Keynote speech by Lieutenant General Lance K Landrum

Deputy Chair of the NATO Military Committee

Distinguished guests, ladies and gentlemen, good morning.

- Many thanks for the opportunity to join you at this hugely important event. Specifically, I would like to thank EUROCONTROL's Mr Raul Medina (Director General) and ICAO's Padhraic Kelleher (President of ICAO Air Navigation Commission) for hosting such a fine event. Karsten, thank you for the invitation to participate.

- When I was asked to provide the military view, it was clear to me that framing the future of NATO operations requires a look at the challenging time we are living in and at the operations we conduct in the current strategic environment. The Euro-Atlantic area is not at peace. The unprovoked aggression by Russia has radically changed our security environment. It has shown that the threats we face are global and interconnected. It has forced all of us to rapidly react in order to mitigate and counter the spill-overs from the Russian war. Soon after the hostilities commenced, the airspace in and around the area of conflict was closed, creating a huge hole at the heart of Europe's airspace network. But frankly, we would be naive to think that the only drawback of the illegal invasion of Ukraine is the increased congestion of the air space. I invite you to consider the entirety of the threats to the security of the Alliance and Euro-Atlantic area. We could mention the intensive employment of missile, cruise missile, EM, and drones' capabilities and the risk of miscalculation, which could disrupt our freedom of movement and access to the air and space domains, as actually happened. We could think to the cyber and electromagnetic warfare operations, used to degrade the Global Positioning System (GPS) services or to jam SATCOM, which

would severely affect navigation systems and the security of air traffic operations, both civilian and military, as actually happened. This conflict has shown some of the vulnerabilities of our common operating environment that is widening beyond traditional military bounds, with competitions among different actors, new weapons and technologies and new entrants whose employment blurs the clear distinction between peace, crisis, and conflict in the air and space domains.

- In practical terms, to bolster our deterrence the Alliance has responded by employing its defensive tools in a proportionate way to establish a near seamless shield from the Baltic to the Black Sea; and ensuring increased protection of Allies' territory, populations and forces from possible threats, whether coming from deliberate actions or from miscalculation. NATO has further enhanced its posture, in the air, including Air Policing missions that, although currently based toward the East, retain the flexibility to orientate towards any emerging threats with the speed of relevance and a 360 degree perspective. This increased military activity also includes an intensified program of collective defence exercises and training, conducted on a daily basis, sometimes with relatively short notice.

- These efforts clearly show the unity of the Alliance to maintain peace through vigilance and may be considered part of NATO's enduring commitment to preserve the integrity of all Allies' sovereignty in the air domain. Joint Air Power capabilities are and will be employed as a key element to provide the Allies with the agile means to rapidly react to emerging crisis and change posture, demonstrating credibility through appropriate measures, if required.

- In this context, Allies have promptly adapted and prioritized national airspace to meet the demanding military requirements and ensure the access to large suitable

airspace structures, such as Air Policing Areas and ad hoc transit corridors. The newly established areas are also used to synergize the peacetime Vigilance Activities with complex collective daily training and exercises, required by deployed and local assets to “train as you fight” in highly contested scenarios and ensure the interoperability and integration of NATO forces.

- These achievements are the result of close cooperation between NATO, the Allied nations and the Civil Aviation stakeholders. Air traffic coordination and airspace management with Civilian Organizations is a key ongoing task to enable air operations, especially when it comes to the European Airspace, whose limited availability must be carefully managed to satisfy the requirements of growing civil air traffic as well as the need for the larger area required for military operational activity. Furthermore, current air operations have highlighted the increased relevance for Cross Border Operations, required both for the training activity and the fast deployment of NATO forces across Allies’ airspaces. Hence, the need to fully embrace the principles of a flexible use of airspace, leveraging all the possible support that may come from the enhanced cooperation not only with national Civil Aviation Authorities (CAA), but also with the Network Manager (NM) and, as a consequence, with the Air Navigation Service Providers (ANSP).

- With more than 30 years as a military pilot, I fully recognise the value of civil-military cooperation and the need for the flexible use of airspace. We understand that a strong economy increases security. We are in this together (UTTR & NTTR). So, a few examples: 1) the TLP four Large Force Employments (LFEs) in Spain; and 2) the on-going AIR DEFENDER Ex. 2023 in Germany. Germany’s planning and coordination with various national ATC, including EUROCONTROL and some national airlines, has been extensive.

- I applaud all of you for working on collaborative solutions to the complex issues that we face regarding current and future air operations. I recognize that our military needs must be closely coordinated with civil needs and economic realities. However, there is still work ahead.

- Regarding a security and defence view on the future of air and space operations, I would like to mention a handful of considerations.

- First, I would like to discuss new entrants into higher level airspace (above FL600). Second, is the growth of the space launch industry. Third, I want to address the new requirements that military aircraft are placing on airspace. Fourth, we must discuss resilience, which for the military means continuity of operations in degraded environments. And finally, is the need for the military to be an active partner in any airspace modernization efforts. Changes that fail to fully consider military requirements will have unintended costs for everyone.

- As aviation professionals, we are keenly aware of new entrants into Higher-Level Airspace, such as high altitude/high endurance platforms and balloons — which are slow moving—and their antithesis, hypersonic platforms. The range of use, sizes and speeds of these new entrants is vast. In the past, only the military and some scientific platforms were the main actors above 60,000 feet. While all stakeholders would perform their due diligence in deconflicting known traffic, there was much less traffic to avoid. The “Big Sky Theory” was the rule of the day.

