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Assessing the Minuteman III ICBM Test by US

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Image: National Park Service

On 16 August 2022, the US military tested[1] the Minuteman III ICBM. At the time of the test, Col. Bryan Titus, Vice Commander of Space Launch Delta 30 said[2] "The test launches demonstrate the readiness of U.S. nuclear forces and provide confidence in the lethality and effectiveness of the nation's nuclear deterrent". The test had been delayed twice earlier. The first time when Ukraine War had started and President Putin was issuing[3] nuclear threats; and second time was, after the visit of Nancy Pelosi[4] when China became too aggressive on Taiwan, with its firing of nuclear capable missiles around Taiwanese waters.[5] The US had then found it best not to test, so as not to ratchet up the tensions any further.

Understanding the Minuteman III Origin

The arms race between the US and USSR had begun in the 1950s. On November 26, 1956, the Secretary of Defence Charles E. Wilson assigned[6] responsibility, for developing Intercontinental Ballistic Missiles (ICBMs) to the US Air Force. The Air Force responded by activating its first ICBM within a year. The first ICBM was known as the Atlas[7]. It was able to strike a targeted area up to 500 miles away. The Atlas was born because the US wanted a capability, to provide a quick, action-oriented response, and a reliable nuclear deterrent through a new concept, that combined space technology with nuclear capability. The Atlas was fueled by mixing the liquid fuel with an oxidizer[8]. It took thirty minutes of preparation time to launch the Atlas, due to the liquid fuel being used in it. Other such liquid- fuel missiles included the Thor, Jupiter, Titan I, and Titan II. As the competition over missiles with USSR became intense, the US defence planners[9] observed that their nuclear forces (ICBM), were vulnerable to a Soviet first strike due to the liquid fueled missiles (Atlas, Titan I) limitations, thereby, neutralising[10] any attempted American nuclear retaliation in the future. As the missile systems improved, the Air Force looked for ways to launch missiles faster. An Air Force designer, Col Edward Hall, advocated solid fueled propellant. In the late 1950s, he designed solid fuel which was ground breaking technology. This allowed for instant combustion, and so there was no need to add fuel[11] before the launch. So, it saved time with respect to missiles[12] like Atlas and Titan I. Not only was solid fuel more responsive, but it was more accurate and enabled the missile to go further distance. Also, it was much safer than the explosive process of mixing, the liquid fuel and the oxidizer. Thus, by 1958, the Air Force had its first solid fuel ICBM called 'Weapon System Q'. Col Hall changed the name of this missile to Minuteman I, in order to exhibit the quick response time of the missile system.

Minuteman I to Minuteman III

The ability to launch within minutes exhibited the distinct characteristic of Minuteman I, as compared to all earlier ICBM types. Minuteman I was designed to be an efficient, and reliable weapon system. It was lighter and cheaper to manufacture as compared to other systems. Minuteman I could be mass produced[13] and this was another advantage. The reason they were mass produced was that the US wanted the USSR, to fear these missiles and target them, instead of targeting American civilian population centres. By 1965, the US had 800 operational Minuteman I missiles.[14] With innovation came Minuteman II, which had a better fuel system, allowing for better range[15] and survivability of the missile. Soon the Minuteman III was developed. Unlike the all other previous missiles, it carried three independent warheads, in place of only one. So, the multiple independently targetable re-entry vehicles (MIRV) capability was introduced with this concept.[16] The Minuteman III had a better guidance system, and so it could strike targets up to 8000 miles away. Also, with three warheads, the blast radius was doubled. By 1977, 550 Minuteman III were ready to be launched. In 1962 Robert McNamara[17] claimed that the US nuclear force now has a counterforce weapon, with respect to the Soviet capability to perform a second strike. It meant that these Minuteman III missiles would target military installations, missile complexes and submarine bases. Hence, cities were not the target anymore, even though they would definitely be damaged as collateral. The aim of counterforce was to eliminate nuclear capability of the adversary.

Future of Minuteman III

Minuteman III is scheduled to be operational[18] until 2030. Currently, the US has 440 operational Minuteman III ICBMs[19]. After that, it would be replaced by Ground Based Strategic Deterrent (GBSD), which is being now called LGM-35A Sentinel. With the arrival of GBSD, the silo- based ICBMs would become less[20] prominent. LGM-35A Sentinel is an ICBM that is being developed[21] since 2014 by Northrop Grumman, along with Air Force Global Strike Command (for US Air Force). It will have a range[22] of more than 5500km. In order to engage the adversary during a surprise strike, the ground control stations will be connected[23] to space in order to ensure quick connection to ICBMs. It would allow the advanced command and control systems to cut down on reaction[24] time for the higher authorities to take needful action.

The American Department of Defense officials said that the Minuteman III life would not be extended, because in 2015 the final decision had been made to go ahead with the GBSD[25]. It is high time that it be replaced with GBSD, because this step to replace the Minuteman III has been long pending. Though it is a reliable missile but it is nearing the end of its life[26].

NOTES:

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[5] Ibid.

[6] "Chronology: 1950-1959", *Air and Space Forces Magazine*, November 24, 2018, https://www.airandspaceforces.com/chronology-1950-1959/, Accessed on September 25, 2022.

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[12] Ibid.

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[19] Missile Defense Project, "Minuteman III," *Missile Threat*, Center for Strategic and International Studies, August 2, 2021, https://missilethreat.csis.org/missile/minuteman-iii/. Accessed on September 25, 2022.

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[22] Ibid.

[23] Ibid.

[24] Ibid.

[25] Toby Dalton, Megan Dubois, Natalie Montoya, Ankit Panda, George Perkovich, "Assessing U.S. Options for the Future of the ICBM Force", *Carnegie Endowment For International Peace*, September 7, 2022, https://carnegieendowment.org/2022/09/07/assessing-u.s.-options-for-future-of-icbm-force-pub-87808, Accessed on September 25, 2022.

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