutes, the pilots face 13 hours of preparation, mission planning, and mission analysis. These figures are probably the most impressive expression of the quality and requirement profile of the high-value exercise. Clearly set goals are the cornerstone of success. With the basic principle "To Train Fighter Pilots For Victory", the AETC pursues the primary goal of every military pilot: to plan, execute, and survive the mission successfully. The main objective of Anatolian Eagle is to improve the capabilities of national and international elements, test new tactics and techniques, and develop combined operational procedures. By increasing the mutual support of the participating countries, mission effectiveness is to be enhanced. The training scenarios take place over a period of two weeks. Two missions (Eagle 1 and Eagle 2) are flown daily, with the Turkish Air Force providing the majority of the flying units. Three main elements are involved: Red Force, Blue Force, and White HQ. The latter is in charge of preparing the training scenarios and transmitting the Air Tasking Orders to the respective teams.

Maj. Ekrem Çekin, AETC Commander, said: "This training is designed to give aircrew maximum freedom to solve problems presented by tactical scenarios. Anatolian Eagle Trainings allow our partners the opportunity to compare and improve capabilities, tactics and procedures in a safe and instructive way through a shared vision and operational synergy."

DETAILED SCENARIOS AND MULTI-THREAT ENVIRONMENT

Major Ekrem Çekin explained in his briefing the specifics of this year's training in detail. We would like to elaborate on this point of the briefing, as many scenarios arising from the world's trouble spots influence this exercise

F-16Cs assigned to 132 Filo at Konya AB

Takeoff of an F-16D assigned to 132 Filo at Konya AB

- This year's training was based on the realities of modern, dynamic, and multidimensional warfare. The scenarios reflected a high-threat environment, incorporating advanced air defense systems and asymmetric threats.
- One of the most prominent and the first scenarios ever involved was the interception of cruise missiles, emphasizing early detection, identification, and neutralization.
- Also, the Low radar cross-section cruise missiles were engaged through joint missions involving airborne and ground-based systems, which requires full coordination.
- Another topic was drone defense. According to the AETC commander, these scenarios were also incorporated into the exercise, but questions were not answered in the briefing on this subject; it was only confirmed that this was taking place.
- Additionally, operations were carried out against a fictional adversary named RED COUNTRY, equipped with real training auxiliary air defense systems in the Konya Range Training Area.
- To suppress these threats, complex missions were conducted, including:
  - SEAD (Suppression of Enemy Air Defenses) operations,
  - Integrated air-to-air and air-to-ground missions,
  - Use of national electronic warfare systems for jamming and deception.

All these operations tested the capabilities not just of pilots, but also of mission planners, C2 staff, and ground support teams.

LOCAL DEFENSE INDUSTRY

The local defense industry played a key role in this edition of Anatolian Eagle.
This year's exercise also showcased Turkey's national defense industry on an international stage. Indigenous systems employed during training included:

- AKINCI and ANKA-S and ANKA-3 UAVs,
- ŞİMŞEK and SÜPER ŞİMŞEK radar-deceiving decoys,
- KARASOJ electronic warfare systems,
- GPS jamming systems,
- STORM mission analysis software,
- C2SE ACMI mission tracking systems.

STRATEGIC IMPORTANCE OF AIR POWER

Maj. Ekrem Çekin said in his briefing; "Every phase of the exercise was monitored live via our nationally developed Airborne Early Warning and Control platform, reflecting technological self-reliance and strategic depth". "This synergy of training and innovation represents not just technical success but a strong expression of sovereignty and capability".

Testing these technical developments from Turkish industry live here and using the results to drive further developments is also a very good selling point for potential customers.

CLOSING

Since the start of Anatolian Eagle in 2001, a total of 55 Anatolian Eagle Exercises with the participation of 16 countries, including NATO, have been successfully conducted. These exercises not only meet the educational needs of Turkey as well as allies and friendly nations but also play an important role in Turkey's contributions to international cooperation by utilising the sources of its unique geographical location. The AETC Commander emphasized at the end of the briefing; "This training goes beyond tactics, it builds trust, enhances interoperability, and strengthens alliances". "The Anatolian Eagles trainings convey shared values and allied cooperation".

We also close with the timeless words of Mustafa Kemal Atatürk, founder of the Republic of Turkey:

"The future is in the skies. Nations that cannot protect their skies can never be sure of their future."

And so, this edition of Anatolian Eagle was once again an edition with interesting international participation, but it was also seen that the exercise provides a platform for the Turkish defense industry to test systems in realistic environments with allied nations.

The Aviation Magazine would like to thank AETC Commander Major Ekrem Çekin, Major General Mete Kuş, Commander of the 3rd Main Jet Base. and the AE-team for the hospitality on site and also the HQ of Turkish Air Force in Anakara for their generous assistance.

Top: F-16C of 192 Filo at Balıkesir AB with a special color scheme for the NATO Tiger Meet
Above: F-16C of 151 Filo at Merzifon AB with a special tail marking commemorating 151,000 flight hours

F-16C configured with CFTs (Conformal Fuel Tanks) assigned to 181 Filo at Diyarbakir AB

U.S. AIR FORCE – F-16C/D *FIGHTING FALCON* – 31ST FIGHTER WING – AVIANO AB

The U.S. Air Force participated in the exercise with 12 F-16 ***Fighting Falcon***s

U.S. Air Force F-16C *Fighting Falcons* assigned to 31st FW at Aviano AB

ROYAL JORDANIAN AIR FORCE – F-16 AM/BM *FIGHTING FALCON* – 1 SQUADRON – AL ASRAQ AB


QA416
QA407
QA421


QA407
QA407


QA416


QA416


QA421
QA421

TURKISH AIR FORCE – F-4E-2000 *PHANTOM II* – 111 FILO – ESKIŞEHIR AB

ROYAL SAUDI AIR FORCE – F-15SA *STRIKE EAGLE* – 92 SQN – HAFR AL BATIN AB

The Royal Saudi Air Force sent six F-15SA ***Strike Eagle***s to Konya AB for ANATOLIEN EAGLE 2025-2

HUNGARIAN AIR FORCE – JAS39C *GRIPEN* – 101ST AW – KECSKEMÉT AB


31
DANGER
HUNAF
101ST AW
31


36
HUNAF
101st AW


HUNAF
101ST AW
31


31
HUNAF
101ST AW


27
27


33
33

"Elephant Walk" with an Qatar Emiri Air Force EF2000 *Typhoon* and Turkish Air Force F-16 *Fighting Falcons*

TURKISH AIR FORCE – E-7T *WEDGETAIL* – 131'INCI HİK GRUP KOMUTANLIĞI – KONYA AB


TÜRK HAVA KUVVETLERİ
13-003
TURKISH AIR FORCE
GÜNEY

13-004
TURKISH AIR FORCE
TÜRK HAVA KUVVETLERİ
İSTİKBAL GÖKLERDEDİR
GURURLA 22603'ÜNCÜ SAAT
BATI
DUR

NATO – AWACS E-3 *SENTRY* – NATO AIRBORNE EARLY WARNING & CONTROL FORCE – GEILENKIRCHEN AB

TURISH AIR FORCE – CN235-100M – 135INCI PK VE İHK GRUP KOMUTANLIĞI – KONYA AB

TURKISH AIR FORCE – NF-5A/B *TIGER II* – «TURKISH STARS» AEROBATIC TEAM – 134 FILO – KONYA AB

COBRA WARRIOR 2025-2

RAF WADDINGTON, UK

ARTICLE BY JORIS VAN BOVEN AND ALEX VAN NOIJE
PHOTOS BY THE AUTHORS UNLESS NOTED

U.S. Air Force F-15E *Strike Eagle*s from the 492nd Fighter Squadron, 48th Fighter Wing, RAF Lakenheath waiting on the ramp for their taxi clearance to the runway

THE MULTINATIONAL COMBAT TRAINING EVOLUTION

Exercise COBRA WARRIOR 2025-2 represents the Royal Air Force's flagship multinational air combat training exercise, conducted biannually under the lead of the Air Warfare Center at RAF Waddington. The three-week exercise integrates NATO and partner nation air forces in high-intensity, large-force employment scenarios designed to test and enhance coalition interoperability across contested, degraded, and operationally limited environments. Directed by Group Captain Paul Hanson, the exercise encompasses operations across multiple RAF installations and North Sea airspace, featuring advanced tactical training for weapons instructor qualification and multinational force integration. Participating nations include the United Kingdom, Canada, Italy, Germany, and the United States, deploying approximately 60-70 aircraft in complex multi-domain operational scenarios that replicate contemporary peer adversary threat environments.

Exercise COBRA WARRIOR stands as the culmination of the Royal Air Force's tactical training progression, representing a sophisticated evolution in multinational air warfare preparation that traces its origins to 2019. The exercise emerged from the Air Warfare Center at RAF Waddington under the lead of the No. 92 (East India) Squadron, now designated as No. 92 Tactics and Training Squadron, a unit with distinguished lineage dating to its formation as part of the Royal Flying Corps at London Colney on 1 September 1917. The squadron's transformation from a First World War fighter unit that deployed to France in July 1918 to its current role as the RAF's premier tactics and training establishment reflects the service's adaptive approach to evolving military requirements. Under the command of Squadron Leader John McFadden, who coordinated the 2023 iteration, No. 92 Squadron has developed COBRA WARRIOR into what McFadden describes as "a challenging air-led multi-domain exercise focused on pitting our NATO, JEF, and International partners against a capable peer adversary within a contested, degraded, and operationally limited threat environment." Since its inaugural conduct in 2019, featuring a wide variety of participants from the RAF, Luftwaffe, Italian Air Force, and Israeli Air Force, COBRA WARRIOR has undergone systematic expansion and refinement. The exercise now operates on a biannual schedule, with each iteration incorporating lessons learned and tactical developments that reflect the contemporary geopolitical and military balance.

OPERATIONAL FRAMEWORK AND TRAINING ARCHITECTURE

The three-week duration of COBRA WARRIOR 2025/2, starting on 15 September 2025, represents the final component in the Royal Air Force's tactical training continuum. The exercise operates within a Composite Air Operation (COMAO) environment designed to qualify personnel across multiple specialized roles critical to modern air warfare. These qualifications encompass Qualified Weapons Instructors, Qualified Multi-Engine Tactics Instructors, Qualified Intelligence, Surveillance and Reconnaissance, and Qualified Space Instructor certifications. RAF Group Captain Paul Hanson (OF-5), serving as Exercise Director, emphasizes the unprecedented scope and complexity of COBRA WARRIOR within the global training environment. "COBRA WARRIOR is one of the largest exercises that we run in the UK. It's probably one of the largest and most complicated in the world. Certainly one of the largest in Europe," Hanson explains. His role encompasses the integration of participating nations and diverse force elements extending beyond traditional air assets. "We're not just talking air forces, we're talking in the land and the maritime and also forces that do electronic warfare and other things, to be able to bring all of those together and to create a series of training scenarios that are safe and tactically relevant." The operational spectrum contains the full range of air operations, with Defensive Counter-Air missions challenging participating aircrew to establish and maintain air superiority against sophisticated opposing forces equipped with advanced surface-to-air missile systems and electronic warfare capabilities. Offensive Counter-Air operations extend this challenge by requiring coordinated strikes against heavily defended airfield complexes and command facilities, demanding precise timing and multi-platform coordination to achieve tactical objectives while minimizing exposure to defensive systems.

Strike Operations incorporate the specialized capabilities of RAF Regiment Precision Strike Teams, providing participants with exposure to joint terminal attack controller procedures and the integration of ground-based targeting assets with airborne strike platforms. These scenarios replicate the complex coordination requirements encountered in contemporary conflict environments, where ground forces require immediate and precise air support within urban or complex terrain conditions that demand exceptional accuracy and situational awareness. Air Maneuver operations demonstrate the integration of tactical airlift and air-to-air refueling capabilities in support of rapid force deployment and extraction scenarios. These missions challenge crews

U.S. Air Force F-15E *Strike Eagles* rolling onto the runway to line-up for takeoff

Head-on shot of an U.S. Air Force F-15E ***Strike Eagle*** taxiing onto the runway

U.S. Air Force F-15E ***Stike Eagles*** assigned to 492nd Fighter Squadron based at RAF Lakenheath

U.S. Air Force/Airman 1st Class Chloe Masey

Strike Eagle **taking off (left) and approaching a KC-135 Stratotanker from the 100th Air Refueling Wing at RAF Mildenhall, over the North Sea (right)**

to operate within contested airspace while maintaining the precise timing and coordination necessary for successful personnel and equipment movement under combat conditions. The development of Joint Personnel Recovery Capability represents perhaps the most demanding aspect of the exercise, requiring seamless coordination between search and rescue assets, fighter escort elements, and command and control platforms operating within hostile territory.

The continuous evolution of COBRA WARRIOR reflects the dynamic nature of contemporary military challenges and technological advancement. No. 92 Squadron's responsibility for establishing modern tactics and providing training opportunities enables the Royal Air Force to maintain operational relevance within an increasingly complex global security environment. The exercise's design philosophy acknowledges that the military world undergoes constant transformation, with the operational requirements of today bearing little resemblance to those encountered a decade ago. This adaptive approach ensures that each iteration incorporates contemporary threat assessments, technological capabilities, and operational requirements through a systematic process of evaluation and refinement. The exercise serves as both a culmination of individual platform training and a catalyst for enhanced collective capability development, creating what Group Captain Hanson describes as the essential bridge between platform-specific expertise and multinational operational effectiveness. For the Royal Air Force specifically, COBRA WARRIOR provides essential opportunities for completing Mission Employment Phase training for future weapons instructors, with the combined level of training complexity and variety of international training partners facilitating achievement of the rigorous standards required by Weapons School criteria. The tactical environment created within the exercise enables personnel across various specializations to train optimally within scenarios that replicate the contested, degraded, and operationally limited conditions characteristic of contemporary conflict environments.

TRAINING PROGRESSION & MISSION ARCHITECTURE

The exercise operates on a carefully structured three-week progression designed to accommodate varying levels of participant experience and specific national training objectives. Group Captain Hanson explains the systematic approach: "Each participating nation has its own areas that they'd like to do. And we, as the RAF, as the exercise owner, we'll take those, and we'll build scenarios to make sure that everybody can get their own objectives satisfied." The training architecture begins with familiarization operations during the initial week prior to the exercise, allowing participating aircrew to adapt to the complex UK airspace environment and establish communication protocols with distributed command elements. "For the average pilot, he'll arrive probably the week prior, and they'll do some familiarization flying from there," Hanson notes. Following familiarization, the exercise transitions into two weeks of daylight operations featuring progressively complex mission scenarios. These daylight missions establish tactical proficiency and inter-platform coordination before advancing to the most challenging phase: night operations during the final week. The night training phase tests aircrew capabilities under the most demanding conditions, where tasks such as air-to-air refueling and precision strike coordination require exceptional skill and coordination. Mission complexity extends to what Hanson describes as "enormous 60 or 70 ship

U.S. Air Force/Airman 1st Class Chloe Masey

missions," requiring detailed pre-mission planning and extended execution periods. "It is one mission, but it's so complicated and lengthy that it requires a detailed plan beforehand to be able to execute," he emphasizes. These large-force exercises simulate the operational tempo and coordination challenges encountered in contemporary high-intensity conflicts, where multiple platforms must coordinate across extended time periods while protecting vulnerable assets such as air mobility platforms throughout prolonged mission profiles.

GEOGRAPHIC SCOPE AND OPERATIONAL ADVANTAGES

The United Kingdom's extensive airspace provides COBRA WARRIOR with distinctive training advantages that Group Captain Hanson identifies as fundamental to the exercise's effectiveness. "We're very blessed in the UK to have such a large bit of airspace, which goes out across the whole of the North Sea, incorporates a lot of Northern England and Southern Scotland as well, where we can exercise some really brilliant training, air, land, maritime, and put in the full suite of electronic warfare and other effects." This geographic advantage extends to supersonic flight operations, where the exercise can conduct realistic high-speed intercept and engagement scenarios without civilian airspace restrictions. "Of course, you can fly supersonic without annoying people over the sea," Hanson notes, emphasizing the operational freedom that distinguishes COBRA WARRIOR from exercises conducted in more constrained airspace environments. The Exercise Director draws comparisons with other major European exercises, acknowledging the value of complementary training programs while identifying COBRA WARRIOR's distinctive focus. "So I think Frisian Flag is an excellent exercise. I've flown in it myself," Hanson observes, referencing the Netherlands' premier air combat exercise. "I look at the Tactical Leadership Program as well. These are all great, great exercises. COBRA WARRIOR is certainly up there in that tier of exercise."

The fundamental difference lies in COBRA WARRIOR's emphasis on comprehensive integration rather than platform-specific proficiency. "The difference, I think, comes from the emphasis it puts on integration, as opposed to just on air fighting and force elements," Hanson explains. Exercise scenarios are structured to ensure that mission success depends on effective coordination across all operational domains. "If they don't integrate themselves properly, and in order to be able to make sure that not only as air fighters, but also on the land and in the non-kinetic areas, if they don't think about that and put the puzzle together in a way that's going to work, then they'll fail in the air as well." This integration-focused approach directly supports the development of future weapons instructors, with scenario leadership responsibilities assigned to personnel approaching instructor qualification. The Exercise Director emphasizes that success requires comprehensive thinking: "The difference being is that the focus is on how well you integrate, rather than how well you do your piece of the puzzle."

COALITION CAPABILITIES & FORCE INTEGRATION

Group Captain Hanson's assessment of coalition air power demonstrates the strategic value of multinational integration within the COBRA WARRIOR framework. His observation of participating European air assets reveals the collective capability that emerges through coordinated training: "I think if you look at the amount of Typhoons that we've got here, and the amount of F-35s that European nations have on order in individual packets, they might seem quite small, but when you come together and in an exercise like this, when you're watching the fly through, and there's so much combat air, but also so much high-end intelligence assets as well going into preparing that battle space, all of which gets fused together, you really sense that coming together, there's quite a big punch that's sat there, ready for action." This coalition approach addresses the contemporary reality that NATO interoperability extends beyond theoretical frameworks to practical operational coordination. The Exercise Director emphasizes this proven integration capability: "I think one of the great things about NATO is it does

A U.S. Air Force F-15E ***Strke Eagle*** from the 48th Fighter Wing receives fuel from a KC-135 ***Stratotanker*** from the 100th Air Refueling Wing during a COBRA WARRIOR mission

interoperate, trains a lot together, and that's really important. COBRA WARRIOR is a really good way that we can prove that what we do works, and we can test and learn from each other."

The exercise structure incorporates contracted opposition forces through established industry partnerships, enabling maximum utilization of participating military assets in blue force roles. Hanson explains this operational model: "What we have as part of the Air and Space Warfare Centre, which directs the exercise, we've got contractors within SPIRE who do produce an awful lot of the overall exercise construct for us. The red air is also largely produced from contract red air through our partners in Draken and, to a lesser extent Top Aces as well." This integrated approach with commercial training providers ensures that participating military aircraft can focus on collective training objectives rather than opposition force simulation. "They mean that more of the military assets can be spent being good guys rather than having to fly opposed in there as well. So it's a really good blend, and it's a well-proven model," Hanson notes, highlighting the efficiency gains achieved through this public-private partnership approach. Exercise control and coordination operate from RAF Waddington, but Hanson emphasizes the comprehensive geographic scope that distinguishes COBRA WARRIOR from other major European exercises. "This is not just all that we're here at Waddington today, which is where the exercise control is done. Actually, it's the whole of the UK, a whole of RAF effort to put this in. So we have a B-52 at Fairford, we have Lakenheath, Coningsby, we have Bulmer, Spadeadam, Lossiemouth, Leeming, Leuchars; They're all playing a role in there."

Takeoff of an F-15E *Strike Eagle*

F-15E ***Strike Eagles*** **of the 492nd Fighter Squadron returning from their afternoon mission to RAF Waddington**

The distributed nature of operations requires sophisticated coordination capabilities that leverage advanced networking technology. "We're very fortunate that we've got a really advanced distributed network where we're able to bring people into secure, not only video conferencing calls, but we're able to share a lot of data and pictures," Hanson explains. This technological infrastructure enables comprehensive mission analysis and debriefing capabilities that extend beyond traditional briefing formats. "We're able to watch the mission live and debrief a live recording, including all of the shot fly-outs and weapon events and non-kinetic events that might be happening." The Exercise Director emphasizes that effective learning occurs through comprehensive mission analysis rather than individual platform assessment. "Although you can sit back and watch your own airplane fly around this enormous 60 or 70 ship mission that might be going on, the true learning is done in watching how the whole jigsaw puzzle comes together to produce this picture to make sure that we've actually achieved what the whole mission was out to do, not just your individual element."

