The Deployment of missile defense systems and its implications for European Security and Nuclear Disarmament

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[Editor's note: The article was slightly edited to improve readability. Although the data included here might be somewhat dated, the analysis and conclusions therefrom remain highly relevant.]

After the 9/11 attacks in the U.S., a "Global Missile Defense" became the centerpiece of the Bush administration's policy to protect not only the United States, but also its allies, forward deployed US forces, and friendly countries against long-range missiles. For Europe, the original idea was to place an interceptor site with 10 two-stage ground-based interceptors (GBI) in Poland, and a fixed, potent, "European Midcourse Radar" in the Czech Republic. This configuration was mainly designed to intercept Iranian missiles heading to the US, but it became apparent that these interceptors could also shoot down Russian ICBMs under certain conditions. However, the system could not cover some parts of Southern Europe. President Putin of Russia criticized these plans at the Munich Security conference in 2007, arguing that this would lead to "an inevitable arms race." On September 17, 2009, the newly elected U.S. President Obama announced the cancellation of the Bush deployment plan in Europe, replacing it with a more mobile and flexible architecture that would protect the whole of Europe, especially, against Iranian ballistic missiles. It was named the "European Phased Adaptive Approach" (EPAA) plan, and called for the deployment of the US Navy's Standard Missile SM-3 interceptors on board Aegis ships and, later, on two land-based "Aegis Ashore" sites in Rumania and Poland, respectively, that would be designated for the EPAA system. This regional architecture for ballistic missile defense (BMD) includes a land-based radar in Turkey, and an evolving Command and Control (C2) network, also known as the NATO's ALTBMD system. Then, Prime Minister Putin and the Russian President Dmitry Medvedev welcomed President Obama's decision. Anders Fogh Rasmussen, stated in his first speech as the new Secretary General of NATO that the Alliance would "explore the potential of linking US, NATO, and Russian missile defense systems at an appropriate time." But the US decision increasingly caused frustration to the Polish and Czech governments. By the end of 2009, the subject of missile defense impeded any further talks on a follow on Strategic Arms Reduction Treaty (START).

In February 2010, the US Department of Defense (DoD) released a Ballistic Missile Defense Review Report. This first ever comprehensive BMD review mandated by the US Congress (DoD, 2010) outlines the official US BMD strategy, policy and future program planning. In his foreword, the then Secretary of Defense, Robert Gates, declined the two main missions of the US missile defense policy under President Obama. The top priority was to defend "against near term regional threats," and "to defend the homeland against attack by a small number of long-range ballistic missiles" (DoD. 2010, p.i). Regarding long-range threat, the

report named North Korea and Iran (DoD. 2010, p.ii). The main focus of the report was clearly on the growing regional threats "from short-range, medium-range, and intermediate-range ballistic missiles with acronyms SRBM, MRBM, and IRBM, respectively, in regions where the United States deploys forces and maintains security relationships" (DoD. 2010, p.iii).

The Basis of the EPAA: American or European?

EPAA, as mentioned earlier, originally consisted of four phases, sequenced to provide increasing protection against ballistic missile threats (O`Rourke, 2016, p.6). The Phase 1 started with the deployment of a Patriot tactical BMD system, and four Aegis BMD ships in the Mediterranean by the end of 2011. Phase 2 involved the construction in 2015 of an "Aegis Ashore" site in Deveselu Air Base, Rumania, with SM-3 Block IB interceptors. The site was operationally activated on May 12, 2016. In Phase three, the plan called for the building of another Aegis Ashore site in Redzikowo, Poland in the 2018 mainframe, with new SM-3 Block IIA interceptors. The faster SM-3 Block IIA interceptor has a higher seeker sensitivity and a better divert capability compared with the slower SM-3 IB interceptor. Its initial deployment was planned by the end of 2018 (Lewis, 2016d).

If the Aegis BMD ships are deployed near the Eastern US coast, they could have significant defense capabilities against Russian ICBMs (Butt & Postol, 2011). However, such a relocation of Aegis ships would require a few days, but could not be achieved clandestinely, given Russia's additional warnings. The fourth phase, which was originally planned for 2020, would have deployed faster SM-3 Block IIB interceptors with an anti-ICBM mission to defend the US against Iranian ICBMs, but was cancelled in 2013 due to technical problems and a slower evolution of the Iranian threat. A GAO study from 2013 stated that "the original impetus came from comparing policy alternatives, not from technical analysis" (Grego, Lewis & Wright, 2016, p.17).