- Well, it’s starting to get a bit more crowded up there. The Big Sky Theory – probably never really a good idea -- is out-dated. As more New Entrants take flight, traditional air traffic management methods and systems may not be able to provide the necessary deconfliction. Simply segregating airspace will not be sufficient. While cooperative surveillance is a promising answer, it’s only a partial answer; defence

considerations will need to maintain operational security, which will often prevent military participation in cooperative surveillance.

- Another set of new airspace actors has stoked the world's imagination: commercial space launch. If I simply mention SpaceX, Virgin Galactic, and Blue Origin, your mind is automatically populated with images commercial space-launch vehicles. Space launch has always had an impact on airspace, but in the past, the impacts were limited. You would have the occasional launch from Cape Canaveral, which would disrupt traffic on the east coast of Florida. Now this is happening more often, and with the proliferation of space ports worldwide, it's happening in more places.
- Another impact on the horizon is the need for space recovery locations. Whereas rockets often splash down in the ocean, and the Space Shuttle would land on a runway, we now have companies successfully demonstrating vertical recovery of rockets on landing pads.
- Bringing our sights down from the edge of space, our air-breathing military aircraft are also pushing the boundaries of airspace requirements. The theme of this summit, the Flexible Use of Airspace, is particularly relevant when discussing the requirements of Modern Air Combat Aircraft. These aircraft include not only the F-35, but also the Typhoon, Rafale, Gripen, F-15EX, and others. Simply stated, they require larger swaths of airspace than previous generations of aircraft to train and exercise the full potential of their capabilities - but it's not all training:
- NATO activities in Eastern Europe serve as a warning to our adversaries that we take Deterrence and Defence of the Euro-Atlantic Region very seriously. Those activities also require larger segments of airspace for training, including cross-border airspace. Just as navies have historically made the seas safe for maritime commerce, effective air and missile defence secures the skies for the aviation industry. Thus,

Flexible Use of Airspace is a perfect tool to ensure the security of, and access to, airspace for all users.

- Another headline for advances in military aviation includes the proliferation of remotely piloted aircraft systems.
- Whether or not you agree that the days of a pilot in the cockpit are coming to an end, it is certainly true that remotely piloted aircraft, are a critical and growing capability. The idea of an aircraft without a pilot on-board is unsettling for some people, and these aircraft are often segregated from other air traffic as a result. For high altitude long endurance, RPAs, this segregation is a growing, but less significant problem—they are operating near that higher altitude I spoke of earlier.
- However, for Medium Altitude Long Endurance, or MALE, RPAs, segregation becomes more problematic. Ultimately, we need to get to a point where RPAs are treated as any other piloted aircraft - because they are piloted. Technologies, such as sense and avoid, facilitate integration into airspace, but these aircraft still need to provide the safety case to allow for the required access. What we have seen to date is that RPAs have an equal or lower rate of accidents compared to crewed aircraft.
- While the focus of this summit is the Flexible Use of Airspace, we cannot forget the fact that it is all for nothing if the aviation ecosystem is not resilient. Resilience is something that matters to both civil and military aviation. For security and defence, it means the ability to continue the mission despite a degraded operating environment. While civil aviation rightly avoids flying in degraded and denied environments, those same environments are often where our military aircraft are needed. Modernization of the global aviation system has GPS or other global navigation satellite system (GNSS)-based technologies. This technology is fantastic, but we all know it is also vulnerable, especially in an increasingly congested EMS (Electromagnetic Spectrum)

environment. We must make smart decisions about rationalizing or divesting legacy navigation and surveillance infrastructure.

- For NATO, the North Atlantic Council has affirmed that we will continue to rely on TACAN/DME, Mode 3 Alpha/Charlie, and primary surveillance radar as baseline requirements for NATO air activities. We understand that the goal of aviation modernization is to move past these legacy capabilities, but Allies on both sides of the Atlantic, have determined that some of these modernized navigation and surveillance technologies do not provide the level of operational security and robust resilience needed to execute our military mission in a degraded environment. This brings me to my final point.

- Civil and military cooperation must begin at the earliest point of any discussion about airspace modernization or aircraft equipment requirements. Innovation is transforming aviation; we all know this. Commercial innovation is exploiting emerging and disruptive technologies such as Artificial Intelligence, air taxis, and delivery drones; and air traffic management solutions include AI and new UAS Traffic Management concepts. Automatic Dependent Surveillance Broadcast, or ADS-B, combines GPS and new transponders to provide the most precise aircraft information to air traffic controllers while dramatically reducing spectrum requirements.

- The key to success – which will be measured by the efficient use of airspace for all users, while protecting defence and security needs – is based in communication, coordination, and cooperation. Whether it be through regular engagement with the Allies and International Partners in the NATO Aviation Committee, or through collaborative international events, such as today's – we need to keep speaking with each other, and we need to keep listening.

- The future of aviation has always been exciting. A lot has changed in the three decades that I have been flying. All the same, one thing has not changed: military and civil aviation share the same sky. Flexible Use of Airspace is not just an aspiration—it is essential, and we need it now. The policies, procedures, and technologies that make it possible must be used and enhanced with both civil and military experts sitting at the same table. Commercial aviation is the economic engine that drives many decisions, but military aviation is the guarantor of security so that the airspace is free for civil use.
- Thank you for your attention, and I wish you a productive summit.