SECURITY CONTEXT & OPERATIONAL RELEVANCE

The timing of Exercise COBRA WARRIOR 2025-2 assumes particular significance within the current international security landscape, where air superiority and integrated multinational operations have emerged as fundamental components of contemporary deterrence strategy. The exercise framework addresses the reality that modern conflict scenarios demand seamless coordination between diverse air assets operating within contested electromagnetic environments, where traditional communication and navigation systems face systematic degradation or denial. This operational reality drives the exercise's emphasis on developing capabilities that function effectively within what military planners term contested, degraded, and operationally limited environments. Such conditions reflect the sophisticated electronic warfare and air defense capabilities that characterize potential peer adversary threats, requiring participating forces to demonstrate proficiency in alternative communication methods, distributed decision-making processes, and autonomous tactical execution when centralized command and control systems face disruption. The evolution from the initial 2019 iteration, which featured a more limited scope of participating nations and operational scenarios, to the current comprehensive framework demonstrates the Royal Air Force's recognition that collective training must evolve at the same

A U.S. Air Force B-52H *Stratofortress* is staged on the ramp at RAF Fairford, England. The bomber is assigned to the 49 Test and Evaluation Squadron at Barksdale Air Force Base, La.
U.S. Air Force/Airman 1st Class Adam Enbal

A U.S. Air Force B-52H *Stratofortress*, attached to the 49 Test and Evaluation Squadron at Barksdale AFB, Louisiana. This aircraft has been modified to be a Tactical Data Link jet, allowing the aircrew to integrate with NATO Allies and partner nations and helped establishing Tactics, Techniques, and Procedures (TTPs) for B-52 mission planning and execution of link enabled operations in EUCOM. *U.S. Air Force/Staff Sgt. Tambri Cason*

pace as threat development. Each successive exercise incorporates lessons learned from previous iterations while simultaneously integrating contemporary intelligence assessments and technological developments that influence tactical employment concepts and operational procedures.

TACTICAL PLATFORM EMPLOYMENT

The 2025-2 iteration demonstrates unprecedented integration of fourth and fifth-generation air combat platforms operating within contested electromagnetic environments. The Eurofighter Typhoon Force Enhancement Package aircraft, deployed from RAF Coningsby and RAF Lossiemouth, provide participants with exposure to advanced electronically scanned array radar capabilities and enhanced electronic warfare systems developed specifically for operations against peer adversary air defense networks. Integration with the Lockheed Martin F-35B Lightning II platforms introduces participants to low-observable operational concepts that fundamentally alter traditional air combat tactical employment. The sensor fusion capabilities inherent in fifth-generation aircraft enable information sharing across coalition platforms through Link 16 and emerging Multi-Domain Command and Control networks, providing real-time battlespace awareness that extends beyond individual platform sensor limitations. Supporting these primary combat assets, the Airbus A330 Voyager Multi Role Tanker Transport aircraft from RAF Brize Norton demonstrate critical force multiplication capabilities through air-to-air refueling operations conducted within contested airspace. These scenarios require precise coordination between tanker aircraft, fighter escorts, and electronic warfare platforms to establish temporary air superiority corridors that enable fuel transfer operations while maintaining defensive postures against simulated surface-to-air missile threats. The Airbus A400M Atlas tactical transport contributions extend beyond traditional airlift operations to encompass intelligence, surveillance, and reconnaissance platform roles through specialized sensor package integration. These configurations provide participants with exposure to multi-intelligence fusion techniques that combine signals intelligence, imagery intelligence, and electronic intelligence gathering capabilities

The "sister squadron" of 492 FS, the 495th Fighter Squadron, 48th Fighter Wing at RAF Lakenheath participated in COBRA WARRIOR 2025-2 with its F-35A *Lightning II* fighter jets

within a single platform architecture. The Boeing B-52H Stratofortress operations from RAF Fairford introduce strategic bomber integration procedures that require comprehensive air-to-air coordination protocols. These long-range strike scenarios test participants' abilities to provide escort services for high-value assets operating at extended ranges while maintaining communication security and electronic warfare protection throughout multi-hour mission profiles.

ELECTRONIC WARFARE AND CYBER DOMAIN

Exercise scenarios incorporate sophisticated electronic warfare environments that replicate contemporary threat characteristics encountered in operations against near-peer adversaries. The Spadeadam Electronic Warfare Tactics Range provides participants with exposure to advanced surface-to-air missile system simulations, including S-400 and S-300 family threats that require specific countermeasure employment and tactical flight path planning to achieve mission success. Digital Radio Frequency Memory jamming systems challenge participating aircrew to operate effectively when traditional communication and navigation systems face systematic degradation. These scenarios require implementation of alternative communication protocols, distributed decision-making procedures, and autonomous navigation techniques that maintain mission effectiveness when centralized command and control systems become unavailable. Cyber warfare integration elements test participants' abilities to maintain operational effectiveness when information networks face hostile intrusion attempts. These scenarios replicate contemporary operational environments where adversary cyber capabilities target military communication networks, sensor data links, and weapon system targeting information to degrade coalition operational effectiveness. Ground-based electronic attack systems provide a realistic simulation of hostile electronic warfare capabilities that extend beyond traditional radio frequency jamming to encompass GPS denial, satellite communication disruption, and radar system interference. Participating aircrew must demonstrate proficiency in operating within these degraded environments while maintaining situational awareness and tactical coordination with supporting ground forces.

JOINT & COMBINED ARMS INTEGRATION

The RAF Regiment Force Protection elements provide ground-based air defense capabilities that integrate with airborne combat air patrol operations to establish comprehensive airspace control measures. These scenarios require precise coordination between ground-based surface-to-air missile systems and fighter aircraft to ensure effective target identification and engagement procedures while preventing fratricidal incidents. Precision Strike Team integration demonstrates the complex coordination requirements between ground-based Joint Terminal Attack Controllers and airborne strike platforms operating in close proximity to friendly forces. These scenarios emphasize the precision targeting capabilities required in urban operational environments where collateral damage considerations demand exceptional accuracy and situational awareness. Naval integration elements, coordinated through Maritime Operations Centers, provide participants with exposure to joint maritime air operations that encompass anti-submarine warfare, maritime interdiction, and naval surface warfare support missions. These scenarios require an understanding of complex coordination procedures between air and maritime assets operating within overlapping operational areas. Special Operations Forces integration introduces participants to the specialized communication

Takeoff of an U.S. Air Force F-35A *Lightning II,* assigned to the 495th Fighter Squadron, 48th Fighter Wing at RAF Lakenheath

procedures and tactical employment techniques required for close air support missions in support of small unit operations. These scenarios emphasize the precision timing and exceptional situational awareness required when providing fire support for personnel operating in contested territory with limited extraction options.

INTELLIGENCE, SURVEILLANCE & RECONNAISSANCE

Multi-Intelligence fusion procedures demonstrate the integration of signals intelligence, imagery intelligence, measurement and signature intelligence, and human intelligence sources to provide comprehensive battlespace awareness. Participants learn to process and disseminate intelligence information across coalition networks while maintaining operational security protocols that protect sensitive sources and methods. Distributed Common Ground System integration provides participants with real-time intelligence processing capabilities that enable tactical-level decision making based on strategic intelligence collection assets. These procedures demonstrate the compression of traditional intelligence cycles to support immediate operational requirements in high-tempo conflict scenarios. Tactical Reconnaissance Wing operations from RAF Marham provide participants with real-time imagery intelligence collection and dissemination capabilities through advanced sensor platforms. These scenarios emphasize the coordination requirements between collection assets and operational planners to ensure intelligence gathering aligns with immediate tactical requirements. Signals Intelligence collection operations demonstrate the integration of electronic warfare and intelligence gathering capabilities within tactical scenarios. Participants learn to exploit adversary communication systems while simultaneously protecting friendly communication networks from similar intelligence-gathering attempts.

OPERATIONAL ASSESSMENT & LESSONS INTEGRATION

Advanced Mission Data Recording systems enable comprehensive post-mission analysis that extends beyond traditional debriefing procedures to encompass detailed tactical employment assessment. These systems capture aircraft performance data, weapon employment parameters, communication transcripts, and electronic warfare system effectiveness measurements that provide quantitative assessment of tactical proficiency development. Threat Replication systems provide a realistic simulation of contemporary air defense networks that enable participating aircrew to experience authentic threat engagement procedures without exposure to actual weapon systems. These simulations incorporate accurate threat system capabilities, engagement envelopes, and electronic signatures that replicate operational environments encountered in contemporary conflict zones. Cross-Cultural Military Cooperation assessments evaluate the effectiveness of international coordination procedures and identify areas requiring additional training emphasis. These evaluations encompass communication protocol effectiveness, tactical procedure standardization, and command relationship clarification that ensures coalition interoperability maintains

A U.S. Air Force F-35A *Lightning II* fifth-generation fighter prepares to take fuel from a KC-135 *Stratotanker* from the 100th Air Refueling Wing at RAF Mildenhall *U.S. Air Force/Airman 1st Class Chloe Masey*

effectiveness under operational stress. Future Capability Integration experiments test emerging technologies and tactical procedures within realistic operational scenarios. These trials provide essential feedback for capability development programs and tactical doctrine evolution that ensures RAF tactical employment procedures maintain relevance to evolving threat environments and technological developments.

ROYAL CANADIAN AIR FORCE PARTICIPATION

The Royal Canadian Air Force's (RCAF/ARC) participation in Exercise COBRA WARRIOR 2025-2 represents a significant component of Canada's broader Operation REASSURANCE commitment, demonstrating transatlantic expeditionary capability and NATO interoperability standards. Lieutenant-Colonel Maxime Renaud, serving as Canadian Air Task Force Commander for Exercise COBRA WARRIOR 2025-2, leads a composite task force that extends beyond single-squadron representation to encompass multiple specialized capabilities drawn from across the Royal Canadian Air Force structure. "I am the commander of the 425th Tactical Fighter Squadron in Canada, and we're here to participate in Exercise COBRA WARRIOR 2025-2 as part of Operation REASSURANCE for Canada," Lieutenant-Colonel Renaud explains. His detachment encompasses personnel and aircraft from multiple squadrons, creating an integrated Canadian Air Task Force specifically configured for multinational training operations. "It includes more than just the 425th Squadron. It includes people from the sister squadron, the 433 Tactical Fighter Squadron. It includes people from our tanker squadron in Winnipeg, 435 Transport and Rescue Squadron with

The Royal Canadian Air Force deployed eight CF-188 *Hornets* from 425 Tactical Fighter Squadron (TFS) to RAF Waddington for COBRA WARRIOR 2025-2

the CC-130HT, and we have a lot of support trades as well from all over Canada."

The Canadian participation framework operates within the broader strategic context of Operation REASSURANCE, Canada's most significant overseas military commitment and direct response to Russian actions in Crimea in 2014. Lieutenant-Colonel Renaud emphasizes the dual strategic objectives underlying Canadian involvement: "It is Canada's contribution or response to what happened in Crimea in 2014. So that was the beginning of Operation REASSURANCE. It is the biggest operation we have overseas right now." The operation encompasses multiple geographical theaters and force elements designed to achieve complementary strategic effects. "The first thing is to reassure our allies, mostly in the Central and Eastern European countries, that we are there for them as part of NATO," Renaud explains, identifying the reassurance mission as encompassing the NATO Brigade led by Canada in Latvia and the Baltic States through distributed force deployments. "We have people in the Baltics right now. We have ships in Europe to do that." The deterrence component addresses capability demonstration requirements that extend beyond symbolic presence to showcase credible force projection capabilities. "But also to prove to Russia that we can actually deploy and project force to Europe from Canada, which is not a small feat, right? Taking CF-188s from Canada and deploying them is a big lift for us. Therefore, that is to deter Russia from further aggression," Renaud notes, highlighting the logistical complexity and strategic significance of transatlantic CF-188 deployment operations.

CF-188 HORNET OPERATIONAL CAPABILITY

The Canadian CF-188 Hornet fleet participating in COBRA WARRIOR represents the culmination of extensive modernization programs designed to maintain operational relevance through the transition period preceding CF-35A Lightning II introduction. Lieutenant-Colonel Renaud, with approximately 3,000 total flight hours including 1,900 hours on the CF-188 platform, provides an operational perspective on current capabilities and ongoing enhancements. Recent radar modernization through APG-79(V)4 Active Electronically Scanned Array integration has fundamentally altered Canadian Hornet tactical employment procedures. "Better capabilities overall. It's a much better radar. The APG-79 is a more modern radar. To us, it's a brand new way of thinking in the cockpit," Renaud explains. The technological advancement encompasses tactical procedure evolution that enhances lethality and situational awareness capabilities. "With new capabilities always come new tactics. Yes, we are definitely more lethal with the APG-79." Configuration modifications reflect lessons learned from operational deployments, particularly from Operation MOBILE in Libya (2011) and Operation IMPACT in Iraq and Syria (2014-2016). The relocation of targeting pod systems from wing pylons to centerline stations addresses field-of-regard limitations encountered during combat operations. "One of the reasons we went that way with the sniper pod is in previous missions, in Operation MOBILE in 2011 in Libya and Operation IMPACT in Iraq and Syria in the 2014-2016 timeframe, we had to have a configuration called Ugly Duck. Essentially, it's a centerline fuel tank and an outboard fuel tank. And the reason we did that is that the field of regard of the sniper was masked by the fuel tank on the left wing," Lieutenant Colonel Renaud explains. This configuration optimization demonstrates the practical application of combat experience to platform modification, though with acknowledged trade-offs. "That frees up essentially a missile station. But you lose the drop tank, that is the drawback," Renaud notes, highlighting the constant balance between capability enhancement and operational limitations inherent in legacy platform modernization efforts.

TRAINING OBJECTIVES AND MISSION COMMANDER QUALIFICATION

The Canadian training program within COBRA WARRIOR addresses specific qualification requirements that cannot be replicated within domestic training environments due to scale limitations. Lieutenant-Colonel Renaud identifies large force employment integration as the primary training objective: "Integration in a large force employment exercise means integrating into all the mission sets that we're trained to back home. Like, you know, on a smaller scale, we come here and integrate into the NATO force package, therefore this is our main objective." Mission Commander qualification represents a critical training outcome that requires international exercise participation to achieve certification standards. "We also have another side objective that is specific to the squadron. We're trying to qualify three mission commanders for this exercise. Three of our pilots will upgrade to mission commander qualified, which means they can lead large force employment packages," Renaud explains. The qualification process encompasses progressive training elements that begin in Canada before culminating in COBRA WARRIOR assessment scenarios. "In Canada, we started doing some training, some ground school, which are like academic lectures initially. We did a smaller-scale exercise just before we came here, and this is their graduation exercise," the Air Task Force Commander notes, emphasizing the exercise's role as

a final certification assessment for advanced tactical leadership positions. Fighter Weapons Instructor oversight ensures qualification standards maintain consistency within the Royal Canadian Air Force requirements. "These are FWIs, or Fighter Weapon Instructors. They're the ones that will administer the check ride," Lieutenant-Colonel Renaud explains, identifying the internal assessment structure that validates mission commander capabilities within the multinational training environment.

Canadian operational employment within COBRA WARRIOR encompasses the full spectrum of tactical mission sets that reflect contemporary air operations requirements. "We're doing everything. Every day is a different mission. We're doing air interdiction, defensive counter-air, and offensive counter-air. All the mission sets that we have assigned to us, we're going to train on them during the exercise," Lieutenant-Colonel Renaud explains. The geographical distribution of training scenarios emphasizes maritime operations over overland missions, reflecting the exercise's utilization of North Sea airspace advantages. "The exercise itself is mostly overseas, so I would say 75-25," Renaud notes, identifying the proportion of maritime versus overland training scenarios that characterize Canadian mission participation. Data link integration through Link 16 systems ensures Canadian forces maintain seamless communication and coordination with multinational partners throughout complex mission scenarios. The tactical data exchange capabilities enable real-time coordination and situational awareness sharing that proves essential for effective coalition operations within contested electromagnetic environments.

PERSONNEL DEVELOPMENT AND EXPERIENCE

The Canadian detachment composition reflects a deliberate personnel development strategy that

Landing of an RCAF CF-188 *Hornet* on a very wet runway

encompasses both experienced and junior aircrew to maximize training value across experience levels. "We have brought our most experienced pilots in Bagotville with us. But we also brought some of our most junior pilots as well. It's important to give the experience to the complete representations of the squadron," Lieutenant-Colonel Renaud explains. This approach addresses capability development requirements that extend beyond individual platform proficiency to encompass coalition interoperability across all experience levels. "Not only our best are ready to work with our NATO allies, but all of the squadrons are ready to work with our NATO allies. One thing I always say is that we're as strong as our weakest link. Therefore, we need to make sure that our younger pilots, our less experienced pilots, are worked up to the same level, which is as competent as they can be in the cockpit." The integration of Royal Air Force exchange personnel within the Canadian squadron structure provides additional interoperability advantages that enhance coordination with British forces during COBRA WARRIOR operations. "In our squadron, we have an RAF pilot on exchange, and he's been instrumental in making sure that everything we wanted to do was considered. This pilot has links in Lossiemouth, he has links in Coningsby, and he has links in Waddington throughout the Royal Air Force. Therefore, he's been really good for our interests," Lieutenant-Colonel Renaud notes, highlighting the value of embedded exchange programs in facilitating multinational cooperation.

CF-35A LIGHTNING II TRANSITION PLANNING

Canadian participation in COBRA WARRIOR occurs during a critical transition period preceding CF-35A Lightning II introduction, with Lieutenant-Colonel Renaud emphasizing the importance of maximizing CF-188 pilot qualifications before platform transition. "We're transitioning to the CF-35 soon. We want to bring people up to the highest level of qualification they can be before they transition to the CF-35." The qualification emphasis reflects strategic planning that recognizes extended CF-188 operations during the transition period. "We haven't done that in Canada since 2023. So this is the first three since the last two years that we've qualified Mission Commanders. It's important to us," Renaud explains, highlighting the significance of mission commander qualification opportunities provided through international exercise participation. CF-35A delivery schedules indicate Canadian ownership beginning in 2026, with initial aircraft allocated to Luke Air Force Base training programs. "The first CF-

Top: Landing of RCAF CF-188A '188794', still waering the paint scheme it had as part of the RCAF *Hornet* Demo Team in 2023

Above: Takeoff with full-afterburner

This CF-188A *Hornet* is about to land at RAF Waddington

35s, of which we'll take ownership in 2026, which is already next year. These aircraft will go to Luke Air Force Base. The main impact to this is going to be the number of pilots that we're going to take from Canada to teach at Luke Air Force Base," Lieutenant-Colonel Renaud notes. The extended CF-188 operational period provides additional opportunities for advanced qualification development and international cooperation experience that will benefit future CF-35A operations. Lieutenant-Colonel Renaud's assessment of platform transition timing reflects realistic planning for continued CF-188 operations: "For a couple of years. Until the complete implementation of the CF-35 program, to meet the RCAF operational needs. Repetition might be a bit left too much to interpretation for readers that might not be too familiar with the delivery schedule of CF-35."

CC-130HT HERCULES TANKER INTEGRATION

The Royal Canadian Air Force's CC-130HT Hercules tanker aircraft, operated by 435 Transport and Rescue Squadron based in CFB Winnipeg, provides a specialized air-to-air refueling capability that significantly enhances Canadian and coalition force effectiveness during Exercise COBRA WARRIOR 2025-2. Major Kevin Prior (OF-3), representing the Canadian tanker detachment, explains the operational role within the broader Air Task Force structure: "This is a CC-130HT. We have a large internal fuel tank and the ability to give away gas right now to any Coalition NATO partner if they are probe and drogue, which is the type of air-to-air refueling system we use, as well as our CF-188s." The CC-130HT variant represents a specialized configuration of the standard CC-130H Hercules transport aircraft, modified specifically for tactical air-to-air refueling operations through probe and drogue systems. The aircraft incorporates an internal fuel tank system that supplements the standard fuel capacity, enabling extended loiter time and increased fuel transfer capability during refueling operations. The probe and drogue configuration provides compatibility with NATO-standard receiving aircraft equipped with air-to-air refueling probes, including the Canadian CF-188 Hornet fleet and various European fighter aircraft participating in the exercise. Major Prior emphasizes the dual-role

Royal Canadian Air Force's CC-130HT *Hercules*, assigned to 435 Transport and Rescue Squadron based in CFB Winnipeg, The *Hercules* is configured as a tanker aircraft and used to refuel the CF-188A

capability that characterizes 435 Squadron's operational profile: "Multi-role back home, we do both search and rescue and air-to-air refueling, and while we're here participating in the exercise, obviously solely air-to-air refueling." This operational flexibility reflects the Royal Canadian Air Force's requirement for multi-mission capability within constrained aircraft inventories, enabling individual platforms to support diverse operational requirements based on mission tasking.

