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BALTICA 2023



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THE EDITORIAL TEAM

EDITOR IN CHIEF:

Lieutenant Colonel IOANA TEIȘANU

e-mail: iteisanu@roaf.ro

TEXT EDITOR:

LEANA TUDORAN

e-mail: ltudoran@roaf.ro

PHOTOJOURNALIST:

ADRIAN SULTĂNOIU

e-mail: asultanoiu@roaf.ro

LAYOUT & DTP:

DIANA ȘIJCĂ

e-mail: msuica@roaf.ro

COVER I: ROMANIAN F-16 FIGHTING FALCON

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COVER III: ROMANIAN PATRIOT MISSILE SYSTEM

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MISSION, PHOTO: ADRIAN SULTĂNOIU

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ROMANIAN AIR FORCE STAFF
ȘOSEAUA BUCUREȘTI-PLOIEȘTI, KM 10,5, DISTRICT 1, BUCUREȘTI
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#WEARENATO



Allied and Partner Air Chiefs came together on Ramstein Air Base for the bi-annual NATO Air Chiefs' Symposium (NACS) on 16 March

**AIR CHIEFS' SYMPOSIUM
NATO AIR CHIEFS DISCUSS HOW TO
FURTHER ACCELERATE AIR AND SPACE
POWER INTEGRATION**

Ramstein, Germany – Allied and Partner Air Chiefs came together on Ramstein Air Base for the bi-annual NATO Air Chiefs' Symposium (NACS) on 16 March hosted by General James Hecker.

This meeting allows all Allied Air Chiefs the opportunity to come together and collaborate on shared success and combined opportunities in the future. This iteration had topics covering an update on NATO's Air Shielding effort on the eastern flank of the Alliance and requirements for a counter-Integrated Air Defence System capability. Discussions also focused on how to upgrade and further improve air bases for combat operations and to accelerate NATO's Integrated Air and Missile Defence efforts.

The Supreme Allied Commander Europe, General Christopher Cavoli was connected to the Symposium via VTC and shared his vision with NATO's Air and Space community. The Italian Deputy Air Chief, Lieutenant General Aurelio Colagrande, presented background on the centenary of the Italian Air Force, and the Croatian Air Chief, Brigadier General Michael Križanec, gave an update on his country's armed forces modernisation programme.

"It is a great pleasure to host senior representatives from NATO's Air Forces again here at HQ AIRCOM for 2023's first iteration of the NATO Air Chiefs' Symposium. This is always a great opportunity to strengthen relationships and improve communications amongst each other," said General James Hecker Commander Allied Air Command

and US Air Forces Europe/Africa. "I am convinced this is the ideal forum to facilitate frank, open and fruitful discussions, especially towards the Vilnius Summit in July 2023. We had great exchanges on Air and Space Power related to the overarching theme of the symposium 'Accelerating Integration'", he concluded.

In addition to the Air Chiefs, Allied Air Forces' Senior Enlisted Leaders (CSEL) joined for a separate conference at the same time. Senior Enlisted Leaders represent their commander, communicating the commander's goals and direction for the command to the enlisted workforce, while simultaneously representing the enlisted personnel's views and concerns to the commander. They enhance communication and foster a better understanding of the needs and viewpoints of all members.

The symposium ended with closing remarks from General Hecker and the CSEL conference wrap-up. "NATO, and its Air Forces, are facing a very dynamic security environment, one that recently has become more complex, fast moving and demanding," he said "We continue to address these issues and provide assurance to our Alliance and to Partners," he added.

Story by Allied Air Command Public Affairs Office



Meeting of the NATO Defence Ministers

Minister of National Defence, Angel Tîlvăr, participated in the Meeting of the NATO Defence Ministers conducted at the NATO Headquarters from Brussels, over 14-15 February. The event was chaired by the Alliance Secretary General, Jens Stoltenberg. The Allied talks focused on the further implementation of the decisions made at the 2022 Madrid Summit and the preparation of the decision-making package for the Vilnius Summit, which is to take place over 11-12 July 2023.



The meeting started with an informal working session attended by the Swedish and Finnish Defence Ministers as well as by the Ukrainian Defence Minister, Oleksii, and the EU High Representative (HR/VP) as invitees, and focused on the latest security developments in the context of the aggression war led by Russia in Ukraine, a year after its beginning. The defence ministers were briefed by their Ukrainian counterpart on the developments in the field of the defence of Ukraine's independence, sovereignty and territorial integrity as well as on the specific requirements to be met in order to continue the fight for defence.

Minister Tîlvăr emphasized the importance of consolidating the Allied support provided to Ukraine, by also implementing the measures comprised in the dedicated Consolidated Assistance Package /CAP. The official also expressed his commitment to continuing providing support to Ukraine during the aggression war led by Russia at political, economic and humanitarian levels, both within bilateral and multinational formats.

At the same time, he pointed out the importance of consolidating cooperation and coordination between EU and NATO in support of Ukraine by saluting EU's launching of the European Union Advisory Mission Ukraine - EUMAM Ukraine. The official also reiterated his support to the use of all EU and NATO tools and specific cooperation between the two organizations for the consolidation of defence and resilience of the most vulnerable partners to Russia's aggression, including the Republic of Moldova.

The main topic of the second working session of the Allied defence ministers, with the Swedish and Finnish invitees, was the adaptation

of the Allied defence and deterrence posture for the decisions that are to be made at the upcoming Vilnius Summit. The Allied ministers offered guidelines referring to the consolidation of the post-2024 Defence Investment Pledge/DIP.

The Romanian minister emphasized the importance of rendering operational the Battle Groups operating in the Central and South-Eastern Europe, which augmented and consolidated the forward Presence on the entire Eastern flank, as well as the need to implement the decisions related to the troop augmentation of the brigade-level Battle Groups. The official also briefed the audience on the status of rendering operational the collective defence Battle Group from Cincu and the excellent relation with France.

In his speech, the Romanian official reiterated the need that the Allied Response Force /ARF and the NATO Force Model Concept/NFM be validated as key elements with a high readiness level. Also, the minister saluted the endorsement of Political Guidance 2023 /PG23, with implications for the defence planning process at Allied and national levels on long-term, which is required to accomplish NATO's Ambition Level and its committed objectives.

As part of the Meeting of the NATO Defence Ministers, the Romanian official had a series of meetings with his Spanish and British counterparts, during which he approached the reciprocal support provided for the consolidation of the Allied posture on NATO's Eastern flank, especially in the Black Sea region, as well as the coordinates of the bilateral defence enhancement.

Text and photos: MAPN



NATO Secretary General Jens Stoltenberg participates in the B-9 Summit



NATO Secretary General thanks US and B9 leaders for their strong support for NATO and Ukraine

NATO Secretary General Jens Stoltenberg thanked, in 22 february, US President Joe Biden and the leaders of the Bucharest 9 (B9) countries for their strong support for Ukraine and commitment to NATO collective defence.

Mr Stoltenberg was speaking at a meeting of the B9 NATO Allies (Bulgaria, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia) in Warsaw, co-hosted by Polish President Andrzej Duda and Slovak President Zuzana Čaputová.

The Secretary General thanked US President Joe Biden for his "outstanding leadership" and for the United States' "ironclad commitment" to the security of Europe. He underscored NATO's "steadfast support" to Ukraine, as demonstrated by President Biden's recent visit to Kyiv. The Secretary General reiterated the urgent need to "sustain and step up our support for Ukraine" and to give them "what they need to prevail."

"NATO Allies have never been more united," Mr Stoltenberg said, "we will protect and defend every inch of Allied territory, based on our Article 5 commitment to defend each other." He highlighted Russia's "pattern of aggression over many years," stating "we don't know when the war will end, but when it does, we need to ensure that history does not repeat itself." "We cannot allow Russia to continue to chip away at European security. We must break the cycle of Russian aggression," the Secretary General said.





CARPATHIAN VIPERS will ensure enhanced Air Policing over the Baltic States

Allied Air Policing detachments, deployed on a four-month rotational basis, to Ämari, Estonia and Šiauliai, Lithuania are ready to be launched by NATO's Combined Air Operations Centre Uedem, if required. The Air Forces of Estonia, Latvia and Lithuania contribute to the mission with host nation support in the form of air command and control, infrastructure and personnel.

When the three Baltic States joined NATO in 2004, a NATO Air Policing capability was established at Šiauliai Air Base, Lithuania. In 2014, after Russia's illegal and illegitimate annexation of Crimea, a second Air Policing presence was established at Ämari Air Base, Estonia under NATO's Assurance Measures to its Eastern Allies.

Honoring the commitment to the concept of collective defense, Romania participates in 2023 with F-16 Fighting Falcon fighters, to the Air Policing mission in the Baltic countries.

Considering the North Atlantic Alliance's goals and tasks, Romania, in its capacity as a plenary NATO member, declared its availability to provide the necessary forces and assets for Air Policing within the Baltic States' airspace.

In recognition of its level of readiness, NATO accepted Romania's proposal and consequently four MiG-21 LanceR aircraft belonging to the Romanian Air Force provided Air Policing missions in Estonia, Latvia and Lithuania, for three months, between 1st August and 1st November 2007.



BALTICA 2007



BALTICA 2023



#WEARENATO



CARPATHIAN VIPERS is the Romanian detachment of 4 F-16M fighter jets that will ensure enhanced Air Policing over the Baltic States between April and July 2023. This is Romanian Air Force's second tour in Lithuania, first time being in 2007, when we assured Air Policing mission with 4 MiG-21 LancerR C's aircraft. The DETCO of the Carpathian Vipers is colonel Cosmin Vlad, an officer with experience flying the MiG-21 LancerR's and with multiple assignments within the RoAF HQ.

The detachment's mission is to safeguard the integrity of the Baltic State's airspace. The 4 F-16 fighter jets are on duty around the clock 24/7, ready to scramble in case of suspicious or unannounced flights in the proximity of the NATO airspace. This is an important way in which the Alliance provides security for our members, and we are here to provide that. The mission is not only about responding to a specific threat, but rather it is a routine and a fundamental component of NATO's commitment to its members.

The detachment is a part of the 53rd Fighter Squadron "Warhawks" (Romanian: *Escadrila 53 Vânătoare "Warhawks"*). This is a squadron of the Romanian Air Force, tracing back its history at the beginning of WWII operating Hawker Hurricanes, and reactivated on 29 September 2016 with the arrival of the first F-16Ms from Portugal. During 2017 the 53rd FS

reached IOC, meaning the unit could start taking part in NATO air patrolling missions. In 2018 tasks were further expanded to cover the whole spectrum of missions the F-16M weapon system can perform. The squadron received its 17th F-16M on 25 March 2021 and currently is assigned to the 86th Air Force Base, Borcea.

Starting in 1997, a MiG-21 LancerR squadron operating from the 86th Air Force Base began intensive training, in order to become capable of carrying out joint missions with NATO forces. A special training program was initiated, aiming to attain an increased level of interoperability, and for this purpose the 861st Fighter Squadron was fully equipped with upgraded MiG-21 LancerR C's.

The 86th Air Force Base has nowadays a modular structure, being reconstructed according to NATO standards and offering support for operations both to Romanian and NATO partner detachments, aiming to provide the necessary infrastructure to plan, organize, command, and accomplish the missions assigned.

The NATO enhanced Air Policing mission is a multinational effort and a key component of NATO's long-term deterrence and defence posture. This mission will ensure the stability and security of NATO's airspace by coordinating, controlling and exploiting the air and space domains to better protect NATO populations and territory.





