

AIR AND MISSILE DEFENCE SYSTEM OF THE REPUBLIC OF POLAND

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Abstract

The article deals with the key aspects of the air and air missile programs as the consequence of the evolving security environment, which prompted major international actors to initiate appropriate actions aimed at assuring effective defence against ballistic missile threat. The author focuses on three key programs. First one – the United States defence missile program, perceived as a vital element of the state security strategy. Second one – the NATO ballistic missile defence which main purpose is to develop a capability needed to protect Allied forces engaged in out-of-area operations against short and medium range ballistic missiles. Third one - the Polish air and missile defence endeavors seen from the role of the Polish military industry in the development of „the Shield of Poland”, as the national and ambitious program. Finally, the National Defence University and other military research institutions contribution to development of the Polish Air and Missile Defence System is considered.

Key words: security threats, capabilities, air and missile defence, NATO, United States, Poland

Introduction

Ballistic missiles have become means of power projection in a regional and strategic context enabling countries to launch surprising attacks from a distance. Missile technology is available nowadays to a number of state actors hostile to Western democracies, but the threat may become even more serious if such

technologies fall into the hands of non-state, radical organisations. Nowadays, more than thirty countries possess ballistic missiles, which may be used to carry not only conventional warheads, but also warheads containing weapons of mass destruction. Sophisticated ballistic missile technologies available to Iran and North Korea increase the lethality and effectiveness of missile attacks and allow more accurate attacks against targets over longer distances. The evolving security environment prompted major international actors to initiate appropriate actions aimed at assuring effective defence against ballistic missile threat. NATO launched a ballistic missile defence feasibility study in 2002 to examine options for protecting Alliance forces territory and populations against the full range of ballistic missile threats. At the NATO Summit in Chicago in May 2012, after nearly a decade of vigorous efforts, the Alliance was able to declare an Interim Capability in ballistic missile defence, and new steps are now being taken to expand the protection of NATO European populations and territory against the full range of ballistic missile attacks. The decision by the US Government to adopt a phased, adaptive approach for missile defence in Europe gave a new impetus to the Alliance efforts for creation of upper layer and territorial missile defence capability. Poland has firmly declared its commitment and willingness to contribute to NATO ballistic missile defence by modernizing its air and missile defence system and allowing basing of the US missile defence components on its territory.

The concept of acquiring limited ballistic missile defence capabilities as a part of the national air defence system modernisation has resulted from a deliberate assessment of security environment and future operational requirements. Concerned with the security of the territory of the Republic of Poland, safety of its citizens and most important facilities, the political authorities found it essential for the existing anti-aircraft system to be rearranged and the anti-ballistic missile defence system to be created from the ground up. Another factor that was present in the considerations related to a future air and missile defence system was the status and operational capabilities of existing air defence assets. The realisation that combat (operational) value of the present air defence system as a whole decreases steadily and the consequent retirement of the outdated air defence surface to air missile sets is imminent, produced tangible political and legal results.

Diagnosis of the operational capabilities, including that of the Air Defence system of the Republic of Poland was present in both Strategic Defence Reviews

of 2006 and 2011, and was taken into consideration in the final report of the National Security Strategic Review in 2012. Additionally, the NATO Lisbon and Chicago summits commitments constituted exceptionally strong premises for Poland to undertake adequate actions in that regard. It is worth noticing that concrete outcomes related to missile defence capabilities became clearly visible relatively quickly. The missile defence was named one of top priorities for the force modernisation between 2012 and 2022. The presidential bill on the missile defence of the Republic of Poland was put to the vote of the Polish Parliament and passed recently. The law provides a stable financing mechanism necessary for a long-term modernization of national air and missile air defence system.

With adaption of the new law, an efficient and financially viable realization of the air defence system modernization will allow the Armed Forces of the Republic of Poland to obtain a qualitative capability, which they do not possess presently. Ballistic missile capability will be indispensable to ensure a proper level of national security and also will allow force protection needed for effective engagement in crisis response situation outside the country. Evolving threats related to the proliferation of the WMD and missile technology make Poland's actions aimed at obtaining limited ballistic missile capability well reasoned and fully justified.