FORCE MULTIPLICATION AND TRAINING OBJECTIVES

The CC-130HT's integration within COBRA WARRIOR addresses fundamental training objectives that extend beyond fuel transfer operations to encompass comprehensive force multiplication and mission extension capabilities. Major Prior identifies the primary operational benefit: "The biggest thing here is we're essentially a force multiplier for the fighters. We're here to really assist them. They can stay airborne longer, they can do more training because now they are not having to land in order to get more gas." This force multiplication capability proves particularly significant within the context of COBRA WARRIOR's complex, extended mission scenarios that require sustained airborne operations across multiple phases. The elimination of fuel-related mission interruptions enables participating fighter aircraft to maintain continuous engagement throughout lengthy mission profiles, thereby maximizing training value and scenario realism. The "flying gas station" concept, as Major Prior describes the tanker role, encompasses tactical employment procedures that require precise coordination with receiving aircraft within potentially contested airspace environments. These procedures include rendezvous timing, formation flying, fuel transfer monitoring, and defensive maneuvering capabilities that ensure tanker survivability while maintaining refueling capability throughout mission execution. Canadian training objectives emphasize interoperability development both with international partners and domestic force elements. "The biggest thing that we're getting out of this is just the interoperability both with the other nations as well as just training and practicing our craft with our Canadian allies as well," Major Prior explains, highlighting the dual-benefit approach that enhances both coalition cooperation capabilities and internal Royal Canadian Air Force coordination procedures.

Current operational limitations restrict CC-130HT refueling operations to Canadian CF-188 aircraft due to technical authorization requirements, though historical precedent demonstrates broader coalition capability. "Right now, we're only doing the Canadian planes. We're just working through some technical authorizations to get approval to refuel the other nations that are here as well. However, in previous exercises, we have tanked many other nations," Major Prior notes. These technical authorization procedures reflect the complex regulatory framework governing multinational air-to-air refueling operations, encompassing fuel compatibility standards, emergency procedure coordination, communication protocol verification, and liability framework establishment. The authorization process ensures that refueling operations maintain safety standards while enabling effective coalition support capability when required. The probe and drogue system compatibility extends potential refueling capability to various NATO and partner nation aircraft equipped with compatible receiving equipment, including Royal Air Force and Italian Air Force Typhoon aircraft, German Air Force Eurofighter platforms, and other coalition fighter aircraft participating in the exercise. This broad compatibility demonstrates the strategic value of standardized NATO refueling systems in enabling flexible coalition support operations.

AIRCRAFT SPECIFICATIONS & PERFORMANCE CHARACTERISTICS

The CC-130HT configuration incorporates specific modifications to the baseline CC-130H Hercules airframe to optimize air-to-air refueling performance while maintaining core transport capability. The internal fuel tank system supplements standard wing tank capacity, providing additional fuel storage for transfer to receiving aircraft while maintaining sufficient fuel reserves for extended loiter operations and return flight requirements. Performance characteristics include the ability to operate at various altitudes and airspeed compatible with receiving fighter aircraft, though specific operational parameters vary based on receiving aircraft type and environmental conditions. The twin-point probe and drogue system enables simultaneous refueling of two receiving aircraft. Mission endurance capabilities depend on fuel load configuration, number of receiving aircraft, transfer quantities, and operational altitude requirements. The CC-130HT can maintain extended loiter patterns while conducting multiple refueling operations, providing sustained support throughout complex mission scenarios that may extend beyond standard fighter aircraft internal fuel capacity. These systems support the complex coordination requirements associated with large-force employment scenarios where multiple refueling operations must be sequenced and coordinated with overall mission timing requirements.

STRATEGIC DEPLOYMENT & FOLLOW-ON OPERATIONS

The CC-130HT deployment to Exercise COBRA WARRIOR represents the initial phase of extended Royal Canadian Air Force operations in Europe

The C-130HT *Hercules* can carry up to 81,000 lb of fuel – 23,500 lbs in a fuel tank in the aircraft's cargo hold and 57,500 lb in six wing tanks. The fuel transfer rate is 1,000 lb per minute for the wing tanks and 2,000 lb per minute for the fuselage tank

under Operation Reassurance. Major Prior explains the broader deployment context: "We did use our other larger tanker to bring the fighter jets over here, and then we're being used as the in-situ tanker." This deployment strategy demonstrates efficient resource utilization where larger CC-150 Polaris aircraft provide transoceanic deployment capability while CC-130HT aircraft provide tactical refueling support during exercise operations. Following COBRA WARRIOR completion, the Canadian tanker capability will transition to Exercise TARASSIS in Estonia, supporting Royal Canadian Air Force participation in Joint Expeditionary Force operations. "After this exercise wraps up, we'll then be participating in Ex TARASSIS in Estonia for the first, I think, two and a half weeks in October. And this crew won't be going, we'll be doing a swap with aircraft, we will be continuing on after that exercise," Major Prior explains. The crew rotation procedure ensures sustained Canadian tanker capability throughout extended European operations while managing personnel deployment duration requirements. This approach demonstrates the Royal Canadian Air Force's capability to maintain a continuous operational presence through systematic personnel and equipment rotation procedures that ensure mission continuity while addressing individual deployment limitations.

ITALIAN AIR FORCE F-2000 TYPHOON

ADVANCED WEAPONS INSTRUCTOR QUALIFICATION

The Aeronautica Militare Italia (AMI) participation in Exercise COBRA WARRIOR 2025/2 represents a strategic commitment to advanced tactical instructor development through multinational integration training. Major Cavallo (OF-3), leading the Italian contingent from the 9° Gruppo of the

The Italian Air Force participated in COBRA WARRIOR 2025-2 with six Eurofighter F-2000A *Typhoon*. The unit taking part in COBRA WARRIOR 2025-2 was the 9° Gruppo, 4° Stormo. However, the aircraft came from four different units.

***Typhoon '36-22'* is assigned to 936° Gruppo Efficienza Aeromobili (G.E.A.) at Gioia del Colle AB**

4° Stormo, commands a composite detachment that exemplifies the Italian Air Force's distributed excellence approach to weapons instructor qualification. "We bring six jets from four different units and wings. These wings are all the F-2000 Typhoon units in Italy. These units are: the 4° Stormo, which is in Grosseto. 36° Stormo, based in Gioia del Colle, the 37° Stormo from Trapani, and the 51° Stormo in Istrana," Major Cavallo explains. This multi-wing representation serves specific institutional objectives that extend beyond individual pilot development to encompass service-wide standardization and tactical proficiency dissemination. The distributed selection approach ensures comprehensive geographic and operational coverage across Italian Air Force fighter units. "We are here to upgrade, train, and qualify weapons instructors that then, after qualification, will be back in their respective unit and squadron. There, they will be the key element representative for the unit in the role of tactical mentor to ensure also standardization among all the units," Major Cavallo

notes. The qualification framework addresses critical force multiplication requirements where individual weapons instructors serve as institutional knowledge repositories and tactical development catalysts within their assigned units. This approach reflects contemporary military aviation's emphasis on distributed expertise rather than centralized instruction, enabling rapid capability dissemination across geographically dispersed operational units

INSTRUCTOR DEVELOPMENT STANDARDS

Italian Air Force weapons instructor selection encompasses comprehensive assessment criteria that prioritize character attributes alongside technical proficiency measures. Major Cavallo emphasizes the holistic evaluation approach: "First of all, weapons instructor is a qualification that is not for all the pilots in the front line. It's only for some selected pilots. The selection is based on some specific criteria that start from some characteristics like, first of all, attitude and commitment that are really the main characteristics of these pilots we look for." The selection process extends beyond traditional flight performance metrics to encompass interpersonal effectiveness and knowledge transfer capabilities. "In addition to that, of course, the performance, both on the ground and fly-wise, is key. The role is really specific, because you need to be good on the ground, in the air, be humble,

and approachable. You have to be really willing to improve your knowledge. The most important thing is to share this knowledge. Otherwise, if you cannot share it, you are not really useful as an instructor," Major Cavallo explains. This comprehensive approach reflects modern military aviation's recognition that technical expertise alone proves insufficient for effective instruction roles. The emphasis on humility and approachability addresses the complex interpersonal dynamics inherent in advanced tactical instruction, where knowledge transfer effectiveness depends significantly on instructor accessibility and communication capability. Major Cavallo's personal experience demonstrates the extensive operational background expected from weapons instructor candidates. With approximately 2,000 hours on the Eurofighter Typhoon platform and graduation from the Operational Conversion Unit in 2012, he represents the mature operational experience typical of weapons instructor selectees. This experience baseline ensures instructors possess comprehensive platform knowledge and tactical employment expertise before assuming training responsibilities.

TRAINING OBJECTIVES AND MULTI-DOMAIN INTEGRATION

Italian participation objectives encompass advanced tactical scenario planning and execution within

Italian Air Force *Typhoons* assigned to 936° G.E.A. (top left) and 904° G.E.A. , 4° Stormo at Grosseto AB (left and right)

contested multi-domain environments that replicate contemporary threat conditions. Major Cavallo identifies the comprehensive training scope: "The main objective for us is, like I said, first of all, to train and qualify these guys and test their ability to plan, brief, conduct and debrief complex missions in a high-intensity scenario that requires analysis of a tactical problem in a multi-domain scenario in order to be ready tomorrow to counter or to deter any evolving threat." The training architecture emphasizes tactical problem-solving capabilities that integrate air, land, maritime, space, and cyber domain considerations within unified operational frameworks. This multi-domain approach reflects contemporary operational environments where traditional air-centric tactical planning proves inadequate for complex scenario resolution. Italian weapons instructor candidates must demonstrate proficiency in cross-domain effects integration and coalition coordination procedures that characterize modern combined arms operations. The high-intensity scenario emphasis addresses preparation requirements for near-peer conflict environments where conventional tactical approaches face sophisticated countermeasures and complex threat integration. These scenarios test instructor candidates' abilities to adapt established tactical procedures to dynamic threat environments while maintaining mission effectiveness under degraded operational conditions.

The exercise's challenging nature stems from the advanced expertise levels of participating personnel and the sophisticated coordination requirements inherent in multinational operations. Major Cavallo assesses the training intensity: "It's quite challenging. The exercise is really high-level in terms of expertise, so you need to also plan alongside our allies with their weapon instructors, with their upgraded weapon instructors. And it's really good because we can share knowledge, we can improve mutual understanding, and of course, as a normal consequence, we can improve our interoperability." This collaborative planning

An Italian Air Force *Typhoon* assigned to 936° G.E.A. turns onto the runway

environment exposes Italian instructors to diverse tactical approaches and employment concepts developed by allied air forces, creating cross-pollination opportunities that enhance overall NATO tactical proficiency. The knowledge sharing aspect proves particularly valuable for Eurofighter Typhoon operators, where common platform employment across multiple nations enables detailed tactical procedure comparison and optimization. The multinational instructor interaction facilitates tactical standardization development and procedure harmonization that proves essential for coalition operations. These interactions address specific interoperability challenges that emerge during combined operations, enabling proactive solution development rather than reactive problem resolution during actual deployments.

PLATFORM INTEGRATION AND TECHNICAL COOPERATION

Italian F-2000 Typhoon operations demonstrate enhanced integration capabilities with fellow Typhoon operators from the Royal Air Force and German Air Force contingents. Major Cavallo explains the natural synergy: "Specifically, we can, of course, be more interoperable with them, more integrated with them. And of course, we are looking for further integration training that is available with the US Air Force." The common platform advantage extends beyond basic interoperability to encompass detailed tactical employment optimization and maintenance cooperation. Technical agreements between Typhoon-operating nations enable component sharing and maintenance support that enhances operational flexibility during extended deployments. Major Cavallo confirms this cooperation: "We can do it, yes. There are some agreements, yes. We have already done it in the past, and also recently." The Italian detachment's assignment to RAF Coningsby facilitates direct cooperation with the Royal Air Force's 29th Squadron, creating opportunities for detailed tactical exchange and procedure development. "Specifically for our deployment, we are in RAF Coningsby, so we are really working together with the 29th Squadron, and specifically their weapons school. So the guys can work together, they can fly together, plan together," Major Cavallo notes. This co-location approach maximizes training value through integrated briefing processes and shared operational planning that exposes Italian personnel to Royal Air Force tactical development methodologies while providing reciprocal learning opportunities for British instructors.

Italian F-2000 operations encompass the complete tactical employment spectrum available to the Typhoon platform, demonstrating operational

Takeoff of an Italian Air Force F-2000A *Typhoon* assigned to 904° G.E.A.

cross air-to-air and air-to-surface mission profiles. Major Cavallo confirms comprehensive mission participation: "We do all kinds of missions the aircraft is capable of conducting." This full-spectrum employment ensures Italian weapons instructor candidates gain exposure to diverse tactical scenarios that reflect the Typhoon's multi-role capabilities. Link 16 data link integration enables seamless information sharing with allied platforms throughout complex multi-aircraft mission scenarios. This technological integration proves essential for large force employment exercises where tactical coordination depends on real-time data exchange and situational awareness sharing across multinational formations. Supersonic flight operations within the exercise airspace provide realistic training conditions that enable full platform performance utilization when tactically required. Major Cavallo explains the employment approach: "We fly according to national regulation, whether we can do it or not. If it's needed. We need it. And if it's allowed." This regulated approach ensures compliance with airspace restrictions while maintaining tactical realism within appropriate operational parameters.

COMPARATIVE EXERCISE ASSESSMENT

Major Cavallo provides professional assessment of COBRA WARRIOR's position within the international exercise training continuum, comparing it to established programs such as the Tactical Leadership Program and Red Flag exercises. His evaluation emphasizes the unique expertise requirements that distinguish COBRA WARRIOR from other major training events. "The TLP is a format dedicated to element lead pilots. So, it means that their experience, let's say, is less than the experience required to conduct the mission here. And this is more of a RED FLAG format. But the main difference is that the expertise level is really high," Major Cavallo explains. The distinction reflects COBRA WARRIOR's specific focus on weapons instructor qualification rather than broader tactical proficiency development. The exercise's advanced requirements create training environments where tactical problem complexity matches participant expertise levels, enabling sophisticated scenario development that challenges experienced instructors while maintaining realistic operational parameters. "Since it's for weapons instructors, I mean, you need to be a weapons instructor to attend the COBRA WARRIOR at a good level," Major Cavallo notes, highlighting the specialized nature of the training audience. This targeted approach enables scenario developers to create complex tactical problems that require advanced analytical capabilities and extensive platform knowledge to resolve effectively, providing appropriate challenge levels for personnel approaching the pinnacle of tactical instruction qualification within their respective air forces.

Left: **Takeoff of an Italian Air Force F-2000A *Typhoon* assigned to 936° G.E.A.**
Right: **German Air Force Eurofighter assigned to the TaktLwG 74 at Neuburg AB**

German Air Force Eurofighter of TaktLwG 74 climbing out after takeoff

Royal Air Force Typhoons of No. 29 Squadron based at RAF Coningsby. The squadron is the Typhoon Operational Conversion Unit, training RAF combat air pilots on the Typhoon for front-line operations.

The left inset shows a Typhoon FGR4 single seater and the right inset a Typhoon T3 two-seater

Takeoff with full afterburner of a Typhoon FGR4 assigned to XI(F) Squadron, based at RAF Coningsby

Royal Air Force Typhoons of No. 29 Squadron
Royal Air Force/AS1 Ben Webb

ROYAL INTERNATIONAL AIR TATTOO – RIAT 2025

PHOTO REPORT BY KRIS CHRISTIAENS

Fly-over of a formation of an RAF Boeing E-7 ***Wedgetail*** **AEW1 Mk1 and the Royal Air Force (RAF) aerobatic team «THE RED ARROWS», flying with nine Hawk T1**

The RIAT 2025 (Royal International Air Tattoo) took place from 18 to 20 July at RAF Fairford and was themed "Eyes in the Skies," with a focus on special aircraft for reconnaissance, surveillance, and rescue.

A extremely rare sight was the U.S. Air Force U-2S '80-1094/BB' assigned to the 99th Reconnaissance Squadron at Beale AFB, California. The U-2 provides high-altitude, all-weather surveillance and reconnaissance and is capable of flying at an altitude of more than 70,000 feet (21,212+ meters) and has a range of more than 6,090 nautical miles (11,287+ km)

Top: U.S. Air Force U-2S '80-1094/BB' assigned to the 99th RS at Beale AFB, California

Above: French Air Force E-3F AWACS '201/36-CA' assigned to Escadron de Observation et d'Alerte 1/36 (DCA01.036) at BA702 Avord

Boeing RC-135W Rivet Joint. The RAF has three RC-135W, based at RAF Waddington with No. 59 Squadron. It is used to intercept and analyze electronic and signals intelligence and repalced the Nimrod R1.

Italian Coast Guard ATR42-500MP 'MM62270/10-03'

French Navy ATL2 '5' assigned to 23F at Lorient-Lann Bihoué Naval Aviation Base

Czech Air Force reconnaissance aircraft L-410FG '1525' assigned to 242.tsl at Kbely AB

BN-2B-20 Islander operated by Channel Islands Air Search Ltd.

Main: The ATP P-72A 'MM62281/41-04' is an Italian Navy reconnaissance aircraft operated by the Italian Air Force and assigned to 88° Gruppo/41Stormo at Sigonella Air Base

Inset: RAF Boeing E-7 *Wedgetail* AEW1 Mk1 assigned to 42(TB) Squadron, which is formed as the OCU for both the Poseidon MRA1 and Wedgetail AEW1 and based at RAF Lossiemouth

Left: Royal Air Force Typhoon FGR4 'ZK344/344' assigned to No. 29 Squadron, a Typhoon Operational Conversion Unit based at RAF Coningsby

Middle: Royal Danish Air Force F-16AM 'E-006' assigned to Esk 727 at Skrydstrup AB with the «Dannebrog» color scheme. The Esk 727 is the new F-35A *LightningII* squadron

Right: Finnish Air Force F/A-18C 'HN-442' assigned to HävLLv 11 at Rovaniemi AB

Top: Finnish Air Force F/A-18C 'HN-417' of to HävLLv 11 at Rovaniemi AB

Left: Royal Danish Air Force F-16AM 'E-006' assigned to Esk 727 at Skrydstrup AB

Left: Spanish Air Force EF2000 'C.16-36/14-36' assigned to Ala 14 at Albacete AB
Right: Royal Air Force Typhoon FGR4 'ZK344/344' assigned to No. 29 Squadron at RAF Coningsb

Royal Air Force F-35B 'ZM166/032' assigned to 207 Squadron at RAF Marham. The squadron is the joint RAF and Royal Navy Operational Conversion Unit for the F-35B ***Lightning II.***

The F-35B is the vertically take-off variant (V/STOL) of the F-35 and may not be confused with the F-35A, the conventional take-off and landing version of the F-35 or the aircraft carrier-based F-35C.

Main: This Saab JAS39E '396002' was operated by the Swedish Air Force and currently is used by the Saab Aeronautics Flight Test & Verification Department in collaboration with Helsing as part of Saab's "Project Beyond" which is bringing AI capabilities to military aircraft.

Right: Czech Air Force JAS39C *Gripen* '9234' assigned to 211.tl at Cáslav AB. The aircraft received this special paint scheme to celebrate the 20th anniversary of the *Gripen* aircraft at Caslav AB

Above left: Polish Air Force F-16C '4061' assigned to 31.BLT (3 & 6.elt) at Poznań-Krzesiny AB
Above right: Hellenic Air Force Mirage 2000-5BG '507' assigned to 331 Mira at Tanagra AB
Above: Pakistan Air Force JF-17 (Block-III) '23-323/323' assigned to 8 (MR) Squadron *Haiders* is a 4.5-Generation fighter based at Masroor AB

Polish Air Force F-16C *Fighting Falcon* assigned to 31st BLT at Poznań AB. Pilot Major Slab Krakowian received the RIAT trophy for best overall flight performance in 2025. About a month later, he was killed in an accident while training for the Radom Airshow 2025 in the same aircraft. The cause was a looping maneuver that was started at too low an altitude and from which he was unable to recover. The aircraft crashed onto the runway and burst into flames.