Phase	Date	Systems	Deployment Area (Aegis)	Targeted Threat
I	2011	Patriot, four Aegis Cruisers based in Rota/Spain Aegis SM-3 Block IA	Mediterranean Sea	SRBM / MRBM
II	2015	+ Aegis SM-3 Block IB	Land-based in Poland, Mediterranean Sea	SRBM / MRBM
III	2018	+ Aegis SM-3 Block IIA	Land-based in Romania, Poland	SRBM / MRBM / IRBM /
IV*	2020	+ Aegis SM-3 Block IIB	Possibly only two Aegis Ashore site in Poland and Romania	SRBM / MRBM / IRBM / ICBM

Table 4: Planned deployment phases for the future NATO BMD (Neuneck et al, 2015, p.178)
* Phase IV was cancelled in March 2013.

This would have created an extra layer to defend the US homeland.

Defense System (NIAMDS), which protects the Alliance territory, population and armed forces against air and missile threats. From a purely military point of view, Russia sees this as an emerging military threat.

The unsuccessful strive for NATO-Russia Cooperation

At the Lisbon Summit in November 2010, NATO decided officially "to develop a missile defense capability to protect all NATO European populations, territory and forces," adding a new core mission for the Alliance. Although Russia was invited to participate in BMD within the NATO-Russia Council framework, but NATO worked continuously to build up its BMD infrastructure. Different proposals for a joint BMD architecture were made. For example, Russia proposed a plan for shared responsibilities for BMD for different geographical sectors. The so-called sectoral approach meant that each party (either NATO, or Russia) would have been responsible for providing BMD to a specific area. Under this plan, Russia would also have been responsible for the Baltic States (Makarov. 2012, pp.11-23). The key issues here are that Early Warning cannot be divided into different sectors and that both sides would be dependent on each other without having a clearly defined threat assessment. NATO also proposed establishing a joint Missile Defense Data Fusion Centre, and a Planning Operations Centre. The independent EASI project, which was sponsored by the non-governmental organization called the Nuclear Threat Initiative, included both Russian and American experts, who worked out a compromise. It envisioned two separates, but coordinated BMD systems (Dvorkin, 2015, p.132). Two elements were proposed as follows. (1) Independent ship-based interceptors from NATO-Russia and, (2) two BMD centers for Early Warning and Coordination, respectively. One center would be for Satellite and Radar Data Integration Center, and the other would be a BMD Planning and Opera-

Date	Key decisions
19.-20. November 2010	The NATO Summit in Lisbon decided that ballistic missile defense is a European project and approved EPAA.
21. May 2012	At the NATO Summit in Chicago, NATO Secretary General announced that the first elements of NATO BMD are operational ("Interim Capability")
22. December 2013	The new Aegis Ashore Test Facility at the Pacific Missile Test Range is declared operational
31. January 2014	The first of four Aegis destroyers, the USS Donald Cook, leaves Norfolk for the Spanish Harbor Rota
14. March 2014	The Aegis destroyer, the USS Donald Cook, leaves Rota for its first mission
12. May 2016	The first EPAA Aegis Ashore at the Deveselu Air Base, Romania, with SM-3 IB interceptors, was declared as operational.

Table 5: The development of NATO's Ballistic Missile Defense plans (Neuneck 2015, 178)

tions Center, that was to be staffed by both Russian and NATO officers, would have been responsible for the coordination of both the early warning and the defense. The patrol area was geographically restricted: Russian ships would have been deployed in the Baltic Sea, the Barents Sea, the Black Sea and in the Norwegian Sea (EASI, 2012). NATO and Russia also held several joint computer assisted exercises on tactical missile defense, between 2003 and 2008 to develop a common understanding and practices for a future Joint BMD Centre. Despite great efforts from scientists, military experts, and civil society, a common understanding for robust cooperation did not materialize. The obstacles to an enduring BMD cooperation were due to an inability to agree on the missile threat, different views on the geographical and operational responsibilities to defend specific zones and mistrust over the future development of the European BM defense, in combination with NATO being unwilling to give legally binding guarantees that the EPAA would not be directed in the future against Russia's Strategic Forces (Dvorkin, 2015, p.121). With the annexation of Crimea and the unresolved conflict over the Eastern Ukraine, any talks on joint BMD efforts came to a halt. On November 23, 2011, as a possible military reaction against NATO's BMD deployment, Russian President Medvedev announced a set of countermeasures, such as activating an early warning radar in Kaliningrad, deploying offensive capabilities (Iskander SRBMs), or withdrawing from the New START Treaty, for example.