Meeting with Romanian military authorities



DAT Viespe with the authorities Fetești, România March 1, 2023

VIESPE detachment receives the visit of the Air and Space Chief of Staff and the Commander of the Operations Command

The Air Tactical Detachment, composed of 130 military personnel and eight EF-18s of the Air and Space Army, has been deployed in Romania since December 1st.

The Chief of Staff of the Air and Space Army (JEMA), Air General Javier Salto Martínez-Avial, accompanied by the Commander of the Operations Command, Lieutenant General Francisco Braco Carbó, and the Chief of Staff of the JEMA, Brigadier General Isaac Manuel Crespo Zaragoza have visited in Romania, at the 86th Borcea Air Base, the "Viespe" Detachment.

The visit was also attended by the military archbishop Monsignor Juan Antonio Aznárez Cobo and the Vicar of the Air and Space Army José Obrador Castro, as well as the GRUMOCA Chief Colonel Manuel María Jiménez Rodríguez and the Chief of the 15th Wing, Colonel Jesús Andrés Margareto, whose units are deployed in the region.

During the visit, General Salto was received by the Romanian Chief of Air Staff, Lieutenant General Viorel Pană, and by Air Flotill General Catalin Micloș, Commander of 86th Air Base in Borcea, which is the host

of the Spanish air tactical detachment. During the meeting, the two JEMAs discussed the situation on the eastern flank of the Alliance and the contribution of the Air and Space Army to the NATO mission of contributing to the security and defense of the Romanian airspace. General Salto expressed his appreciation for the support provided by the Borcea Air Base to the Viespe Detachment, which started its mission on December 1, 2022 and will remain under NATO command until March 31, 2023.

The "Viespe" detachment has exceeded 500 flight hours in air policing missions, mainly in the framework of the reinforcement of the allied presence on the eastern flank of Europe, maintaining the air shield that the Alliance put into practice more than 60 years ago with the aim of preventing and, if necessary, mitigating any attempt of unauthorized overflight over allied countries. This is a deterrence mission that has been reinforced following the Russian invasion of Ukraine, which is now a year old.

Story by <https://emad.defensa.gob.es>

"Women in Defence and Security" Forum, organized in Bucharest

On Thursday, March 2nd, Ministry of National Defence and the Embassy of the United Kingdom of Great Britain and Northern Ireland organized "Women in Defence and Security" Forum, at the National Military Palace.

The multinational event that promotes gender equality, which was attended by more than 150 representatives of 17 countries, was opened by State Secretary for Defence Policy, Planning and International Relations, Simona Cojocaru, and the Ambassador of the United Kingdom of Great Britain and Northern Ireland, Andrew Noble.

In her speech, the state secretary appreciated the fact that the subject of the forum is extremely relevant: **Women in Defence and Security**.

"This topic is of major interest for us, the Ministry of National Defence, and is permanently discussed by the leadership of the institution. We work to develop the most adequate policies, build a real gender balance and a comprehensive environment in order to eliminate any kind of discrimination. We have accomplished many good things but we don't have to stop here. There is still a lot to be made," Simona Cojocaru stated.

In the video message from the opening of the event, the British Ambassador, Andrew Noble, revealed that it hasn't been long since the stereotype vision that we live in a men's world has been contested and should be left all to them.

"Today, the road openers are present in this room – women who worked for the first time in positions manned, so far, exclusively by men. I salute them and I'm anxious for their number to increase," the Ambassador added.



The topics approached during the talks included challenges posed to women in the field of defence and security, elimination of the boundaries in this sector and the importance of gender equality in the defence and security missions. Another topic listed on the Forum agenda was the ways men can get involved in the elimination of stereotypes.

The activity was also attended by Lieutenant General Iulian Berdilă, the Chief of Land Forces Staff and Rear Admiral Jude Terry, the first woman who passed the British Armed Forces' paratroop training program as well as Lieutenant Commander Simona Maiercan, the first woman pilot on a fighter in Romania and the first woman in Europe who became commander and instructor on a C 17 Aircraft.

At the same time, the participants paid tribute to the brave women from the Ukrainian Armed Forces who delivered a message about their own ambitions and experiences straight from the front line of the battlefield, where they fight against the Russian Federation's enemy forces.

ALLIED AIR FORCES WORK TOGETHER TO IMPROVE ROMANIAN AIR BASE

MIHAIL KOGĂLNICEANU, Romania – The Italian Air Force has bedded down their four Eurofighters in a combined effort with Host Nation Romania to continue improvements at Mihail Kogălniceanu air base thereby enhancing NATO Air Policing operations.

Mihail Kogălniceanu, one of the bases the nation offers the Alliance for the execution of the enduring collective Air Policing mission, has been undergoing renovations recently with the assistance of other Allies.

"Allied detachments' infrastructure upgrade works at Mihail Kogălniceanu have enabled NATO enhanced Air Policing deployments and demonstrated how Allies are cooperating and standing shoulder to shoulder executing the Deter and Defend mission collectively," said Major General Gianluca Ercolani, Chief of Staff at Allied Air Command. "This work is closely coordinated with the efforts made by Host Nation Romania," he added.

When Italian Task Force Air "Gladiator" Eurofighters arrived at the Romanian base in mid-November, the detachment worked with the outgoing Canadian CF-18 detachment and Romania to further upgrade facilities to accommodate, maintain and operate an increased number of quick reaction alert aircraft.

Infrastructure works at Mihail Kogălniceanu Air Base, Romania, are being conducted by both the Host Nation and deployed Allied detachments. Taxiway and apron upgrades and installation of aircraft shelters were conducted while NATO's 24/7 Air Policing capability out of the base continued. "Allies are cooperating and standing shoulder to shoulder executing the Deter and Defend mission collectively," said Major General Gianluca Ercolani, Chief of Staff at Allied Air Command. Photos courtesy Italian Air Force.



"The 3rd Wing Villafranca Rapid Airfield Operational System and the 3rd Engineer Unit technicians prepared and delivered two smart hangars with one more shelter to follow soon; these measures boost our maintenance capability and offer better protection of our Eurofighters against weather and warfare sensors," said Colonel Michele Morelli, Commander of the Task Force Air. "This helps increasing availability and survivability of our jets for the important NATO mission on the eastern flank," he added.

"In a collective effort, we upgraded and reinforced more than 1,300 square metres of apron and taxiway surface; the demanding projects were managed with Romanian Air Force and local building contractors including working at night," said Colonel Morelli. "During the time, the jets of both Italian and Canadian detachments were deployed at the base. Therefore, the focus was on

ensuring a 24/7 quick reaction alert capability for NATO and a smooth handover of the mission – which we clearly achieved," he added.

"In July 2015, the NATO Investment Committee through the NATO Security Investment Programme approved a significant renovation plan for Mihail Kogălniceanu Air Base that is led by Host Nation Romania in coordination with the other allies and agencies deployed there", said the air base commander, Romanian Air Force Colonel Nicolae Crețu. "The Romanian Ministry of National Defence runs an Investment Project approved by the Government in 2020, aimed at upgrading Mihail Kogălniceanu Air Base to meet NATO Criteria and Standards for Airfields," he added.

The investment will be implemented in four stages over 20 years and include various works such as terrain arrangement works, runway and

taxiway construction. The new flight line will provide a flight traffic control post, aircraft operating platforms, lighting and radar systems. The project also includes administrative and social facilities, transit and storage areas, aircraft maintenance areas, military equipment warehouses, perimeter fence and access post control.

"The most recent upgrade projects we worked with the Canadian and Italian detachments were conducted to enable operation of up to ten aircraft and temporary parking of five more aircraft," concluded Colonel Crețu.

Allied fighter detachments have taken turns since 2014 flying out of the air base alongside their Romanian colleagues safeguarding the skies along the Black Sea shores.

Story by Allied Air Command Public Affairs Office

AWACS: NATO'S "EYES IN THE SKY"

NATO operates a fleet of Boeing E-3A Airborne Warning & Control System (AWACS) aircraft, with their distinctive radar domes mounted on the fuselage, which provide the Alliance with air surveillance, command and control, battle space management and communications. NATO Air Base (NAB) Geilenkirchen, Germany, is home to 14 AWACS aircraft.

ROLE AND CAPABILITIES

The NATO E-3A (or AWACS) is a modified Boeing 707 equipped with long-range radar and passive sensors capable of detecting air and surface contacts over large distances. Information collected by AWACS can be transmitted directly from the aircraft to other users on land, at sea or in the air in near real time.

The NATO Airborne Early Warning and Control Force (NAEW&C Force) is the Alliance's largest collaborative venture and is an example of what NATO member countries can achieve by pooling resources and working together in a truly multinational environment.

A total of 17 NATO member nations participate in the NAEW&CF programme: Belgium, the Czech Republic, Denmark, Germany, Greece, Hungary, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Turkey, the United Kingdom and the United States of America. In addition to these member nations, Canada, France and Lithuania provide military personnel to the E-3A Component (Luxembourg does not provide military personnel). The Force also employs NATO International Civilians from other member nations. All NATO nations contribute to the NAEW&CF employment budget either financially or as contribution in kind.

The NAEW&C Force conducts a wide range of missions such as air policing, support to counter-terrorism, consequence management, non-combatant evacuation operations (NEO), embargo, initial entry, crisis response and demonstrative force operations.

The aircraft is able to detect, track, identify and report potentially hostile aircraft operating at low altitudes, as well as provide fighter control of Allied aircraft. It can simultaneously track and identify maritime contacts, and provide coordination support to Allied surface forces.

Under normal circumstances, the aircraft can fly at a maximum range of 9,250 kilometres or for about eight and a half hours (and longer with air-to-air refuelling) at 9,150 metres (30,000 feet).

The active surveillance sensors are located in the radar dome ("rotodome"), which makes the AWACS structure a uniquely recognisable aircraft. This structure rotates once every 10 seconds and provides the AWACS aircraft with 360-degree radar coverage that can detect aircraft out to a distance of more than 215 nautical miles (400 kilometres). One aircraft flying at 30,000 feet has a surveillance area

coverage of more than 120,000 square miles (310,798 square kilometres, or about the size of Poland) and three aircraft operating in overlapping, coordinated orbits can provide unbroken radar coverage of the whole of Central Europe.

The aircraft is 46.6 metres long, 4.5 metres wide, has a 44.43-metre wingspan and is powered by four TF-33-PW110A turbojet engines. The rotodome has a diameter of 9.1 metre. A flight crew of three and mission crew of 12, which can be tailored to the assigned mission, operate the aircraft.

In 2019, the cockpit was modernised with a glass cockpit designed to meet evolving European air traffic management requirements. The NATO E-3A is currently undergoing a large-scale mission and audio system modernisation effort called the Final Lifetime Extension Programme, which will ensure the aircraft's operational viability through 2035.

HISTORY

During the 1960s, it became clear that military aircraft could no longer fly high enough to avoid surface-to-air missiles. To survive in an increasingly lethal air defence environment, aircraft were forced down to levels little higher than tree-top. By the 1970s, the requirement to detect high-speed combat aircraft with low-level penetration capability made it necessary to augment NATO's system of ground-based radars with new means.

The NATO military authorities determined that an Airborne Early Warning (AEW) capability would provide the key to meeting the challenge. The operational requirement for the NATO AEW system stressed the need to detect small, high-speed intruder aircraft at long range. The need to detect maritime surface targets (such as ships and boats) was also specified because of the geographical regions where the AEW aircraft would have to operate. The inherent mobility and flexibility of the system, especially for control function, were also foreseen by NATO planners as providing air, maritime, and land force commanders with an enhanced command and control (C2) capability. The creation of a NATO AEW Force was therefore designed to make a significant contribution to the Alliance's deterrent posture.