To better understand Poland's philosophy that underpins ongoing efforts to modernize its air and missile defence system, one needs to examine more closely related US and NATO ballistic missile defence programs. While US missile defence programs deal with all types of ballistic missile threats worldwide, the US Government works closely with European Allies to ensure seamless integration of American and NATO missile defence capabilities. The Phased Adaptive Approach for Missile Defence in Europe makes US efforts intertwined with NATO Ballistic Missile Defence, with harmonisation of tasks, capabilities and a common timing. As Poland recognises its membership to the NATO and its bilateral strategic partnership with the US as a cornerstone of its national security, it tries to make sure that national efforts undertaken to achieve major operational capabilities are in concert with respective Allied efforts, including the US.

US missile defence programme

The European and Polish connection to the US ballistic missile defence is a result of American pledge to protect its Allies and friends. The US missile defence system from its beginning has been perceived as a vital element of the state security strategy. The first stage of the system development, as well as the present one, are confirmation of that thesis. Effective functionality of the US ballistic missile defence system would ensure not only realization of defensive functions, but also a deterrence function. Thus, it will discourage the rogue states from developing their offensive missile potential. Presently, American system, known as “Ballistic Missile Defense” ensures the security not only of the territory of the United States, but also of its European and Asian allies, by assuring defence against ballistic missile attacks from unstable states.¹

Respective elements of the US ballistic missile defence system are assessed as being at various levels of technological maturity and operational capabilities. The concerns of military experts are especially related to the elements of the engagement segment of the system, designed to intercept a ballistic missile in the early stages of its flight. Destroying an enemy missile in the initial phase of flight is considered as the most favourable for the defending party, as it cannot be ruled out that the missile carries a warhead with a WMD. Thus, it seems legitimate to assess that a hostile state launching a ballistic missile intends to cause as many casualties and damages as possible and would therefore employ a nuclear, biological or chemical warhead. Taking into consideration possible effect of intercepting such a missile (destroying it in the air, and in consequences, unleashing the danger it carries), the safest solution is to do it over the adversary territory.

The US missile defence system has significant international dimension and importance. The architecture of the system is formed by elements deployed not only in the United States, but also on the territory of some European countries like the United Kingdom, Denmark and in close prospect – in Poland and perhaps in Romania. Moreover, the United States cooperate closely with other states all

¹ *The Threat*, Missile Defense Agency, U.S. Department of Defense, available from: <http://www.mda.mil/system/threat.html>, Accessed on 02 March 2013.

over the world² upon some components of the missile defence system, especially concerning naval and land-based ones. Preliminary American plans for ballistic missile defence called for deployment on the Polish territory of the Ground Based Interceptor designed to destroy even long range ballistic missiles. However; later on, after the President Obama's administration changed its approach to missile defence, it is fair to assess that possible future US ground components in Europe may be different from the previously envisioned system of intercepting missiles. Even so, the Phased Adaptive Approach for Missile Defence in Europe will ensure that a long-term integration of the US and NATO efforts in the field of ballistic missile defence, reflects in close consultations and cooperation between Allies, to include Poland.

The current project of the US segment of the NATO missile defence encompasses four phases that allow for a more flexible, capable and cost-effective architecture in the future. The stage one encompassed the deployment of current and proven maritime and ground-based missile defence systems to Europe to address regional ballistic missile threats to Europe and American deployed personnel and their families. Second phase of the Phased Adaptive Approach for Missile Defence in Europe is expected in the 2015 timeframe and will include deployment of more capable versions of interceptors along with more capable sensors to improve the protection against short and medium range missile threats. During phase three, expected to take place around 2018, new generation of interceptors (currently under development) will be deployed to Europe to counter possible threat of short, medium and intermediate range ballistic missiles. Ultimately, the phase four activities in the 2020 timeframe, will field improved new generation of interceptors that are capable of addressing not only previously mentioned missile threats, but also the potential future intercontinental ballistic missile threat to the United States.³

For obvious reasons, Poland has been particularly interested in completion of the third and fourth phase of the US European Phased Adaptive Approach. The

² Japan and South Korea are enumerated among the states which are most closely cooperating on missile defence with the US.

