

Charting a New Course

The Czech Air Force Transition to an Exciting New Era

Major General Petr Čepelka, Commander of the Czech Air Force

Today, the Czech Armed Forces (CAF) and its Air Force are at a historical and conceptual turning point. This year, it celebrates 30 years since establishing a separate Czech Armed Forces after the dissolution of Czechoslovakia in 1993. Next year, it will commemorate 25 years since joining NATO. Both significant milestones have positively shaped the condition of the Czech Air Force (CZAF) 30 years long quantitative and qualitative transformation: the introduction of new weaponry, modernization of equipment, and implementation of complex new TTPs. These changes might give the feeling that the transformation from the former Warsaw Pact Air Force to a NATO-compatible Air Force is complete. While the CZAF has evolved into a highly professional and confident air force, earning its rightful place as a distinguished member of NATO, it must not rest on its laurels and must continue the successful transformation.

Three Decades of Czech Air Force Transformation

From a conceptual point of view, in the 25 years since joining NATO, the CZAF has experienced a substantial reduction in size and undergone a profound transformation. The primary goal of this transformation was to establish a compact, yet highly efficient professional air force, modelled after Western standards. It aimed at moving away from merely replicating the former Czechoslovak Air Force, which operated hundreds of aircraft from multiple airbases. Today, the CZAF operates a small quantity of sophisticated and modernized aircraft and systems allocated to four primary bases. These bases are actively involved in national and foreign operations, international exercises, and are preparing for tasks that differ significantly from those of previous years. Our commitments encompass a wide

range of operations, including the 24/7 allocation of two-ship JAS-39 Gripen to NATO Integrated Air and Missile Defence. Simultaneously, until Slovakia completes training on their new F-16, we diligently safeguard the sovereignty of their air space. For numerous years, our C-295 CASA transport aircraft have been actively engaged in fulfilling crucial tasks as part of the Multinational Force and Observers mission in the Sinai. Additionally, we biennially undertake the responsibility of leading the Baltic Air Policing mission, while simultaneously training for the NATO Readiness Initiative. Our highly skilled JTACs seamlessly integrate land and air forces, working in close coordination with L-159 and Mi-24 squadrons, thereby ensuring effective operational outcomes.

Furthermore, the mind-set of our soldiers has undergone a significant transformation since joining NATO. A considerable number of them have successfully completed their education at renowned foreign war schools, equipping themselves with invaluable experience through operational deployments in Kosovo, Afghanistan, and Iraq.

However, lessons learned from deployments to combat missions and the current change in the security environment are significantly altering previously known rules. For a long time, we thought that the war did not concern us and that our possible deployment would be focused only on the fulfilment of tasks within peace operations. The recent rise of the geopolitical trend of great power competition with the development of emerging and disruptive technologies, the conflict on NATO's eastern flank, and the Alliance's new concept of future warfare – NATO Warfare Capstone Concept (NWCC) – are becoming prevailing factors influencing the development of future capabilities. Without the integration of new technologies

such as AI, Machine Learning, digitized virtual environments, or concepts such as Loyal Wingman, we cannot succeed in the future theatre of war.

Over the past three decades, we have been fortunate to witness a period of freedom, and security that is unparalleled in our modern history. However, Russia's recent aggression unequivocally demonstrates that a long period of peace is the exception rather than the rule. The Czech Republic is taking a responsible approach towards these changes and is actively adjusting its geopolitical perspective. In 2023, it will join twenty-four other Alliance members with a defence treaty with a strong strategic partner, thus deepening transatlantic cooperation. At the same time, the present Government has passed a defence financing law

that anchors spending 2% of GDP on the military budget, which will significantly stabilize planning and facilitate financing military modernization projects.

The current crisis evokes new challenges for the Armed Forces and its air power. Accordingly, the highest priority is accelerating modernization and urgently increasing combat capability and readiness. However, this will only be possible by addressing the most pressing issues.