In December 1978, the NATO Defence Planning Committee approved the joint acquisition of 18 aircraft based on the US Air Force (USAF) Airborne Warning and Control System (AWACS), to be operated as an Alliance-owned Airborne Early Warning System. In



NATO AWACS planes were deployed to Otopeni, Romania, have conducted air surveillance missions until the end of the month. The scheduled deployment showcases NATO's ability to forward deploy air power reinforcing our posture along the eastern flank. Archive photo courtesy NATO Airborne Early Warning and Control Force.

addition to the delivery of the 18 E-3A aircraft between February 1982 and May 1985, the NAEW&C programme included the upgrade of 40 NATO Air Defence Ground Environment (NADGE) sites and the establishment of a main operating base (MOB) at Geilenkirchen, Germany, along with three FOBs and an FOL

HIGH VISIBLE EVENTS

In the course of the E-3A Component's history its E-3A aircraft have accomplished numerous missions in support of operational requirements. These include not only military operations but also the safeguarding of major high-profile events. Below is an overview of a portion of all the High Visible Events missions flown by the NAEW&C Force.

- G-8 Summit – Italy, July 2009
- Nobel Peace Prize – Norway, December 2009
- European Championship Football – Poland, June 2012
- Coronation King Willem-Alexander – The Netherlands, April 2013
- Nuclear Security Summit – The Netherlands, March 2014
- NATO Summit – Poland, July 2016
- NATO Summit – Belgium, July 2018
- NATO Brussels Summit – Belgium, June 2021

- G-7 Summit – Germany, June 2022
- NATO Summit Programme – Spain, June 2022.

FUTURE

NATO's E-3 AWACS fleet is predicted to retire soon after 2035. At the Warsaw Summit in 2016, Allies declared that "by 2035, the Alliance needs to have a follow-on capability to the E-3 AWACS. Based on high-level military requirements, we have decided to collectively start the process of defining options for future NATO surveillance and control capabilities." This effort has since been carried forward as the Alliance Future Surveillance and Control (AFSC) initiative.

In February 2017, NATO defence ministers agreed to embark upon the AFSC Concept Stage, comprised of a series of studies to evaluate new technologies and explore a system-of-systems approach, including potential combinations of air, ground, space or unmanned systems networked together to collect and share information. These studies will eventually help to inform decisions by NATO, individual Allies or multinational groups to acquire new systems in the future. All NATO Allies currently cooperate in the planning and resourcing of AFSC. In December 2018, the North Atlantic Council declared the first phase

of the AFSC Concept Stage complete on schedule and on budget, and agreed to advance into the second phase. In the second phase currently under way, NATO taps into the expertise of Alliance industries. In 2020, NATO received six high-level concept proposals developed by six transatlantic firms and consortia, comprising expertise from both defence and non-defence sectors. The concepts encompassed innovative ideas to fulfil the AWACS missions in unique and disruptive ways. Allied leaders selected the best ideas from the six proposals and committed to continue working with industry to develop and refine these options.

A new competition was launched in 2021 for a second round of more in-depth industry advice, valued at up to Euro 90 million. NATO is ensuring that it remains relevant and technologically adept, while also benefitting from the widest range of innovative industry developments.

NATO AWACS SURVEILLANCE JETS TO ROMANIA

NATO deployed Airborne Warning and Control System (AWACS) surveillance planes to Bucharest, Romania. The aircraft arrived on January 17, 2023 and are going to support the Alliance's reinforced presence in the region

and monitor Russian military activity. "As Russia's illegal war in Ukraine continues to threaten peace and security in Europe, there must be no doubt about NATO's resolve to protect and defend every inch of Allied territory," said NATO spokesperson Oana Lungescu. "Our AWACS can detect aircraft hundreds of kilometres away, making them a key capability for NATO's deterrence and defence posture. I thank Romania for hosting the aircraft, which makes an important contribution to our early warning," she added.

In response to Russia's war in Ukraine, NATO has increased its air presence in eastern Europe with additional fighters, surveillance aircraft, and tankers. Since February 2022, NATO AWACS have conducted regular patrols over eastern Europe and the Baltic Sea region to track Russian warplanes near NATO borders.

The NATO AWACS started reconnaissance flights, solely over Alliance territory, in the coming days. The mission is scheduled to last several weeks. The aircraft belong to a fleet of 14 NATO surveillance aircraft usually based in Geilenkirchen, Germany. Around 180 military personnel will deploy the Romanian Air Force base at Otopeni near Bucharest in support of the aircraft.

Story by Allied Air Command Public Affairs Office and awacs.nato.int

NATO SURFACE-BASED AIR DEFENCE COMMUNITY TRAINS INTEROPERABILITY IN MAJOR EXERCISE

From the outside, only containers and tents are visible, but the advance set of computers inside these shelters is the backbone of the complete simulated exercise. Photo courtesy: Royal Netherland Air Force.



Two major NATO Integrated Air and Missile Defence (IAMD) exercises are combined with the largest European air defence exercises took place from March 6 to April 1, 2023 providing for interoperability among Allied forces.

NATO's exercises Steadfast Armour 23 (STAR23) and Ramstein Century (RACE23) were integrated with the Netherlands-led command post exercise Joint Project Optic Windmill 2023 (JPOW) exploiting synergies of the IAMD community.

The scenario simulated an aggressor with state-of-the-art weapon systems, high-tech missiles and drones to which the Alliance has to respond quickly and adequately defending against threats from the air. Almost all NATO member states have their own air defence capabilities to prevent a threat, but systems

and operators need to train their interoperability together. This is why IAMD exercises are needed.

NATO's IAMD is an interplay of multi-layer defensive systems, covering different altitudes and capable of creating protective layers over areas of various sizes. Applying strict procedures for deconfliction collision of simultaneous actions in the same area is key and prevent the use of unnecessary resources.

Participants included personnel from AIRCOM, MARCOM, STRIKEFORNATO and from headquarters across the Alliance. Deployed real-world surface-based air and missile defence systems were also tied in simulating effect: PATRIOT batteries from Spain, the Netherlands, Germany and Romania and NASAMS batteries from Norway, the Netherlands and Hungary together with the

US THAAD system, jets and vessels. They completed the multinational mix that trains to be interconnected and handle all threats under an established leadership. The tools and systems in various locations in the Western world will then include all levels from the single defence unit up to the highest NATO decision.

The main activities took place at the Lieutenant General Best Barracks in De Peel, home of the Dutch air defenders which offered participating nations the opportunity to share knowledge, connect systems, and exercise international procedures for integrated missile and air defence, again connected with the two-yearly NATO exercise STAR23 and the RACE23 at Allied Air Command.

Story by Allied Air Command Public Affairs Office



The sun rises over a 10th AAMDC Patriot missile launcher in Slovakia on July 27. Bravo Battery, 5-7 Air Defense Artillery is preparing for crew qualification tables and NATO readiness evaluations in the coming weeks while deployed to Slovakia providing increased air defense capacity and capability along NATO's Eastern flank. (U.S. Army photo by 2nd Lt. Emily Park)

Allied Air Forces work together in Air Defence Drills over Romania

France, Italy, Romania, Spain, Türkiye and the US operated within Romanian Airspace carrying out air maneuvers against simulated adversarial Air Defence systems take downs further improving combined Allied capabilities on January 26.

Allied Air Command directed a dynamic training operation between the French MAMBA system supported by Romanian F-16s and US F-15s against the Italian Eurofighters, Spanish F-18s, and Turkish F-16s. These two teams simulated air-to-air drills as well as air-to-ground drills. The fighter aircraft were supported by a Turkish refueling aircraft to extend their flight times and training opportunities. Combined Air Operations Centre at Torrejón and the Romanian Control and

Reporting Centre provided the air command and control for the mission.

"Simulated training events like this are key to sharpening our skills in the air as an Alliance," said Brigadier General Christoph Pliet, Deputy Chief of Staff Operation Allied Air Command. "Having our Air Forces train against each other enables us to enhance our forces to operate against potential adversarial integrated air defence systems to allow friendly forces freedom of maneuver essential to operations under NATO collective defence." The training event complies with international laws and standards and is not a response to current geopolitical developments, but embedded in the Alliance's vigilance activities



(Archived Photo) An F-15E Strike Eagle assigned to the 492nd Fighter Squadron flies over Royal Air Force Lakenheath, England, May 10, 2018. The 492nd trains regularly to ensure RAF Lakenheath brings unique air combat capabilities to the fight. (U.S. Air Force photo/ Tech. Sgt. Matthew Plew)

aimed at shielding the eastern flank and assuring NATO Allies in the region.

"Complex training events such as an integrated air defence take down underlines NATO's ability to focus Allied fires and effects in the same place at the same time as

one cohesive Alliance," added Pliet. "We conduct these training missions to prepare our air forces to operate in a contested environment," he concluded.

Story by Allied Air Command Public Affairs Office



USAF B-52 supported by Allied fighters over Romania during Allied Air Command led combined exercise.



USAF B-52 supported by Allied fighters over Romania during Allied Air Command led combined exercise.

Allied fighters and heavy bombers conduct NATO mission over Romania

RAMSTEIN, Germany – United States Air Force B-52s and Allied fighters conducted coordinated combined air-to-ground drills over Romania further improving Allied capabilities on March 9.

Allied Air Command led a dynamic long-range operation above Romania with the Combined Air Operations Centre at Torrejón coordinating Allied fighter and bomber aircraft. Italian Eurofighters and USAF F15Es supported by USAF B-52s carried out a combined offensive against adversarial Air Defence systems, simulated by Romanian F-16s, Spanish F-18s and the French Mamba Surface-Based Air and Missile Defence (SBAMD) system deployed in Romania.

"These missions provide a valuable opportunity to train our crews in a complex, contested and dynamic environment," said Colonel Michele Morelli, Italian Task Force Air "Gladiator" commander "Training ensures high-end capabilities including bomber and fighter integration ensures NATO can achieve a desired level of control of the air, wherein the Alliance is able to conduct the full range of its missions in peacetime, crisis and conflict," he added

The participants were pitted against an intricate scenario based on peer threats demonstrating Alliance readiness and capability. This allowed



Italian KC-767 Tanker refueling Italian Eurofighters during the exercise increasing endurance and flexibility of Allied Air Power.

Allied units to practice tactics, techniques and procedures designed to defeat a complex set of potential real-world challenges in a contested air domain.

"These training opportunities are a key element in increasing the readiness and interoperability of Allied aircraft and SBAMD units," said Lieutenant Colonel Gonzalo Tortosa Méndez, Commander, Spanish Detachment VIESPE "They provide the Spanish F-18 detachment with a valuable opportunity to operate with several of our Allies and apply NATO standards against a full spectrum of threats," he added.

The combined training activity takes place in compliance with international laws and standards as part of a programme of regular and repeated vigilance activities aimed at shielding the eastern flank and assuring NATO Allies in the region.

The B-52s are currently conducting their Bomber Task Force rotation out of Moron, Spain. Over the next few weeks, the USAF bombers will fly alongside numerous Allied Air Forces across differing platforms furthering Alliance cohesion and interoperability.

Story by Allied Air Command Public Affairs Office Photo courtesy of Italian Air Force.