³ *The Phased Adaptive Approach for Missile Defense in Europe, Fact Sheet*, Missile Defense Agency, 15 January 2013, available from: <http://www.mda.mil/global/documents/pdf/paa.pdf>, accessed on: 02 March 2013.

issue of deployment on Poland's territory a modified naval system of interceptor missiles as a land based system is undergoing thorough analyses because of related operational, economical and political considerations. Potential advantages of deploying such system in Poland, are being judged from a wider perspective that takes into consideration also possible indirect benefits for Poland and the NATO. Thus, deliberate assessments and consultations are considered as an effective tool to avoid accusations and overly critical opinions on the deployment of the US air and missile defence elements in the Republic of Poland. Having said that, the links between the US ballistic missile defence, particularly its European Phased Adaptive Approach part, and the modernization efforts of Poland's air and missile defence systems are clearly visible and understandable.

NATO Ballistic Missile Defence

The ballistic missile threat was recognised by the NATO more than two decades ago. The Strategic concept of the North Atlantic Treaty Organization, accepted during the Summit in Washington in 1999, called for defence potential to face threats related to proliferation of the WMD. It was recognised, as Peter Flory puts it, that the Alliance needed to create "*a balanced mix of forces, response capabilities and strengthened defenses*". Therefore, it was not a surprise that during the Prague Summit the leaders of the allied states made a decision on an analysis increasing capability of air defence, armed forces and management centres. A study conducted on NATO air defence feasibility was the result of that decision.

NATO ballistic missile ambitions were institutionalised in 2005, when the Active Layered Theatre Ballistic Missile Defence (ALTBMD) programme was established. Its main purpose was to develop a capability needed to protect Allied forces engaged in out-of-area operations against short and medium range ballistic missiles⁴. The level of ambitions rose up at the November 2010 Lisbon Summit, when the agreement was reached by the heads of NATO states and governments

⁴ *Media Fact Sheet NATO Active Layered Theatre Ballistic Missile Defence (ALTBMD)*, NATO Public Diplomacy Division, Brussels September 2011.

to provide the missile defence for NATO European populations and territory against the full range of ballistic missile attacks. Alliance concept of ballistic missile defence calls for layered weapon systems, including sensors and effectors, for high and low-altitude defences against ballistic missiles. National surveillance and engagement capabilities are to be integrated with NATO communications, command and control and battle management software.⁵

Similarly to the US solutions, NATO Ballistic Missile Defence is designed to evolve over time. The ballistic missile coverage will gradually expand and extend with the ultimate goal to provide protection for all European populations, territory and forces. The Interim BMD capability has been declared on 27 January 2011, and the elements of the US European Phased Adaptive Approach constituted the primary assets available to the NATO ballistic missile defence system. Initial Operational Capability of the NATO Ballistic Missile Defence is expected at the end of 2014, when a more capable lower layer of C2 system will be deployed, full integration of air and missile defence systems will be achieved and links to assets of the US European Phased Adaptive Approach will be strengthened⁶. The Full Operational Capability of Allied Ballistic Missile Defence is expected before the end of the current decade. NATO Ballistic Missile Defence is more than just interceptors and sensors. The command and control system of missile defence will enable five key functions that are crucial to the protection of NATO populations, territory and deployed forces: planning, monitoring, information sharing, interception and consequence management. The development of missile defence capability by NATO is focused on two distinctive, but mutually reinforcing, objectives. The theatre missile defence segment of ballistic missile is intended for protection of Allied forces during out-of-area operations. The defence for NATO's European populations territory and forces will be provided by a territorial segment of the ballistic missile defence programme. As the threat of ballistic missile is common not only for the NATO members but also other countries in Europe, the Alliance invited Russia during the Summit in Lisbon to cooperate with NATO on missile defence. Although Russia's President agreed on this goal, the progress on NATO-Russia cooperation is regrettably slow. Nevertheless, NATO strongly believes

5 *NATO Ballistic Missile Defence (BMD)*, NATO Public Diplomacy Division, Brussels October 2012.

6 *Ibidem*.

as it was expressed in September 2012 by the NATO Deputy Secretary General that cooperation between NATO and Russia to defend against a common missile threat through linked sensors, sharing early warning information and coordinating interceptions, would benefit both sides.⁷

The unique feature of the NATO Ballistic Missile Defence program is the division of responsibilities between member states and the Alliance. Member states provide sensor and engagement systems for the missile defence, while NATO itself integrates those national assets using allied communication and command and control systems. Another form of national contributions to the ballistic missile defence is host nation support to the allied and national missile defence assets. Poland, along with Romania, Turkey and Spain decided to host US missile defence assets needed for NATO ballistic missile defence. Germany hosts command and control facilities for the missile defence system. Pooling resources from all member states allow covering the costs of the missile defence programme. Ongoing efforts to develop alliance missile defence capability provide an example of Allies commitment to adapting to new and emerging security environment. As such they prove that the idea of Smart Defence is alive and brings tangible effects in delivering a capability that single member states would not afford to acquire on their own. Taking that into account, one can see that the Polish air and missile defence system modernization efforts fit well into comprehensive actions undertaken by NATO to create the theatre and territorial segments of Allied Ballistic Missile Defence system.