Confronting the Challenges

Experienced and motivated personnel, who often go above and beyond the call of duty, are crucial for an effective and ongoing transformation. Thanks to the interconnectedness with NATO structures and Centres of Excellence, European and US defence organizations,

“Increasing combat readiness and developing operational capabilities is a priority; digitalization of the battlefield is inevitable.”



and the ability to cooperate and share experiences from international exercises and operational deployments, the CZAF employs motivated and experienced personnel. Nevertheless, the decreased manpower from previous years and the diminished motivation to join the Air Force have recently been a significant problem. In addition to that, demographic trends, expectations of 'Generation Z' and higher cognitive demands driven by advanced technological development have led to recruiting and retention challenges. To define the conditions to motivate recruitment and to develop an effective education and training system that corresponds to the pace of anticipated technical modernization and combat readiness, the Chief of the General Staff initiated a comprehensive analysis in which the Air Force participated too. Moreover, we have modernized the military aviation training centre including the introduction of Western training helicopters and advanced jets. Nevertheless, an opportunity to participate in international advanced standardized training activities will be of increased importance in the near future.

The state of the Air Force is very closely linked to the availability of sufficient and sophisticated weaponry. Despite extensive westernization and modernization which primarily involved the Tactical Air Force, other helicopter and transport units and the long-neglected ground-based air defence units remain equipped with equipment of Russian origin. The apparent advantage of this solution, when in the past the CZAF could train the Afghan Air Force armed with Mi-24, becomes a significant disadvantage in the current context of disturbed relations with the Russian Federation. Therefore, the priority is to expedite the westernization of mentioned units.

Unremitting Changes – Audacious Plans

Continuous transformation of the Air Force and its capabilities within the structure of the CAF is the joint responsibility of the Capabilities Planning Division and the Air Force Development Department of the Ministry of Defence, which in close cooperation with the Component command of the Air Force deal with technological and conceptual development, analysis

and lessons learned. A top-down approach ensures streamlined implementation of capabilities, with the main influencing factor being the fulfilment of NATO commitments set out in Capability Targets and interoperability with other Alliance partners. Following the identified capability shortfalls and reflecting on the deteriorating security situation, the Czech Republic intensively reconsidered its Strategic Development concepts and established new enhanced modernization milestones and programmes.

In the context of diminishing dependence on the Russian Federation for armaments, the transition from Mi-24/35 helicopters to the United States made H-1 system (AH-1Z Viper/UH-1Y Venom) is underway these days, which will provide the helicopter forces with a significant qualitative capability increase in both accuracy and effectiveness of fire support and the range of effects critical to supporting ground troops. Strategically, the H-1 system provides a necessary advance in NATO interoperability and the opportunity for deeper involvement in Alliance exercises and operations. Concurrent with the ongoing upgrade of the Mobile Air Defence Radars (MADR) 3D surveillance radar backbone network, the generationally obsolete SA-6 KUB system will be replaced by the Israeli SPYDER SHORAD system beginning in 2024. This will place the CZAF among the countries with technologically advanced ground-based air defence systems and envisages integration into NATO's broader Integrated Air and Missile Defence. However, Air Defence modernization does not end there, and the Air Force, in cooperation with the University of Defence, is intensively analysing implementation of capabilities such as C-UAS and ballistic missile defence.

The subject of extensive modernization also includes increasing and supplementing the capabilities of the drone fleet. However, the intent to acquire medium tactical drones has been postponed based on lessons learned from the current Ukrainian battlefield; the CZAF has decided to prioritize the purchase of a larger fleet of smaller drones. It is also apparent that the future focus should be on sophisticated jamming-resistant drones incorporating advanced features such as AI, and Manned-Unmanned Teaming.



H1 and SPYDER – newly introduced systems in the Czech Air Force.

Despite the indisputable effectiveness of multinational solutions, the Czech Republic's conceptual plans address the increase of strategic transport capabilities by purchasing its own medium transport aircraft. Moreover, it was decided to accelerate the acquisition process which will ensure the ability to react quickly to the development of crisis situations in the world. Therefore, market research is already underway targeting the C-390 Embraer, A-400M Atlas, and C-130 Hercules aircraft.