Royal Navy Fleet Air Arm Wildcat HMA2 'ZZ413', assigned to 825 Naval Air Squadron, based at RNAS Yeovilton. The helicopter can be loaded with up to 20 Martlet short-range anti-surface missiles

Royal Navy Fleet Air Arm «BLACK CATS» display team, consisting of two Wildcat HMA2 helicopters of 825 Naval Air Squadron, based at RNAS Yeovilton

Left: German Army Aviaion NH90TTH assigned to Transporthubschrauberregiment 10 at Faßberg Army Airfield

Right: Portuguese Air Force EH101 Mk514 '19606' assigned to 751 Squadron

Sea King HAR3, civil registration G-SEAK and ex-RAF registration XZ588

PZL- Swidnik W-3A *Sokol* assigned to 243.vrl at Praha-Kbely AB

Portuguese Air Force EH101 Mk514 '19606' assigned to 751 Squadron and operating from Base Aérea No. 6 in Montijo

Top left: Swedish Air Force Sikorsky Hkp16A (UH-60M Black Hawk) '161230/05' asssigned to 2.Hkpskv at Linköping/Malmen
Top right: Irish Air Corps EC135P2+ '270' assigned to 302 Training and Surveillance Squadron at Baldonnel/Casement Aerodrome
Above: Spanish Air Force S-76C 'HE.24-06/49-06' assigned to 801 Esc based at Mallorca/Son San Juan

Main: British Army Apache AH-64E attack helicopter assigned to 3 Regiment Army Air Corps based out of Wattisham Flying Station.

Left: Hungarian Air Force H225M *Caracal* '74'assigned to MH 86.HE based at Szolnok

Egyptian Air Force Antonov AN-74T-200A '1256/SU-BPN' of the 533AW (Indep. Flight). Egypt has three AN-74T, all of which are ex-Ukrainian Air Force

Above: Poseidon MRA1 'ZP803/03' assigned to 120 Squadron at RAF Lossiemouth

Left: Boeing C-40C *Clipper* '09-0540' assigned to 73rd AS/89th AW at Andrews AFB

akistan Air Force C-130H *Hercules* '4479' from No. 6 Squadron *Antelopes* based at PAF Base Nur Khan. This year's special livery — titled "Eyes in the Skies" — pays tribute to air surveillance and technological expertise

Top left: Italian Air Force C-27J *Spartan* 'C.S.X62222 / 46-86' assigned to 98° Gruppo TM based at Pisa - San Giusto AB

Left: The aircraft, a De Havilland Dash 8-315 ISR registered C-GFMX, is operated by Canada's PAL Aerospace under contract to the UK Government's Small Boats Command. **The modified twin-turboprop carries advanced radar, electro-optical sensors and communications equipment designed to detect and monitor small vessels. The Dash 8's mission is to "increase border security while collecting evidence that will help investigators bring people smugglers to justice."**

Right: German Air Force A400M *Atlas* '54+21' of the LTG62 at Wunstorf AB

Main: Quatar Emiri Air Force Boeing C-17A *Globemaster III* 'A7-MAB' assigned to 10 Squadron at Al Udeid AB. As though this is an Air Force aircrat, the C-17 is painted in Qatar Airways colors

Inset: Boeing C-17A *Globemaster III* of 99 Squadron based out of RAF Brize Norton

The Pakistan Air Force Ilyushin Il-78MP 'R11-003/003' is assigned to 10 Multi-Role Tanker Transport Squadron ***Buffaloes*** and operates out of PAF Base Nur Khan

Main: This ex-Italian Air Force G.91 (MM6305) was completely restored, more than 25 years after being taken out of service. It is the only airworthy G.91 and is painted in the colors of the Italian Air Force Aerobatic Team FREECE TRICOLORI

Inset: This Aermacchi MB-326E is ex-Italien Air Force 'MM54168 / 6-43' and now registered to I-RVEG

This ex-RAF Hunter F4 was converted to a Hunter T72 and then delivered to the Chilean Air Force in 1974 as J-736. After being withdrawn from service, Embraer used it as a chase plane. In 2018, it returned to the UK and has since been in use with Hawker Hunter Aviation, registered as XE688 with an MRCOA (military registered civil-owned aircraft)

NATO TIGER MEET 2025

ARTICLE BY SANTIAGO ANACLETO

The Portugues Air Force's 301 Squadron was awarded the «Best Tiger Aircraft» for the painting and presentation of its F-16AM '15107'

RETURN TO THE ALENTEJO PLAINS

After the 2024 edition took place at Schleswig Air Base in Germany, in 2025, the NATO Tiger Meet returned to Portugal, consolidating its historic connection with the host country. The exercise took place between 21 September and 3 October at Air Base No. 11 in Beja, bringing together around 1,400 military personnel from 12 nations and involving more than 85 aircraft of different types and functions.

Beja once again proved to be a strategic and operationally advantageous location. The air base benefits from vast segregated airspace, low population density, and favorable meteorological conditions that allow sustained flight operations and high-intensity training with reduced restrictions. Additionally, its proximity to key training areas, including maritime and land maneuver zones, enabled the realistic integration of multi-domain mission sets, ranging from air interdiction and defensive counter-air to close air support and rotary-wing insertion operations. The region's historical association with previous large-scale NATO exercises further reinforces its status as a reference training hub within the Alliance.

Considered one of the largest and most complex air exercises in Europe, NATO Tiger Meet 2025 was held under the motto «Hard to be Humble» and was organized by the Portuguese Air Force's 301 Squadron Jaguares, one of the oldest and most prestigious units belonging to the NATO Tiger Association. As host squadron, the 301 reaffirmed not only its operational maturity, but also its cultural and symbolic role within the Tiger community – where shared identity, tradition, and tactical excellence converge in a unique spirit of cooperation.

THE NATURE OF TIGER MEETS: BEYOND FELINE CAMOUFLAGE

Created in 1961 to foster the spirit of camaraderie, promoting the sharing of tactical knowledge, and strengthening ties between squadrons that feature the tiger in their emblems, the NATO Tiger Meet quickly became much more than a simple symbolic gathering. Over the decades, it has evolved into one of the most prestigious and technically demanding air warfare exercises in Europe – even though it is not formally part of NATO's structure.

The NTM is coordinated by the NATO Tiger Association (NTA), which brings together permanent, associate, and honorary members. Although it retains a strong symbolic component – from the iconic themed paint schemes on the aircraft to the social events – the essence of the meet is eminently operational. Every day, highly realistic missions take place, requiring meticulous planning, precise execution, and a remarkable level of interoperability

between the various participating forces.

301 SQUADRON JAGUARES: THE FELINE PRIDE OF THE PORTUGUESE AIR FORCE

Based at Air Base No. 5 in Monte Real, 301 Squadron Jaguares is a highly prestigious fighter unit of the Portuguese Air Force and a full member of the NATO Tiger Association since 1978.

BRIEF HISTORY

The history of 301 Squadron dates back to January 1969, when the then 502 Squadron began operations at Nacala Air Base No. 5 in Mozambique, equipped with the Fiat G.91. In this operational context, the Jaguars carried out combat missions of an anti-guerrilla, interdiction, and independent attack nature, standing out for their effectiveness and resilience demonstrated in a war environment.
The unit established three permanent detachments – in Porto Amélia, Mueda

The Portuguese Air Force currently operates 21 single-seat F-16AMs and four two-seat F-16B training aircraft. The aircraft are between 31 and 42 years old and are likely to be replaced by the US F-35 *Lightning II* in the coming years. In addition, Portugal plans to participate as an observer in one of two programs – the Global Combat Air Program (with Italy, Japan, and the United Kingdom) or the Future Combat Air System (with Germany, Spain, and France) – for the development of a sixth-generation European fighter aircraft. In all likelihood, this will be the GCA, as unlike the FCAS, a concrete schedule for the maiden flight already exists.

(AM51), and Nampula, headquarters of the 3rd Air Region Command – in addition to other temporary ones, such as in Nova Freixo (AB6), Vila Cabral (AM61), and Beira (BA10).

With the end of the Portuguese War in Africa and the subsequent reorganization of the Portuguese Air Force, the squadron was transferred to Air Base No. 6 in Montijo, adopting the designation 62 Squadron. In 1978, as part of the revision of the air unit numbering system, it took on the designation it still bears today: 301 Squadron Jaguares.

During this period, it continued to operate the Fiat G.91 until 1993, participating in numerous national and international exercises. Its missions included Close Air Support (CAS), Battlefield Air Interdiction (BAI), and Tactical Air Reconnaissance. One of the most significant milestones of the 1980s was the organization, for the first time on national territory, of the prestigious NATO Tiger Meet, held in 1987.

In 1994, 301 Squadron was transferred to Air Base No. 11 (Beja), where it began operations with the Alpha Jet, an aircraft that would remain in service until 2004. With this aircraft, the Jaguars continued to participate in various NATO exercises, including the 1996 and 2002 editions of the Tiger Meet.

The year 2005 marked the beginning of a new era, with the transition to the F-16AM MLU (Mid-Life Update), a fourth-generation multi-role fighter that placed the unit at the highest level of modern combat aviation. Since then, the Jaguars have operated from Air Base No. 5 (Monte Real), maintaining their historic motto: «The strong feared nothing» – «De nada a forte gente se temia».

THE LEGACY OF THE JAGUARS

The lineage and fighting spirit of 301 Squadron are deeply linked to the heritage of other units that also operated the Fiat G.91 in overseas theaters. Among them, the 121 Squadron Tigres (Tigers) stands out, created in 1966 at Air Base No. 12 in Bissalanca (Guinea), being the first Portuguese unit to operate the legendary Italian fighter-bomber.

The Tigers carried out reconnaissance, bombing, fire support, cooperation with ground forces, and

6 EL – F-16C/D *FIGHTING FALCON* – POLISH AIR FORCE – POZNAŃ-KRZESINY AB

escort missions for ground and river convoys. Until 1974, they faced complex operational challenges, including the emergence of the threat of SA-7 Strela portable missiles, demonstrating a courage that became their hallmark. Reactivated on 13 January 1981 at Air Base No. 4 Lajes, the unit took on the designation 303 Squadron, reinforcing the defense and maritime patrol capabilities of the Portuguese Exclusive Economic Zone.

Another important legacy of the Jaguars comes from 702 Squadron Escorpiões (Scorpions), created in 1971 at Air Base No. 4 Tete Chingosi, also in Mozambique. Like the Tigers, the Scorpions operated the Fiat G.91 in intense combat missions and were the first to successfully face the threat of SA-7 missiles, consolidating a reputation for daring and professionalism.

Thus, 301 Squadron Jaguares represents much more than an operational unit of the Portuguese Air Force: it is the legitimate heir to the traditions, bravery, and fighting spirit of the squadrons that preceded it. If its emblem is the Jaguar, its legacy is that of the living history of national combat aviation.

TIGER SPIRIT AND PREVIOUS PARTICIPATIONS

301 Squadron is recognized not only for its operational excellence, but also for its strong esprit de corps and unconditional adherence to the values of the Tiger community. Over the years, it has won several awards in previous editions of the NATO Tiger Meet, including the Tiger Spirit Award (2019) and the highly coveted Silver Tiger Trophy (1980, 1985, 2011, and 2019). Its connection to the event runs deep – it hosted the 1987, 1996, 2002, 2021, and most recently, 2025 editions.

The Polish Air Force's F-16 *Fighting Falcon*s are Block 52CF models and can be equipped with conformal fuel tanks (CFT), which significantly increase the aircraft's range with only a minimal impact on its overall drag and maneuverability.

192 FILO – F-16C/D *FIGHTING FALCON* – TURKISH AIR FORCE – BALIKESIR AB

335 MIRA – F-16C/D *FIGHTING FALCON* – HELLENIC AIR FORCE – ARAXOS AB

MULTINATIONAL PARTICIPATION: UNITY IN DIVERSITY

The 2025 edition of the NATO Tiger Meet was attended by member squadrons of the NATO Tiger Association (NTA) from 12 allied countries.
In addition to the Tiger squadrons, the exercise involved various NATO forces, Portuguese units, and international partners, enhancing operational realism.

Unit	Air Force	Number and type of aircraft
Esquadra 301 "Jaguares"	Portuguese Air Force	9 × F-16A/B MLU Fighting Falcon
21º Gruppo	Aeronautica Militare, Italy	2 × HH-101 Caesar
12° Gruppo	Aeronautica Militare, Italy	5 × EF-2000 Eurofighter Typhoon
335 Mira	Elliniki Polemiki Aeroporia, Greece	4 × F-16 Block 52
142 Escuadrón (Ala 14)	Ejército del Aire y del Espacio, Spain	5 × EF-2000 Eurofighter Typhoon
6 Eskadra Lotnicza	Siły Powietrzne, Poland	6 × F-16C/D Fighting Falcon
Fliegerstaffel 11	Schweizer Luftwaffe, Switzerland	5 × F/A-18C/D Hornet
Taktisches Luftwaffen Geschwader 51 "Immelmann"	Luftwaffe, Germany	7 × Tornado IDS/ECR
211 Taktická Letka	Vzdušné síly armády České republiky, Czech Republic	5 × JAS-39C/D Gripen
192nci Filo "Kaplan"	Türk Hava Kuvvetleri, Turkey	3 × F-16C/D Fighting Falcon
2.Staffel	Österreichische Luftstreitkräfte, Austria	4 × EF-2000 Eurofighter Typhoon
Escadrille d'Hélicoptères de Reconnaissance et d'Attaque N°3 (3e RHC)	Aviation Légère de l'Armée de Terre, France	3 × SA342 Gazelle
814 Naval Air Squadron	Royal Navy, United Kingdom	1 × Merlin HM.2
Flying Squadron 1	NATO	2 × Boeing E-3A AWACS

Unit	Air Force – Country	Number and type of aircraft – Remarks
Portuguese Forces		
Esquadra 506 *Rinocerontes*	Portuguese Air Force	1 × KC-390 Millennium
Esquadra 552 *Zangões*	Portuguese Air Force	3 × AW-119 Koala
Esquadra 601 *Lobos*	Portuguese Air Force	1 × P-3C CUP+ Orion
Esquadra 751 *Pumas*	Portuguese Air Force	1 × EH-101 Merlin
Esquadra 501 *Bisontes*	Portuguese Air Force	1 × C-130H Hercules
Esquadrilha de Helicópteros	Portuguese Navy	1 × Lynx MK95
International & Multinational Forces		
Flottille 4F	Marine Nationale, France	1 × E-2C Hawkeye
5e Régiment d'Hélicoptères de Combat	Aviation Légère de l'Armée de Terre, France	2 × EC665 Tigre HAP 1 × NH90
Lufttransportgeschwader 62	Luftwaffe, Germany	1 × A400M Atlas
3. Bordhubschrauberstaffel / MFG 5	Marineflieger, Germany	2 × Lynx Mk88A
101st Tanker Squadron *Asena*	Türk Hava Kuvvetleri, Turkey	1 × KC-135 Stratotanker
Multinational MRTT Unit	Europe	1 × A330 MRTT
AVDef	Civil	1 × Falcon DA-20
GFD (Gesellschaft für Flugzieldarstellung)	Civil	1 × Learjet 35A
Ground Component and Coordination		
Tactical Air Control Party (TACP)	Teams from Portugal, Italy, and the Netherlands	Air-ground coordination Close Air Support control
Land Forces	Portuguese Army	Participation of Commandos Air–Land Operations Battalion Paratrooper units

Italian Air Force F-2000A *Typhoons* taxiing to the runway for takeoff

12° GRUPPO – EF-2000 EUROFIGHTER – ITALIAN AIR FORCE – GIOIA DEL COLLE AB


M.M. 7355
36-53

2.STAFFEL – EF2000 *EUROFIGHTER* – AUSTRIAN AIR FORCE – ZELTWEG AB

2.STAFFEL

OPERATIONAL FRAMEWORK

Tiger Meet 2025 focused on conducting combined tactical air operations, recreating realistic war scenarios in a multi-domain environment – involving air, land, and naval components. These exercises aimed to train and reinforce interoperability between NATO forces and partner countries, i.e., the ability of different nations to operate in a coordinated and effective manner in contested environments. This involves the use of different doctrines and systems under a common command and control architecture, both at the technical and human levels, while promoting the so-called Tiger spirit, which strengthens the bonds of camaraderie between the participating squadrons.

Over two very intense weeks, more than 85 aircraft – including fighters, helicopters, transport planes, aerial refueling, and command and control platforms – carried out approximately 830 missions, totaling more than 1,500 flight hours.

The fictional conflict scenario, designed and managed by the Portuguese Air Force, recreated a highly complex environment with simulated air, land, and electronic threats. At the same time, the exercises RAMSTEIN GUARD (focused on electronic warfare) and FAST EAGLE 25 (focused on special operations) took place, providing realistic integration between different combat domains.

TACTICAL DIMENSION AND MULTI-DOMAIN TRAINING

The tactical aspect of NATO Tiger Meet 2025 stood out for the variety and realism of the missions conducted. The exercise included a wide range of coordinated operations covering virtually the entire spectrum of modern air warfare. Among the main types were:

- DCA (Defensive Counter Air)
- AEW (Airborne Early Warning)
- ISR (Intelligence, Surveillance & Reconnaissance)
- Heli Escort
- Air Interdiction

- OCA (Offensive Counter Air)
- AAR (Air-to-Air Refueling)
- CAS (Close Air Support)
- DT (Dynamic Targeting)
- OPFOR (Opposing Force)
- EW (Electronic Warfare)
- TAT (Technical Assistance Team)
- SEAD (Suppression of Enemy Air Defenses)
- ACM (Air Combat Maneuvering)
- BFM (Basic Fighter Maneuvers)
- CSAR (Combat Search and Rescue)

The planning and execution of the missions sought to maximize integration between air, land, sea, and space forces, with coordination on the ground by TACP (Tactical Air Control Party) teams and support from AEW platforms, such as the Boeing E-3A AWACS and E-2C Hawkeye.

One of the main innovations of the 2025 edition was the incorporation of space operations and the use of very high-resolution satellite images, available in near real time, which significantly enhanced situational awareness in mission planning and execution.

More than a tactical exercise, the NATO Tiger Meet has established itself as a true doctrinal tool. By promoting the harmonization of procedures and the sharing of tactics, techniques, and procedures among allied nations, the event contributes directly to the evolution of air and joint employment doctrines within NATO.

The 2025 edition reinforced the concept of combined multi-domain operations, in line with the Joint All-Domain Operations (JADO) doctrine, which emphasizes the synchronized integration of air, land, naval, cyber, and space capabilities - a decisive step in preparing allied forces for the operational challenges of the future.


14-72
C.16-72
10147
14


14-73
142
NTM

STAFFEL 11 – F/A-18C/D *HORNET* – SWISS AIR FORCE – MEIRINGEN AB

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xxx

xxx
xxx

211 TL – JAS39C/D *GRIPEN* – CZECH AIR FORCE – ČÁSLAV AB


JAS 39C
9236
DANGER


JAS 39C
9241


JAS 39C
9240

TaktLwG 51 – TORNADO IDS & ECR – GERMAN AIR FORCE – SCHLESWIG AB


DESERT TIGER


Tiger since 1994

The TaktLwG 51 was awarded the «Best OPS» trophy for its excellence in flight missions

814 NAS – EH101 MERLIN – ROYAL NAVY – RNAS CULDROSE

EHRA 3 – SA-342M *GAZELLE* – FRENCH AIR FORCE – BA ETAIN-ROUVRES

1 AEW&C – E-3A *SENTRY* – NATO – GEILENKIRCHEN MOB

NATO had selected the Boeing E-7 Wedgetail as the replacement for its aging fleet of 14 E-3A Sentry aircraft, with plans to procure six platforms for multinational operations based at Geilenkirchen Air Base in Germany.The alliance issued a request for information in 2022, leading to the formal selection in 2023, aiming to maintain airborne early warning and control capabilities beyond the E-3A's projected retirement after 2035. Despite the U.S. Air Force reviving its E-7 program with funding approved on 10 November 2025, NATO canceled the acquisition of six E-7 Wedgetail aircraft on 13 November 2025, due to ongoing uncertainties and delays. Initial milestones, including the selection process, had been met, but progress on contracting had remained slow, prompting alliance concerns over sustainment of surveillance missions.

GFD – LEARJET – CIVIL – HOHN AB

GFD (Gesellschaft für Flugzieldastellung) has a fleet of 15 specially equipped Learjets of the type 35A/36A and provides target simulation.

ESQ 506 – KC-390 – PORTUGUESE AIR FORCE – BA11 BEJA

The Portuguese government has signed a contract with Embraer for the purchase of six KC-390 Millenium transport aircraft, three of which have already been delivered.