Polish Air and Missile Defence programmes

The Plan for Technical Modernisation of the Armed Forces 2013–2022 accepted by the Government of Poland includes specific goals related to air and missile defence systems. Six batteries of new generation WISŁA medium range surface to air missiles with ballistic missile defence capability are planned to be

7 NATO's Vision for missile cooperation with Russia. Address by Ambassador Alexander Vershbow, Deputy Secretary General of NATO to the Moscow Missile Defence Conference, 3 May 2012, available from: http://www.nato.int/cps/en/SID-AE868370-664A519A/natolive/opinions_86832.htm?selectedLocale=en, accessed on 10 March 2013.

acquired by Poland's Armed Forces prior to 2022. Beside that, the acquisition of 11 batteries of new generation short range NAREW surface to air missiles is planned. Modernisation plan for air defence calls also for procurement of 77 mobile VSHORAD POPRAD systems, 400 man-portable air defence systems (PIORUN) and six batteries of hybrid artillery and missile PILICA systems. The modernization plans include also procurement of deployable radars (19 BYSTRA radars and 8 SOŁA radars).⁸

Presidential initiative to boost the development of missile defence component within the air defence systems relates closely to the governmental modernization plan. According to the proposal made by the Presidential National Security Bureau, a prospective Air Defence of the Republic of Poland should encompass two mutually reinforcing elements: air (anti-aircraft) and anti-ballistic defence. Effective functionality of the mentioned elements requires first of all an ability to destroy a broad spectrum of air-breathing and ballistic threats, including cruise and ballistic missiles of short and medium range. It is therefore necessary to field land-based capability which would intercept mentioned ballistic missiles in the range of at least 100 kilometres away of defended objects. What is more, such medium range air and missile defence systems should possess considerable mobility and significant operational independence. An air and missile defence system, which would be able to fight both aforementioned (conventional and ballistic) threats with the same or at least similar effectiveness, seems to be an optimal solution. Among such systems one can list: the American Patriot, the French-Italian-American MEADS, the Russian S-300W, or the French-Italian SAMP/T. All the mentioned systems can theoretically fight against ballistic missiles in the final stage of their flight. Yet achieving the desirable multifunctional character of missile system is not an easy task, what is well known to the constructors of the Aster system. The obvious difference between presidential initiative for missile defence and governmental plans for modernization of air defence relates to the timeframes. The Presidential National Security Bureau proposes one year delay in fielding missile defence capabilities. The missile defence project has been proposed to start in 2014 and conclude in 2023 with the capability fielded.

⁸ *Plan modernizacji technicznej Sił Zbrojnych w latach 2013–2022*, Ministerstwo Obrony Narodowej, Warszawa 2012, available from: http://www.mon.gov.pl/pliki/File/Modernizacja_techniczna/program_uzbrojenia_8032013.pdf, accessed on 10 March 2013.

The capability will be achieved throughout phased acquisition of air and missile defence. Missile defence capabilities will gradually increase as modules (batteries) of medium range SAM systems are fielded and reach initial operational and then full operational capability.⁹ The Presidential National Security Bureau prepared a proposal of legislation to assure stable funding of missile defence project. The project was voted by the Parliament and approved.

The modernization of Poland's Air Defence System has also a significant industrial dimension. Multiyear research, development and production of sensors, shooters and command and control elements for air and missile defence attract attention of defence industry across Europe and beyond. Because transfer of modern technologies to Poland's defence industry is one of the requirements, proposals from foreign partners include notions of close cooperation. The best known industrial proposal for air and missile system is the project proposed by the Polish military industry group BUMAR under the name "the Shield of Poland". The project intends to integrate elements of air and missile defence, creating a complex, layered system of air defence against current and future air and missile threats. Three layers of VSHORAD, SHORAD and MRAD are expected to form a highly effective adaptive air and missile system, that will be fully interoperable with NATO Integrated Air Defence System and NATO Integrated Air and Missile Defence System in the future (NATI AMDS)¹⁰.

