

prague  
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BACKGROUND REPORT

# Securing NATO airspace

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# Preface

The purpose of this document is to serve as a brief source of information for the participants of the 28th Prague Student Summit's model NATO. The reader will be introduced to the topic of airspace protection coordination within NATO, the types of aircraft and anti-aircraft weapons utilised by NATO member states,

as well as the subsequent issue of financial investments (and their international coordination) in new technologies. In chapter 9, the reader will be presented with several questions to be raised during the negotiations and is advised to research the position of their respective country on those questions.

## 1 Introduction

One of the general purposes and principles of NATO is to "safeguard the freedom and security of all its members by political and military means. Collective defence is at the heart of the Alliance and creates a spirit of solidarity and cohesion among its members."<sup>1</sup> If one was to consider USAF Col. Phillip Meilinger's belief that air superiority is the single most important factor in deciding the outcome of a modern conventional war,<sup>2</sup> to be also correct, it would render the safeguarding of NATO's airspace an exceptionally important prerequisite for the success of the organisation's purpose.

For the purpose of this document, the 'airspace' of a sovereign country is to be understood as the space owned by the country, defined vertically as being between the surface and the border of outer space, and horizontally by the territory of the respective country,

territorial waters included. This definition is based on the Outer Space Treaty of 1967<sup>3</sup> and especially the Convention on International Civil Aviation.<sup>4</sup>

**„Air superiority is the single most important factor in deciding the outcome of a modern conventional war“**

Article III of the aforementioned Convention distinguishes between civil and state aircraft (e.g. military aircraft). The main difference is that the latter cannot fly over the territory of a sovereign country without the consent of its government. If such a case occurs, the dispute is assessed

by the Council of the ICAO (Chapter XVIII, Article 84).<sup>5</sup> It is also necessary to add that a large part of the air traffic disruptions solved this way arises by accident or due to aircraft malfunction. However, in case of war, the provisions of the Convention cannot affect the freedom of action of any of the contracting countries affected by the war (Chapter XIX, Article 89).<sup>6</sup>

## 2 Airspace application of the collective defence

The principle of collective defence is enshrined in Article 5 of the North Atlantic Treaty. According to this principle, “an armed attack against one of the members is considered an attack against all of them.” Article 6 of the Treaty specifies that an applicable target of such armed

attack is the territory of any NATO member, or even a state aircraft of a NATO member if attacked over the NATO territory.<sup>7</sup>

## 3 NATO air forces integration

Members of NATO do not operate independently in the sky; the NATO Integrated Air and Missile Defence System (NATINAMDS) is an overarching framework of NATO's air defence and is further divided into several components.<sup>8</sup>

One of them is the Allied Air Command (AIRCOM) in Ramstein, Germany, which coordinates all air force operations in Europe.<sup>9</sup>

### 3.1 Air Policing

If an unidentified aircraft is spotted over NATO territory, the **Quick Reaction Alert Interceptor aircraft** (i.e. a designated jet on 24/7 active duty) is launched in order to identify it and escort it to an airbase. Members that do not have the capability to secure their own sky are assisted by NATO's air policing missions. This is the case for several countries in the Western Balkans,<sup>10</sup> Iceland,<sup>11</sup> Benelux,<sup>12</sup> or the Baltics.<sup>13</sup> With the worsening geopolitical situation in eastern Europe, more members might look for this type of assistance.



*An of a quick reaction alert example interceptor aircraft intercepting a Russian jet.<sup>14</sup>*

### 3.2 Command and control Connectivity

To ensure coordination of air policing tasks in peace and air defence missions in war, NATO established the Combined Air Operations Centers in Uedem, Germany and Torrejón, Spain. The Uedem Center is responsible for operations conducted north of the Alps while the Torrejón centre covers the south.

## „The soviet-made minority of NATO aircraft are not compatible with the Link 16 system“

<sup>15</sup>A lynchpin of NATO connectivity is the **Link 16 communication system** (a type of computer network) which ensures the exchange of data, such as text messages or images, between airborne early warning and control systems, jet fighters, and ground bases.<sup>16</sup> However, the soviet-made minority of NATO aircraft are not compatible with the Link 16 system,<sup>17</sup> constituting a possible weakness in NATO coordination. Additionally, as of July 2022, three NATO members continue to operate soviet-made aircraft and are not a part of the Link 16 community.<sup>18</sup>

### 3.3 Air defence exercises conducted by NATO

Exercises are one of the most important peacetime activities organised by NATO, and several countries have hosted them every year since 2014. Overall, their history reaches 70 years back.