From thought to action: military employee thriving and engagement ASPECTS OF ORGANIZATIONAL CLIMATE

Spreitzer et al. (2005) define workplace thriving as a desirable and positive psychological state in which employees experience both a sense of vitality and a sense of learning at work. Vitality refers to a positive sense of triggering energy, enthusiasm and zest for life, and looking forward to each new day, while learning emphasizes employees' sense that they are acquiring and able to apply the knowledge they have gained (Spreitzer et al., 2005). A core assumption of workplace thriving is that there must be high levels of both vitality and learning for military employees to thrive at the workplace (Kleine et al., 2019). Typically, military employees are more thriving at work when they demonstrate self-efficacy, resilience, optimism, and a positive attitude toward the present and future. Proactive employees tend to relate job demands to challenges, making it easier for them to accomplish tasks outlined by supervisors. On the other hand, engagement has been conceptualised as a positive affective-motivational state of fulfilment, manifested in three dimensions: **Vigour** - high levels of mental energy and resilience during work; willingness to invest effort in one's work; the ability not to get tired easily; perseverance in relation to difficulties; **Dedication** - strong involvement in one's work, accompanied by feelings of enthusiasm and meaning; a sense of pride and inspiration; and **Absorption** - being completely absorbed in one's work and having difficulty detaching oneself from it (Bakker, Demerouti & Schaufeli, 2005). Thus, for the most part, when military employees are engaged at work, they are also likely to thrive. Harter et al. (2002) argue that the more engaged employees are at work, the more successful the organization will be. Also, employees who are engaged at work build, use their talent, skills, develop stable relationships and perform their tasks very well, innovate and aim to take the organization to a higher level.

Key issues for leaders in developing engaged and/or thriving employees at work
Leaders need to simulate what they expect from their subordinates

In order for subordinates to be engaged and/or thrive at the workplace, it is important for the leader to model these positive affective-motivational states. If leaders lack energy in leading subordinates, subordinates are likely to mimic their low-energy approach. Similarly,

if leaders lack dedication or absorption, subordinates will also adopt a less committed approach to doing their own work. In terms of thriving, if leaders themselves are not trying new things, not risking failure with new approaches, it will be difficult for subordinates to feel psychologically safe to do so (Edmondson, 1999). Thus, leaders should act as a role model for their subordinates' engagement (Schaufeli & Salanova, 2007) and prosperity.

Leaders can build organisational resources for engagement and thriving

Leaders create the context in which their subordinates work. To enable subordinate engagement, leaders need to develop a very specific context that provides work resources but moderates the demands of the job (Schaufeli & Salanova, 2007). Workers will be more engaged to the extent that they have the physical, psychological, and social resources to feel energized and engaged in their work. Like the leader who wants to engage subordinates, the leader who wants to help subordinates develop will also want to provide resources to help employees feel energized and situated in a learning mode. Another crucial resource leaders can provide is psychological safety. Psychological safety refers to a person's belief that the environment is safe for taking interpersonal risks. Accordingly, Edmondson (1999) demonstrated that psychological safety of the team is related to team learning behaviours such as seeking feedback, discussing mistakes, which in turn increase team performance. She explained that when team members feel that the environment is safe to take risks, members are not concerned about possible embarrassment from others about their actions. Furthermore, researchers have found that a safe work environment is positively related to health and job satisfaction (Okros & Virga, 2022) - this relationship being mediated in part by workplace thriving. Therefore, if employees perceive the work climate as safe, they feel more energized and able to acquire and apply knowledge and skills at work, ultimately leading to an optimization of well-being, job satisfaction, which subsequently translates into higher work engagement. Thus, psychological safety matters for engagement and thriving because it reduces energy depletion - a key factor in engagement, prosperity as well as learning. By creating a psychologically safe climate,

employees will be less likely to experience negative emotions associated with failure (whether or not related to learning). As failure is an expected part of risk-taking and learning behaviour, employees experience fewer negative emotions.

Key issues for employees to be engaged and/or thrive at the workplace

The recovery literature (Fritz & Sonnentag, 2006) suggests that employees can build up resources, such as energy or vigour, that have been depleted during the working day by being purposeful about how they spend their time off work in the evenings, weekends and holidays. For example, activities outside of work that are relaxing, that allow people to detach from work both physically and cognitively, that give employees the opportunity to reflect positively on their work and that create mastery can allow them to recover their energy. Other research further suggests that (1) regular breaks during the working day allow for the restoration of self-regulatory energy capabilities (Trougakos et al., 2008), (2) access to snacks that provide glucose (Gailliot et al., 2007), especially those with low glycaemic index content (Loehr & Schwartz, 2003), (3) caffeine for sustained cognitive attention (Lorist et al., 1994), (4) moderate exercise (Thayer, 1987), (5) good sleep habits (Sonnentag et al., 2008; Zohar et al., 2005), and (6) hydration (Loehr & Schwartz, 2003) also allow energy recovery which is an essential resource in the military environment for employees and leaders.

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Psychologist Maria Ioana Telecan



- Part one -

Flight was, is and will be a challenge for the human beings to conquer the endless and eternal sky. To make such dreams come true, a lot of time was necessary. About this desire that tormented humankind since the beginnings, a lot of immortal myths and legends tell stories in various ways (in the Greek mythology: Pegasus the flying horse and Icarus, son of Daedalus; in the Persian one: king Kaj Kaoos and the vultures of the throne; or, in the Thracian-Greek one: Alexander the Great and the mythical birds called gryphons).

In our country, there are well-known stories, like Greuceanu, the legend of the saving glider flights, of Grigore Pinteia the outlaw (1660-1703), the legend of Manole, of the Church Three Hierarchs in Iassy, of the Tower in Mediaş, the Deva Stronghold, or the Saxon Church in Bistrița, as well as the narrations about the gliders of: Constantin Nestor (1766 in Deva, according to the newspaper "La République", Grigore Sturdza (1875, in R. Şuţu's "The lass of Old"; or "The Balloon of the peasants in Săracu" (1803, described by the poem of the Greek I. Villara and confirmed by his editor Gheorghe Vavretas).

Many Romanians first imagined lighter-than-air aircraft (in 1806 Cuparencu; in 1818 ruling Prince Caragea) and later designed them for military purposes (after the flight of the "Romania" aerostat on 20 June 1874).

As science progressed, there were Romanian pioneers who paved the way for the creation of new heavier-than-air aircraft. Traian Vuia built the first airplane that taxied, took off, and landed on its own, on 18 March 1906. Aurel Vlaicu designed, built, and flew the first airplane of the Romanian Armed Forces, whose first in-flight testing took place on 17 June 1910. Henri Coandă designed and built the first jet airplane, which was displayed and flown by himself in Paris, in the fall of 1910. Hermann Oberth introduced the interplanetary flight theory, that he presented for the first time in the world in his Graduation Diploma (Cluj, 1923).

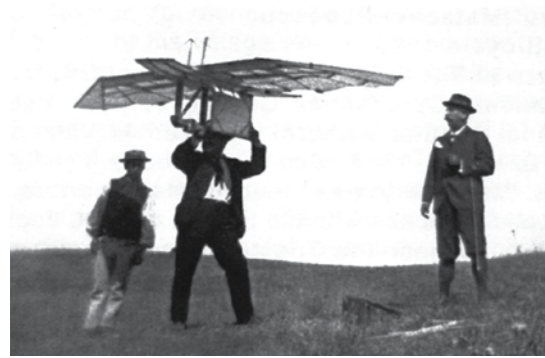
The Romanian Royal Military Aeronautics was structured according to the European pattern, as an individual service, initially comprising the Aerostation (founded in 1893) and the Military Aviation (created on 17 June 1910). To the previously mentioned, the following have been progressively added: a complete aerodrome infrastructure (Chitila, 1910), military aeronautics educational institutions (1 April 1912, for pilots and air observers, which has become the Air Force "Aurel Vlaicu" Training School, placed in the historical site of Ziliştea-Boboc, Buzău). Subsequently, new separate branches appeared within the Romanian Air Force, such as the Antiaircraft Artillery (15 August 1916), the Aeronautical Medical Service (1918), the Paratroopers' Corps (1937), the Aviation Staff Officers' Corps (1940), the Engineering, Logistics, and Air Signal branches (25 January 1941), the Radar service (1942), the Navigators'/Air Traffic Controllers' and Meteorologists' services (1950). Other important moments of the history of military aeronautics, worth being proudly mentioned, are: the set-up of a Meteorological Institute (1924) and of the first Airspace Surveillance Institute (1929), the acquisition of antiaircraft missiles (1959), the first Romanian space flight (of Captain engineer Dumitru Prunariu from 14 to 22 May 1981), as well as other multiple activities successfully performed in cooperation with NATO partners and allies (after December 1989).



It is said that Alexander the Great harnessed six gryphons, mythical winged animals, on a chariot; he stuck his spear into a piece of meat and had them follow it.



ROMANIAN PIONEERS OF AVIATION – BUILDERS OF GLIDERS, AIRPLANES, AND HELICOPTERS



Constantin Bălăceanu-Stolnici and his flying experimental models

At the dawns of aeronautics, a lot of Romanians were interested in the development of aviation. Their endeavors were various (aerostats, gliders, airplanes, hydroplanes, helicopters, jets), some of them having remarkable accomplishments.

Constantin Bălăceanu-Stolnici (1849-1934) participated as a volunteer in the Romanian War of Independence (1877-1878). Starting in 1890, he was a passionate builder of flying models and collaborated with the most famous pioneers of world aviation in the early 19th century: Otto Lilienthal, Clement Ader, and Octav Chanute. From 1896 on, he experimented with flying models, built after his own design. The flying vehicles were tested on the hill near his property of Stolnici, in the Argeş county. Between 1896 and 1906, he successfully tried many flying vehicles, the biggest of which had a 3-meter wingspan.

Ion Romanescu (1895-1918) built his own glider in 1908, when he was a student at a high school in Craiova. He used it to make tests on the local hippodrome, thus becoming the youngest glider pilot in the world. In 1911, Romanescu built a glider that could be dismantled and tested it over the seafront in Movila (Eforie-Sud). At the end of 1912, he began to build a biplane glider. It had unequal wings and was not completed. By 1913, he had built and flown four more gliders. In 1913, he built his fifth glider, that was pulled by an automobile, and made several flights with it.

At the age of 18, he went to France to study. During the First World War, he enrolled as a volunteer in the French military aviation. He died in November 1918, during a dogfight, just a few days before Germany signed the armistice.

Rodrig Goliescu was keen on aviation ever since he was young. Between 1908 and 1909, he designed a flying vehicle that he named "Avioplane". Then, in 1909, he built the "Goliescu Avioplane no. 2", for which he used only partially the initial conception. So, this other vehicle did not have a tubular fuselage any more, it was semicircular, with a curved lower surface wing. Built in Juvisy, the vehicle was studied by a commission of the French Aero-Club and got permission to fly. Goliescu tested the airplane in the spring of 1910, flying it at the height of 50 meters.

In 1909, Corneliu Marinescu designed and started building an airplane conceived especially for military purposes. The vehicle, a tractor monoplane, with a 9.20 m wingspan, 8.35 m length, and 3.20 m height, had three seats, two in the fuselage, for the pilot and the observer, and the third under the fuselage, for someone "who can easily throw a bomb over the enemy forces". It was named "Lăcusta" ("Locust") and was tested in 1911.

Ion Paulat, a chief-mechanic on board the "Turnu Severin" steamship, was preoccupied by hydroaviation. Therefore, in 1910-1911, he worked on two prototypes, a biplane one and a monoplane one. The first was a "flying machine-boat" considered "a progress in aviation which will lead for sure to extraordinary results". Afterwards, Ion Paulat built a monoplane with a single seat and one engine, that he started in October 1911 and completed in May 1912.

