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WHY AN AIR-LAUNCHED BALLISTIC MISSILE: AN ASSESSMENT

Gp Capt Rohit Kaura
Senior Fellow, CAPS

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Why is the subject important?

An air-launched ballistic missile (ALBM) is a ballistic missile launched from a bomber and allows the strategic bomber to stand off at long distances from its target, keeping it well outside the interceptor aircraft and anti-aircraft missiles range. In an era when improving anti-aircraft defences have rendered conventional bombers obsolete, this combination of a strategic bomber with ALBM allows the launch aircraft to present a credible second-strike deterrent option. Once launched, the missile is immune to interception, and if the nuclear force goal is to maintain deterrence by ensuring that a counter strike will be launched, the ALBM concept might improve the survivability of the Air Force strike capability. "Air-launched ballistic missiles have the advantage of depriving adversaries of lower-altitude boost-phase intercept opportunities" as noted by Ankit Panda, in March 2018. "The ability to launch the missile from high altitudes from a range of locations would also complicate midcourse interception, leaving terminal phase interception as the only realistic option."[1]

Overview of ALBM development

US Programme: The ALBM concept was first studied in the US in the 1950s, mainly to ensure the usefulness and survivability of their large strategic bomber fleet from a relatively small fleet of Soviet Intercontinental ballistic missiles (ICBMs). The fundamental idea was to enable US strategic bombers to launch their weapons from well outside the Soviet defences range, as much as 1,000 miles (1,600 km) from their targets. The USAF began development of the 'GAM-87 Skybolt'[2] program in the 1950s along with active United Kingdom participation. However in 1962, the Skybolt program ran into technical difficulties and costs mounting, resulting in President Kennedy cancelling the program in favour of the UGM-27 Polaris submarine-launched ballistic missile (SLBM).

The concept saw a few active developments until the 1970s when ICBM warheads started to

become accurate enough to engage other ICBMs while they were still on the ground. Also, as part of renewing attempts to expand technology and to complement the missile force, it became essential for United States to demonstrate that an ICBM could be successfully launched from an aircraft and fired in mid-air. In the early 1970s, the USAF tested a unique combination of two proven pieces of American hardware, air launching a Minuteman 1B ICBM [3] from a C-5A Galaxy transport aircraft. The test proved the usefulness of propelling an ICBM from the air and that it could offer the USAF an extremely cost-effective recallable deterrent. In the end, however, operational deployment of ALBM was abandoned because it was technically very unsafe and would have been operationally very costly to implement on a more comprehensive, more permanent scale; though the capability was adopted as a negotiating point in the Strategic Arms Limitation Talks.

Although the mid-air missile launch capability was accomplished, the Pentagon never embraced the concept and eventually rejected this course of research entirely. Moreover, no further strategic ALBM development has been taken, and this class of missile never more saw active use. Today, the United States practices ALBMs released from C-17 Globemasters as target missiles for its tests of missile defence systems. Similarly, Israel has already developed a simulated air-launched ballistic missile, called "Black Sparrow" series; for testing its own Arrow anti-ballistic missile system.

Russian Programme: The Soviet Union during the time of US developing the Skybolt programme did not appear to have seriously studied the concept and moved their strategic force directly to ICBMs. The Soviets briefly tried with modifying its Tu-160 strategic bomber to take a nuclear-capable ALBM, but the project collapsed in the early 1980s and never progressed to flight-testing. In 2018, Russia revealed an ALBM called Kh-47M2 Kinzhal with a 2,000 km range.

Chinese Programme: Defence Intelligence Agency chief Lt Gen Ashley while explaining the development of new Chinese long-range, precision-strike systems on March 06, 2018 affirmed that "China is developing two new air-launched ballistic missiles (ALBM), one of which can carry a nuclear warhead along with a new long-range strategic bomber to deliver it."[4] The Chinese military has practiced H-6K 'strategic bomber' [5] for flight-testing a nuclear-capable ALBM named CH-AS-X-13 [6] by the U.S. intelligence community. The Chinese have conducted 'five flight tests of the unnamed missile' with the most recent one 'in the last week of January 2018' on H-6K strategic bomber which is capable of being refueled while in the air and is assessed to have a combat radius of nearly 6,000 kilometers — a significant improvement from older H-6 variants. Assuming a launch from the edge of the bomber's H6X1/H-6N combat

radius, the launch of CH-AS-X-13 will be capable of threatening targets in the contiguous United States, Hawaii, and Alaska.

Why an Air-Launched Ballistic Missile?

As crisis intensifies, countries would strive their strategic bomber fleets, equipped with ALBMs, to high alert status. The Air Force like the Navy, in times of high alert, would send their bomber force to holding positions far outside the enemy defences range, and then launch their missiles on command. "Given the standoff ranges available to ALBMs, bombers carrying these weapons do not necessarily require to enter hostile airspace to be effective."[7] Once an ALBM-equipped bomber is airborne — probably after being alerted of an incoming launch or the start of an attack — national leadership could be assured of some retaliatory capability. Moreover, using aerial refuelling, the bomber will be able to loiter for as long as a day.

ALBMs offered an engaging means to enhance the survivability of land-based nuclear forces in silos until the arrival of reliable SLBM and ballistic missile submarines. The system had a significant advantage compared to SLBMs, as the missiles could be retargeted before launch. Ground-based systems lacked this capability and could only be retargeted with a notable amount of effort. In theory, the bombers could be used as a second-strike weapon, attacking only those targets that had been missed in a first-strike, or alternately, being shifted from counterforce to counter value targets or vice versa.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

Notes

[1]Russia Releases Footage of New 'Kinzhal' Nuclear-Capable Air-Launched Missile, https://thediplomat.com/2018/03/russia-releases-footage-of-new-kinzhal-nuclear-capable-air-launched-missile dated March 12, 2018, accessed on December 07, 2018

[2] The GAM-87 Skybolt, intended to be launched from Boeing B-52 Stratofortress and Avro Vulcan bombers with a range of 1850 Kms.

[3]A dominant force in America's defence arsenal and one of the mainstays of United States military deterrent strategy

[4] The U.S. Department of Defence's 2017 report on Chinese military power, www.dia.mil/News/Speeches-and-Testimonies/Article-View/Article/1457815/statement-for-the-record-worldwide-threat-assessment dated March 06, 2018, accessed on December 12, 2018

[5]The new bomber, dubbed the H6X1/H-6N by the U.S. intelligence community, has been modified from standard variant H-6s for the ALBM delivery mission. The modifications have been made by Xi'an Aircraft Industrial Corporation, the manufacturer of all H-6 bomber variants since the late-1950s.

[6] The CH-AS-X-13, meanwhile, is a two-stage, solid-fuel ballistic missile with a 3,000 kilometer range; it is likely a variant of the DF-21 medium-range ballistic missile. The missile may use lighter weight composite materials in its airframe to reduce the necessary carry weight for the bomber.

[7] China is developing a nuclear-capable air-launched ballistic missile, likely based off the DF-21, https://thediplomat.com/2018/04/revealed-chinas-nuclear-capable-air-launched-ballistic-missile/ dated April 10, 2018, accessed on December 12, 2018