3/MFG 5 – SUPER LYNX MK88A – GERMAN NAVY – NORDHOLZ NAS

With the delivery of the first of a total of 39 NH90 Sea Tigers in December 2025, the German Navy will begin phasing out the Super Lynx Mk88A, a process that is expected to be completed by 2030

Main: Formation consisting of a German Navy Super Lynx Mk88A, an Italian Navy HH.101 *Caesar,*, and a Portuguese Navy Super Lynx Mk95

Inset: German Navy Super Lynx MK88A

ESQ 601 – P-3C ORION – PORTUGUESE AIR FORCE – BA11 BEJA

LTG 62 – A400M *ATLAS* – GERMAN AIR FORCE – WUNSTORF AB

ESQ 501 – C-130H *HERCULES* – PORTUGUESE AIR FORCE – BA6 MONTIJO

4F – E-2C *HAWKEYE* – FRENCH NAVY – BAN LORIENT

AVDEF – FALCON 20 – CIVIL – NÎMES-GARONS AB

Dassault Falcon 20 of Aviation Defense Service, providing aerial mission control and countermeasure services

5 RHC – EC-665 TIGRE HAP, NH90 – FRENCH ARMY AVIATION – BA PAU-PYRÉNÉES

ESQHEL DA MARINHA – SUPER LYNX MK95 – PORTUGUESE NAVY – BA6 MONTIJO

PORTUGUESE ARMY PARTICIPATION IN NATO TIGER MEET 2025

The Portuguese Army was present at NATO Tiger Meet 2025 with around 175 military personnel, mostly from the Rapid Reaction Brigade (Brigada de Reação Rápida – BRR) – namely from the 1st Parachute Infantry Battalion, the Commando Battalion, and the Air-Land Operations Battalion. These forces were engaged in missions to support joint air operations, ensuring coordination between ground elements and air assets in the areas of tactical control, defense of sensitive points, surveillance, and perimeter security.

A key component of this participation was the integration, within the contingents of the Portuguese Army, of Portuguese, Italian and Dutch TACP (Tactical Air Control Party) teams, in order establish a direct connection with the air units and to coordinate, for example, Close Air Support (CAS) missions. While the CAS engagements were conducted in simulated conditions, the scenarios replicated the constraints and communications complexity of real-world air-land integration, allowing the standardization of procedures and the refinement of command and control processes essential to modern joint operations.

The following also joined the exercise:

- A platoon-level unit from the Heavy Infantry Battalion of the Mechanized Brigade, engaged in ground protection and defense missions,
- The Anti-Aircraft Artillery Regiment of the Intervention Brigade, which integrated the Integrated Command and Control System for Anti-Aircraft Artillery (Sistema Integrado de Comando e Controlo para a Artilharia Antiaérea - SICCA[3]), enabling the testing of different air defense scenarios in a realistic operational environment and reinforcing interoperability with allied air assets.

The main objective of the Army's presence at NTM25 was to test and validate interoperability between allied ground and air forces, reinforcing operational integration and inter-branch cohesion.

This involvement also enabled the exercise of multi-domain capabilities, particularly in the areas of air defense support, air–land operations, tactical mobility, and the employment of mechanized and anti-aircraft artillery systems.

From a doctrinal point of view, the exercise contributed to the validation of NATO joint procedures and to the certification of national forces in a multinational environment. At the same time, it acted as a practical testbed for emergent technologies and command-and-control systems, supporting their evaluation under demanding and highly realistic operational conditions.

A MEETING BEYOND THE SKIES

The NATO Tiger Meet 2025 was not just about missions and awards: it was a demonstration of operational integration and doctrinal evolution, in a context of growing demands in multi-domain environments. More than an exercise, it is a space where different air forces strengthen ties, share experiences, and consolidate mutual trust. The trophies awarded in Beja thus represent much more than individual distinctions – they reflect a collective spirit that values cooperation, operational excellence, and the tradition of one of NATO's most emblematic exercises.

Planned and executed by the Portuguese Air Force, NTM25 reaffirmed Portugal's role as a facilitator of training and interoperability within NATO, projecting the Beja Air Base as a strategic hub for the training and validation of combined forces.

The integration of the Portuguese Army into NATO Tiger Meet 2025 reinforced the importance of the joint employment of air and land forces, confirming the Portuguese Armed Forces' ability to operate in a multinational, complex, and technologically advanced environment – in full accordance with the doctrinal requirements of the Atlantic Alliance.

Looking ahead, the Tiger spirit now heads to the south of Europe: the next edition of NATO Tiger Meet will take place in Araxos, Greece, continuing a tradition of cooperation, camaraderie, and excellence that has defined the Tiger community for more than six decades.

Fly-by of a Royal Netherlands Air Force Airbus A330 MRTT assigned to the Multinational MRTT Unit (MMU) and three F-16AM *Fighting Falcon*s of the Portuguese Air Force's 301 Squadron

ART IN FLIGHT: THE PAINTING OF THE PORTUGUESE F-16 FOR THE TIGER MEET 2025

301 Squadron surprised everyone once again and presented another impressive special painting, reaffirming its status as a benchmark within the Ttiger Community.

As in 2021, the creation was entrusted to Hugo «NARK» Pinhão, the Portuguese graffiti and tattoo artist, whose connection to the Air Force dates back to 2018. That year, he was invited to create a mural on the 201 Squadron Falcões building as part of the unit's 60th anniversary celebrations. This work quickly attracted attention and earned him an invitation to decorate the tail of the F-16AM '15103'.

The success of the project led to a new collaboration in 2019, this time with 301 Squadron, for the commemorative painting of the unit's 50th anniversary, applied to the F-16AM '15105'. Two years later, «NARK» would undertake his most ambitious work to date: the full body painting of an F-16, designed especially for the Tiger Meet 2021, also organized by the Jaguares.

For this year's edition, the artist was inspired by the colors and patterns used by the FIAT G.91s that represented Portugal at the Tiger Meet 1992. The result is a fusion of tradition and modernity, translated into a bold and dynamic camouflage that evokes the feline spirit of the Squadron.

The artistic process took place over nine intensive days, culminating in the official presentation on 16 September. On that same day, the aircraft made its first flight with the new livery, piloted by Major Pilot-Aviator Augusto Figueiredo, current commander of Operational roup 51.

TIGER SPIRIT

Cooperation, discipline, and sharing – three pillars that define the doctrinal spirit of cohesion at the NATO Tiger Meet. Through joint missions and inter-force activities, the exercise fosters mutual trust, strengthens cooperation ties, and promotes understanding between forces of different origins and capabilities – essential elements for the collective response capacity of the Atlantic Alliance.

At the end of the exercise, the event culminated in the usual awards ceremony, when the squadrons that stood out most in different aspects of the meet were honored.

The most coveted trophy at Tiger Meet is the Silver Tiger, awarded this year to Staffel 11 of the Swiss Air Force. More than just recognition of operational performance, this award also rewards the dedication, cooperation, and team spirit demonstrated throughout the event, thus becoming a true symbol of what it means to belong to the Tiger Community.

The Special Tiger Spirit Award was presented to 6 ELT from the Polish Air Force in recognition of their enthusiasm, hospitality, and active participation – qualities that capture the essence of the meeting. The same unit also won the Best Uniform award, standing out for the creativity and visual impact of their uniform presentation.

On the operational level, the highlight was the German Air Force's TaktLwG 51 squadron, which was awarded the Best OPS prize for its excellence in flight missions. The Best Tiger Aircraft trophy stayed at home: the 301 Squadron of the Portuguese Air Force was awarded for the painting and presentation of its aircraft - a recognition of great symbolism for the hosts of Tiger Meet 2025.

But the Tiger spirit goes beyond operational rigor: it also celebrates creativity and camaraderie among squadrons. The Italian Air Force's 12º Gruppo won the Best Skit award for the best performance presented during the event, while the Austrian Air Force's 2. Staffel won the Tiger Games, recreational activities that test the unity and good humor of the teams.


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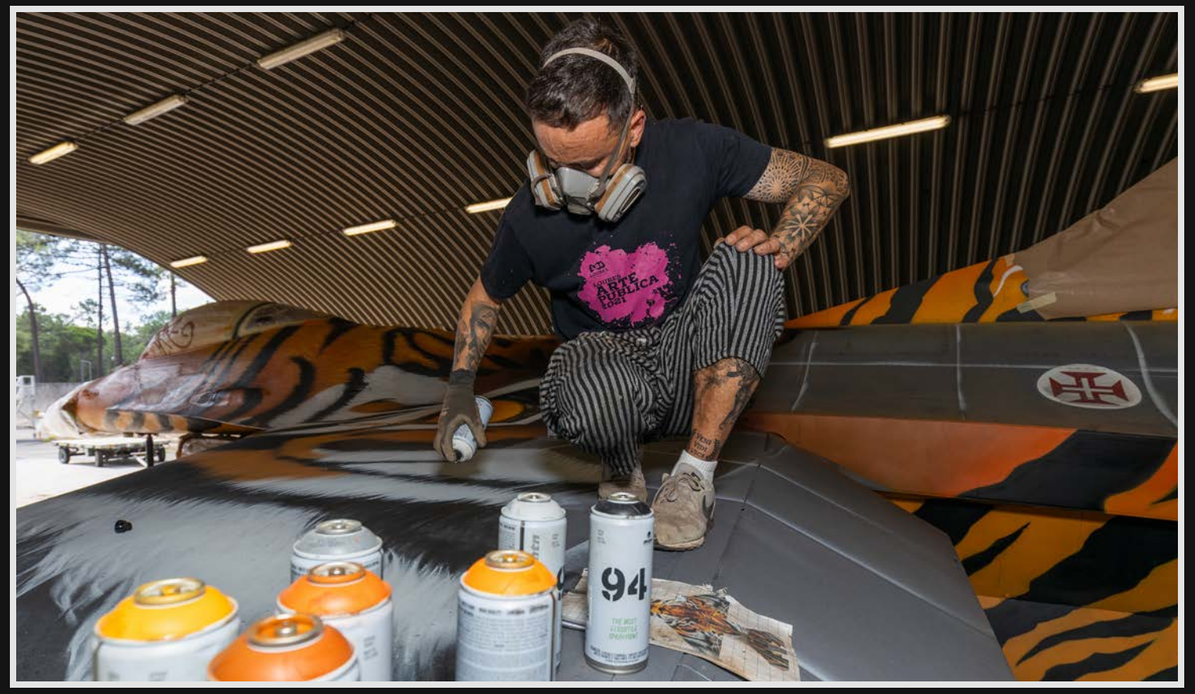
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Heroes

GALILEO SAR-MEET 2025

ARTICLE BY MARCO MUNTZ AND WIEBE KARSTEN

The 243rd Helicopter Squadron of the Czech Air Force had the privilege to host the 2025 Galileo SAR Meet at their homebase Kbely near the city of Prague. The unit specializes in Search and Rescue, operating both the Mi-17 *Hip* and W-3A *Sokół* for this specific task. Depicted is Mi-17 '0849' hovering to lower the rescuer at the start of the hoist challenge on 5 August

GALILEO SAR-MEET 2025 "THAT OTHERS MAY LIVE"

The latest edition of the bi-annual Galileo Search and Rescue (SAR) Meet took place in the first week of August at 24th Air Base Prague - Kbely, one of two Search and Rescue bases in the Czech Republic. Kbely AB is home to three squadrons: the 241st Air Transport Squadron, flying the Airbus A319-115X; the 242nd Air Transport and Special Squadron, operating the C-295M and Let L-410UVP/FG; and the 243rd Helicopter Squadron, responsible for SAR and transport missions, operating the W-3A and Mi-17/Mi-8 helicopters. This unit participated with both the W-3A and Mi-17 in the previous SAR meet at Nordholz in Germany. Being the 'overall winner' of the prestigious trophy (Mi-17 crew), the 243rd Helicopter Squadron of the Czech Air Force hosted this year's event, which suits the tradition perfectly. The main objective of these international SAR meetings is to enhance the effectiveness of search and rescue operations by exchanging experiences and sharing knowledge, procedures, and techniques with one another. The European Union is actively supporting the event to emphasize the importance of the Galileo SAR services in saving lives.

GALILEO SAR APPLICATIONS

Galileo is a worldwide, civil-based, global navigation satellite system (GNSS), owned by the European Union (EU). Although the European Commission is overall responsible for the Galileo Programme, the EU Space Programme Agency EUSPA is being tasked with its operational management of the services, ensuring a defined performance of the whole infrastructure. The European Space Agency (ESA) takes care of the design, technical development, and implementation of the Galileo System, consisting of a space, ground, and end-user segment. Currently, the space segment comprises 28 satellites, of which 26 are orbiting at approximately 23,000 kilometres above the Earth, in three equally spaced orbital planes. Two satellites are being used for search and rescue purposes only due to their position in incorrect orbits. The ground segment is spread across several locations in Europe, augmented

Top left: **Making a left-hand turn after take-off, Mi-17 '0849' is flying towards Kbely's single runway for the mass formation at the start of the SAR contest with destination Plzen-Líně airport in the southwest of the Czech Republic. This was one of the latest *Hips* delivered to the then Czechoslovak Air Force in the late eighties**

Top right: **The Flight Training Centre at Pardubice (CLV) sent one of their Mi-17s to the Czech capital to participate in the SAR meet. The CLV uses four Mi-17s to provide training to pilots, on-board specialists and ground personnel. The training includes search and rescue, hoist operating techniques, flying with underslung loads and the use of Night Vision Goggles.**

Right: **Mi-17 '0825' is the oldest *Hip* in service with the CLV, delivered in the mid-eighties. Early 2025, LOM Praha renewed the Czech Air Force Mi-17 support contract until 2031 which keeps the type in operational condition until 2035. However, the CLV Mi-17s are expected to continue flying until 2032.**

The participation of the Spanish Air and Space Force 803 Escuadrón was only confirmed a few weeks before the actual SAR Meet. The unavailability of the Goodrich hoist due to delayed deliveries meant that the NH90 crew could not participate in the skills challenge. However, it was still decided to send a Spanish delegation to Prague to take part in all other activities related to the SAR Meet.

by a global network of Galileo Sensor Stations (GSS) to monitor the integrity of each individual satellite, such as accuracy and signal quality. Two Galileo Control Centres (GCC), situated in Germany and Italy, continuously synchronize the time signal of all satellites with ground station clocks while system integrity is being computed using data from the Sensor Stations. Up-link stations relay data between the two Control Centres and each satellite. Although primarily designed as a European, free-of-charge, global navigation system for civil use, Galileo provides additional services such as a global Search and Rescue (SAR) function. Galileo satellites are able to pick up signals from emergency beacons, ranging from small personal, hand-held beacons to Emergency Locator Transmitters (ELT) carried on ships or aircraft, and send the signal back to national rescue centres. In total, 27 satellites are equipped with SAR payloads, which detect distress signals from these beacons using the 406 to 406.1 MHz frequency range. These signals are then relayed to one of the (four) MEOLUT (Medium Earth Orbit Local User Terminals) ground stations to compute the beacon's position and transmit it to the Mission Control Centre (MCC) and further on to all relevant Rescue Coordination Centres (RCC) anywhere in the world. A key component and backbone to the Galileo SAR system evolution is the Return Link Service (RLS) which informs the beacon's user that their distress signal has been received and their position has been located. The French Mission Control Centre (FMCC) in Toulouse also receives distress signal information from MEOLUT ground stations for processing and sends a return link message to the emergency beacon via interconnected ground stations and satellites. A new application is the two-way communication service, which is an exchange of pre-coded questions and answers, to help SAR operators better understand the situation and get more detailed information on how many people are involved and the number of casualties. It also has the possibility to send pre-encoded instructions to persons in distress, automatically displayed in the language of the beacon's user. Another new feature is the remote activation of an emergency beacon. This will give the possibility for accredited users to force a beacon to start working when a person, vessel or aircraft is missing and not transmitting a distress signal. Europe's Galileo SAR service has been integrated into the international emergency beacon and locating system COSPAS-SARSAT. The Galileo system's astonishing position accuracy of around 20cm and signal transmission speed certainly makes the difference in saving lives by the international SAR community.

PARTICIPATING TEAMS

In May, information about the Galileo SAR Meet 2025 was made public through a dedicated website including a preliminary list of participants.

The AW101 is an important asset to the Search and Rescue system across Norway. All sixteen AW101s have now been delivered to the Norwegian Air Force and are exclusively operated by 330 Squadron. The helicopter's performance and modern systems are perfectly suitable to face the challenging geographic and environmental conditions in the Scandinavian country, providing 24/7 all-weather SAR capability

The first AW101 Model 612 was delivered to Norway in November 2017, gradually replacing the Sea King helicopter. The latter type was finally withdrawn from use in 2023, after an impressive 47 years of service. The Norwegian AW101, named 'SAR Queen', started to be employed for active SAR duties in September 2020. SAR Queen serial 0265 was assigned to the Norwegian Air Force in January 2018

Main: Transporthubschrauberregiment 30 in Niederstetten received their first H145 LUH SAR in December 2019, while the type was officially inducted into service in July 2020. The 7 Staffel has been assigned the SAR task and maintains detachments at Nörvenich and Holzdorf. Currently, seven H145M LUH SAR models are operational which replaced the long-serving SAR UH-1Ds

Inset left: The hoist challenge required optimum coordination between the flight crew, hoist operator, and the rescuer and included an exercise to deliver a leather ball in the basket

Inset right: The slalom course ended by putting the weighted tire on an oil drum. The German H145 crew won the prestigious SAR-Meet trophy for the best overall performance of all challenges combined

Social media channels such as Facebook were used to announce the confirmation of each participating squadron. The number of helicopters to join the event was quite impressive, but in the last few weeks ahead of the SAR Meet, the organisation received a few cancellations. In style, the organizing 243rd Helicopter Squadron was the first to announce its participation with a W-3A and Mi-17. Koksijde-based 40th Squadron of the Belgian Air Force operating the NH90-NFH was the first foreign unit to confirm its attendance in late June, swiftly followed by the German Navy's Air Wing 5 to dispatch both a Sea Lynx Mk88 and an NH90-NTH *Sea Lion*. However, the majority of participating teams were revealed in July, starting with the Lithuanian Air Force SAR Helicopter Squadron equipped with the AS365 N3+ *Dauphin* and the 51st Helicopter Wing of the Slovak Air Force, sending both a Mi-17LPZS and UH-60M. Additional Czech participants were announced, comprising one Mi-171Sh from 222nd Helicopter Squadron and a Mi-17 of the Flight Training Centre (CLV) at Pardubice. Other international teams to join this year's line-up were 330 Squadron of the Norwegian Air Force to participate with one of their AW-101 *SAR Queens* and the German Army's 7th Squadron operating the Airbus H145 LUH-SAR. 803 Sqn of the Spanish Air and Space Force from Cuatro Vientos near the capital Madrid was the last team to confirm its attendance, only one week before the exercise. Their participation long remained uncertain as the absence of the Goodrich Rescue Hoist System (RHS) for the NH90-TTH *Lobo* fleet, due to delivery delays, would mean the crew could not take part in the hoist challenge. Cancellations included a W-3WARM *Anaconda* of the Polish Navy, the Slovak Air Force Mi-17, and the NH90 of the German Navy, either due to technical problems or availability issues. The Spanish team had to make the longest journey by far to get to Prague. The ferry was made in approximately nine flight hours with three technical stops, including an overnight stay at Nancy, France. All participants arrived at Kbely on Monday at the start of the Galileo SAR Meet 2025, except one Mi-171Sh which arrived on Tuesday morning for the static display. Although the Slovakian Mi-17 was cancelled, the intended crew was still present in the Czech capital as observers. Other observer teams consisted of a German H145, Italian HH-139, and an Austrian UH-60 Black Hawk crew. All international helicopter crews returned home on Friday morning, in addition to the W-3A, which flew back to Plzeň/Líně airport. Other Czech participants, the CLV Mi-17 and both Mi-171Shs, had already departed Kbely on Thursday.

CHALLENGE DAY

Tuesday was chosen for the SAR contest, which was divided into a navigation search and a precision skills challenge. The day started with a mass take-off formation of all participating helicopters to Plzeň-Lině airport in the Dobřany region, the other Search and Rescue facility. Just before the start of the navigation challenge, all crews received the same leaflet which included tasks to be completed, roles to be taken, and what to be expected from them. The helicopters took off from Plzeň-Lině with a 15 minutes interval to start the challenge. First, two sandbags had to be dropped in a metal ring on the ground from a certain height. This exercise wasn't easy, as this would test the resilience of the crew at the start of the navigation flight. The return flight to Kbely airbase entailed different tasks to be completed, including certain routings, flying certain bearings to find particular items or landmarks, to search for coordinates, and a pattern to locate a crashed aircraft. This was a small aircraft model (mock-up) somewhere in the area, which was one of the most important targets to be found. The time needed to prepare for the navigation flight and all its associated tasks was limited, to put the crew under time pressure, which forced them to improvise both on the ground and during the flight. Completing all tasks in a proper way was nearly impossible, so

Top: **Six out of ten W-3As operated by 243rd Helicopter Squadron are painted in a high-visibility color scheme to better reflect the SAR task. Most missions carried out by the W-3 are related to SAR and Medevac, in addition to liaison, transport and firefighting flights. All four camouflaged W-3s are based at Kbely while five are detached to Plzen-Líně and one to Bechyně, providing a 24-hour rescue service**

Above: **The Czech Republic purchased 11 W-3As in the mid-ninetees from Poland. Ten *Sokóły* are still operated by the Czech Air Force as one W-3A was lost when practicing auto-rotation landings in February 2001. An upgrade program for the W-3 fleet was eventually cancelled which forwarded the out of service date of the type, now set for the end of 2028**

The future retirement of the W-3 coincides with the intension of the Czech Ministry of Defense to cease SAR duties within the country's national air ambulance service in 2028. There are currently no plans to find a replacement for the 'Sokół'. Until then, the W-3 will be an invaluable asset in saving lifes across the Czech Republic whenever called upon

the crew had to prioritize. The importance of each specific task was represented by the number of points to be gained, which was known to the participants. However, the most important criterion was the time over a certain target. Also, the search pattern flown and the accuracy to locate the simulated crashed aircraft model were evaluated by means of GPS tracking.