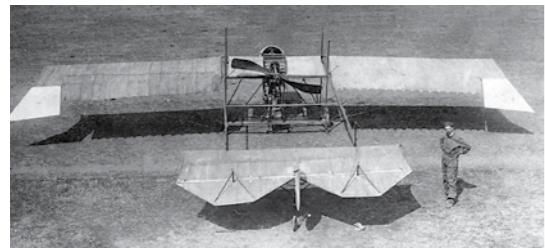
Ion Stroescu, a teacher in Râmnicu Sărat between the two World Wars, was the first Romanian who was specialized in aerodynamics. A brilliant researcher, author of more than 150 paperwork and patents, he designed in 1910 a plane named "Romania Airplane". On 24 March 1910, he obtained patent no. 2038 awarded by the Ministry of Industry and Commerce. Preoccupied by the idea of rapid flight, he embraced the solution of reducing the wingspan, the armament on board the airplanes and of the jet engines (between 1914 and 1915 he designed a fighter plane, then, in 1917, a twin-engine plane). He built several aerodynamic tunnels: in 1926, in the gym of the highschool in Râmnicu Sărat; in 1930, together with university professor and engineer Elie Carafoli, PhD, at the Polytechnical School in Bucharest (which still exists nowadays and has been modernized); between 1946 and 1948, at the Sorbonne University in Paris.

Conrad Haas is considered one of the founders of astronautics, because he was the first who designed and achieved a rocket with several stages in 1529. This both had an entertaining role, as a fireworks, and served a military purpose. The project of the three-stage rocket was composed of three elements of different sizes, made of paper and wood. They were then filled with gunpowder and placed one into the other. The connection between the stages was made by a fuse. At the end of the operation, they were stuck with glue at one end, a conical paper top was attached to them, and they were then placed on a stick. So the new element brought by Conrad's technical solutions resided in the fact that he designed, for the first time in the world, the energetic stages that need fuel both from the components and their casement. This solution is still used nowadays in aerospace flights.

Traian Vuia showed his passion for flight ever since he was a child, when he started building and flying kites. In adolescence, he attended the highschool in Lugoj, where he got his first notions of Physics and Mechanics. He later attended the University of Budapest, specializing in Juridical Science. He worked as a lawyer



Ion Romanescu and one of the gliders built by him.



Ion Paulat and his monoplane



The Stroescu wind tunnel built at the Polytechnical School in Bucharest. in Bucharest



The "Lăcusta" ("Locust") airplane invented by Corneliu Marinescu.

in Lugoj for a few years and spent much of his time conceiving a flight vehicle (a half-airplane, half-automobile). In the summer of 1902, Traian Vuia settled in Paris, where he accomplished his project. His flying machine was a monoplane powered by an engine of a carbon dioxide air automobile, a Serpollet type, which was rebuilt by Vuia so it may reach up to 20-25 HP for no more than five minutes. This engine was supposed to activate a Tatin tractor propeller, whose diameter was 220 cm. Resembling those of a bat, the wings were fixed on a four-wheeled quadricycle on a metal frame. The cockpit consisted of a pilot seat and a steering wheel which commanded the front wheels and the vertical rudder. In the summer of 1906, after a few alterations done to his airplane, Traian Vuia resumed his experiences, managing to lift it from the ground several times. On 18 March 1906, at Montesson, near Paris, he tested his airplane named "Vuia 1 Airplane-automobile" that he flew, opening the way to heavier-than-air means of flight: the airplanes. The flying device taxied, took off and landed by its own means (unlike the Wright brothers' byplane, which flew for the first time in December 1903, Vuia's monoplane had wheels). Though it was a short flight, of only 12 meters, at a height of one meter, this can be considered: the first mechanical flight in Europe; the first monoplane flight in the world; the first complete mechanical flight in the world of a heavier-than-air machine. Nowadays, the Romanian Air Force Military School for Warrant Officers and Non-Commissioned Officers in Ziliştea-Boboc, Buzău, has been named after him. La 24 octombrie 1909, On 24 October 1909, Aurel Vlaicu came to Bucharest to get the support of the Romanian government in order to make his own plane. With the help of Octavian Goga, he was hired at the Military Armory. Starting in November 1909, he began to make the component parts of the airplane and the vehicle itself was ready for flight in early June 1910. The first flight took place on 17 June 1910. Vlaicu was very successful. He only hoped to accomplish one more thing: the flight over the mountains to establish an aerial path between the Romanians separated by the two ranges of the Carpathians. For this reason, on 13 September 1913, he tried to fly over the mountains. After a halt in Băneşti, having reached an altitude of 30 metres, the plane lost balance and collapsed, killing the man who had created it. This great loss was very painful for the Romanian people. Nowadays, the Air Force Training School in Ziliştea-Boboc, Buzău (follower of the Military School for Pilots founded on 1 April 1912) is named after him.

In the fall of 1910, a 24-year old Romanian brought his biplane (having a wooden fuselage without a propeller) to the second aeronautical exhibition in Paris. Actually, the propulsion was obtained with the help of a tube propeller, having the shape of a compressor. This was the first jet in the world. Unfortunately, the aircraft was destroyed during the field tests, at the end of 1910. Between the two World Wars, Coandă resumed his studies on jet aircraft, that he later developed and received a patent for this phenomenon named after him. He is the author of more than 250 inventions and 700 patents and technical applications. Among these, we can mention the cannon without recoil, onboard a Bréguet bomber, which was tested in France, in the spring of 1916. Nowadays, the Air Force Academy in Braşov and the most important Romanian airport in Bucharest are named after him.

Born in Sibiu, Hermann Oberth studied Medicine and Mathematics-Physics at the University of Cluj, from which he graduated on 18 May 1923, with the study "The rocket toward the interplanetary space", the first official confirmation of his pioneer work. About this work, Wernher von Braun, his future disciple, said: "Hermann Oberth describes the essential technical details of the current modern rockets, details which are often considered by the contemporary authors to be inventions of the recent years". In 1929, Hermann Oberth published his main study, "Ways of the interplanetary flight", also called the "Bible of modern astronautics", for which he received the International Award for the science of interplanetary flights.

The Chitila flight school – 1910

On 20 November 1909, the Ilfov county Tribunal registered the document regarding the foundation of a company whose purpose was to initiate and develop "the employment of air transportation in all forms". The main shareholder was a lawyer from Brăila, Mihail Cerchez. Cerchez developed in Chitila, near Bucharest, the first Romanian aeronautical complex, with an airfield, hangars, workshops for the construction and maintenance of airplanes, administrative buildings and a tribune for the public. Thus, the lawyer from Brăila founded the following: the first Romanian aerodrome, the first school for pilots, the first center of the national aeronautical industry (the first airplane factory). The basic airplanes of the center in Chitila were of type Farman III.

In 1911, The Ministry of War was already convinced that aviation represented an advantage in battle. Therefore, a group of engineering officer-volunteers was selected under the command of Major Ion Macri. This group was deployed to Chitila to be trained for flight. Moreover, the Ministry ordered the committee presided by Mihail Cerchez to make four Farman III airplanes for the endowment of the Army.

On 8 April 1911, the Romanian military pilots began their first courses in Chitila. In the summer of 1911, two of the officers detached in Chitila got their flying licenses: 2nd Lt. Ştefan Protopopescu (9 July) and 2nd Lt. Gheorghe Negrescu (17 July).



Rocket applications as seen by the inventor born in Sibiu (part of Conrad Haas' manuscript). "The Fire Spears." The one in the middle is a four-stage rocket, and the one on the right is a rocket battery. The connection between the stages was made by a fuse.



Traian Vuia in his "Vuia 1" airplane, that he used to perform the first complete mechanical flight in the world – on 18 March 1906, at Issy-les-Moulineaux.



Aurel Vlaicu in 1912.



Presentation leaflet for the 1910 Coandă airplane, during the second International Air Show–Paris, 1910.



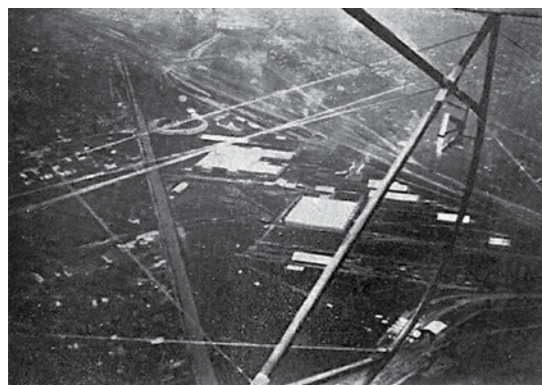
Hermann Oberth at NASA. On the right, dr. Ernst Stuhlinger, here, as well as in Peenemünde, his boss and good friend.



Aerodromul de la Chitila, 1910.



Student pilot Nicolae Capșa and his instructor, 2nd Lt. George Valentin Bibescu



In 1912, the first air photos of the Capital City were taken from the planes of the National Air League.



The only photo of the "Michael the Brave" aerostat, of March 1874, during the reception tests that took place at a gas plant in Paris.



In Piatra Olt, after the execution of the first military mission during the Royal maneuvers, in the fall of 1910

The Cotroceni flight school, 1911

The second Romanian flight school was founded in Cotroceni by Prince George Valentin Bibescu in the second half of August 1911, its first commander being himself. The first instructor was Cavalry Lt. Mircea Zorileanu, newly licensed as a pilot in France. Both schools took part in the military maneuvers of the fall of 1911, that were organized with the participation of the 3rd and 4th Army Corps.

The National Air League

On 5 May 1912, the National Air League was founded. Among its founders were Prince George Valentin Bibescu (Chairman), Jean Cămărășescu, Aristide Blank, G. Constantin Coandă. The League was meant to enhance the development of Romanian aviation, including through purchasing airplanes for the army. The League was put from the very beginning under the presidency of Prince Ferdinand, heir of the throne. Its airfield was established in the Northern part of Bucharest, in Băneasa. Most of the airplanes were Blériot and many were bought by public subscription.

THE EARLIEST FLIGHTS IN THE ROMANIAN ARMY

The Aerostation, the first weapon of the Romanian Military Aeronautics

The first signs of a consistent activity within the Romanian military aeronautics appeared in 1874. It was the moment when the first balloon flights were made with clear military purposes and Major Alexandru Lahovary was one of the performers. The "Michael the Brave" balloon was the first flight machine of Romania. This aerostat was built in 1874, in Paris, under the command of several enthusiasts and of the merchant M. Villemont. The balloon weighed 410 kg, had a capacity of 1 496 cubic meters of gas and could carry 5 to 6 people. The first ascension of the balloon took place on 5 May 1874, in Bucharest. The two passengers, journalist Grigore Ventura and M. Villemont, went up to 4 000 meters. They landed 24 kilometers far from Bucharest. The results of the observations made after the first flights led to the creation, in 1893, within the Signaling Company of the 1st Engineering Regiment in Bucharest, of an aerostation subunit, commanded by Lt. Eugen Asaki. Thus, the beginnings of aeronautics in Romania occurred in 1893 in Bucharest, when this first aerostation subunit was created. In order to be trained for balloon flights, engineering officers were sent to Paris and a spherical balloon was purchased from France, which was named "Romania". In 1903, a "kite- balloon" was purchased from Germany.

In 1907, the military aerostation participated for the first time in military maneuvers over the Murfatlar area.

