

## Partial Capability Loss through MEADS

Does the Defense System Meet German Defense Policy Guidelines?

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**The still-to-be-developed air-defense system, MEADS, is supposed to replace the adopted Patriot System by 2015. The announced aim is an improvement of Germany's and its armed forces' protection as well as the protection of its allies and their armed forces while abroad. Can the future Medium Extended Air-Defense System meet these demands? What are the advantages and disadvantages of MEADS? Are more suitable solutions obtainable?**

According to the aims of the latest German Defense Policy Guidelines (*Verteidigungspolitische Richtlinien*), German missile-defense capability will be expanded. The current German Armed Forces Concept (*Konzeption der Bundeswehr*) demands the protection of the German population and territory. It is considered even more important to protect the troops, while abroad, from air-based threats. To meet these challenges, the German Air Force—together with its American and Italian program partners—wants to develop and order MEADS. Holding to the procurement of MEADS means that the political aims cannot be fulfilled completely.

### Advantages of MEADS

Compared to the current Patriot System, MEADS would bring only three advantages. First, the resolution of its radar system is superior to that of the Patriot's, and due

to its antenna—which can be turned 360 degrees on the azimuth—it provides a much better field of view. Secondly, MEADS reduces the need of strategic capacities for air transport.

In many conflicts, the improvement of the field of view would not be necessary, because usually it is known where the threat is coming from, thereby allowing the defense systems to be focused ahead of time. This is especially valid in the case of land-based systems for ballistic missile defense. The fact that less sorties would be necessary for the air transport of MEADS is an undeniable advantage which would allow for the transport of more soldiers. Generally, the new radar system additionally improves the capability of defending against cruise missiles.

Finally, as one of three large international defense projects, MEADS would also improve the transatlantic co-operation, due to the participation of the United

States. Given the start of the Bush administration's second term and current efforts to improve the relationship between the United States and Germany, this is an important factor.

### **Disadvantages and Problems**

With the replacement of the Patriot Systems by MEADS, there would also be technical disadvantages and problems.

The existing Patriot System of the German Armed Forces has a range of about 70 km (43 mi). The PAC-3 missile, which is planned to be deployed with MEADS, would only have a range of 25 km (15 mi) even under the best circumstances. Therefore, in the case of aircraft defense, the Patriot System is much more powerful. The consequence of its being replaced would be a loss of the general capacity to defend against aircraft. Additionally, a comprehensive protection of territory and population by a land-based air defense cannot be realized with the number of missiles planned on being procured. This also means that the political demands will not be met. Only selected small areas could be protected.

Compared to the Patriot System, the PAC-3 missile is more agile. However, even today some export variations of the Russian Tactical Ballistic Missiles from model SS-26 already exist. They are said to be so maneuverable in the final stage of flight that they are barely capable of being intercepted.

Besides, all of the nations with nuclear weapon capabilities also own ballistic missiles which cannot be defended by the Patriot System or MEADS. For example, the already-functioning and improved Shahab-3 missile of the nuclear candidate Iran could easily bypass the MEADS system.

Even if MEADS turned out perfectly as planned, it would not be able to protect troops in action around the globe from ballistic missiles with devastating nuclear warheads.

In order to execute its improved capacity to fight against cruise missiles, MEADS

would always need the backing of the United States. According to the Pentagon, defense against low-flying cruise missiles cannot be effective by deploying the E-3 AWACS and MEADS only. For this, the use of new air-based radar platforms would be necessary. The Pentagon is therefore developing a special early warning system (E-10).

The defense against ballistic missiles by a German air-defense system would depend on the United States if it were to receive its data from U.S. early warning satellites (SBIRS High). Otherwise, an air-defense system such as MEADS would only be able to offer protection to smaller areas.

A dependence upon U.S. systems might prove to be a real handicap in operational terms as, in general, U.S. forces pass on very little data. Defense against ballistic missiles and low-flying cruise missiles depends on the availability of large amounts of time-critical data. If the United States were to stick to their current policy, they would most likely only trust in their own abilities during large-scale conflicts, and hardly in the abilities of their allies. This again would mean that a German contribution would not be of great importance to an operation.

### **The Policies of Other Nations**

A great number of countries consider the existing Patriot System—with its various improvements (PAC-2 GEM+) and the addition of PAC-3 missiles—as being sufficient to protect their territories from aircraft threats and ballistic missiles with a range of up to 1,000 km (625 mi).