After the navigation search flight, performed south of Prague, each crew returned to Kbely for the skills challenge in staggered intervals, which started with a precision landing. The distance between a fixed cross or marking on the ground and the first point of ground contact of the helicopter determined the amount of points. Then each helicopter repositioned for the precision skills challenge, which took place under the watchful eyes of military personnel, media, and photographers. Next to demonstrating manoeuvring and coordination skills, also the crew's ability to concentrate was ultimately tested as tiredness could affect their performance after a long flight. Despite the negligible time pressure during the hoist challenge, all tasks still had to be completed within 12 minutes. Coordination of the crew was of utmost importance during the exercises; however, also each specific helicopter type with different weights and characteristics, such as vortex and downwash, could make a difference. The first objective was to complete the slalom obstacle course. A weighted tyre attached to the winch cable had to be manoeuvred between two

Left: **The AS365N3+ Dauphin is a crucial component to the Lithuanian air rescue capabilities. Three Dauphins were delivered during 2015 to the Sraigtasparniu Eskadrilé (Helicopter Flight) at Šiauliai and declared operational in January 2016. A support and service contract with Airbus guarantees a serviceability rate of 80%, that number is easily being met**

Right: **The capabilities of the AS365 allow the Lithuanian Air Force to perform complex lifesaving missions. The Dauphins feature a full glass cockpit and a four-axis autopilot with different SAR modes. Equipment includes a forward-looking infrared radar (FLIR), search lights and a rescue hoist**

PARTICIPANTS

Callsign	Serial	Aircraft type	Air Force	Unit	Homebase
Rebel	0714	W-3A	Czech AF	243.Vrtul'niková letka	SAR det. Plzeň/Líně
Harley	0849	Mi-17	Czech AF	243.Vrtul'niková letka	Praha/Kbely
Shaker	0825	Mi-17	Czech AF	CLV	Pardubice
Rosebud	9825	Mi-171Sh	Czech AF	222.Vrtul'niková letka	Námest nad Oslavou
Blackhawk	7642	UH-60M	Slovak AF	1.Vrtul'niková letka	Presov
Cyclone	41 'BLUE'	SA-365N3	Lithuania AF	Sraigtasparniu Eskadrilé	Helicopter Fl. Siauliai
Wildcat	8317	Super Lynx Mk88A	German Naxy	MFG-5	Nordholz
Airwolf	7704	H145 LUH SAR	Geramyn Army	7. Staffel (THR30)	Niederstetten
SARQueen	265	AW-101 Mk612		330 Skvadron	Sola
Valkyre	RN-02	NH90-NFH	Belgian AF	40 Smaldeel	Koksijde
Zorro	HD.29-17/803-17	NH90-TTH	Portugues AF	803 Escuadrón	Cuatro Vientos
Handy21	713	W-3A	Czech AF	243.Vrtul'niková letka	Praha/Kbely
STATIC DISPLAY					
	9806	Mi-171Sh	Czech AF	222.Vrtul'niková letka	Námest nad Oslavou
	0848	Mi-17	Czech AF	243.Vrtul'niková letka	Praha/Kbely
	0835	Mi-8PS-11	Czech AF	243.Vrtul'niková letka	Praha/Kbely
	0709	W-3A	Czech AF	243.Vrtul'niková letka	Praha/Kbely

Although search and rescue is the Dauphin's primary mission, the type is also being used for environmental monitoring such as tracking crop conditions and plant disease, maritime pollution control and observation flights to detect the effects of drought and floods. Lithuanian Air Force AS365 '41 Blue' is seen here on departure after the Galileo 2025 SAR Meet

poles and oil drums, then slalomed around three other barrels before placing the tyre on top of the final oil drum. All this had to be done without any intervention of the winchman. Penalties were added if the weight was being 'guided', too high, touching the ground, or hitting one of the barrels. During the next task, the rescuer was being hoisted up to direct the helicopter in such a way, by using hand signals, to be in a position to throw a ball into a basket. The final exercise was to pick up a ring with a grappling hook attached to the winch cable, again without the intervention of the winch operator (rescuer). Once accomplished, the winchman was hoisted back into the helicopter before repositioning to their parking spot. For all precision and hoist exercises, skills of both pilots and good communication between crew members, hoist operator, and the rescuer on the ground, directing by hand signals, determined the outcome of each exercise, were vital.

SYMPOSIUM

On day three, Wednesday 6 August, a SAR symposium was held in the EU Space Agency HQ (EUSPA) in Holešovice, Prague. This symposium gave SAR professionals and international experts (RCCs, SAR-related organisations, and industry representatives) an excellent opportunity to learn, network, and share valuable experiences. The day included a series of presentations, including one by Pascal Claudel, Chief Operating Officer of EUSPA, as well as talks by European and global participants.

A French and Canadian delegation of Galileo gave a presentation about the global navigation satellite system (GNSS), how the system works, and its role within SAR. Furthermore, there were presentations from members of the Czech University of Defence and from three participating crews, 803rd Squadron of the Spanish Air Force, 330th Squadron from Norway, and the Belgium Air Force delegation of 40th Squadron. The special guest was Norwegian fisherman Jon-Atle Bjørnø, who found his life in danger after his boat suddenly sank in the icy waters of northern Norway. Thanks to the activation of his emergency beacon and the quick and accurate position determination by the Galileo SAR System, he was rescued in time during an intervention where minutes were decisive. The symposium day was concluded with a hangar party at Kbely Airbase, where the winners of the Navigation and Search, rescue and ground crew challenge were announced. The Norwegian delegation of the 330th Squadron were the winners of the Rescue Competition. The Mi-171Sh crew of 222nd Helicopter Squadron won both the Hoist and Ground Crew Challenge but the winning team of SAR-meet 2025 was 7th Squadron of the German Army. They were the 'overall winner' of the Navigation and Search challenge, bringing the prestigious SAR-Meet trophy to their home base, Niederstetten, where the next SAR-meet will take place.

The Authors would like to thank Captain Kristýna Kosatíková (press Officer at Kbely airbase) and Captain Michal Scherks (member of the exercise organizing committee) for their hospitality and information.

Based at Prešov in Eastern Slovakia, the Slovak Air Force UH-60Ms are mainly tasked with troop transport, search and rescue and medical evacuation missions. Nine *Black Hawk*s were acquired in a Foreign Military Sales agreement with the US in 2015 and delivered between 2017 and 2020. The UH-60s are being operated alongside the remaining Mi-17s in 51th Wing while a second batch of 12 second-hand modernized UH-60Ls is on order.

Main: The German Navy has been operating the Westland Sea Lynx since 1981. Initially, 19 Mk88 models were acquired, followed by an order for an additional seven Sea Lynx Mk88As in 1996. The existing fleet of 17 Mk88s was brought up to 'Super Lynx' standard as well. Enhancements included new sensors and weapons improving the anti-submarine and anti-surface warfare effectiveness

Inset left: The Sea Lynx is now clearly in the twilight of its career with the Marineflieger as the type is being replaced by the NH90 *Sea Tiger*. During the official hand-over ceremony of the first *Sea Tiger* at Nordholz naval base this December, news emerged about Germany's intension to transfer the Lynx fleet to the Ukrainian Navy once retired from German military service at the end of 2026

Inset right: Marineflieger Geschwader 5 will have received 31 *Sea Tigers*, the latest version of the NH90 NFH model, by the end of 2030. Once retired, the distinctive sound of the Lynx helicopter will greatly be missed in the skies over Germany and beyond

F-35A *LIGHTNING II*
THE NEW BACKBONE FOR THE
BELGIAN AIR FORCE

ARTICLE BY LAURENT HEYLIGEN

F-35A 'FL001' was the first aircraft to be officially handed-over to the Belgian Air Force on 10 December 2023, however, it was only the 3rd *Lightning II* to make its first flight more than six months later in June 2024

THE LOCKHEED-MARTIN F-35A *LIGHTNING II*, BACKBONE OF THE BELGIAN AIR FORCE IN THE 21ST CENTURY

INTRODUCTION

In April 2025, Belgian Defense invited the author to visit the Belgian F-35 *Lightning II* Conversion Unit at Luke AFB, Arizona. This was a very welcome opportunity to write an overview on the program within the Belgian Air Force. Undoubtedly, a lot will be written in the upcoming months when the first aircraft arrive in Belgium, so let this be a kick-off to get to know the aircraft and the program a bit better and how the Belgian Air Force plans to introduce it in operational service.

Selection and acquisition

In late October 2018, after several decades of studies and political delays, the then Belgian government decided to acquire 34 Lockheed-Martin F-35A *Lightning II* fighter aircraft as a replacement for the Lockheed-Martin F-16AM/BM *Fighting Falcon*s now in service with 2nd Tactical Wing at Florennes AB and 10th Tactical Wing at Kleine Brogel AB. The total cost of the project was about 4 million Euros. The F-35A is the conventional take-off and landing version of the F-35 and may not be confused with the F-35B, the vertically take-off variant (V/STOL) and the carrier-based F-35C.

Belgium was the last of the original F-16 EPAF-countries (F-16 European Participating Air Forces – Belgium, Denmark, Norway, and the Netherlands, who together with the USA were the first countries to buy the F-16 in 1975 with the so-called 'deal of the century'). Belgium was also the only country in this group that had decided not to participate in the development of the F-35 *Lightning II*.

Belgium did an 'off-the-shelf' buy of the aircraft via the FMS (Foreign Military Sales) procedure, but this had the advantage that it could choose the very latest version of the F-35A, the TR-3, which would become available in the early 2020s. The number of 34 aircraft was considerably lower than what NATO had requested Belgium to buy, which was at least 48 examples.

The first two Belgian F35A instructor pilots, «SO6» and «Fridge» joining their aircraft for their next training flight. The Belgian ground crew –in the tan overalls – are supported by civilian Lockheed-Martin personnel during their on-the-job training

Belgian Air Force detachment commander Lt.Col. Pierre-Yves «SO6» Libert climbing abord F-35A 'FL001' using the build-in crew ladder. «SO6» was the first Belgian to make an F-35A solo-flight on 12 December 2024. Almost one year later, on 8 December 2025, the detachment made its 1,000th F-35 flight at Luke AFB

At the time of the decision, only one other candidate was still in the running, the Eurofighter Typhoon. The Saab *Gripen* and the Boeing F-18E/F *Super Hornet* had pulled out of the competition at a relatively early stage as they could not fulfill all requirements listed in the Belgian Air Force's specifications that were issued to the various candidates. Dassault (with the Rafale) did a last frantic attempt, but was excluded as their final proposal (that they issued after the deadline) could also not meet the requirements of the Belgian Air Force.

After the signature of the F-35-contract it became silent for a while, but this did not mean that in the background a lot of work was put in the preparation of putting into the service the new aircraft within in the Belgian Air Force.

Production

The 34 Belgian F-35A's will all be built on the Lockheed-Martin assembly line at Ford Worth, Texas, USA. In November 2022, the first component of a Belgian F-35A, the so-called 'outer wing box', produced at FACO Cameri in Italy, was noted on the assembly line. Cameri is one of many locations in the US and Europe where larger components are built for the F-35. Northrop-Grumman constructs the central part of the fuselage in its facility at Palmdale, California, and the rear part of the fuselage and tailplanes come from the BAE Systems factory at Samlesbury in the United Kingdom. As part of the contract, the Belgian SABCA will also start building at least 400 of these tailplanes in its facility at Lummen, Belgium, from 2025 onwards.

On 10 December 2023, during an official ceremony held at Fort Worth, the first aircraft, registered FL001, was publicly unveiled in the presence of many representatives of the Belgian government and air force.

Unfortunately, it would take another year before the aircraft was effectively handed over to the Belgian Air Force. At first, it was planned to deliver four aircraft per year between 2023 and 2030, but delays of several components coming from various subcontractors caused by the Covid-19 pandemic resulted in a rescheduling of the deliveries. In late 2023, two aircraft would be delivered, and two aircraft in the first quarter of 2024, but these plans had to be revised.

The development of the F-35 TR-3 (Technical Refresh-3) suffered from delays in the area of software development, and Lockheed-Martin was forced to stop all F-35-deliveries for several months. Both the hardware and software of the TR-3 had to undergo a complex testing and certification program before any of the production aircraft would be delivered to the end users.

The TR-3 has about 75 improvement in both the hardware and software, where the new core processor who has about 75 times more processing power than its predecessor in the TR-2, is the most noticeable. This extra computer capacity supports a new cockpit display system, a larger computer memory, and faster updates of the mission system. The TR-3 is the basis for the new F-35A Block 4 upgrade that will be introduced by the end of this decade. This modernization covers the integration of a new radar, the AN/APG-85, the introduction of the AIM-260 Joint Advanced Tactical Missile (JATM), the MBDA Meteor for some European users, the AGM-88G Advanced Anti-Radiation Guided Missile Extender Range (AARGM-ER), and the Norwegian Joint Strike Missile (JSM).

On 14 May 2024, F-35A 'FL003' was the first Belgian F-35A to fly from Fort Worth in the hands of a Lockheed-Martin test pilot. In the following weeks, also the seven other aircraft of the initial batch made their first flights.

On 28 November 2024, the F-35A also received its type certification from the Belgian Military Airworthiness Authority. This certification cleared the aircraft for operations under the Belgian aviation rules.

312th Fighter Squadron

All Belgian pilots and technicians will undergo conversion training in the United States. For this purpose, on 1 June 2023, the 312th Fighter Squadron *Scorpions* was reactivated within the 56th Fighter Wing at Luke AFB, Arizona. The current commander of the Scorpions is Lieutenant Colonel Jason «CHILL» Wall, with the Belgian Lieutenant Colonel Pierre-Yves Libert (ex 350 Squadron, callsign «SO6») as his assistant.

The 312th is a mixed American-Belgian unit, with 17 Belgian Air Force men and women who work together with their American colleagues to assure training of both the pilots and technicians. A total of 12 instructors (six US and six Belgian) are planned, but to clear the backlog in April 2025, an additional three U.S. Air Force instructors were assigned to the squadron. At that moment, no qualified Belgian instructors were available; the first two were about halfway through their additional instructor training. An additional 48 technicians and 20 support personnel are assigned to the squadron.

During their conversion, the pilots can make use of the extensive training facilities that surround Luke AFB. South of Luke, the large Barry M.Goldwater training range is located. Three airspace areas are available north west and east of Luke for the training flights, some of which fly against 'aggressor' Dassault Mirage F1C (ex Armée de l'Air/French Air Force) from ATAC that are also based at Luke AFB. Another big advantage of Luke AFB is, of course, the weather, which is virtually always dry and sunny, so the training schedules are virtually never interrupted.

On 3 December 2024, the first Belgian F-35A, serial FL002, was transferred from Fort Worth to Luke AFB, and the Belgians finally could start with their training flights. About one week later, on Thursday, 12 December 202,4 the first Belgian pilot, Lt.Col. Libert, made the first Belgian flight with the F-35A, a historic moment.

The other F-35As were transferred to Luke over a period of two months, and by mid-February, the 312th had its full inventory of eight aircraft, 'FL001' to 'FL008', available.

At the time of the visit, two Belgian pilots, «SO6» and Major Nicolas «FRIDGE» Verbraken (ex 349 Squadron) were ready with their conversion to the F-35A, but still taking the additional instructor pilot course, a training they concluded successfully at the end of June. Eight other pilots were in various stages of the initial conversion course, coming from all current F-16

Top: **'FL001' taxiing out its 'hangarette' at Luke AFB. This shot gives a nice view of the massive Pratt & Whitney F135 engine**

Middle: **The F-35As cockpit is much larger than that of the F16s these pilots used to fly before. The canopy gives great visibility, this being supplemented by the Collins F-35 Gen III Helmet Mounted Display System (HMDS) which gives the pilot a 360-view around his aircraft**

Bottom : **'FL001' is waiting for the final clearance from the Luke AFB tower for a new training flight**

BAF-Serial	Construc-tionnumber	FMS-Serial	First Flight	Delivery to 312th FS
FL001	AY-1	22-5762	5 Jun 2024	9 Dec 2024
FL002	AY-2	22-5763	24 Jun 2024	3 Dec 2024
FL003	AY-3	22-5764	14 May 2024	Feb 2025
FL004	AY-4	22-5765	23 May 2024	Jan 2025
FL005	AY-5	22-5845	18 Dec 2024	13 Feb 2025
FL006	AY-6	22-5846	19 Dec 2024	24 Jan 2025
FL007	AY-7	22-5847	9 Dec 2024	8 Jan 2025
FL008	AY-8	22-5848	8 Jan 2025	13 Feb 2025

312th Fighter Squadron has eight F-35A *Lightning II*s in its inventory, which are scheduled to stay at Luke until at least 2028, with a possible extension until 2031. What happens after 2031 is still to be decided

squadrons (1 Squadron *Stingers* and 350 Squadron *Ambiorix* at Florennes AB, and 31 Squadron *Tiger* and 349 Squadron *Mace* at Kleine Brogel AB) that are scheduled to receive the F-35A. Six of these pilots will also later become instructor pilots.

HOW LONG DOES IT TAKE TO CONVERT AN F-16 PILOT TO THE F-35A?

It all starts with a six-week theoretical training, followed by a number of sessions in the simulator. After these, the first flight in the aircraft is made. This happens immediately on the F-35A as no two-seater version of the type was developed. After the 'solo', a series of F-35 flights are made, focusing on basic maneuvers, air-to-air fighter training, air-to-ground training, and air defense training. A total of 48 experienced Belgian F-16 pilots will undergo this syllabus.

For the 28 Belgian F-16 pilots with less than 500 flying hours on the F-16, a modified 'T-X' Transition Course is organized. This course takes about 5.5 months. From March 2026, a so-called 'B-Course' will start for pilots who come directly from pilot training. The type of flights is the same as for the experienced pilots, but the theory and the number of flights on both the simulator as the actual aircraft will be expanded and spread over a period of 7.5 months.

Those who are selected to become instructor pilots get an additional training of about 21 missions (both simulator and real flights).

In the current planning, the Belgian Air Force will remain at Luke AFB with eight aircraft until 2028, but likely this will be extended until 2031.

MAINTENANCE TRAINING

The training of the technical personnel is also completely done in the United States. They start with a theoretical course in the 'Academic Training Center' at Eglin AFB, Florida. This takes between 3.5 and five months. This training uses a number of interactive courses and uses modern training simulators for the F-35A, including a number of real-size models, covering all aspects of maintenance and handling of the aircraft.

Top left: **On 14 May 2024 at Fort Worth, Texas, F-35A 'FL003' was the first Belgian F-35 to fly**
Top right: **F-35A making a low fly-by over Luke AFB's main runway**
Above: **«Fridge» taxiing in after his flight. Both «SO6» and «Fridge» were qualified to fly F-35A at the time, but were undergoing the additional instructor pilot module during our visit**

Left: **Maintenance personnel carries out post-flight checks on the aircraft while the pilot prepares to exit the cockpit**

Above: **Two maintenance technicians check the left main landing gear for tire and brake wear.**

After their period at Eglin AFB, the students move to Luke AFB where they receive a 2.5 to five months on-the-job training, supported by personnel of Lockheed-Martin, during the day-to-day flight operations within the squadrons. This training is led by Major Loïc Van Himst and is currently planned for about 120 persons.

The F-35A causes a radical change in maintenance within the Belgian Air Force. The 1960-1970s technology of the F-16AM/BM will be replaced with 21st century technology that is updated constantly. The F-35A has been designed in such a way that it is not necessary to dismantle half the aircraft to replace a specific part. It uses a modular system, where a faulty module is replaced by a working example. With the F-16, they counted in months and days to resolve specific issues, but in the case of the F-35A, this is reduced to hours or maximum a few days. Major Van Himst described it as follows: "It's a completely different story with the F-35 than with the F-16. After every F-35 flight, we have access to thousands of parameters. Based on these, the onboard computer makes recommendations for repairs. What took days in the past can now be resolved within hours."