The first military use of a Romanian airplane

In the fall of 1910, the airplane "Vlaicu no. 1" was used in a mission during the military maneuvers. According to the decision taken by the commanders of the mission, Aurel Vlaicu received from King Carol I an operation order that took him from Slatina to Piatra Olt, on 27 September 1910. The flight lasted for 35 minutes, the altitude was 500 meters, and in Piatra Olt, the airplane landed on a field, a few meters away from the army staff and the foreign guests taking part in the maneuvers. Pilot Aurel Vlaicu handed the document to Prince Ferdinand, the heir of the throne. So, the Romanian army was one of the first in the world to have tested the military capabilities of an airplane.

The first military school for pilots – 1912

On 1 April 1912, by Royal Order no. 1953 of 27 March 1912, signed by the Minister of War Nicolae Filipescu and countersigned by King Carol I, the Military School for Pilots was created in Cotroceni. This school was endowed with the Farman III airplanes from Chitila and the Blériot airplanes purchased from Prince Bibescu's school.

This date remains greatly significant in the history of the Romanian military aviation, because the first Military School for Pilots represented an open road for what we call the Romanian Air Force, being the first military aviation unit. Today, the Air Force Training School "Aurel Vlaicu" in Ziliștea-Boboc, Buzău, is the heir and follower of the aeronautics education started at that moment.

By means of a leaflet issued by the Minister, volunteers were requested from all Army units. In early April 1912, the theoretical courses began with 17 officer-students. The Military School for Pilots had two departments: one for biplane aircraft, with infantry, artillery, and engineering officers, and another one for monoplanes, with cavalry and navy officers. The biplane officers were instructed by Lt. Gheorghe Negrescu and Lt. Ștefan Protopopescu and the monoplane officers were trained by Lt. Nicolae Capșa and Lt. Mircea Zorileanu.

Apart from the flight instruction, the school progressively developed the Cotroceni aerodrome, one of the first in the world especially made for this new branch. Besides the flight field, it had hangars, a maintenance department, and fuel supplying installations.

During the maneuvers of 1912, a new plane was tested. It was designed by Henri Coandă, then technical director of the firm "Bristol" in England. The plane was tested in flight by Lt. Protopopescu and Gen. Mihail Boteanu, Engineering Inspector. After the tests, the Ministry of War ordered several "Bristol-Coandă" aircraft for the endowment of the Military School for Pilots.

The organization law of the Aeronautics

When a year had passed since the foundation of the Military School for Pilots, on 1 April 1913, the "Military Aeronautics Organization Law" was adopted, at the request of the Ministry of War.

The law that laid the bases for the military aeronautics as an individual branch in Romania was issued in collaboration with the pilots from the Military School for Pilots in Cotroceni. The law was discussed in Parliament, voted by both Chambers, and sanctioned by Royal Decree no. 3199/20 April 1913, then published in the "Official Monitor".

This law founded "The military aeronautics Service", with the following responsibilities:

- the studying, purchasing, producing, and employment of "navigation machines that could be used in the army";
- the management and mobilization of the subordinate units, after their formation;
- the training of the air crew, pilots, and technical personnel.

As an organization, the Service was made up of two departments (Aviation and Aerostation) and was responsible before the General Engineering Inspector, who now became "The General Engineering and Aviation Inspector".

The law also contained regulations regarding the aviation personnel and for the first time acknowledged the position of the airman, with corresponding rights.

The law specified the fact that the pilots, airmen, and technical personnel were part of the "permanent airmen corps". It is very important to mention that the law referred to the military pilot's license and established two types of license: pilot's license and superior pilot's license. After graduation and tests, the students got their pilot's license. After three months of studying, they obtained their superior pilot's license and became part of the permanent airmen corps, on the basis of a three-year contract.

It is in this context that the flight activity in Cotroceni began intensively. The new students managed to fly individually over Bucharest.

On 11/24 August 1913, Lt.av. Nicolae Capșa performed the flight Bucharest-Constanța in 2 hours and 2 minutes and on 16/29 August this priceless pilot established a national altitude record, reaching up to 4,025 meters.

The aviation participated in the Balkan War in 1913 with all its forces, mainly located in the Military School for Pilots of Cotroceni and on the Băneasa aerodrome. These were used for their flying equipment, performing for the first time war missions specific to aeronautics: liaison, reconnaissance, and air observation, through their two departments:

THE ROMANIAN MILITARY AERONAUTICS DURING WORLD WAR I

In the summer of 1914, the First World War broke out. From the beginning, the battles took place in Europe. In December, the front was stabilized. The main theaters of operations were the Eastern part of France, where the belligerent parts were France and England, on the one hand, and Germany, on the other, and the Western part of Russia, where the German and Austro-Hungarian divisions fought against the Russian ones. A secondary front was the Balkan Peninsula, where Serbia successfully resisted the initial Austro-Hungarian attacks.

The World War intensified the preparation of our Army for a possible involvement in the war. For this reason, at the end of 1914, a military committee set off for France, led by Colonel Vasile Rudeanu; its purpose was to purchase armament for the endowment of the Romanian Army. The representatives of Aviation were George Valentin Bibescu, Nicolae Capșa, and Ștefan Protopopescu.

The equipment they purchased was to be sent to Romania through the Thessaloniki harbor and Serbia. The members of the committee had the responsibility to study the development of the battles and the methods used for the new equipment at tactical level.

When World War I broke out, the Military School for Pilots was run by Captain Andrei Popovici, who managed to increase the number of flights. In July 1914, a few days before the start of World War I, Lt. Protopopescu and Lt. Negrescu graduated from this school. They were both pilots and aviation engineers.

Observatorii Aerieni

The military actions emphasized the real value of aviation. It had an important role in discovering the enemy positions and guiding the artillery fire. Both missions required the presence of an aircraft and specialized officers: the air observers.

In Romania, Division General Constantin Coandă ordered the setting up of a school for artillery military observers. It opened in January 1915. Some of the students were trained in Cotroceni (by Major Gheorghe Petrescu), the others in Băneasa (by Major Gabriel Negrei).

In the following year, the air observers were selected from Staff artillerists. Among the volunteers were two future Defense ministers: Major Nicolae Samsonovici and Captain Ion Antonescu.



Military Aeronautics Law

20 April 1913

1. The Military Aeronautics Service mission is to study, supervise, manufacture, and use air navigation apparatuses which can be employed in the military.

It is also meant to deal with everything regarding the management and mobilization of the units pertaining to this service, as well as with the personnel training.

This service has two branches:

1. The Aviation branch which attends mainly to everything related to airplanes and any other similar flying machines.

2. The Aerostation branch which is responsible for everything related mainly to balloons.

2. Only the active military personnel can serve in the Military Aeronautics Service, with the exception of the cases mentioned in article 4.

3. The Military Aeronautics Service is placed under the command of the Ministry of War namely the General Directorate of the Corps of Engineers, which is at the same time the General Directorate of the previously mentioned service.



The Voisin III airplane, 130 Hp, in the Băneasa aeronautical center: imported from France in the autumn of 1915, it proved to be an excellent airplane for the missions of the air observers.



One of the staff officers who graduated the observers' school was Maj. Gheorghe Rujinschi, the future commander of the military aeronautics in the 1916 campaign.



Preparing a Caquot aerostat for take-off. These aerostats had a good stability when ascending, even if the wind was over 70 km/h. Having only one observer in the nacelle, it could climb up to 1,800 meters, and up to 1,200 meters with two observers. As the photo shows, the nacelle could hold up to three people. The control cable was 7 mm thick and resisted to 3.6 tons.



Farman 40 were the main aircraft employed by the Romanian Aeronautics during the battle for Bucharest.

Corpul de aviație

On 15 September 1915, as a consequence of the increase in number of the specialized personnel and of the aircraft, the Aviation Corps was formed, based on Law no. 305.

Lieutenant Colonel Constantin Găvănescu was appointed commander of the Aviation Corps, while the second in command was Major Gheorghe Rujinschi.

Until the fall of 1915, when Serbia was occupied by the forces of the Central Powers, new airplanes arrived from France, of the types Farman, Voisin, Morane-Saulnier and Caudron. But none of them had weaponry onboard.

In 1916, the first air bombing tests were made, using bombs made by the Pyrotechnic Department of the Army, in Bucharest. The results were stimulating.

It was the period when the air photography service was founded, under the lead of the Artillery Captain Nicolae Teodoru.

Finally, the Aviation developed in Cotroceni, too, and the aerodrome in Pipera was necessary. It became the new military aerodrome in Bucharest in July 1916 and remained so until the end of the 1950s, when it was turned into an industrial area of Bucharest. In 2006, the former hangars on the Eastern side became the Romanian National Aviation Museum.

From 1 April 1912 until Romania entered the Great War, the military aviation educational system trained 97 pilots and 84 air observers and another 129 between 1916 and 1918. Moreover, after only three years since the 2nd Balkan War had ended, in 1916, the Military School for Pilots became operational, and several structures were kept for the training process on the school-aerodrome. The first pilot who flew over the Carpathians for military purposes was Captain Ioan Peneș, squadron commander within the school, on 18 August 1916.

On the whole, overwhelmed by enemy forces, the Romanian Army had to withdraw from Dobrogea and from the Carpathians Arch. The enemy was to besiege the Capital city.

On 27 September 1916, the Great General Headquarters decided to evacuate the Military School for Pilots to Bârlad; afterwards, on 15 December 1916, the School for Air Observers received the order to leave and move to Botoșani.

The beginnings of anti-aircraft artillery in Romania

When the aviation was first engaged in battle, during the Italian-Turkish war of 1911-1912 and the Balkan one of 1912-1913, during reconnaissance and bombing missions, the necessity to attack the aircraft from the ground was solved, in almost all European countries, by adjusting the ground cannons so as to fire against airplanes.

Because of the need for Romania to enter the war and of the evolution of aviation engagement in battles, the Romanian military experts were determined to follow the example of the European countries and begin the production of their own defense systems against air attacks.

Some of the solutions established on paper by the Great General Staff in 1941 were the ones regarding the anti-aircraft artillery. So, on 22 December 1914, a contract with the Italian company "Vickersterni Spezia" was signed in order to import four "Deport" 75-mm air defense cannons.

Because of the war, the cannons were shipped on 9 July 1916, and received by the Romanian Army in the summer of the same year.

At the same time with the efforts made by the foreign suppliers to provide cannons and ammunition necessary for air defense, the Romanian specialists tried to avoid the lack of this equipment by using ground cannons for air defense.

Therefore, the Romanian Military Armory was assigned to carry out the alterations for the 1880 75-mm and 57-mm cannon models, coordinated by Colonels Ștefan Burileanu and Gabriel Negrei.

The Romanian military aviation when the country entered the war

When Romania entered the war, there were 97 pilots and 84 air observers in the Air Force. The Aviation Corps had 51 airplanes at that moment, but only 24 could be used for first-line missions (the others were being repaired and assigned to the flight schools). None of them had weapons.

When the campaign began in 1916, the Aviation Corps had four groups, one for each army:

- the 1st Squadron Group, led by Captain Alexandru Sturdza, at the disposal of the 1st Army, that set off from Oltenia. After the divisions of the 1st Army reached Transylvania, the 1st Group was stationed near Sibiu, in Tâlmaci;
 - the 2nd Squadron Group, at the disposal of the 2nd Army, fighting between the Olt Valley and the Buzău Valley, was commanded by Lt. Alexandru Pașcanu. After the Romanian troops reached Brașov, this group remained here;
 - on the Băneasa airfield, there was the 3rd Squadron Group, commanded by Captain Constantin Beroniade. Initially, it was responsible to the Great General Headquarters, then it was commanded by the commander of the 3rd Army, whose mission was to defend the Southern front;
 - the 4th Squadron Group, led by Lt. Haralambie Giossanu, fought on the territory in Piatra Neamț for the Northern Army. The military aerostation mobilized four companies assigned to several divisions from the front line.