Biennially since 2006 (2022 included), an exercise called “Cold Response”<sup>19</sup> takes place in Norway. NATO's air forces participate along with other branches. According to the NATO website, “Cold Response 2022 is a long-planned exercise bringing together thousands of troops from NATO Allies and partners, testing their ability to work together in cold weather conditions across Norway”. Despite the proximity, NATO does not consider this exercise a preparation for possible conflict with the Russian Federation.<sup>20</sup>

On the other hand, the “Atlantic Resolve”<sup>21</sup> exercise started in 2014 as an explicit reaction to Russian activities in Ukraine.

The common thread in most of the exercises is a current, realistic threat (mostly concerning some kind of Russian aggression). Consequently, the exercises are mostly conducted in eastern Europe or countries bordering the Russian Federation.

### 3.4 Ground based air defence weapons

NATO Integrated Air Defense System is an extremely important asset of air defence, which is similarly controlled from Ramstein, Germany. It can be divided into two main branches: anti-missile defence, and anti-aircraft defence.

NATO's anti-missile strategy<sup>22</sup> relies on a series of sensors and interceptors (weapons). At first, satellites detect the heat signature of a missile using infrared sensors and send the data to Ramstein for analysis. After the missile burns its fuel, **it can no longer be detected by infrared sensors** so radars (such as the ground-based AN/TPY-2 and SMART-L systems or the naval AEGIS combat system) come into play. After all calculations are made at the ground bases, the weapon systems are activated. If the missile is still outside the atmosphere, it is possible to destroy it from the AEGIS ships or with the ground-based **THAAD (Terminal High Altitude Area Defense) system**.<sup>23</sup> Otherwise, systems like the Patriot system or the SAMP/T terminate the missile.



*The Patriot system firing a missile.<sup>24</sup>*

**Anti-aircraft weaponry** mostly includes the same systems (the Patriot and SAMP/T), as those are quite versatile. However, gun systems like the German Flakpanzer are also still in use.<sup>25</sup>

It is worth mentioning that NATO bases all of its air defence structures on the so-called “Joint Air Power Strategy”.<sup>26</sup> Therefore, this text also serves as an introduction to the concept of air power.

## 4 Some types of jets and other equipment utilised by the member states of NATO

This section focuses mostly on supersonic aircraft, as those represent the backbone of a modern air fleet. Supersonic aircraft are far more expensive to both research and acquire, which means that smaller militaries might find difficulties procuring them. This can be solved via leasing plans<sup>27</sup> or donations.<sup>28</sup>

### 4.1 Soviet-made types

Still used by some NATO members, specifically Slovakia, Bulgaria and Poland, **MiG-29s**<sup>29</sup> are powerful fighters with air-to-ground attack ability. The lack of compatibility, training transferability and inability of

future modernization means that MiG-29s are likely to be replaced in the future.

Besides aircraft, soviet-made ground-based air defence systems, such as the **S-300**, are still on active duty in some NATO militaries (i.e. Greece and Slovakia —at least until they donated their S-300s to Ukraine<sup>30</sup>). **S-400**, a Russian successor to S-300, was purchased by Türkiye in 2017, causing tension between Türkiye and its NATO allies.<sup>31</sup>

## 4.2 US-made types

The US-made **F-16**<sup>32</sup> has its place in several NATO air forces. The original F-16 had similar capabilities to the MiG-29 but has since received several upgrades. Because of its equipment with the Link 16 system, the F-16 is a popular replacement choice for MiGs in air forces of the members still flying the soviet aircraft.

The newest and the most powerful aircraft in the USAF and other NATO air forces is undeniably the **F-35**. It is versatile, powerful, and wields cutting-edge technologies. It has been described as the “quarterback of the skies” (for its mentioned versatility, access to intel, and ability to achieve air dominance).<sup>33</sup> As of 2022, several North American and European countries are either flying them (the United States, Italy, Denmark,

the Netherlands, Norway, and the United Kingdom) or purchasing them (Belgium, Finland, Poland; possibly the Czech Republic, Greece, Germany, and Canada).<sup>34</sup> Türkiye has been removed from the F-35 programme for its purchase of the S-400 system.<sup>35</sup>

The **Patriot** system is a long-range GBAD system operated by the United States, Germany, Spain, Romania, Sweden, and possibly Poland.<sup>36</sup>

## 4.3 Other notable types

The need of several European countries (the UK, France, West Germany, Italy and Spain) to procure a new fighter in the eighties gave birth to the **Eurofighter Typhoon**. However, this multinational experiment showed that there are weaknesses in the cooperative approach, as well.<sup>37</sup> For example, the participating countries wanted to procure different types of aircraft. This resulted in delays and additional costs.<sup>38</sup> Instead of an estimated 86 million euro, the Eurofighter Typhoon costs 118 million euro per aircraft.<sup>39</sup>