NATO´s inflexibility

At the NATO summit in Chicago in May 2012, the Alliance declared an "interim missile defense capability" and NATO defense ministers approved an action plan for the next steps towards an Alliance wide BMD capability. The May 2012 NATO Deterrence and Defense Posture Review also emphasized that "Missile defense can complement the role of nuclear weapons in deterrence; it cannot substitute for them." No details or any operational rationale were worked out. In early May 2012, during an international BMD conference in Moscow, senior Russian officials specified their concerns. At the conference, Russian officials claimed that interceptor speeds higher than 5.5 km/sec and sea-based interceptors higher than 4.5 km/sec would be able to intercept Russian strategic missiles (Zadra, 2014, p.53). First, the Russian military saw an inextricable link between strategic defenses and offenses. The new NATO BMD structure was perceived by the Kremlin as the basis of a strategic defense system, which would undermine Russia's strategic nuclear deterrent. For a long time, strategists have argued that the deployment of defenses by one side would reduce the effectiveness of the other side's second strike weapons. This perception directly touches the debate on a follow on New Strategic Arms Reduction Treaty. The Russian military sees the US BMD architecture as "global". Furthermore, Russia claims that other emerging US capabilities, such as conventional, precision guided strategic missiles (Prompt Global Strike) and space dominance, would undermine Russia's strategic deterrent.

In September 2014, at the NATO summit in Wales, the Alliance repeated in its statement that "Missile defence can complement the role of nuclear weapons in deterrence; it cannot substitute for them", without explaining the operational relationship of both concepts by specifying what "appropriate" means (NATO, 2014, Nr. 49 & 52). The 28 leaders also commented: "Should international efforts reduce the threats posed by BM proliferation, NATO missile defence can and will adapt accordingly" (NATO, 2014, Nr. 55). In May 2016, NATO Secretary General Jens Stoltenberg reiterated that "our missile defense programme represents a long-term investment against a long-term threat. Our goal is to achieve full coverage and

protection for NATO's European Allies against ballistic missile attacks from outside the Euro Atlantic area". He described the system as "defensive" and emphasized that based on "physics and geography," "the system did not represent any threat to Russia's strategic nuclear deterrent" (Stoltenberg, 2016). Although, this could have been true under the configuration envisioned at the time, the architecture could change significantly in the future by adding new platforms and faster interceptors.

At the NATO Summit in Warsaw in July 2016, the 28 leaders declared the "Initial Operational Capability" of NATO's BMD, which means that the four Aegis ships based in Spain, the radar in Turkey and the interceptor site in Romania would work together under NATO Command and Control. (NATO, 2016, Nr. 56-58).

When President Obama announced the EPAA in September 2009, a principal goal was to enable NATO to defend against the emerging long-term ballistic missile threat from Iran. In his Prague speech in 2009, President Obama stated that "if the Iranian threat is eliminated, we will have a stronger basis for security, and the driving force for missile defense will be removed." With the successful conclusion of the Joint Comprehensive Plan of Action in July 2015, the prospects of a nuclear armed Iran declined rapidly. Also, flight tests of Iranian ICBMs, which were predicted by 2015 by some analysts, never materialized. A report of the US-Russian-German Deep Cuts Commission called for the postponement of the scheduled EPAA deployment in Poland (Deep Cuts Commission, 2016, p.29), but without success. The NATO continued with its implementation of the EPAA. Meanwhile, Washington repeatedly declared that it was not directed against Russia. NATO's inflexible stance unnecessarily exacerbated tensions with Moscow, creating additional anti-Western momentum in Russia. A study on regional missile defense states that "there has been remarkably little public debate on the critical issues raised by the renewed and reimagined emphasis on missile defense in the United States and across the globe" (Kelleher, 2015, p.13). Among the public, BMD is seen as a protective tool of security policy.