The establishment of the Anti-aircraft Artillery Corps and its first missions

Before Romania's participation in the war, the anti-aircraft defense was the mission of "The Service for the anti-aircraft defense of the Capital", led by Captain Gheorghe Ciurea. This service was part of Bucharest Stronghold Command, responsible to the 2nd Army Corps.

It was necessary to establish a single command structure for the anti-aircraft defense, so on 15 August 1916, the first unit was formed. It was named "The Anti-aircraft Defense Corps" and was endowed, for the defense of the Capital city, with: 6 batteries with four 75-mm cannons, 8 sections of machine-guns, 12 sections of 90-cm projectiles and 22 surveillance posts (with 8 soldiers each) at a distance of 50-60 km around the Capital, placed in Putineiu, Frățești, Toporu, Drăgănești, Prundu, Greaca, Hotarele, Goștinari, Budești, Comana, Călugăreni, Bila, Letca Nouă, Vida-Cartoiani, Clejani, Crevedia, Sohatu, Pârlita, Titu, Bilciurești, Țigănești, Movilița. Beside those, there existed another information network, through the City councils. All posts were endowed with the telephonic means necessary for the transmission of the enemy aircraft positioning, from the very moment they crossed the border.

The Great Unification of 1918 and the Romanian Military Aeronautics

In the fall of 1917, the Russian political situation changed completely. The Bolsheviks, led by Lenin, took over in Petrograd and decided that Russia should not participate in the War.

Consequently, Romania was left alone having to face the Central Powers and their allies in the Balkans. Having realized that the Romanian Army had no chance to put up with such a numerous and powerful enemy force, the Government placed in lassy, under the leadership of Alexandru Marghiloman, claimed peace. As a consequence, the Romanian Army was demobilized.

The spring and summer of 1918 were not favorable to the Central Powers. The German Army started more attacks on the Western front, but they all failed. The outcome of the Second World War was decided in the autumn of the same year. On 16/29 September, Bulgaria signed the armistice of Thessaloniki, due to an ample offensive initiated by the Triple Entente.

On 17/30 October, Turkey withdrew its forces from war (the armistice of Mudros), being forced to draw back by the English coming from Palestine and Syria. The Austro-Hungarian Empire was defeated in Italy and signed the armistice of Villa Giusti, on 21 October/3 November.

Finally, on 29 October/11 November 1918, after the conclusion of the Compiègne armistice, the German Army capitulated, thus ending the war.

A few days before the end of the conflict, a new government was established in lassy, led by General Constantin Coandă (former commander of the Military Aviation educational system), who decreed the mobilization of the Army. Therefore, Romania was once again at war.

The collapse of the neighboring empires led to the unification of all the Romanians within a single state. Thus, on 27 March/9 April 1918, Bessarabia and Romania were unified. After the end of the war, the Romanian provinces of the former Austro-Hungarian Empire also decided to become part of Romania (Bucovina on 15/28 November, and Transylvania, Banat, Crișana, and Maramureș on 18 November/1 December).

During the days preceding the Unification with the Romanian territories which had been part of Austro-Hungary, the lassy government wanted to contact the political leaders of the Romanians in Transylvania for an exchange of information.

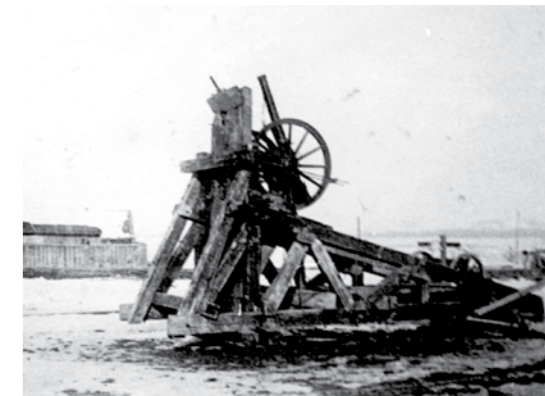
For this reason, it was decided to use a military airplane, which would take off from Moldavia and land in Blaj.

The mission was assigned to Lt. Av. Vasile Niculescu and Capt. Victor Precup and took place on 10 November 1918. When they returned to Moldavia, the following day, the two officers brought the news that, within a week, a Great National Assembly from Alba Iulia was to be held in order to proclaim the Unification with the Homeland.

Review of the Romanian Military Aviation during World War I

During this great world conflict, 28 pilots and air crew members gave their lives, within the total amount of 8,160 flight hours consisting of: 560 dog fights, 61,871 kg of bombs, 703 adjustments for the Romanian and Russian artillery, 6,981 aerial photos, 80 connection missions and 6 special missions. The Anti-aircraft Corps launched 16,500 projectiles and pinned down 11 aircraft.

It was the moment when three basic services were formed: the Aerostation, the Aviation, and the Anti-aircraft Artillery. By their great contribution to the ideal of national unification, they justified the financial effort of the Romanian state to develop them. Each was as efficient as the air force of the other states involved in war by performing air surveillance and coordination of the ground anti-aircraft artillery activity, of the air battles and bombings (absolutely new in the Great War military science), by defending the air space using dedicated ground systems (cannons, projectors, protection aerostats).



Anti-aircraft cannon with slow firing, 57 mm caliber, model 1891, adapted for air shooting in 1916, mounted on a "Negrei" system Romanian carriage.



For the air-raid defense, on 16 August, 1916, the 3rd Romanian Army was provided with a Deport battery, which hit a German airplane on 19 September, 1916, during the Flămânda maneuver. This first anti-aircraft artillery victory, represented by the destruction of an airplane, is still a memorable event for the artillerists. The aircraft burnt and its underframe was brought to Bucharest. As a result of the anti-aircraft artillerymen's success facing-off the aerial enemy, 19 September was designated the day of the anti-aircraft artillery and is celebrated every year.



On March 21, 1919, a communist regime was established in Budapest, led by Béla Kun. On the night of April 15/16, 1919, Hungarian troops attacked the Romanian units stationed in the Apuseni Mountains area. On April 17, the Romanian Army stopped the Hungarian offensive and started a counter-offensive, reaching the Tisa River on May 1, 1919. The 5th Aeronautical Group, led by Mr. Av. Athanase Enescu participated at the campaign. The group consisted of two reconnaissance and light bombing squadrons (S.2 and S.12) and one fighter squadron (N.7). In the picture is a bridge over the Tisa river bombed in June 1919 by a Romanian crew from Squadron S.12.



Bacau. Vasile Niculescu, the one who took the documents announcing the Great Union to Transylvania, on board the Farman 40 plane (first from the left), F.4 Squadron/2 Aeronautical Group



The military aviation endowment strategy developed before 1927, when the anonymous society "The Romanian Aeronautical Industry" (IAR) was founded in Brașov. The IAR Brașov plant was inaugurated in the presence of the Prime-Minister and of the representatives of the French companies. Production began with an order of 30 Morane-Saulnier MS-35 training planes, made of wood and cloth (under license). It was a training aircraft with two tandem seats, for phase I. It had a Gnome-Rhone rotary engine of 80 HP, able to reach a speed of 135 km/h.



On 5 August 1930, Royal Decree established the Order "Aeronautical Virtue", the first aeronautical order in the world.



Image from the air of the South-West part of the Pipera aerodrome. The National Museum of Romanian Aviation is currently located on the site of the former airfield.

THE ROMANIAN MILITARY AERONAUTICS IN THE INTERWAR PERIOD

During the First World War and the 1918-1920 campaigns in Bessarabia and Hungary, the Romanian Military Aviation, the Aerostation, and the Antiaircraft Artillery proved to be indispensable for the defensive battles and during the offensive attacks. Moreover, by developing the aerodynamics studies and increasing the engines power, the aircraft were naturally supposed to radically enhance their performances (speed, cruising altitude, fire power, airlift). Progress was expected not only in the diversification of the Aerostation missions (air obstacles), but also regarding the antiaircraft artillery (the increase of the projectile airspeed and firing intensity).

In the early 1920s, the Romanian Army carried on with its organization after the French doctrine. According to this, the main mission of the Aviation was that of helping the land troops with data gathered from the enemy lines. Consequently, the reconnaissance and observation aviation units became really important for the endowment policy of the Ministry of War.

In 1920, the Civilian Aviation was created. Even if it operated within the Ministry of Communications, it passed for a reserve structure of the Military Aviation.

In that same year, the first transcontinental company in the world was established: the French-Romanian Air Navigation Company, with mixed French-Romanian funds. Its aircraft conveyed passengers and cargo on the route Paris-Strasbourg-Prague-Vienna-Budapest-Belgrade-Bucharest-Istanbul. In 1920, the Romanian Aero-Club was created in Bucharest on the initiative of a group of aviators, like Prince George Valentin Bibescu and Lt.Col. Andrei Popovici. From 1925 on, this institution published the journal "Aripi" ("Wings"). The following years, aero-clubs were founded all over the country and they were reunited within the Royal Romanian Aeronautics Federation in 1936. On 1 September 1920, the Antiaircraft Artillery Regiment was established, under the command of Col. Nicolae Opran. The regiment was organized in four groups (battalions) and was subordinated to the Artillery Technical General Inspectorate. From 1 April 1921 until 1 April 1923, the regiment commander was Col. Ioan Șt. Negoescu, later replaced by Col. Dimitrie Sturza.

After 1924, the Romanian Government encouraged the establishment of an in-house military industry (including the aeronautical industry); however, up to this moment, imports remained the basic source. Therefore, in 1925, 120 Potez-XV reconnaissance aircraft came from France and 50 Fokker fighter planes (these were produced between 1918 and 1919). On 10 November 1925, the Romanian Government signed a contract with Blériot-Spad for providing us with 100 fighter planes, with 450 HP Lorraine engines. Spad-61 aircraft endowed the battle units and were assigned to fighter missions. In the second half of the 1920s, Savoia-61 hydroplanes were ordered from Italy.

Victor Anastasiu came in contact with the aviation in the fall of 1914, when he was appointed physician in the 1st Engineers' Regiment. At first, he flew as a passenger, then attended the military flight school obtaining, on 3 March 1916, the pilot license no. 82 (he was the second doctor in the world to become an aviator). During World War I, Captain Anastasiu was part of the Aviation Corps and fulfilled combat missions during which he was wounded twice; also, he remained faithful to his first vocation and organized the aeronautical medical service.

After the war, he became head of the Aeronautical Medical Center (established in 1920), that he led until 1939, when he was retired with the rank of Colonel. He was promoted to Brigadier General on 8 June 1940.

Despite the financial obstacles the Romanian industry had to face, the efforts to elaborate and develop warfare were encouraged by the Army leadership. An example is the activity of the inventor and officer Ion Bungescu. He designed in 1925 the first central firing equipment, establishing the path for brilliant inventions, some of which were world premieres. These led to the rapid growth of the antiaircraft artillery regarding the execution and precision of firing. The equipment created in 1925 was meant to be employed in 1926, as a component of the antiaircraft artillery battery endowed with 76.2-mm cannons from Czechoslovakia. Captain Bungescu's accomplishments were to continue with a second developed model, introduced in the antiaircraft artillery system in 1928. In 1935, the third model, known as "simplified central equipment", was made and, in the fall of 1938, the central equipment "Major Bungescu" appeared, as a prototype brevetted in 1939.