In parallel with the aircraft technicians, a small group of specialists in specific areas, like in 'stealth' technology (a new function for the Belgian Air Force), specialists in flight gear, maintenance managers, planners, and IT specialists are trained in the US.

Late July 2025, the first group of technicians finished their training and returned to Belgium, where they will support the next phase, the introduction of the F-35A at Florennes AB.

NEW INFRASTRUCTURE

The first Belgian Air Force unit that will receive the F-35A is 2nd Tactical Wing at Florennes AB, where the Nº 1 Squadron *Stingers* will be the first unit to fly the aircraft. The first of these, 'FL009', rolled off the Fort Worth assembly line in early June 2025 and made its first flight on 14 August, followed by 'FL011' on 15 August, 'FL012' on 16 August, and finally 'FL010' on 28 August. The cockpit sections of 'FL015' and 'FL016' were seen at Fort Worth during a visit of the Belgian Minister of Defense in early Oktober 2025.

On both future F-35A bases, Florennes AB and Kleine Brogel AB (where the 10th Tactical Wing will get its first F-35A *Lightning II*s by 2028), two new F-35 compounds were built by a consortium of Belgian and American companies. The contract was allocated to the consortium 'Full Throttle', where Belgian building company 'Jan De Nul' is responsible for the design, build, and maintenance of these facilities. Another Belgian company, Arcadis (in collaboration with their American partner Burns & McDonnell) acted as designer of the plans and technical consultants for the virtually identical 'compounds' that had to comply to all current safety and environmental regulations.

Each compound consists of an administrative area with offices, meeting rooms, class rooms, an auditorium, dressing rooms, and a cafeteria;

Main: **'FL004' pulling up after a gear-down fly-by over Luke's main runway**

Left: **Training conditions at Luke are ideal, the weather is almost always perfect and the aircraft can use the large training facilities in its surroundings**

Middle: **This visit gave a unique opportunity to photography the first batch of F-35As for the Belgian Air Force as they are scheduled to stay at Luke for the several years.**

Right: **'FL004' powering-up just prior to brake release. Noise levels are higher than with the F-16, which is already giving some concerns with the locals around the Belgian airbases of Florennes and Kleine Brogel. The increased noise will be compensated with less flights, as many of the training flights will be done on simulators**

a logistical area for the maintenance of aircraft, workshops, and a storage area for spares; and finally a high security area for the planning of operations and the training sessions. In this area, the four flight simulators will also be located, where a large part of the training will take place. Last but not least, the complex will also get a new flightline.

The complete budget for both compounds is estimated at 275 million Euros.

Flight Simulators

A large part of the conversion and flight training for the F-35A will be done on flight simulators. In the short term, the Belgian Air Force will receive eight simulators – four at Florennes AB and four at Kleine Brogel AB. These can be connected so that pilots from both bases can conduct 'virtual' combined training missions. In the long term, these simulators can also be linked with the simulators of other NATO-partners, to develop a LVCT-capacity (Live Virtual Constructive Training), a network of systems for virtual training in real-time to simulate complex threats in a virtual and collaborative environment.

The ultimate goal of the Air Force is to acquire a total of 16 of these 'Effects Based Simulators' (EBS), eight per base. The use of the EBS will also mean that the number of actual flight movements will be drastically reduced on both bases compared to the F-16.

In March 2025, the first components for these simulators arrived at Florennes AB and these were put in service by late July.

For the use and management of the simulators at Florennes AB, a 'new' squadron was reactivated at Florennes AB, the 10 'Silver Dragons' Squadron. This unit will not only be responsible for the simulators, but will also be dealing with the standardization of F-35A procedures and the integration of the new jet in the Belgian airspace. It will also support the other F-35A squadrons and the Florennes Flying Group.

The Squadron has adopted the traditions of N° 10 Squadron that flew the De Havilland Mosquito NF.30 and Armstrong-Whitworth Meteor NF.11 night fighters based at Beauvechain AB between 1948 and 1957. At Kleine Brogel AB, a similar unit will be created, although not yet confirmed officially, it is expected that this will become N°_27 Squadron, an old Kleine

Left: **FL006 in the small hangar attached to the squadron building that can take 2 aircraft at a time. A similar configuration but with more hangar space has been constructed at Florennes and Kleine Brogel**

Top Right: **The maintenance crew received theoretical training at Eglin AFB, Florida before moving to Luke to "on-the-job" training under the guidance of civilian Lockheed-Martin personnel**

Right: **For security reasons the Belgian military staff had to wear face masks during our visit, this is a new guideline issued in early 2025 to product them (and subsecuantly their family) from outside treats. We live in strange times currently**

Brogel AB Republic F84F *Thunderstreak* squadron that was disbanded in 1962. For those wondering why 23 'Devils' Squadron, a former Kleine Brogel AB F-16 squadron that was disbanded in 2002, is not going to be revived, well, 23 will raise again as the new unit operating the future Special Forces aircraft flying from Beauvechain AB.

First delivery

On 13 October 2025, the first Lockheed-Martin F-35A Lightning II fighters of the Belgian Air Force arrived at Florennes AB.

Four days earlier, on 9 October, four F-35As, serials FL009, FL010, FL011, and FL012, had departed the Lockheed-Martin factory at Fort Worth, Texas, for their delivery flight to Belgium. They were accompanied by two Airbus A330MRTT tanker aircraft (T-057 and T-061) from the Multinational MRTT Unit at Eindhoven, The Netherlands.

After a 7.5-hour flight, the aircraft arrived at their first stop at Base Aérea Nº 4 Lajes on Terceira, one of the Azores islands. Here, the aircraft stayed over the weekend before continuing their flight to Belgium.

Unfortunately, during the pre-flight phase of the second leg, one of the F-35As, 'FL011', had a technical problem and the decision was made to continue the delivery flight with only three F-35A and the two tankers.

After a four-hour flight, the F-35As performed a first fly-by over Florennes AB around 15.00 hrs local. This was quickly followed by the first landing of a Belgian Air Force F-35A on Belgian soil by 'FL010', quickly followed by 'FL012' and 'FL009'.

At Florennes AB, they were greeted by around 800 invitees of the Belgian Air Force, including HRH King Filip of Belgium. Earlier in the day, the newly built F-35 compound had been officially inaugurated by the Belgian Minister of Defense.

Unfortunately, virtually no members of the Belgian specialized aviation press were allowed to be present at the event on base; only a select group of mainstream press were present. As a direct result, the main focus in their reporting that evening and the news articles in the newspapers the following day was the fact that one F-35A didn't make it to Florennes AB. For most of them, this was the 'highlight' of the day … overshadowing an event that was considered a historical moment for the Belgian Air Force.

THE FUTURE

In 2018, 34 F-35A Lightning IIs were ordered, a number that was well below the NATO ambition level for Belgium at that moment. In late July 2025, the decision was made to order a second batch of eleven aircraft and ammunition. These eleven aircraft will not be build in the United States, but at FACO Cameri (F-35 Final Assembly and Check Out) in Italy. The choice for FACO was influenced by the call to European countries to 'buy European' after the various threats on tariffs coming from the current US administration.

However, during the same governmental meeting of 18 July 2025, it was decided to update the so-called 'STAR'-plan (Safety, Technology, Ambition and Resilience) that was agreed upon in 2022 to modernize and strengthen the Belgian Armed Forces. Part of this update is to study the

F-35As 'FL001' and 'FL004' waiting for clearance. This spot was one of the busiest areas on the base. At a certain moment we had F-35As from the US, Italy, Norway, and Belgian patiently waiting for their turn to take-off.

possible acquisition of another ten F-35As, what would bring the total to 55, which is above the initial 2018 NATO-ambition level of 48 aircraft, and probably closer to recently revised NATO-plans.

The choice for the F-35A has already resulted in a lot of negative comments in Belgium (and also other countries), from politicians from opposition parties, 'would-be' aviation experts, and even managers of companies who lost out on the deal., However, the author is convinced that the choice for the F-35A was the best for the following decades, and in these uncertain times of geopolitical change, an unavoidable necessity.

The selection and acquisition of the F-16 also caused a lot of noise at the time; its introduction was not without technical issues (although in those days, these were not spread out over the news like they are now), and in the end, the F-16 became a huge success, and certainly, the F-35A will follow this example. The fact that the aircraft has been ordered by 20 aircraft in a relatively short time can't be a 'coincidence'.

312TH FIGHTER SQUADRON – A HISTORIC OVERVIEW

The 312th Fighter Squadron was first formed on 16 July 1942, as part of the 388th Fighter Group at Dale Mabry Field, Florida. It initially flew the Bell P39 Airacobra. The squadron's mission was to act as a Replacement Training Unit (RTU). RTUs were large units that trained pilots following their graduation from flight school.
In June 1943, the 388th Group became a split organization, and the 312th (and its sister squadron, the 441st FS) moved to Perry Army Air Field, Florida. However, HQ and the two other FSs remained at Dale Mabry Field. In September 1943, the squadron focused on Republic P-47 Thunderbolt training but also had some Curtiss P40 in its inventory.
In May 1944, the squadron was disbanded, and its personnel, equipment, and mission were transferred to the 342nd AAF Base Unit (Replacement Training Unit, Fighter).
Exactly 40 years later, on 1 October 1984, the unit reformed and was redesignated the 312th Tactical Fighter Training Squadron by Tactical Air Command. It was assigned to the 58th Fighter Wing at Luke AFB, Arizona. It was the first General Dynamics F-16C Fighting Falcon training squadron in the U.S. Air Force. It initially flew the new Block 25 F-16C, but in 1990, it converted to the new Block 42. Its aircraft carried the 'LF' tail code with a black tail stripe outlined in red. On 18 January 1991, the squadron was inactivated and most of its aircraft reassigned to the 308th, 309th, and 310th Fighter Squadron.
On 1 June 2023, the squadron was reactivated and redesignated as the 312th Fighter Squadron as a Lockheed-Martin F-35A *Lightning II* training unit, primarily training F-35 crews for the Belgian Air Force at Luke AFB. It was assigned to the 56th Fighter Wing (the 8th became 56th FW in 1994).

The author wants to thank the members of the Belgian Defense Press Office for the invitation to Luke AFB and the members of the 312th Fighter Squadron for their kind reception and support during the visit.

'FL007' heading towards the runway at Luke AFB. The identity of most pilots are kept secret for security reasons.

HUNGARIAN DEFENSE FORCES
JÓZSEF KISS 86TH HELICOPTER WING

ARTICLE BY LOWPASSAVIATION.COM

An Airbus Helicopters H225M with three Airbus Helicopters H145M in the background

MAGYAR HONVÉDSÉG KISS JÓZSEF 86. HELIKOPTERDANDÁR

HISTORY OF SZOLNOK HELICOPTER BASE

Szolnok Helicopter Base was a former German base that the Soviet Red Army captured during World War II. Szolnok became a Russian medical base for injured soldiers in 1944. When the Soviet Union fell apart, Hungary declared itself independent. In the early 90s at Szolnok, the 89. 'Szolnok' Vegyes Szállito Repülo was based, and it was a mixed transport regiment with one squadron equipped with the An-26 Curl transport aircraft and two squadrons with Mi-8S and Mi-8T helicopters. At Szentkiralyszabadja the 87. 'Bakony' Harcihelikopter Ezred was based with two Mi-24D and Mi-24V squadrons, one squadron with Mi-8T helicopters, one squadron with Mi-17 transport, and a small number of special mission equipped Mi-17PP helicopters. At Börgönd was the 'Asboth Oszkár' helicopter regiment, based with the Mi-2 helicopters.

During the Nineties, several reorganizations took place within the Hungarian Air Force; Börgönd AB was closed, and its Mi-2s were relocated to Szolnok AB. Followed by the closure of Szentkiralyszabadja a few years later, all the Mi-8s, Mi-17s, and Mi-24s were also transferred to Szolnok AB. The An-26 Curl transport aircraft transferred from SzolnokAB to Kecskemét AB. From that moment, the unit at Szolnok AB was renamed from 89. Szolnok Vegyes Szállítórepülő-Ezred to MH 86. Szolnok Helikopter Ezred. During the years, the Mi-2s were withdrawn from use, and a lot, but luckily not all, Mi-8s, Mi-17s, and Mi-24s were also withdrawn from use. Also, an Air Academy was established within the Hungarian Air Force at Kecskemét AB. For this purpose, twelve IAR-52 's were acquired from Aerostar in Romania but were based at Szolnok AB. Twenty L-39ZO's were bought from the former East Germany and based at Kecskemét AB. In 2009, all the L-39s were withdrawn from use, and in 2020, the Yak-52s were replaced by Zlin training aircraft. In 2018, Szolnok helicopter base was completely renewed due to the delivery of new helicopters and more training aircraft, and the wing changed its name to MH Kiss József 86. Helikopterdandár, which means 86th Helicopter Base.

THE ZRINYI 2026 PROGRAM

At the end of 2016, the Hungarian Government launched the ambitious "Zrinyi 2026" modernization program, now called the National Defense and Armed Forces Development Program, as a response to

The Hungarian Air Force's H225M helicopters are equipped with integrated winches, essential for their Search & Rescue (SAR) and special operations roles, enabling fast roping, rappelling, and hoist operations for personnel recovery, alongside advanced avionics and optional HForce weapon systems for combat support

evolving security dynamics and increasing instability along NATO's eastern borders. Hungary enhanced its focus on strengthening defensive capabilities and recognized the need to modernize its largely Soviet-era military equipment and align its capabilities with NATO standards.

For the ground forces, the program contained the acquisition of 218 Lynx KF41 Infantry Fighting Vehicles (IFV), 44 Leopard 2A7+ main battle tanks, and 24 PzH 2000 self-propelled howitzers.

For Air Defense and Electronic Warfare, the Hungarian Government invested significantly with the acquisition of National Advanced Surface-to-Air Missile System (NASAMS), medium-range air defense systems, Mistral MANPADS, and 11 ELM-2084 radars, ensuring effective integration into NATO's integrated air defense network and enhancing protection for critical infrastructure.

The program also included comprehensive digitalization of command-and-control systems, implementing NATO-standard communications equipment, and battlefield management systems, including the development of cyber defense capabilities, and the establishment of a dedicated cyber defense center. For training and personnel development, the program includes significant investment in new simulation centers, modernization of training ranges, and enhanced cooperation with NATO allies for joint training exercises.

A key aspect for the program is its focus on developing Hungary's domestic defense industrial base, which saw further expansion through partnerships with international firms, supporting long-term industrial growth.

For the Air Force, the program involved the overhaul of eight Mi-24s and the acquisition of two Airbus A-319, two Falcon 7 and two KC-390 transport aircraft, two Zlin 143, six Zlin 242, twelve L-39NG training aircraft, twenty H-145M, and sixteen H-225M helicopters.

The Hungarian Air Force has ordered a total of 16 Airbus H225M helicopters and has received the final two H225Ms in July 2025

Airbus delivered all 16 H225Ms within two years to the Hungarian Air Force. Some of the H225M will be fitted with the HForce weapons management system, allowing the use of guns, rockets and missiles and adding close air support capabilities. This will potentially provide some commonality with the Hungarian H145M fleet, which is also equipped with HForce

MODERNIZATION OF MH 86

The first part of the Zrinyi 2026 program that was executed was the large overhaul of eight Mi-24 attack helicopters in Russia. This large overhaul, which extended the lifespan of the helicopters, started in 2017 and was completed in 2019. For pilot training, eight Zlin training aircraft were ordered, and the first four were delivered in 2018, followed by the other four in 2020. In June 2018, the Hungarian Ministry of Defense purchased twenty H-145M helicopters, which were delivered between November 2019 and December 2021. These helicopters are equipped with HForce Modular Weapon Systems, which offers the option to arm the helicopter with 70mm rockets, a 12.7 mm machine gun, or a 20mm gun. Besides armament, the helicopters have a missile protection package, a fast-roping system, an electronic countermeasures system, and an electro-optical targeting camera. These helicopters will be used for HForce, transport, Search and Rescue (SAR), and VIP tasks. The last part of the Zrinyi 2026 program for MH 86 was the acquisition of sixteen H-225M helicopters by the Hungarian Ministry of Defense at the end of 2018, which were delivered between July 2023 and July 2025. These multi-role helicopters are equipped with state-of-the-art communication capabilities and have an all-weather capability supported by its night vision goggle compatibility. They will be used for transport, Combat Search and Rescue (CSAR), and special operations. For the special operations, six helicopters are equipped with HForce Modular Weapon Systems. Due to its advanced avionics and four-axis autopilot, exceptional range and payload capabilities, combined with a large cabin designed to carry up to 24 troops and powerful air-to-ground and air-to-surface armament as well as electronic warfare systems, the H-225 is capable of carrying out the most demanding missions.

Due to the delivery of the twenty H-145Ms and sixteen H225M helicopters with accompanying equipment, there is also a need for more hangar space and platforms, and work is currently underway. A brand new state of the art facility is currently being built at the base with a massive platform and several hangars so that all of the helicopters can be parked inside. Work on this new facility is well underway and will be finished soon. Once finished, the H145Ms and H225Ms will move to their new facility and will operate from there, while the Mi-17s and Mi-24s will not relocate to the new facility – they will operate from the dispersal area until they will be withdrawn from active service.

The Hungarian Air Force has a total of 20 H145Ms in their inventory.

PRESENT

At this moment, MH Kiss József 86. Helikopterdandár (86th Helicopter Base) consists of three squadrons. The first is Szállító Helikopter Zászlóalj (Transport Helicopter Battalion), which is flying with the Mi-17, H145M, and H225M. The second is Phoenix Harchihelikopter Zászlóalj (Phoenix Attack Helicopter Battalion), flying with the Mi-24 and H145M. The third squadron is Vegyes Kiképző Repülőszázad (Mixed Training Aviation Squadron) and is also operating out of Szolnok but is on paper based at MH Vitéz Szentgyörgyi Dezsó 101. Repülódandár (101st Tactical Airbase) Kecskemet AB. They are flying with the AS-350, Zlin 143, and Zlin 242 from Szolnok Air Base. The main difference between Zlin Z 143 and Zlin Z 242 is that Zlin Z 143 has place for two people and Zlin Z 242 has place for four people.

All the Zlin Z 143s, Zlin Z 242s, H145Ms, and H225Ms are newly built. The Hungarian Air Force will be able to operate with them in the coming decades, but this cannot be said of the ageing Russian-built Mi-17 and

The two-seater Zlin-242L training aircraft are used for basic flight training for future pilots, also providing instrument and night flying capabilities

Mi-24 helicopters. Only a handful of Mi-17s and Mi-24s are still operational, but the question is, how long can they be kept operational? Due to a lack of spare parts and an increasingly reduced number of crew members, the days of the Mi-17s and Mi-24s are numbered. On paper, they will be in service until the summer of 2026, provided they have enough spare parts and crew to fly them. Due to the war between Russia and Ukraine, it's now impossible to receive spare parts from the Russians, and due to a lack of pilots, all pilots fly on two types: on the Mi-17 and H145M or on the Mi-24 and H225M.

The Airbus Helicopters H145M is built in Germany and is compact in size, easily flyable with a built-in mission capability and flexibility, especially in high and hot operating conditions, and has a large and flexible cabin. The future pilots must follow a two-week study, followed by two weeks flying in the simulator, and then two weeks of practice flights. The first pilots had their education in Germany; nowadays, the education is done at Szolnok AB by the Hungarians itself.

After the introduction of the H225M to replace the Mi-17, the Hungarian Air Force has only five Mi-17s operational left

The legendary Mi-24P helicopter's service in Hungary is coming to an end. With a final live-fire exercise at the Hajmáskér military training area, the Hungarian Armed Forces bid farewell to one of their most iconic aircraft

These *Hind*s are ex-NVA Mi-24Ps and from December 2017 until January 2019 transferred to Russia for a major overhaul

The Hungarian Air Force has two of the Eurocopter AS350B2 *Écureuil* (Airbus Helicpter H125) in its inventory

MISSIONS AND EXERCISES

In 2023, two H145M helped in Slovenia with the massive flooding. From January 2024, one Mi-17 served EUFOR in Bosnia Herzegovina together with two H145Ms. In the same year, two Mi-17s, equipped with Bambi buckets, helped in Slovakia with large forest fires. In March 2025, one H-145 served KFOR in Kosovo as a recce element.