Examples of nationally produced aircraft include the French **Rafale**<sup>40</sup> or the Swedish **Gripen**.<sup>41</sup> The French GBAD system, the **SAMP/T**, is also worth mentioning.<sup>42</sup>

# 5 NATO Procurement system

## 5.1 Principles of NATO Procurement system

NATO itself can only advise its members about their procurement methods. However, it serves as an important actor in the international standardisation of military equipment. For example, NATO adopted a common infantry cartridge in 1954.<sup>43</sup> Any attempt at further standardisation would need a unanimous vote.<sup>44</sup> NATO encourages standardisation, since it results in more interoperability, reduced costs, fewer duplicates, and closer cooperation in research and development.<sup>45</sup>

The decision-making process is conducted by the **Conference of National Armament Directors** and it reports directly to the North Atlantic Council.<sup>46</sup> Its job is to identify the fields of possible research and investment cooperation in order to produce interoperable and standardised equipment. CNAD regularly publishes

a document called the Management Plan containing its priorities.<sup>47</sup>

CNAD is split up between several main groups (having their own Management Plans), based on their field of interest. For instance, the **NATO Air Force Armaments Group** (NAFAG) deals with procurement coordination of air force related projects, with the **Missile Defense Project Group** and the **Ballistic Missile Defense Steering Committee** being closely related to it. In addition to that, we can identify other groups, such as NAAG, NNAG, ASG, LCMG, GNDC, Joint Intelligence Surveillance and Reconnaissance Project Group, and the NATO Industrial Advisory Group.<sup>48</sup>

Within CNAD groups, members create working groups and collaborate on various projects, some of which will be presented in Chapter 6.

When it comes to the practicalities of the procurement process, **NATO Support and Procurement**

**Agency**<sup>49</sup> serves as the middleman between members and suppliers. Its job is to buy equipment cost-effectively and solve the logistics of delivery. During the COVID-19 pandemic, it also helped members with the distribution of medical supplies.<sup>50</sup>

## 5.2 Investment coordination

NATO's budget is funded either indirectly, e.g. when a member bears the costs of an exercise, or directly – based on an agreed cost-share formula, i.e. a small percentage of national defence budgets. The money is then allocated based on a previous agreement between members. Besides running NATO HQ (civil budget), running the command structure (military budget), and other mandatory costs, the budget can be used to fund research. Thus, it can serve as a means of joint funding of a defence project with NATO's political oversight.<sup>51</sup>

Members of NATO agreed that they will spend 2 percent of their national GDP on defence. In addition, they agreed on spending 20 percent of their defence budget on new acquisitions. However, as might be expected, the reality often differs from political pledges.<sup>52</sup>

The establishment of the NATO Innovation Fund has been a big step in investment coordination. As NATO Secretary General Jens Stoltenberg said, "with a 15-year timeframe, the NATO Innovation Fund will help bring to life those nascent technologies that have the power to transform our security in the decades to come, strengthening the Alliance's innovation ecosystem and bolstering the security of our one billion citizens." The fund involves 22 members and 1 billion euros.<sup>53</sup>

## 5.3 Advantages and disadvantages of cooperation

NATO Support and Procurement Agency operates on the assumption that it is more cost-effective to manage procurement NATO-wide. This also applies to logistics and storage. When it comes to research and development cooperation, the sheer number of collaborative projects speaks in favour of the advantageousness of such collaboration. Additionally, cooperation makes existing alliances and partnerships more closely tied.<sup>54</sup> NATO defines interoperability, a product of procurement coordination, to be "the ability for Allies to act together coherently, effectively and efficiently to achieve tactical, operational and strategic objectives".<sup>55</sup>

The lack of interoperability poses a risk to effective cooperation, and steps undertaken by members that result in less interoperability often provoke sanctions and general ostracism by other members.<sup>56</sup>

However, critics (Keith Hayward of WEU ISS, J. Birkler, M. A. Lorell, M. D. Rich of the RAND Corporation – see the sources) point out that it might be more expensive to cooperate than to work alone, and that indeed was the case several times in the past<sup>57</sup> (for instance with the troubled development of the Eurofighter Typhoon).

