

WebMemo



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Congress Should Fund Development of Air-to-Air Missile Defense Technology

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On December 3, 2007, during a test conducted at New Mexico's White Sands Missile Range, a modified AIM-9X Sidewinder missile intercepted an Orion target ballistic missile in the boost phase of flight. The technology responsible for this successful test result is the Raytheon Company's Network Centric Airborne Defense Element (NCADE) interceptor program, the centerpiece of which is an inexpensive boost-phase missile defense system.¹ Yet the lasting success of this program requires devoting \$15 million of the Bush Administration's proposed missile defense budget request to the continued development of the NCADE interceptor.

By providing for NCADE in the fiscal year 2009 defense authorization and appropriations bills, Congress would be able to field an inexpensive boost-phase missile defense system within the next few years. Considering the high-cost and lengthy production time of alternative boost-phase missile defense systems, Congress should immediately bolster the security of the United States by fully incorporating NCADE into our nation's missile defense program.

The Bush Administration's ballistic missile defense strategy requires a variety of interceptor systems. When combined, these different systems are capable of knocking down hostile ballistic missiles in the boost, mid-course, and terminal phases of flight.

Currently, the United States has mid-course and terminal interceptors but lacks a boost-phase interceptor. Capable of striking the target missile when it

is still easy to detect and is moving relatively slowly, boost-phase interceptors offer the most effective means of defending all territories outside of the launch area. Additionally, boost-phase interceptors are designed to destroy hostile missiles before individual warheads and decoys can be released.

According to Raytheon, long-lead procurement of NCADE interceptors, with proper funding, can begin in late 2008 or early 2009. Given the relatively small investment required and the potential for a rapid fielding of the system, Congress should provide the funding required to move the NCADE program forward.

NCADE Interceptor Technology. The NCADE interceptor is derived from the Advanced Medium-Range Air-to-Air Missile (AMRAAM) presently deployed by the United States and allied air forces. In creating NCADE, Raytheon modified key components of the original AMRAAM design. For example, NCADE missiles boast several updated features, including:

- A slightly modified AIM-9K seeker system;
- A guidance electronics unit; and
- A special propulsion section.

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These modifications transform traditional missiles mounted on fighter aircraft into interceptor missiles capable of shooting down a ballistic missile in the earliest stage of flight.

Economic Viability. By modifying the technology and infrastructure currently invested in AMRAAM, Raytheon will be able to deploy NCADE missiles economically. In fact, according to Raytheon, the unit cost is less than \$1 million per interceptor. Overall, Raytheon projects that the five-year (2009–2013) system design and development program will cost only \$385 million.

Operational Versatility. In addition to the above-noted cost efficiency and developmental ease, the NCADE interceptor also offers the military considerable operational flexibility. For instance, the interceptor may be launched from the following manned aircraft:

- F-15;
- F-16;
- F-18;
- F-22;
- Eurofighter; and
- Gripen.

The interceptor may also be mounted on the Predator and Reaper unmanned aerial vehicles (UAVs).

There are a variety of scenarios under which the NCADE interceptor might be deployed. For instance, the U.S. Air Force could mount two interceptors on a Predator or Reaper UAV and use the craft's loitering capability to perform combat air patrol (CAP) missions. Predators, likely to be already engaged in a CAP surveillance operation, would then possess a multi-mission capability for boost- and ascent-phase missile defense over an extended period of time.

Alternatively, the NCADE interceptor could be included in a mixed load of weapons carried by fighter aircraft. Such an approach would allow the fighter aircraft to intercept ballistic missiles that have been launched, while using air-to-surface

strike weapons from the same mixed load to destroy missile launchers on the ground.

Along with operational flexibility, the NCADE interceptor also provides extensive geographical coverage against hostile missiles. A boost-phase interceptor's defended area will be calculated on the basis of the area within which a missile cannot be launched without a high risk of being shot down.

Therefore, with regard to boost-phase interceptors, it makes relatively little difference where the target area is located. In fact, the defended area, as described earlier, could be worldwide. A hostile missile could target San Francisco, New York, London, Seoul, or Tokyo and still be shot down by the same NCADE interceptor missile.

A Proven Approach. The fundamental technological advancements crucial to the NCADE interceptor's development were first realized more than two decades ago. On September 5, 1986, the Strategic Defense Initiative Organization (SDIO) successfully demonstrated an interceptor's ability to distinguish between a boosting missile's hot and bright plume and the missile body. SDIO's February 1986 experiment, known as the Delta 180 test, resulted in a direct hit against the simulated boosting ballistic missile target from more than 125 miles away and at a closing velocity of almost two miles per second.

Towards The Future. Considering the success of the Delta 180 test, it is disappointing that an endo-atmospheric boost-phase interceptor capable of utilizing existing military infrastructure did not emerge until 2007. However, the demonstrated success of Raytheon's NCADE interceptor provides Congress with a near-term option for obtaining boost-phase missile defense capability at a reasonable cost.

At a minimum, Congress should make certain that development of the NCADE interceptor continues into the 2009 fiscal year. Such a guarantee would require allocating necessary funds—\$15 million—within the missile defense account of the defense authorization and appropriations bills com-

1. At the request of the author, Raytheon Company representative Mike Booen provided a briefing on NCADE on April 1, 2008, at The Heritage Foundation.

ing before Congress in the weeks ahead. Assuming continued interceptor success on the test range, Congress must also be prepared to provide longer-term funding to the NCADE program, thus assuring a stable path to continued interceptor deployment.

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