Indian Missile Defense Program Advances

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India is pressing ahead with its work on missile defense, conducting its latest successful test last November and preparing to test a new kind of interceptor early this year.

In its Nov. 23 announcement of the test earlier that day, India said it had demonstrated the ability to intercept multiple incoming missiles. The test, which was the latest in a series dating to 2006, follows several tests in 2012 of nuclear-capable ballistic missiles, including the successful launch in April of the 5,000-kilometer-range Agni-5. (See ACT, May 2012.)

India also has tested the sea-launched version of the hypersonic Brahmos cruise missile, jointly developed with Russia. In addition, air- and submarine-launched versions of the Brahmos missile are in development.

Indian media reports suggest that a test of a new high-altitude anti-missile interceptor will occur in January and that India may soon test a submarine-launched ballistic missile (SLBM) for the first time, bringing the country closer to possessing a triad of nuclear weapons delivery systems. (See ACT, September 2012.)

India’s nuclear-armed neighbors, China and Pakistan, have significant cruise and ballistic missile capabilities. China has taken steps to acquire missile defense capabilities although Pakistan apparently has not attempted to do so. In the past, Pakistan has justified its pursuit of cruise missiles by citing their supposed invulnerability to Indian ballistic missile defenses. China possesses SLBMs, and China and Pakistan are able to deliver nuclear weapons by airplane.

The Chinese and Pakistani reaction to Indian missile defense developments is not yet clear, said Rajeswari Pillai Rajagopalan, a senior fellow at the New Delhi-based Observer Research Foundation. “The new capabilities and counter-capabilities add to the already vexed issue of arms race[s] in Asia,” Rajagopalan, a former assistant director of India’s National Security Council Secretariat, said in a Dec. 19 e-mail to Arms Control Today.

In a Dec. 19 analysis for the Institute for Defence Studies and Analyses, where he is a senior fellow, Vivek Kapur, a group captain in the Indian air force, said that “ballistic missile proliferation in India’s neighbourhood requires the development of a more capable” missile defense system.

In the Nov. 23 press release, the Defence Research and Development Organisation (DRDO), the Indian government entity responsible for developing offensive and defensive missile and other systems, said the Advanced Air Defence (AAD) interceptor destroyed a target missile, a modified Prithvi ballistic missile, at an altitude of 15 kilometers.

The interceptor and target missile were launched from sites in Orissa, a state in the eastern part of the country. In the press release, the DRDO said it had demonstrated an ability to track and destroy multiple incoming ballistic missiles.

Rajagopalan said India’s efforts are “primarily driven by the threat of short-range missiles in Pakistan”; Chinese missile threats “did not figure prominently in the Indian calculation for a missile defence shield,” she said.
The Pakistani government has not issued an official reaction to the AAD interceptor test. Pakistan, however, successfully tested a nuclear-capable Hatf-5, a 1,300-kilometer-range ballistic missile, on Nov. 28. A Pakistani statement following the test of the Hatf-5, also known as the Ghauri, did not mention India specifically, but said the test “strengthens and consolidates Pakistan’s deterrence capability.” According to the DRDO, the Nov. 23 AAD test demonstrated a capability to intercept ballistic missiles with a range of 1,500 kilometers.

Two-Tiered Defense

India is pursuing a two-tiered missile defense shield, which would give it multiple opportunities to intercept incoming missiles. The AAD interceptor comprises the lower tier, and the higher-altitude, two-stage Prithvi Air Defence (PAD) interceptor currently comprises the upper tier. Like the U.S. Patriot system, both of these Indian systems intercept ballistic missiles in the so-called terminal phase, in which the incoming missiles are descending toward their target.

India first tested the AAD interceptor in December 2007 and, according to the Indian government, has conducted several subsequent tests. India first tested the higher-altitude Prithvi interceptor in November 2006 and again in March 2009. The test reportedly planned for January is of the Prithvi Defence Vehicle, which would be capable of interceptions at a much higher altitude than the PAD interceptor, and may eventually replace that interceptor as the upper tier of the Indian system.

The Indian government has not announced the area that the missile defense system is designed to protect. Media reports have indicated that New Delhi and Mumbai will be the first sites, with the system expanded to protect additional cities later in the decade.

According to the DRDO press release, the AAD interceptor used an explosive warhead to destroy the target missile as the interceptor approached it. In contrast, most U.S. missile defense systems, including the Ground-Based Midcourse Defense and sea-based Aegis systems, rely on “hit-to-kill” interceptors that destroy a target solely through impact.

Eyeing Iron Dome

In addition to developing an anti-ballistic missile capability, India has expressed an interest in purchasing and perhaps producing a domestic variant of the Israeli Iron Dome anti-rocket system, according to the U.S.-based Defense News. The Israel Defense Forces claim Iron Dome successfully intercepted 84 percent of rockets fired at Israeli population centers last November during Operation Pillar of Defense, which was intended to halt rocket attacks from groups in Gaza.

In the past, India has expressed interest in purchasing the Israeli Arrow-2 ballistic missile defense system. New Delhi bought two Israeli Green Pine missile defense radars, used for tracking incoming ballistic missiles, in 2002 and 2005. The Swordfish Long Range Tracking Radar, which was used in the AAD test, is based in part on the Green Pine radar.

India and the United States pursued missile defense cooperation during the administration of U.S. President George W. Bush, but such efforts have been less prominent under the Obama administration. Last July, U.S. Deputy Secretary of Defense Ashton Carter said India and the United States intend to discuss missile defense cooperation, calling it “an important future area for our cooperation.” India and the United States should discuss the issue “strategically before they discuss it technically,” he said.

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