As mentioned previously, there is no single NATO procurement system, as it would be difficult to achieve politically and bureaucratically.<sup>58</sup> However, ad hoc procurement cooperation is being implemented quite often,<sup>59</sup> despite its opponents claiming that such contracts are inevitably deformed by national industrial interests and bargaining.<sup>60</sup>

# 6 Future of the NATO air forces and air defence

## 6.1 Phasing out the soviet made weapons

The soviet technology is difficult to maintain and incompatible with modern western technologies,

such as the Link 16 system. The countries still flying soviet-made aircraft are focused on replacing them with their western counterparts.<sup>61</sup> And the same goes for ground-based air defence systems.<sup>62</sup>

## 6.2 AWACS replacement

The Airborne Warning And Control System consists of a fleet of Boeing E-3s. Its purpose is to provide early warning to command centres using its radars. However, E-3s are to become obsolete soon.

## 6.3 Modernisation

Several multinational NATO projects that will possibly change the face of air warfare are emerging. The following overview is not an exhaustive list.

The **Modular Ground Based Air Defense (MGBAD)**<sup>63</sup> offers two main advantages over regular GBAD: interoperability and customisation. Based on the Command and Control<sup>64</sup> backbone, it can be customised to any threat or mission.

The **Multi Role Transport Tanker Capability (MRTT-C)**<sup>65</sup> is a plan to acquire a multinationally-owned

fleet of air-to-air refuelling tanker aeroplanes, also capable of transporting troops or cargo.

The **Next Generation Rotorcraft (NGRC)**<sup>66</sup> project strives to design a helicopter for the future. As of now, NATO helicopters are often based on designs from the sixties. The plan is to introduce the new helicopters by the year 2035-40 which should benefit from advancements in electric and hybrid propulsion technologies.<sup>67</sup>

The **Air Battle Decisive Munitions (ABDM)**<sup>68</sup> is another acquisition project via which members procure all utilised types of air battle ammunition. A parallel project exists for the infantry (Land - LBDM) and the navy (Maritime - MBDM).

The **Rapidly Deployable Mobile Counter Rockets, Artillery and Mortar (C-RAM)**<sup>69</sup> programme attempts to produce and procure effective protection against rockets, artillery, and mortar before they hit the ground.

# 7 Conclusion

In the intensified geopolitical situation on its eastern flank, NATO might use new radars and GBAD systems stationed on the territory of its eastern members. But how willing are they to allow it? Most importantly, many members are raising the question of procurement – but what should be procured? From

whom should NATO buy? For how much? And what should be done with the old equipment? Or, should NATO pursue a different path altogether, like more air policing? NATO members will have to find answers to these questions sooner or later; preferably the former.

## 8 Questions for negotiations

- I. Is your country a part of any group conducting military research related to the topic of air defence?
- II. Is your country a part of the NATO Innovation Fund?
- III. What aircraft does your country fly, produce, and plan to procure?
- IV. Is there a GBAD/satellite system stationed in your country?
- V. If not, is your country interested in hosting a GBAD or satellite system?
- VI. Does your country operate soviet-made equipment?
- VII. If yes, is your country planning to replace this equipment?
- VIII. How much is your country willing to spend on the modernisation of its air forces?

## 9 Recommended further reading

1. The official NATO website:  
<https://www.nato.int/>
2. An interesting video about anti-missile defence:  
<https://www.youtube.com/watch?v=3LPdmxnBkIU>
3. A website focused on military technology:  
<https://www.army-technology.com/>
4. A monograph dealing with coordinating weapon procurement on European scale:  
[www.iss.europa.eu/sites/default/files/EUISSFiles/cpo27e.pdf](http://www.iss.europa.eu/sites/default/files/EUISSFiles/cpo27e.pdf)
5. Websites of some aircraft producers:  
<https://www.lockheedmartin.com/>  
<https://www.saab.com/products/gripen-e-series>  
<https://www.dassault-aviation.com/en/defense/rafale/introduction/>

## Pražský studentský summit

Pražský studentský summit je unikátní vzdělávací projekt existující od roku 1995. Každoročně vzdělává přes 300 studentů středních i vysokých škol o současných globálních tématech, a to především prostřednictvím simulace jednání čtyř klíčových mezinárodních organizací – OSN, NATO, EU a G20.

## Asociace pro mezinárodní otázky

AMO je nevládní nezisková organizace založená v roce 1997 za účelem výzkumu a vzdělávání v oblasti mezinárodních vztahů. Tento přední český zahraničně politický think-tank není spjat s žádnou politickou stranou ani ideologií. Svou činností podporuje aktivní přístup k zahraniční politice, poskytuje nestrannou analýzu mezinárodního dění a otevírá prostor k fundované diskusi.

## Pavel Tichý

Autor je spolupracovníkem Asociace pro mezinárodní otázky a členem přípravného týmu Pražského studentského summitu.

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