

Missile Defense

Background

The basic task of missile defense can be likened to hitting a number of bullets with a number of bullets. While it is not against the laws of physics, and occasional heavily scripted tests against a single target have been successful, missile defense has a plethora of technical challenges to overcome.

Since the 1950s, the United States has attempted without success to develop various systems that could intercept incoming ballistic missiles. The first deployed U.S. missile defense system became operational on October 1, 1975, in North Dakota. Once the system's weaknesses were recognized, however, it was quickly shut down.

While some R&D on missile defense continued, the program was not revived until President Ronald Reagan, in his March 1983 "Star Wars" speech, called for a protective bubble that could defend the country against a missile attack. There were doubts even then about the program's technological feasibility, immense costs, and likelihood of violating the Anti-Ballistic Missile Treaty's prohibitions against interceptors in space.

After the fall of the Soviet Union, George H.W. Bush's administration recommended yet another version of missile defense. During the first Gulf War, an Iraqi Scud slammed into a U.S. barracks on February 25, 1991, killing 28 people. This brought home the danger from short-range ballistic missiles, which produced a new emphasis on shorter range systems.

While on the campaign trail in May 2000, then candidate George W. Bush promised that, if elected, he would work to "build effective missile defenses . . . at the earliest possible date." His first Secretary of Defense, Donald Rumsfeld, had been a member of a commission that warned Congress in July 1998 that "concerted efforts by a number of overtly or potentially hostile nations to acquire ballistic missiles with biological or nuclear payloads pose a growing threat to the United States, its deployed forces and its friends and allies."

Present Status of Missile Defense

Total spending on the various missile defense systems has shot up from about \$3 billion annually during the Clinton administration to over \$10 billion a year. The Missile Defense Agency (MDA), the branch of the Pentagon charged with developing ballistic missile defense systems, has been relieved of the congressional reporting requirements that all other branches of the Pentagon must comply with regarding their weapons systems.

The MDA is working to develop various weapons systems that can intercept a ballistic missile during all three of its stages: the initial or boost phase, the midcourse, and the final or terminal phase. The Ground-based Midcourse Defense (GMD) system, whose 13 ground-based interceptors (GBIs) are currently fielded in Alaska and California, is the largest and most controversial program by far. It is designed to defend the United States against a very limited ICBM attack by intercepting the enemy missiles during their midcourse phase.

GMD has successfully intercepted targets during heavily scripted tests only six times out of 11 attempts. Furthermore, these tests were vastly simplified and not representative of the types of

actual situations in which a ballistic missile attack may occur. While the simplification of the tests is understandable given the rudimentary level of the technology's development, it does mean that one cannot draw the conclusion from a few intercepts that the system will work under operational conditions.

Missing from the GMD program is the upgraded satellite network needed to determine that a missile launch has occurred, a second satellite network to track the target and discriminate between it and a decoy, a solidified command and control network that can join up the various commands and services to provide a unified response to an attack, and the Sea-based X-band Radar (SBX) necessary to track the missiles in flight. The SBX has been stuck in Hawaii undergoing repairs since the beginning of 2006, when it was sidelined while traveling to its home port of Adak, Alaska.

Another major missile defense effort is the Aegis Ballistic Missile Defense (BMD) system. This program puts a Standard Missile (SM)-3 on the Navy's Aegis ships to provide a ship-borne defense against short- and medium-range ballistic missiles during their midcourse phase. It has fared better, intercepting successfully in seven out of nine attempts. The program's guidance control system has not been tested successfully or completely, however, and during its only test it failed to make an intercept.

A few land-based missile defense systems are designed to defend smaller areas against short-range ballistic missile attack by intercepting the missiles during their terminal phases of flight. These are the Patriot Advanced Capability (PAC)-3, the Terminal High Altitude Area Defense (THAAD) system, and the Medium Extended Air Defense System (MEADS). The MEADS is a joint effort with Italy and Germany; the United States provides the interceptor (the PAC-3) and the partner countries work on other parts of the program. All these programs, except for PAC-3, are in the early stages of development.

The PAC-3 was used in 2003's Operation Iraqi Freedom. Its effectiveness against missiles during war is unclear, but it was definitely involved in shooting down two friendly aircraft, killing the pilots on board. THAAD, after suffering six flight test failures in a row, was shut down in 1999 so that it could be revamped. It started up its newly configured system with tests in 2005. MEADS is facing problems experienced by many international joint programs: a reluctance to share information and squabbles over funding.

Finally, several programs are designed to intercept missiles during their boost phases. The Airborne Laser (ABL) is a Boeing 747 fitted with specially designed lasers that are intended to pierce a missile's outer coats, causing it to malfunction. Program designers have not yet been able to fit the lasers inside the aircraft and are still working through a multitude of other technical issues. Overall, the program has been teetering on the chopping block for the past several years. Its major boost-phase competitor is the Kinetic Energy Interceptor (KEI), a ground-based (and perhaps eventually sea- and air-based) program. ABL and KEI both have tests scheduled for 2008 that will most likely determine which system MDA will adopt for its attempt to develop a boost-phase capability.

