



# FACT SHEET



MDA FACT SHEET

## BALLISTIC MISSILE DEFENSE APPROACH



### WHY BUILD A MISSILE DEFENSE?

In the decade since the end of the Cold War, the increased proliferation of ballistic missile systems and the weapons of mass destruction they may carry has raised the importance of developing and fielding a capable Ballistic Missile Defense (BMD) System. A number of countries, some of which are overtly hostile to the United States, our Allies, and our friends, have acquired these dangerous capabilities. In response to this changing geopolitical environment, the Department of Defense has restructured its approach to building ballistic missile defense. The fundamental goal of the planned BMD system is to defend the forces and territories of the United States, its Allies, and friends as soon as practicable.

### LAYERED DEFENSE

The planned BMD System will be capable of engaging all classes of ballistic missile threats. The program will increase system robustness by incrementally deploying layered defenses that use complementary interceptors, sensors and battle management and command and control (BMC2) systems to provide multiple engagement opportunities against threat targets in the boost, mid-course, and terminal phases of flight. This approach is structured to adjust more easily to changing engineering, schedule and cost uncertainties inherent in building missile defense systems. The Department will pursue promising technologies and approaches towards BMD to hasten the fielding date of an effective, reliable, and affordable system. These promising technologies and approaches include kinetic and directed energy kill mechanisms and various land, sea and air deployment options.

### BOOST PHASE

The mission of the Boost Defense Segment (BDS) is to define and develop boost phase intercept (BPI) missile defense capabilities. The boost phase of the ballistic missile trajectory is defined as the part of a missile's flight lasting from post launch through the completion of propulsion fuel burn, when the missile enters the ballistic flight ascent period of the mid-course phase. Typically the entire boost phase occurs at altitudes of less than 200 kilometers and within the first 100-300 seconds of flight. To engage ballistic missiles in this phase, quick reaction times, high confidence decision-making, and multiple engagement capabilities are needed.

The capabilities defined and developed in the BDS will progressively reduce the "safe havens" available to a hostile state. Within this context, the "safe haven," formed by geographic and time constraints is the region of a country from which a missile is launched out of range of a potential BDS intercept. The potential elements in the BDS are the directed energy systems (Airborne or Space-based) using high power lasers and kinetic energy systems (sea- or space-based interceptors) with faster interceptor capabilities. These air and land elements are required to reduce the size of safe havens, whereas development of viable space-based elements could potentially eliminate them entirely.

Sensors developed in this segment will have multi-mission capabilities intended to enhance and integrate detection of and provide critical tracking information for threat ballistic missiles in all phases of flight.

Successful BDS operational concepts will be fully integrated into an overall BMD operational concept including those involving the Mid-course and Terminal Defense Segments.

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## MIDCOURSE PHASE

The Midcourse Defense Segment (MDS) develops increasingly robust capabilities for countering ballistic missiles in the mid-course stage of flight. When the missile's booster stages are spent, the missile continues its ascent into the mid-course part of flight. The MDS could provide early capability based on past developmental successes.

The primary elements of the MDS are the Ground-Based Midcourse Systems (GMS) and Sea-Based Midcourse Systems (SMS), successors to the National Missile Defense and Navy Theater Wide programs. The SMS is intended to intercept hostile missiles in the ascent phase of mid-course flight, which when accompanied by GMS, provides a complete mid-course layer. Sea-based elements also offer the opportunity to engage missiles in early ascent, thereby reducing the overall BMD System's susceptibility to countermeasures. SMS will build upon technologies in the existing Aegis Weapons System and the STANDARD Missile infrastructures.



## CONCLUSION

This approach toward developing and deploying missile defenses will meet the growing threat and provide the earliest possible fielding date of effective defensive capabilities. In contrast to the previous BMD program, the integrated BMD System is intended to counter the full spectrum of ballistic missile threats, capitalize on existing technologies and capabilities, and foster innovation. It will incorporate incremental capabilities to detect, track, intercept, and destroy threat ballistic missiles in all phases of flight using kinetic and directed energy kill mechanisms and various deployment approaches. Accordingly, MDA has implemented a flexible acquisition strategy to provide a timely, capable system that paces the ever-evolving threat. Thus the approach protects against uncertainty by ensuring that the U.S. will have the ability to defend itself, its deployed forces, allies, and friends from a ballistic missile attack should the need arise.

Missile Defense Agency, External Affairs  
7100 Defense Pentagon  
Washington, D.C. 20301-7100  
(703) 697-8472  
<http://www.acq.osd.mil/bmdo/bmdolink/html/>

## TERMINAL PHASE

The Terminal Defense Segment (TDS) provides defensive capabilities that engage and negate threat ballistic missiles in the terminal phase of their trajectory. The missile enters the terminal phase when the missile or warheads fall back into the atmosphere. This is a very short phase, lasting less than a minute.

The primary elements in the TDS are the Theater High Altitude Area Defense (THAAD) system and the Israeli Arrow Deployability Program (ADP). The mission of the THAAD System is to defend against short- and medium-range ballistic missiles at long ranges and high altitudes. THAAD's capability will protect U.S. and allied armed forces, broadly dispersed assets, and population centers against missile attacks. The Arrow Weapon System (AWS) (developed jointly by the U.S. and Israel) provides Israel a capability to defend against short- and medium-range ballistic missiles and help ensure U.S. freedom of action in future contingencies. Arrow also provides protection against ballistic missile attacks on U.S. forces deployed in the region.