Currently, extensive training is being conducted with the H225M helicopters, but they have also already been deployed to help in their own country as well as in other countries. The first deployment was in August 2024 to North Macedonia to help with forest fires. In September 2024, there were forest fires in Hungary itself, where the H-225 helped. In October 2024, one H225M replaced the Mi-17 in the EUFOR mission in Bosnia and Herzegovina. In February 2025, the H225M conducted the first live firing at the Bakony range. In June 2025, the exercises FIRE BLADE and SABRE GUARDIAN took place at Papá AB, to which four H225M deployed. Two H225M helicopters were deployed to Albania in July 2025 to help with forest fires, and a total of 568,000 liter water was dropped during 300 Bambi Bucket drops. In the same month, one H225M was sent to Bulgaria to help with forest fires, and for three days, a total of 277,000 liter water was dropped by 146 Bambi Bucket drops. In August 2025, one H225M was deployed to Montenegro to help with forest fires, and there was a total of 132,000 liter ater dropped by 66 Bambi Bucket drops.

n August 2024, an Airbus H225M was sent by the Hungarian Air Force to North Macedonia to assist in fighting wildfires from the air. The H225M can be equipped with so-called Bambi Buckets which can hold up to around 1,000 liters of water

The Hungaria Air Force's H225M are configured to transport up to 24 troops. Here members of the Special Forces are "fast-ropeing" down from the helicopter

The H145M can also use the fast-rope technik to deploy troops

MAINTENANCE

A technical employee, responsible for the maintenance planning: "I started my military career in 2015 and was a mechanic for the engine and airframe shop until 2020. Then I became the maintenance planner. The first mechanics for the H145M went to Donauwörth, Germany, and the first mechanics for the H225M went to Marseille, France. Their education lasted around six weeks and is not only study but also practical training. Mechanics for the Mi-17 and Mi-24 are now being retrained for the H145M and H225M. These mechanics can follow their study at Szolnok itself, but can also go to Donauwörth, Germany, or Marseille, France, depending on what is best for that person. The new H145M and H225M helicopters look different compared to the ageing Mi-17 and Mi-24, but the maintenance is the same; the only thing that is different is the avionics, which are fully digital in the H145M and H225M and are not in the Mi-17 and Mi-24. Every 100 flight hours, the H145M and H225M need small maintenance, which lasts around three till four weeks and is done here at Szolnok. Every 600 flight hours, they need a bigger inspection, which takes more time. The maintenance on the Mi-17 and Mi-24 is simpler; the H145M and H225M have a lot of background compared to the Mi-17 and Mi-24. The only problem with these Russian made helicopters is to get spare parts from Russia. That's why the Mi-8s aren't flying anymore because they need spare parts. LOM Praha in the Czech Republic can also deliver spare parts, but then the guarantees from Russia will expire. We also had a problem with the language; every document of the Mi-17 and Mi-24 was translated by the Russians into Hungarian, but on the H145M and H225M, everything is in English, so the personnel needed to understand the English language, but Airbus is supporting us very well, and our personnel, around 60 people, are very satisfied.

The Squadron Commander, with a total of 3,000 flight hours on the Yak-52, Mi-2, and Mi-8/Mi-17 and Deputy Commander with a total of 2,500 flight hours on the Yak-52, Mi-2, Mi-8/Mi17, and Mi-24 were classmates, and both graduated in 1988 and came to Szolnok after graduation. Nowadays, he doesn't fly much but will loose his license if he doesn't fly for 1,5 years. So he flies the H145M sometimes, and his colleague has been flying the H145M since 2021 and is now in conversion to the H225M.

The commander had his type conversion in Marseille, France. The study consists of three sections, three weeks study on the ground, 2,5 weeks of training in the simulator, and two weeks of training flights. For maintenance, there were another 1,5 weeks of training. The flight training has now been done at Szolnok itself. The cockpits from the H145M are like the cockpit of the H225M.

According to the Deputy Commander, the big difference between the Mi-17/Mi-24 and the H145M/H225M is that the pedals are the other way around due to the circulation of the rotor blades. This is not a big problem, but you must be aware of it during the flight – if you use the pedals wrong it will be a very big problem. The biggest gap between the old and the new helicopters are the old and new cockpits and the mapping systems. Also, the H145M is very light compared to the Mi-17, the H145M weighs 3,5 tons and the Mi-17 13 tons, and that was in the beginning very difficult for the pilots. The Mi-17 has more space for troops than the H225M, and that will be missed. So hopefully, the Mi-17s will be operational in the next few years.

The pilots of the Mi-17 and Mi-24s did not have a choice on which helicopter they wanted to fly, but we looked at where we needed pilots and told the pilots on which helicopter they were going to fly. The H225M is not yet operational capable due to the many tasks the H225M can do, but we are on our way; now we are between initial and operational capability. Airbus is training our personnel so we can teach future pilots ourselves."

The authors of LowpassAviation.com would like to thank the personnel of the Hungarian Air Force for their hospitality and help during the visits at Szolnok AB!

A brilliant idea for a photo – sitting on the runway is a Mi-17, then comes an H145M, and on top an AS350

750 NAVAL AIR SQUADRON AT RNAS CULDROSE

ARTICLE BY MICHAEL LINTOTT-DANKS

The Avenger is currently the only fixed wing aircraft operated by a Fleet Air Arm squadron. In 2011, it replaced the BAE Jetstram T.3

SUBMARINE SEARCHERS

Visiting RNAS Culdrose, we had the opportunity to speak to the commanding officer of 750 Naval Air Squadron, Lieutenant Commander Phil Clark, about the role of 750 NAS in the present day and what the future holds for this essential training squadron.

"The role of 750 NAS is to provide mission aircrew across the RN and Royal Air Force (RAF), rear crew, Royal Navy (RN) Observers and Weapon System Officers (WSO) for the RAF, though not all RAF WSO's train with 750 NAS but we provide subset of training whilst the other training is provided at RAF Cranwell in Lincolnshire."

"Our Royal Navy and Royal Air Force trainees have overlapping but differing training requirements, so we tailor their courses to meet their needs."

The main RN training is to supply the Observers and aircrew for the helicopter fleet, including for the three Merlin NASs (814, 820, 824) and RNAS Culdrose and the three Wildcat NASs (815, 825, 847) at RNAS Yeovilton. The courses are:

- Merlin Mk2 ASW Observer
- Merlin Mk2 ASW Aircrewman
- Merlin Mk2 ASaC Observer (different from ASW)
- Wildcat Mk2 Observer

The rest are Weapon System Officers, Weapon System Operators, and air traffic and weapons controllers (known as NAV) for:

- RC135 Air Seeker
- MQ-9A Protector
- Shadow R.1
- Poseidon MRA.1

The basic pathway is laid out below for both the Royal Navy Observers and Royal Air Force WSOs:

Royal Navy Observers

Over the Basic Flying Training (BFT) course of six months they complete phases in Reversionary Navigation (no GPS or Inertial Navigation System), System Navigation (no GPS), a UK and Continental Navigation Trainer, Sensor Operations (maritime operations inc landing profiles to ships, search and rescue) and Multi Task (dynamic airborne re-tasking to new events) with an emphasis on Captaincy.

Royal Air Force WSOs

The WSO Lead-In Course (WSOLIC) takes three months and, whilst it has commonality with the BFT course, it has a different focus as WSOs won't operate from ships and will operate as part of larger crews across land and maritime environments. Trainee WSOs complete phases in Navigation (full suite of navigation aids available), Maritime (maritime operations and search and rescue), ISTAR (combined land and maritime intelligence gathering and threat-based scenarios), and Final Air Tests (dynamic airborne re-tasking to new events) with an emphasis on Mission Command.

Both courses are designed to develop tomorrow's battle-winning aircrew from individuals who know little about aviation into those ready to progress

The Beechcraft Avenger T1 are provided by Ascent Flight Training and crewed by a mixture of military and civilian instructors. The role of these modified King Airs is to train observers from the Navy's helicopter force, instructing them in the various systems and the management of sensor equipment.

to their next stage of training on their Operational Conversion Units (OCUs) for their Front Line aircraft: the Merlin Mk2 or Wildcat HMA2 advanced maritime helicopters for the Observers, and the cutting-edge Poseidon or Rivet Joint ISTAR aircraft for the WSOs. (Source Royal Navy)

750 NAS is run with the involvement of six different military and commercial organisations, which come under the one umbrella of 750 NAS. These are the Royal Navy, Ascent Flight Training, Draken Engineering, Babcock International, Lockheed Martin (LM), and CAE UK.

UK Military Flying Training System (UKMFTS) training service provider from within 750 NAS is Ascent Flight Training. "Ascent is responsible for meeting the military requirement output for the trainees. Now, because 750 NAS sits under 22 group, which is an RAF organisation, which oversees the UKMFTS, Ascent is responsible, contractedly, to deliver the right number of people to the RN and RAF in any given year to give accountability to the industry to ensure the continued output."

The Royal Navy and Ascent are the two main entities of 750 NAS, and Lt Cdr Clark explained, "The way that works is that the squadron is run equally between myself, as the Commanding Officer, and the General Manager of Ascent Flight Training. We sit level with each other, managing the day-to-day operations at the NAS. There aren't decisions being made that don't have full coordination between the two offices, as it should be, as they are trying to run a business, and they are on contract to deliver people on time." Lt. Cdr. Clark continues, "Our vested interest is to ensure that the trainees, who are passing out, are of the agreed quality and continue to be delivered to the RN and the RAF in the correct timeline."

Subcontracted to Ascent is Draken Engineering, which has 16 personnel who maintain the four Beechcraft Avenger T.1 aircraft. Draken is there to ensure that there are aircraft available on the flight line for the daily missions. In addition to the day-to-day management of the airframes, Draken is also completing the modifications to the aircraft, including the new radar camera and other systems. Lt Comm Clark said that "Lockheed Martin is the provider for the new mission kit for the back of the aircraft, with Draken fitting the Osprey 30 AESA radar and new MX15 EOIR Wescam HD Camera, which is the standard camera that is on the Wildcat."

Draken also subcontracts out to Babcock, who look after the general maintenance of the buildings and hangars and the 750 NAS site, doing this on behalf of Ascent.

The fifth and sixth elements of 750 NAS are Lockheed Martin and CAE UK, who own and run the training simulator. This current simulator is due to be out of service by summer 2025, after which Lockheed Martin will own and run the new simulator suite. "The reason for the change is that while Lockheed Martin owned the old simulator, it is subcontracted to CAE UK to run the sim, as they are the experts in this area. Lockheed Martin has increased their knowledge, over the years, on simulators, so they are going to run their own simulators, with the new one, which is due to arrive in the coming months and be up and running in late 2025."

In addition, "There is one civil servant who works on site, and they provide the staff office function for the military side of 750 NAS, including the HR side for the NAS, but also works with the Ascent side of the Squadron, to ensure that the collaborative working all runs smoothly. It doesn't work to have a hard line between the military and Ascent."

Lt Cdr Clark continued, "There is a good working relationship between all partners; otherwise, the work could grind to a halt. There is incredible synergy, seeing ourselves as 750 NAS, and not individual entities, and that is something I'm very proud of and ensure that everyone knows whoever they work for, they are representing the squadron."

"The Squadron is in transition for the future now, as we are modifying the aircraft. It's very difficult to keep a full complement of staff employed once two of the Avengers are unavailable, as we have the modifications completed. Over the last year, 750 NAS has been in a managed decline; if a staff member has left, they have not necessarily been replaced, unless it has been a specific role, to seek to replace them in a year when the squadron is back up and running again. The squadron has worked extremely hard to ensure that there has not been a drop in output, which is a testament to the dedication and professionalism of 750 NAS."

THE FUTURE OF 750 NAS

The Royal Navy press release gives an overview of the investment and future output from RNAS Culdrose: -

In a boost for the UK economy, DE&S has awarded a £300m contract to Ascent Flight Training to significantly improve flying training, preparing RAF and Navy trainees for the demands of modern worldwide operating environments, and investing in local communities in Cornwall, Lincolnshire, and Bristol.

Around 68 highly skilled workers will be hired or retained for the duration of the eight-year contract up to 2033 and £180m spent in the British supply chain.

Using new state-of-the-art, realistic synthetic

The 750 NAS has four Beechcraft King Air 350 Extended Range twin-engine Avenger T1 aircraft.

and simulated environments, the Future ISTAR (Intelligence, Surveillance, Target Acquisition and Reconnaissance) and Rear Crew Training System (FIRCTS) programme will train rear crew personnel at Royal Naval Air Station (RNAS) Culdrose and Royal Air Force (RAF) Cranwell, in a safe, cost-effective manner that reduces both flying hours and carbon footprint.

In addition to the new training facilities and equipment at RNAS Culdrose and RAF Cranwell. Courseware development will take place in Bristol.

Transitioning from Rear Crew training (RCS1), the new technology reflects a considerable investment in infrastructure as part of the UK Military Flying Training System (UKMFTS).

The new capability will equip 140 RAF and Navy trainees a year with the skills to operate a large variety of aircraft, such as Merlin Mk2 and Wildcat helicopters, RAF P-8 Poseidon, Rivet Joint, and RPAS, such as the Protector RG Mk1.

DE&S has worked hard to bring next generation training for aircrew to life, providing enhanced capabilities that strengthen national security and growth.

Captain Polly Hatchard, UKMFTS Team Leader, said: "This new flight training contract is a significant step forward for the UK's Defence capabilities, ensuring that armed forces personnel have access to world-class training resources. The contract reinforces our commitment to providing the highest level of readiness and operational effectiveness whilst creating new jobs across the UK and investing in regional economies."

The RAF Directorate of Flying Training has worked closely with the other stakeholders from the UKMFTS Enterprise to help set the requirements for the FIRCTS programme.

Air Commodore Rob Caine, Head of Flying Training, said: "The introduction of the Future ISTAR and Rear Crew Training System will ensure that we can safely deliver world-class personnel to the front-line to operate in vital roles on our latest aircraft platforms including Poseidon, Rivet Joint, and Wedgetail. The investment in the latest training technology and infrastructure at RNAS Culdrose and RAF Cranwell will help us to prepare aircrew to be ready to Fly, Fight and Win in an uncertain world."

Ascent continues to build on its success with previous UK MOD contracts and to work closely with the FIRCTS contract's key suppliers, Lockheed Martin, Babcock, and Draken.

Ascent MD, Tim James said: "We are so proud to once again be trusted by our UK MOD customers to deliver this innovative training solution across our operations sites in Cornwall and Lincolnshire, directly benefiting our local communities and delivering a

The crew of the Avenger T1 consists of one pilot, one Qualified Instructor and one trainee, with the ability to carry eight persons in total in a communications role

critical capability for the UK Armed Forces."

The first new course at RNAS Culdrose is due in March 2026. From now until that date, the aircrew and instructors will transition to the new syllabus, creating the new course to be delivered. "From March 2026, we start to grow the trainee output, with initially it being RN observers and WSOs under an interim contract before FIRCTS comes in in June 2026. There will be a three-month sustainment programme before pushing out the new course," said Lt Cdr Clark.

With a growth in output, the fleet of aircraft would be expected to expand, but "it won't. One of our challenges will be to increase the through put of trainees without extra aircraft. This will be achieved through the balance of synthetic and live training. The expansion and growth in training is mainly for the RAF, with the RN numbers only increasing slightly, with acoustics training being the addition to the RN numbers." Without the increase in aircraft, this will mean that the simulator will be used more heavily, especially by RAF trainees which will have fewer flights in the Avengers. Communications with the Air Traffic Control at RNAS Culdrose, to extend the operating hours, could allow for up to eight 2-hour flights to be completed on a daily cycle.

The two new mission simulators will have four different stations, which can all be run individually or linked to allow training by a single instructor. These medium fidelity simulators give some feeling of being aboard an aircraft without the vibrations and movement. The simulators allow the trainees to learn the anthropometrics of how far they need to reach for controls and how tactile, including touchscreen, the controls are, as it will all be as in the actual aircraft.

There will also be additional simulator terminals for Anti-Submarine Warfare training for trainees heading to the RAF Poseidon's and RN Merlin's. These separate terminals ensure that there isn't an issue with classification on the simulators being used by the Observer trainees.

"When FIRCTS is underway, 750 NAS will grow into a squadron that is more heavily RAF in the military numbers. However, the best way of putting it is that the prestige course or certainly the most difficult course to pass, the one which will have the highest level of complexity, the longest, and put our trainees through the most, will still be the Royal Navy Observer course. This is because of the demands from the front-line rotary squadrons and how we use Observers differently from the RAF, in that an Observer will often be not only the mission commander but also the aircraft commander. Whereas the RAF have a different ethos about how they use their aircrew, giving them a different level of responsibility and accountability. This is why the courses are different lengths, RAF 3 months and RN 6 months."

The Beechcraft Avenger T1 – a modified King Air 350ER) is packed with advanced mission equipment for training Royal Navy observers, featuring a Collins Pro Line 21 cockpit, Telephonics 1500A radar (weather/mapping/search), extensive comms (VHF, UHF, HF), TCAS, TAWS, Electronic Standby Instruments, Tactical Data Links, and Electronic Support Measures (ESM) for simulating real-world sensor management

THE OBSERVER

Becoming a Royal Navy Observer is a challenging course, as we discovered when speaking to Sub Lieutenant Lily Chubb, a trainee observer who has just passed the course at 750 NAS. Sub Lt Chubb started on the course in November 2024 with four other trainees and passed out at the end of April 2025.

After attending Officer training at Dartmouth, further training was completed at RAF Shawbury, which is secondary roles training, also at RAF Valley, which is learning SAR, winching, and operations within a helicopter. The change when moving to 750 NAS is being on a fixed wing aircraft, where the training is very heads in and focusing on the instruments and the radar screen.

Sub Lt Chubb said, "It is a hard course and should be hard, as the role is extremely intense and challenging, but there is staged progression with different phases throughout the course. We start with navigation using charts and basic principles, and it's obviously the first time we are in the aircraft itself, so it's about getting used to the airmanship working with the pilots, and Crew Resource Management (CRM), including safety, airspace and anything to do with aviation. We then build up and end with the multitasking phases, where we focus on captaincy and decision making. We are given scenarios over the land and the sea to basically use everything we have been taught by the instructors to put it all together to achieve the mission."

The stages of learning are ground schooling, then moving to the simulator, putting in to practice the new learnings and adding to the previous skills, before completing the learnings airborne. In addition, there are many hours spent outside of the teachings studying and discussing with the other course trainees. There are no set instructors or pilots assigned to the individual trainees, and these change throughout the course, with the instructor saying less and less to the pilot and the trainee towards the end of the course.

In relation to the challenges for the trainee, there are "Two VHF, two UHF, and an HF radio. You can select on what you listen to and what you transmit, scanning radios and frequencies to monitor traffic in the area and listen for your call sign, but delegation of the various radios to the other persons aboard is part of aircraft captaincy."

Lt Com Clark said, "When you're focused, the first thing that will go is your hearing. In time with the radio blaring in your ear, your capacity to listen to the radio and take the information you need from it, communicate the information all whilst completing your role at the same time. In addition, doing some decision making, planning, and talking

to your own crew in the aircraft about how you're going to achieve the mission."

"As your capacity and skills grow then it becomes easier to listen out for information, and it's then about prioritisation, because at the start I wouldn't prioritise the radios because I was thinking about what I was doing with navigation or the radar, but in the end, it becomes part of the normal workload" stated Sub Lt. Chubb.

What's next? "I'm on holdover now, and then I'll be writing streaming letters with my preference and will get streamed to either Merlin or Wildcat. I'd like to head to the Wildcat." This will then be a further 18 months of training on the Operational Conversion Unit, where she will be awarded with her wings.

Lieutenant Commander Jason Flintham, a staff pilot on 750 NAS, gave an insight into the pilot's role in the training of the Observers.

Lt Cdr Flintham started his career flying the iconic Sea Harrier FRS.2 before instructing jointly with the RAF on the Shorts Tucano at RAF Linton-on-Ouse. Continuing with instructing, he went on to the OCU with the Sea Harrier and finally time on the Hawk with 736 NAS at RNAS Culdrose. After fast jets, it was back to instructing with the Grob Tutor at RNAS Yeovilton, and from January 2025, Lt Cdr Flintham has been one of three military pilots flying the Avenger for 750 NAS. The other pilots on 750 NAS are employed by Ascent.

"We are non-instructors, and the role of the pilot is to fly around the Avenger under the direction of the Pseudo Captain, which is the trainee. The trainee deals with the scenario/mission that is presented to them by the instructors, but they are also being monitored on how they interact with the pilot, to make sure there is good CRM. But even as a non-instructor, we are intrinsically involved in the training of the observer."

Thank you to Lt Com Clark, Sub Lt Chubb, Lt Com Flintham, and Mr G. Wilkinson, DIO PR, for their time and for giving the author the opportunity to visit 750 NAS at RNAS Culdrose.

THE AVIATION MAGAZINE

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