The last major program is perhaps the most controversial. In the budget request that will be released in February 2007, MDA is expected to request \$45 million to begin work on a space-

based test bed. This is part of an effort to eventually deploy perhaps 50 to 100 space-based interceptors (SBIs) in orbit. While supporters claim that this would be “just” a test bed, it must be remembered that Fort Greely, Alaska, also started off as a test bed but now is the heart of the GMD system.

In short, space-based interceptors would cross the line toward space weaponization, something the United States managed to avoid even during the tensest periods of the Cold War. By describing the program as only a test bed, the administration clearly wishes to avoid generating the debate that should take place prior to such a major shift in U.S. policy.

Talking Points

- **Missile defense systems have not proven reliable.**

Extrapolating from a few intercepts that a system works and will do so reliably is flawed logic. Major components required for current systems to work effectively are missing and the Missile Defense Agency (MDA) has yet to determine how many of the components will fit together effectively.

- **Missile defense tests have not been conducted under realistic circumstances.**

All of the tests to date have been held under heavily scripted conditions: participants have known roughly when the test target would be launched, what it would look like, how it would fly, and what it would do. Even with this assistance, the GMD system being deployed in Alaska and California has intercepted the target in only six out of 11 attempts. The recent test targets have also lacked the basic countermeasures that any enemy capable of launching an ICBM would be able to build.

- **Missile defense funding keeps spiraling upward, yet has little to no accountability.**

By following a policy of “spiral development,” in which improvements are explored and funded while fielding partially completed systems, the MDA is ensuring that costs will continue to grow. Yet the MDA does not have to provide estimates of the total cost of the planned architecture or report to Congress when costs increase under current budgetary constraints.

- **Space-based interceptors are dangerously destabilizing and should not be funded.**

Putting money into research and development of a test bed for space-based interceptors leads the way toward weaponizing space. This would be the world’s first officially deployed space weapons system. The United States, with its heavy reliance on its space assets, would have the most to lose from an arms race in space.

Prior Legislation

The Department of Defense requested \$11.1 billion for missile defense in FY 2007. On September 29, 2006, the Senate-House conference committee approved the National Defense Authorization Act for FY 2007. Section 222 of the report directed that “[n]o funds appropriated or otherwise made available to the Department of Defense may be obligated or expended for the testing or deployment of a space-based interceptor” until 90 days after the submission of a detailed report describing the effectiveness, cost, and international political implications of such a system.

Section 223 of the report declared the conference committee’s preference for near-term missile defense systems: “It is the policy of the United States that the Department of Defense accord a

priority within the missile defense program to the development, testing, fielding, and improvement of effective near-term missile defense capabilities, including the ground-based midcourse defense system, the Aegis ballistic missile defense system, the Patriot PAC-3 system, the Terminal High Altitude Area Defense system, and the sensors necessary to support such systems.” This specification implied that the committee would look askance at the more long-term, pie-in-the-sky programs such as ABL, KEI, and SBI.

Section 226 addressed the need to monitor the transition of missile defense systems from MDA to whichever military service would operate them: “Not later than March 1, 2007, and annually thereafter through 2013, the Under Secretary of Defense for Acquisition, Technology, and Logistics shall submit to congressional defense committees a report on the plans of the Department of Defense for the transition of missile defense programs from the Missile Defense Agency to the military departments.” The report should identify which programs are going to which services, what the schedule is for their transition, and what the plans are for funding the programs after the transition. Furthermore, a missile defense program’s operational test criteria must be reported before it can be shifted to a service.

Legislative Recommendations for 2007

- Bar funding for a third ground-based interceptor site in Europe until the Ground-based Midcourse Defense (GMD) system has successfully completed rigorous and operationally realistic tests.
- Mandate an operationally realistic test of the GMD system that includes countermeasures before any further deployment.
- Require programmatic milestones and timelines that need to be achieved for missile defense systems to move into operational status.
- Block funding of a space-based interceptor test-bed.

Additional Resources

Arms Control Association: Missile Defense

<http://www.armscontrol.org/subject/md/>

Center for Defense Information: Missile Defense Project

<http://www.cdi.org/program/index.cfm?programid=6>

Center for Arms Control and Non-Proliferation: Missile Defense

<http://www.armscontrolcenter.org/md/>

Defenselink.mil: Budget (go to RDT&E; vol. 2 is MDA)

http://www.dod.mil/comptroller/defbudget/fy2007/budget_justification/index.html

Missile Defense Agency

<http://www.mda.mil/mdalink/html/mdalink.html>

Union of Concerned Scientists: Global Security

http://www.ucsusa.org/global_security/missile_defense/