Although the CZAF will go through another critical stage of modernization in the following years and thus achieve a significant increase in capabilities both for its operations and for NATO's Collective Defence, it will be necessary to continue to discuss the factors shaping future battlefields and consequently the missions in which the Czech Republic could eventually operate. The threat posed by the A2/AD systems, which are also increasingly implementing ballistic and hypersonic missiles, covers an ever larger NATO territory, including the Czech Republic. This creates an additional requirement for tactical assets to be able to operate in contested and degraded opponent environment. The CZAF will therefore have to include counter-A2/AD capability in considerations for the successor to the 4th generation aircraft fleet, which will ensure the integrity of the Czech Republic airspace beyond 2030.

However, a significant increase in combat effectiveness cannot be achieved only by introducing modern

technology and recruiting motivated personnel. Hence, we have been meticulously studying the Multi-Domain Operations (MDO) whose conceptual and operational frameworks have been provided in NWCC and DDA. Moreover, the Air Force, by principle, has significant potential to take a leading role in the introduction of this concept into the entire CAF. Speed of relevance, agility, distributed C2, unity of command and decentralized execution, advanced technology and the use of information sharing, the ability to orchestrate and provide kinetic and non-kinetic effects across physical domains, and the ability to integrate and exploit Space and Cyber capabilities are factors that play a significant role in the initiation and integration of MDO into national capabilities.

Elevating Ambitions

The CZAF has been intensively preparing to substitute its fleet of fourteen JAS-39 Gripen, which the Czech Republic leases from Sweden until 2027. An expert team across all decision-making components of the Air Force, the General Staff and the Ministry of Defence has been created and tasked to conduct a thorough analysis, assess and determine the requirements for the future capabilities of the tactical air force. The resulting analysis, taking into account the independent expertise provided by the Joint Air Power Competence Centre and NATO's upcoming development concepts, provided the basis for a military recommendation to the Czech Government, which concluded

that an effective solution for the comprehensive future development of the CZAF beyond 2030 is to implement the 5th generation aircraft supplemented with advanced drone capabilities.

Nowadays the only conceivable system, the F-35, with its unique sensor suite and low observability, possesses the potential to dramatically enhance the Czech Republic's defence capabilities by being able to provide one layer of integrated airspace protection effectively enough to maintain and establish flexible air superiority over its territory and, where appropriate, provide support and conduct operations as required by the Alliance. In addition, by increasing the presence of 5th generation assets in the middle European region, the Czech Republic will further strengthen deterrence and defence of the Alliance.

NATO's strategic documents formulate the space for the emergence of an adaptive protective wall based on 21st-century technologies. The prerequisite is digitally and technologically interconnected elements that can react quickly and act adaptively across all domains. The primary purpose is information dominance and accelerated decision-making, an essential components of modern warfare and premise for dominance in future conflicts. The 5th generation capabilities, which are Data-Driven by design, can potentially create a foundation of the information backbone network that will subsequently connect other domains to create and enable MDO C2. Moreover, the crucial 5th generation capabilities cannot be fully exploited without thorough and consistent integration into both national, and subsequently NATO federated mission networks. Thus, for the CAF, the 5th generation system could be the gateway for introducing MDO capabilities and forming the framework for the inevitable digitalization.

The CAF have been actively raising their ambitions in the space domain as well. Although the Czech Republic does not currently possess its own space assets, apart from the experimental satellite VZLUSAT2, its military puts great importance on utilizing space products to enhance operational capabilities. A new Space Capabilities Planning Section was therefore created within the Capabilities Planning Division. Its

initial task is to implement space capabilities into strategic and doctrinal documents and to work closely together with the already functioning Military Intelligence Satellite Center. To maintain an appropriate level of integrity and interoperability with NATO, Czech representatives are deployed at the Space Operations Center in Germany and the newly established Space Center of Excellence in France.