The British Defense Ministry also shares the view that hostile air threats are less likely and, for this reason, fewer land- and air-based air defense systems are needed. As a result, Britain has just decided not to maintain an operative land-based air defense. The price Britain pays for this decision is a stronger dependence upon the United States. Britain has openly stated that during any intense conflict, its armed forces are going to operate under U.S. air cover.

Apart from Germany and the United States, Italy also has a stake in the development of MEADS. But it is rather questionable as to whether Italy will procure the system. It also has a share in the development of the competing SAMP/T (Sol-Air Moyenne Portée/Terrestre) system. For Italy, it makes sense not to buy MEADS, especially because the Aster missiles, which are used by SAMP/T and the naval variation SAAM, are more agile than the PAC-3 missiles, which are used by Patriot PAC-3 and MEADS. The Aster missile has already been selected as the air-defense system for various European warship programs.

### **Economic Considerations**

Germany's remaining Patriot Systems, which haven't been sold or taken out of service, will experience several combat improvement programs. This will cost €340 million. The procurement of PAC-3 missiles is said to be included. The future development and procurement of MEADS would be much more expensive. In the end the costs would probably even exceed €4 billion.

The German industry has a 28 percent share in the risk-reduction phase of MEADS, but such a working share could also be reached by the development or procurement of other systems. When making international arms deals, it is common to make substantial offset deals with the purchaser's country. As a lot of nations have already committed themselves to other systems, it can hardly be expected to find many countries interested in importing MEADS. Therefore, the German economy would not experience any disadvantages by deciding upon another system.

### **Proposed Solutions**

Members of the German Defense Committee have developed a workgroup called "Land-Based Air Defense" whose final report presents the following solution:

The adapted weapons system (a modernized version of the Patriot System, the

Surface-to-Air Missile Operations Center/SAMOC, and a PAC-3 missile that can be sealed) would be able to fight against tactical ballistic missiles with a range of up to 1,000 km (625 mi).

As a threat evolves, their capabilities can be expanded by the procurement of an improved radar and early warning system. For defense against ballistic missiles with a range of more than 1,000 km (625 mi), the United States is developing a specialized system named "Terminal High Altitude Area Defense" (THAAD) which fights ballistic missiles only.

In contrast to MEADS, this system would even be able to protect Germany and its troops abroad from ballistic missiles with thermonuclear warheads. The protection of German territory and even a transatlantic co-operation for a global defense against ballistic missiles could be reached by combining the improved Patriot System (PAC-3) with THAAD and a suitable early warning system. This would enable a faster introduction of improved means of defense for the protection of Germany and its troops abroad since the money saved by not developing MEADS could be spent on the modernization of the Patriot System and THAAD only if necessary.

### **Conclusion**

The German Patriot System is already able to fight ballistic missiles of a lower caliber. In contrast to the Patriot System, which is well-established and could be improved further with sufficient funds, MEADS, favored by the German Air Force, would be no real innovation. Its main advantage would be the reduction of logistical impact in the unlikely case that the system is deployed. Another advantage of MEADS—its radar system—could be developed for the Patriot System as well.

Development and procurement costs for MEADS are very high. Given worsening financial conditions, it is more important to expand the reconnaissance abilities against asymmetric threats. For the fight

against smaller artillery, it is reasonable to improve the expansion of the modern and very mobile SHORAD system (LeFlaSys/HeFlaFüSys). Therefore, it would be useful to integrate a new radar (giving constant 360 degree coverage like the Objective Lightweight Counter Mortar Radar) as well as a co-operation with the Mobile Tactical High Energy Laser (MTHL) of the U.S. Army.

The Patriot System meets the demands of conventional air defense. A switch to MEADS would even be a partial step back that does not meet the German Defense Policy Guidelines or the German Armed Forces Concept.

As a reaction to a possible increase in threats from ballistic missiles with a range greater than 1,000 km (625 mi), tenders could be invited to procure a specialized missile-defense system such as THAAD, Arrow 3, or S-400.

A transatlantic co-operation, which has already been planned for the development of MEADS, could also be realized with the development of more important projects like the Heavy Transport Helicopter (HTH).

This way, if Germany's services are demanded, they could be vastly improved by spending much less money than estimated for the development of MEADS. In view of the current level of threat, such a modular modernization would serve as a model for military transformation.

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