In the light of the aforementioned circumstances, a question on the role of the Polish military industry in "the Shield of Poland" programme emerges naturally. There are no doubts that it is a great opportunity for our enterprises producing air defence hardware, yet can they realise such an ambitious project single-handedly? Results of the study on feasibility, which constituted an outcome of research projects upon the future air and missile defence system, suggest that up to 60% of the components of the entire system can be delivered by the Polish military industry itself. The other 40% has to be developed with international

⁹ S. Koziej, *Obrona przeciwrakietowa w ramach obrony powietrznej RP (przesłanki i założenia koncepcji)*, Biuro Bezpieczeństwa Narodowego, Warszawa, październik 2012, available from: http://www.bbn.gov.pl/portals/pl/2/4186/Koncepcja_obrony_przeciwrakietowej.html, accessed on 10 March 2013.

¹⁰ *Tarcza Polski*, Bumar Elektronika, available from: <http://www.bumar.com/elektronika/o-firmie/projekty-strategiczne/tarcza-polski/>, accessed on 10 March 2013.

cooperation. However, it seems that despite the achievements of our military industry such assessment is a bit too optimistic. In this context, it is desirable to create international consortia, which would include Polish enterprises. The pressure of time naturally forces Poland to make use of the existing and useful achievements, outputs and experiences, what in consequence would lead to save some of the precious time during developing and implementing modern system solutions of air defence.

The National Defence University and other military research institutions contribution to the development of the Polish Air and Missile Defence System

All military universities, research and academic institutions, which could make a contribution, should be engaged into the developments of the Polish Air and Missile Defence System. The US ballistic missile defence system as well as systems of other NATO allies are subjects of the academic research conducted in the National Defence University. It should be underlined that such research projects have taken place at our University since the nineties of the last century. In that period, research projects have focused mainly on the developments of the American ballistic missile defence system. NDU academic instructors took part in numerous meetings organised by the US Missile Defense Agency and by the Polish Ministry of National Defence.

Air and missile defence issues are complex ones. They demand multidisciplinary approach, more academic attention and further researches. Since the significance of the US, NATO and Polish air defence systems to the national and international security is enormous, the potential for international and multidisciplinary research cooperation is enormous. The Contribution of the National Defence University to such research project may relate analyses of operational employment of air and missile defence systems, operational scenarios and command and control requirements. The Military University of Technology in Warsaw possesses significant scientific potential which can be exploited in technology research projects and implementation of the national system of air defence. In this case it may relate to the employment of the most up-to-date air and missile defence

technologies and developing unique technical solutions. Academic and research institutions proved to be reliable partners of industrial partners in a number of multidisciplinary research and development projects. Finally, academic freedom of discussion allowed open and honest exchange of opinions between various air and missile defence stakeholders during numerous workshops, seminars and conferences. The interconnectivity between NATO, US and Polish efforts on missile defence will surely effect in an increased scientific and academic cooperation in the field of operational art, technology and training.

Conclusions

Discussion of the concepts, plans and actions related to Poland's Air Defence System needs to take into account a broad spectrum of factors, circumstances and consequences. Modernisation efforts that have been undertaken by Poland to modernise its air defence system and acquire a limited ballistic missile capability should be viewed as a part of Allied actions aimed at protection of NATO populations, territory and forces against the threat of ballistic missile attacks. Technical modernisation plans adopted by the government call for the acquisition of medium range air defence surface to air missile systems that will be able to intercept tactical ballistic missiles in the timeframe of 2022. The development and fielding of missile defence capability will require international military and industrial cooperation. While it is a challenging endeavour, it offers a strategic opportunity to improve allied cooperation within NATO concept of smart defence and reinforce bilateral cooperation between Poland and the US. Modernisation of Poland's air defence system offers a unique opportunity for domestic defence industry to increase its competitiveness and technology transfers. It enables also Poland's academic and research institutions to increase research cooperation with foreign partners and engage in multidisciplinary research and development projects with industrial partners. As challenging and demanding may be the modernisation of Poland's Air Defence System, so unique and promising are the prospects of development of military capabilities, industrial potential and research activities related to missile defence in Poland.