Future possible Aegis Deployments

Three flight parameters, that are key to determine whether Russian strategic ICBMs heading to the US, can be intercepted, are the number of interceptors and their speed, respectively. A simulation model developed at IFSH, Hamburg, which includes real missile data as well as their location, gravitation, earth rotation, and drag forces, calculates the trajectories of attacking missiles and that of the interceptor to determine the reachability of attacking missiles. The calculations showed that an "early intercept" of Russian ICBMs by EPAA assets would only be possible with interceptors faster than 5 km/sec. (Neuneck, 2015, X). It follows that the current and planned number of SM-3 interceptors would not undermine the Russian deterrent. Simulations also show that five ships with SM-3 Block IB interceptors from two Aegis Ashore sites can cover the NATO area against MRBMs from the South. It also seems clear that if the interceptors become faster, this would increase the defended area. If new and faster interceptors are introduced, a cooperation agreement with Russia should be considered. This must include the locations and the operational areas of the BMD-capable ships, the speed and number of the interceptors, as well as the capabilities of the deployed radars.

As of the end of 2016, the US Navy had 33 BMD-capable Aegis ships (5 cruisers and 28 destroyers). 16 are assigned to the US Navy Atlantic fleet. The Missile Defense Agency and the US Navy are working to increase the number of such ships to 39 by the end of 2020. BMD-capable ships are operating in the Western Pacific and the Persian Gulf to provide

regional missile defense, mainly against North Korea and Iran (O´Rourke, 2016, p.i). Of the 33 BMD-capable Aegis ships, only four have "advanced BMD capability," which can perform against aircraft and ballistic missiles, simultaneously. The Navy plans to have 40 ships available by 2026: 4 for the EPAA, 9 to be based in Japan and 27 for carrier battle groups (O´Rourke, 2016, pp.14-15).

The Aegis sea-based BMD system, deployed on Ticonderoga class cruisers and the guided missile destroyers enjoy broad political support in Washington. Currently, the US Navy has in service three types of "Standard Missile" interceptors: 75 SM-2 Block IV (to defend against aircraft and cruise missiles), which will be replaced by SM-3s; 200 SM-3 Block 1 A/B (to defend against ballistic missiles). In principle, each destroyer can carry 90-96 Vertical Launch System (VLS) tubes (Mk 41 launch containers) and each cruiser 122 VLS. The Obama administration, planned to increase the number of SM-3 Block IIA interceptors rapidly in the 2020's (Lewis, 2016d). For the four EPAA Aegis destroyers, there are no concrete numbers available, but it is believed that 182 SM-3 Block IIA interceptors will be purchased for the EPAA (Lewis, 2016d). According to an analysis by George Lewis, starting in 2017, the number of advanced Aegis BMD ships will increase rapidly by 3-4 per year. By the mid- to late- 2030s, 400-600+ SM-3 Block IIA interceptors would likely be deployed, mostly on ships (Lewis, 2016). If one takes in to account the 44-100 GBI interceptors, it would be roughly comparable to the number of survivable Russian nuclear warheads on ICBM and SLBM combined, and much larger than the number of Chinese warheads. This creates unresolved challenges for nuclear deterrence and strategic stability between these countries. There is a real danger that ship-based BMD might become a spoiler for nuclear disarmament.

Today, Russia has numerous options for maintaining its second strike capabilities: developing new warheads and countermeasures; deploying faster ICBMs; investing in future submarines or mobile ICBMs; or deploying more missiles to silos in the Eastern part of Russia, which cannot be reached by interceptors from NATO territory. President Putin has already announced that the modernization of the Russian strategic missiles includes adding penetration aids and maneuverable warheads. For the moment, there are no prospects of signing a new ABM-like treaty between the US and Russia. It is worth noting, however, that the United States is likely to have significantly fewer strategic missile defense interceptors at the expiration date of the New START Treaty than the 100 strategic interceptors allowed each side under the ABM Treaty, as amended by the 1974 Protocol. The US will have no more than 44 strategic interceptors before 2017. Russia's plans are less certain, but the 68 strategic interceptors currently deployed around Moscow are more likely to be replaced in equal or lesser numbers than augmented.

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