The military aviation endowment strategy developed before 1927, when the anonymous society "The Romanian Aeronautical Industry" (IAR) was founded in Brașov. It had a capital of 120 million Lei, of which 18 million represented the contribution of the Romanian state (12 million was the value of the terrain); 22 million came from a group of Romanian banks (Romanian Bank, Technical Credit, Romanian Credit Bank, Discount Bank, and Commercial Bank). Astra Wagons Arad donated machinery and tools which were worth 36 million Lei and 4 million in cash. Finally, the remaining 40 million came from a group of two French firms: Lorraine-Dietrich and Blériot-Spad. The IAR Brașov plant was inaugurated in the presence of the Prime-Minister and of the representatives of the French companies mentioned in

the contract. Production began with an order of 30 Morane-Saulnier MS-35 training planes, made of wood and cloth (under license). It was a training aircraft with two tandem seats, for phase I. It had a Gnome-Rhone rotary engine of 80 HP, able to reach a speed of 135 km/h.

On 5 May 1932, a new structure was formed; it was the State Undersecretariate of the Air (SSA). The project was promoted at the end of 1931 by the Minister of War, General C. Ștefănescu Amza (probably at the King's suggestion). After the approval from the High Account Management Court and the Ministry of Finances, the project was forwarded to the Parliament. On 12 April 1932, the law was passed by the deputies. Six days later, it was voted by the Senate, too.

In May 1935, the command of the SSA was given to the engineer Nicolae Caranfil. Because of some misunderstandings between the Minister of War and Nicolae Caranfil, the latter tried to solve the problem by giving the aviation a more intelligent position, in order to ensure financial independence, a sine-qua-non condition for its management and development.

As a direct consequence of the national industry development (with platforms in Bucharest, Ploiești, Brașov and Reșița), at the end of the 1930s, the antiaircraft artillery was considered a priority regarding the endowment process. From 1937 on, the ground-based cannons adapted for antiaircraft firing were replaced with modern antiaircraft cannons, imported from England, France, Sweden, and Germany, as well as with Romanian equipment.

In 1938-1940, the antiaircraft artillery units were endowed with medium caliber cannons (75-mm Vickers, from England, and 88-mm from Germany), small caliber cannons (40-mm Bofors from Sweden, 37-mm German Rheinmetall, 25-mm French Hotchkiss, 20-mm German Gustloff and Swedish Oerlikon), as well as 13.2-mm machine-guns. Another acquisition was represented by the 150-cm Siemens and 60-cm Nedalo projectors, telemeters, altimeters etc. A part of these was produced by the plants in Reșița and Brașov (Astra).

The imperativeness of endowing the antiaircraft artillery troops with Romanian-made cannons and from abroad led to a stringent issue related to personnel training and retraining.

The beginning of World War II limited the aviation's possibilities to acquire aircraft from abroad. Therefore, from France were bought only 20 Potez-63 bombers and 10 Bloch-210 bombers, from England were bought 40 Bristol Blenheim aircraft for distant surveillance and bombardment (of which only 37 arrived in the country) and 12 Hawker Hurricane fighters, and from Germany 20 Messerschmitt-109E and 30 Heinkel-112 fighters. It was planned that in order to completely equip the aviation to manufacture the necessary aircraft here, either by generating original designs (IAR-37 and its versions 38 or 39 and IAR-80) or by purchasing the license for excellent foreign aircraft (it is the case of the Savoia-Marchetti bomber, to which the Romanian engineers made some significant changes).

The interwar period meant the basic stage in the development of the aeronautical education system. The main "lessons learned in the Great War" were used by the Romanian aeronautical schools to train the personnel and referred to: the dog fights and acrobacy, aerial bombardment techniques and procedures, air surveillance and ground-based air defense. In a war of static fronts in general, the aviation brought dynamism, an attitude which impelled not only the Romanian military mentality, but also the global one.

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On 31 December 1925, by the High Decree no. 3983, the Schools and Training Centers' Command was subordinated to the Aeronautical General Inspectorate and initially located in Băneasa and then in Pipera.

After the First World War, the necessity was stated to have an educational system specific to the antiaircraft artillery, a challenge that could not be accomplished until 1 April 1938. On that date, the Air Defense Training Center was established at Ghencea-Bucharest under the command of Major Ion Bungescu and comprised a School for NCOs (80 students) and later, on 10 December 1939, a School for Antiaircraft Artillery Officers. "Along with the foundation of an own military school, the antiaircraft artillery finally attests that it is a branch itself" said its first commander, Ion Bungescu.

In the next edition, we will continue the brief foray into the history of the Romanian Air Force. The series of articles is based on the book "Aeronautica Militară Română" published in 2003, as well as articles from the archive of the CER SENIN magazine



In the 1930s, the Romanian military aviators carried out tens of continental and intercontinental raids; in the photo, the three Romanian crews that flew from Bucharest to Cape Town in 1935.



Among the first to have benefited from the experience of the instructors within the German Air Military Mission were the antiaircraft artillerists at the Training Center and the aviators of Group 7 from the 1st Fighter Flotilla.



The most important product of the Romanian aeronautical industry was, for the first half of the 20th century, the fighter IAR-80 manufactured by IAR Brașov. The engineers Ion Grossu and Ion Coșereanu were the leaders of the team that designed the IAR-80. It was an entirely metallic aircraft, with retractable landing gear and with a three-blade propeller which was 3 meters in diameter and had a variable pace. The prototype, which appeared in 1940, reached 510 km/h, which ranked it fourth in the world when it came to speed. The test extended up to 1940, when the ratification commission concluded that the plane "was a good interceptor due to its climb speed. It doesn't have any piloting-related flaws making it accessible to any well-trained fighter pilot having training related to avionics." It went into mass production in September 1940, and until the end of World War II approximately 5,000 aircraft were manufactured.

F-35 CONDUCTS FIRST FLIGHT WITH TR-3

A developmental test team from the 461st Flight Test Squadron conducted the first flight of an F-35 in the Technology Refresh 3 (TR-3) configuration on January 6, at Edwards Air Force Base, California.

Maj. Ryan "BOLO" Luersen, a U.S. Air Force experimental test pilot, piloted the mission in tail number AF-7, a specially instrumented flight test aircraft and the first with TR-3 upgrades installed. He executed a functional check flight (FCF) profile to verify aircraft airworthiness and system stability. The 50-minute flight, which took the jet to 35,000 feet at speeds just shy of the speed of sound above the Mojave Desert, marked the start of an extensive flight test campaign. Developmental and operational test flights will continue through 2023 to ensure safety and prove warfighting capabilities.

"This is a significant achievement for the F-35 program," said Air Force Lt. Gen. Mike Schmidt, program executive officer, F-35 Joint Program Office. "TR-3 is the F-35's critical computer processing electronics upgrade that will continue to provide all our pilots with the capability they need to be successful against any adversary. There is still a lot of work to do and I am confident that our industry partners and government team will get the job done."

TR-3 provides the computational horsepower to support modernized Block 4 capabilities for the F-35 including: new sensor suites, more long-range precision weapons, improved electronic warfare features, more powerful data fusion, and increased cross-platform interoperability. These capabilities provide the warfighter a combat-edge to identify, track, engage, and survive against advanced air, ground, and cyber threats. TR-3 significantly updates core processing power and memory capacity, which will allow the F-35 to run advanced software packed with state-of-the-art warfighting capabilities.

"The F-35 Integrated Test Force at Edwards AFB is proud to have executed yet another first-flight within the F-35 program," said Air Force Lt. Col. Christopher Campbell, commander of the 461st Flight Test Squadron and director of the F-35 Integrated Test Force. "Technology Refresh 3 modernizes the computational core of the F-35 air vehicle. Therefore, new TR-3 hardware and software affect nearly every aircraft feature. Today's event was just the start of a comprehensive flight test campaign that will both verify and improve the safety, stability, and performance of the whole F-35 weapon system in this new configuration."

"Today's first flight is an important step in enabling future capabilities to ensure F-35 remains unrivaled across the globe. We look forward to



Archive picture by Royal Netherlands Air Force shows a Netherlands F-35 during exercise Frisian Flag at Leeuwarden in October 2022.

continued collaboration with the JPO and industry partners to deliver TR-3," said Bridget Lauderdale, Lockheed Martin vice president and general manager, F-35 Program. "Our mission is to provide our U.S. service members and allies with an aircraft that will guarantee 21st Century security so they can deter and defeat threats and come home safely."

The TR-3 program has overcome technical complexity challenges with hardware and software, and is now on-track to deliver capability to the U.S. and its allies starting in 2023. The government and industry team continue to find innovative ways to ensure delivery of critical capabilities to defeat future threats. Lessons learned in the execution of the TR-3 program will be applied across the entire Block 4 modernization program.

The F-35 is the premier multi-mission, fifth-generation weapon system. Its ability to collect, analyze, and share data is a force multiplier that enhances all assets in the battle space: with stealth technology, advanced sensors, weapons capacity, and range. The F-35, which has been operational since July 2015, is the most lethal, survivable, and interoperable fighter aircraft ever built. The F-35 will serve as the backbone of the U.S. fighter fleet as well as 16 other nations for decades to come.

Story by F-35 Joint Program Office Public Affairs F-35 Joint Program Office

Courtesy Photo by F-35 Joint Program Office

NETHERLANDS PREPARE F-35 DEPLOYMENT TO NATO ENHANCED AIR POLICING IN POLAND

RAMSTEIN, Germany – The Royal Netherlands Air Force is preparing a deployment of their F-35 fighter jets in support of NATO's enhanced Air Policing mission in the northeast.

Eight F-35s are going to deploy to Malbork, Poland, to join NATO's mission bolstering the defensive posture along the eastern flank in February and March 2023. While four of the fifth-generation fighters will be employed in support of policing the skies in the region, the other four aircraft will conduct training and exercise drills with Allies, ready to augment the defensive mission when required.

"With these eight modern fighter aircraft, the Netherlands contribute to NATO's Air Policing and Air Shielding missions in deterring and if required defending Allied territory in the Baltic region," said Lieutenant Colonel Guido Schols, Commander of the Netherlands F-35 detachment. "We are also assuring our Allies and demonstrating our commitment to the NATO Alliance," he added.

The Netherlands regularly contribute to Allied Air Policing missions. At home, they have shared the task of safeguarding the skies above the BENELUX area together with Belgian Air Force F-16s since 2017. Abroad, they deployed their F-16s to Siauliai in support of Baltic Air Policing in 2005 and 2017 and to Malbork in 2014 right after Russia's invasion of Crimea. On the southeastern flank, the Netherlands completed a two-month F-35 deployment to Bulgaria in May.

While deployed to Malbork, the Netherlands form part of the



current rotation of three other Allies who operate fighters out of the Baltic region: Poland and France fly F-16 and Rafale fighters out of Siauliai, Lithuania, and Germany launches their Eurofighters out of Ämari, Estonia.

Story by Allied Air Command Public Affairs Office





F-16

AF SERIAL NO. 83168

SERVICE WITH GRADE JP-8

FUEL PER MIL-T-83133

PUSH BUTTON TO OPEN DOOR

APASA BUTONUL PENTRU

DESCINDEREA USII

PULL RING OUT 6 FEET TO

JETTISON CANOPY

TRAGE-NEM AFARA USII

SALVARE | RESCUE

1612