For small militaries, it is believed that combining joint capabilities to create kinetic and non-kinetic effects is a significant boost in combat effectiveness. Understanding the basic principles is fundamental to introducing the MDO into the CAF. Therefore, the CAF Operations Command, while utilizing capabilities of the Simulation and Training Technology Center, has started a series of both virtual and live computer-assisted exercises called *Odolné Česko* (Resilient Czechia). Through the principle of *learning by doing*, the CAF are verifying their operational and tactical readiness to plan and command all its components together for the first time in modern history. In this way, it already collects the necessary knowledge for future advanced digitization, requirements for innovative C2, and the possible integration of 5th generation aircraft and thus creates a basic prerequisite for adoption of the MDO concept.

Need for Continual Modernization, Standardization, and Enhanced Collaboration

In order for the Czech Air Force to thrive on the future battlefield and solidify its position as a dependable NATO partner, it is imperative that we continue to modernize and enhance our combat readiness. We must invest in professional personnel and further adapt our training system, focusing on introducing advanced weapon systems based on innovative technologies. Newly rearmed units and the upgraded C2 system should be built from the outset as interoperable with NATO by design.

The ever-increasing technological sophistication of weapon systems and the complexity of planning processes and TTPs will increasingly require unified and

standardized training within NATO. The Czech Republic is well on its way to introducing 5th generation aircraft resulting in an unprecedented increase of operational capabilities. In this respect, there will be a need for multinational cooperation in all areas of training, from maintenance personnel and cyber specialists to operational pilot training. In the realm of European F-35 users, fostering collaboration is of utmost importance. This can be achieved by actively initiating or joining programs that facilitate the exchange of operational experiences. Additionally, close cooperation in cross-servicing initiatives will prove instrumental in strengthening our collective capabilities. Furthermore, it is crucial to allocate adequate training facilities to ensure the continuous development of our forces. An important chapter will then be forming protected airbases for both own operations and Host Nation Support, but also building the enablers for the eventual execution of coordinated airfield maneuver to ensure the resiliency and survivability of High Value Assets. However, a potential NATO air maneuver will not be

possible without a joint discussion and resolution of the ability to share and flexibly adapt airspace, provide spare parts and maintenance capability, and build and share prepositioned ammunition stocks.

Since its inception, air power, and its ability to gain air superiority and support the operations of ground and other forces has been an essential and an integral element of conducting effective combat operations. The contemporary security situation in the world not only reaffirms this fact, but it also increasingly emphasizes the need for the interdependence of the air domain with other fighting domains. The ability to operate in a coordinated manner across all domains will form the fundamental premise of future warfare concepts. Utilizing these principles, it will be possible, for example, to operate in an adversary's A2/AD environment. Capability advancement and mutual coordination must therefore continue across all types of forces, not just the Air Force, which has the potential to lead the introduction of MDO capabilities into the CAF. ●

ABOUT THE AUTHOR

Major General Petr Čepelka

Commander of the Czech Air Force



Major General Petr Čepelka graduated from a Military Aviation College Košice in Czechoslovakia with a Master's degree in Aircraft and Missile Technology in 1991. He began his flying career as a helicopter pilot at the 11th Helicopter Regiment in Pilsen. He then worked his way up in ranks through several tactical, operation and strategic assignments and concluded his flying career as the 22nd Wing Commander followed by the 22nd Helicopter Air Force Base Commander. Operationally he completed two deployments to Afghanistan culminating with his deployment as the Czech Air Mentoring Team Kabul Deputy Commander in 2010–2011. His staff appointments include,

among others, Head of the Helicopter and Transport Aviation Section, MoD Force Development – Operations Division and Director of the MoD Force Development Division. Major General Čepelka is a graduate of the Air War College, Maxwell AFB, Alabama and Royal College of Defence Studies London and completed courses at NATO Defence College Rome and Defence Academy Sandhurst. On 1 November 2022, he was appointed commander of the Czech Air Force and promoted to the rank of Major General on 8 May 2023. He became the twelfth Air Chief in the modern history of the Czech Air Force and only the second helicopter pilot to assume such a position.