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Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

Biswas, A. (2015). China's WU-14 Nuclear Device: Impact on Deterrence Equation. *IndraStra Global*, 6, 1-5. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-52283-4>

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A hypersonic glide vehicle (HGV) is shown in flight against a blue sky background. The vehicle is white with black wings and a black nose cone. The text "CHINA'S WU-14 NUCLEAR DEVICE" is overlaid in large, bold, white letters on the right side of the image.

CHINA'S WU-14 NUCLEAR DEVICE

IMPACT ON DETERRENCE EQUATION

ARKA BISWAS

China's WU-14 Nuclear Device: Impact on Deterrence Equation

[IndraStra Global](#) [Tuesday, June 30, 2015](#) [China](#) , [Greater Asia](#) , [India](#) , [United States](#) , [USA](#)

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China's Defense Ministry recently **confirmed** the successful test of its hypersonic glide vehicle (HGV), **called** WU-14 by the Pentagon, on June 07, 2015. The vehicle was tested atop a ballistic missile and has reportedly been successful in demonstrating its maneuvering capability. This was the fourth test of WU-14 in the last 18 months, with previous tests being conducted on **January 09, August 07,** and **December 02,** 2014.

What's New?

As noted in a US congressional research service (CRS) **report** released right after WU-14's first flight test, "the hypersonic glide vehicle (HGV) test appears to mark a step beyond China's anti-ship ballistic missile (ASBM) program, featuring a slower, shorter-range manoeuvrable re-entry vehicle (RV)—and may point to a second-generation ASBM."

However, over the course of four tests, China has managed to not only increase the range of the vehicle, but also increase its speed. Unlike previous tests, the recent test showcased, what has been **labelled** by intelligence officials as, WU-14's extreme maneuvers. With a speed of about 10 mach (around 7680 miles per hours) and the ability to carry out aerodynamic maneuvers, the vehicle can avoid missile defense interceptors, which usually rely upon a device's predictable ballistic trajectory tracked through satellite sensors and radars. The vehicle's ability to travel long distance increases the range which China can now target. The vehicle also distances the vulnerable mid-course phase of the missile's flight from the target and its defenses.

Implications for the US

China has been already developing ASBM, known as DF-21D, which is a battlefield-range ballistic missile designed to target moving ships. **DF-12D**, a solid propellant missile, has better accuracy, reportedly has a range of 2000 km and can carry a nuclear warhead big enough to inflict significant damage to large naval vessels. As Rajeswari Pillai Rajagopalan notes, DF-21D gives China the "capability to defeat US carrier strike groups operating in the region, making it a "no-go-zone" for the US and other advanced navies. Observers in the US are particularly concerned as the "U.S. Navy has not previously faced a threat from highly accurate ballistic missiles capable of hitting moving ships at sea." They are thus **calling** DF-21D a "game-changing" weapon. A maneuverable re-entry vehicle

(MaRV), like WU-14, atop DF-21D will make it further difficult for any missile defense systems to intercept.

The CRS report had noted after the first test that it will take China some years before it could bring WU-14 into service for the offensive application. However, the frequency with which China has conducted WU-14's tests, it appears that China will soon be able to deploy the vehicles atop DF-21D for use. Rick Fisher from the International Assessment and Strategy Center notes China's urgency in deploying WU-14, stating that "with four tests in about a year and a half, it is possible that China would conclude development of an early version for deployment in one to two years."



Image Attribute: Dong Feng / DF - 21D MRBMs

DF-21D mounted with a WU-14 vehicle shifts the deterrence equation between the US and China in latter's favor. This has been captured by growing concerns in the US accompanied by calls to counter-balance China's WU-14. The US has been looking to deploy Zumwalt DDG 1000 destroyer as a response to China's DF-21D. Admiral Lyons has argued that, with its power, cooling, space and weight margin,

Zumwalt DDG 1000 destroyer can operate in stealth and is, therefore, the best choice for the US against China's DF-21D. However, given budgetary constraints, the US had decided to only build three such destroyers and without ballistic missile defense capability.

But the successful tests of WU-14, has brought the emphasis back on deploying effective ballistic missile defenses. For instance, there has been a call to accelerate the development of rail gun weapon. Rail gun fires pellets at hypersonic speeds forming a cloud of them that can destroy WU-14. Similarly, there is a call to also speed up the development of field directed energy weapon systems. The US has been in the process of developing these weapons systems for a long time. But, as has been noted in a **report** submitted to the US Under-Secretary of Defense for Acquisition, Technology and Logistics in 2007, multiple factors, such as “unexpected technological challenges” or “the lack of understanding of the costs and benefits of such system” have resulted in the lack of a substantial progress in that front. Another way for the US to restore balance in its deterrence equation with China is to develop its own hypersonic glide vehicles.

The test of WU-14 by China is definitely going to speed up the US' quest for enhancing both its offensive and defensive technological capabilities. Yet, given the on-going defense budget squeeze, Washington will have to be careful in identifying the right technologies which it could invest in. The US will simultaneously have to factor in time, given the speed with which China is moving towards operationalising WU-14 vehicle atop DF-21D. This factor of time will, however, simultaneously depend on the role that China assigns to this new generation ASBM (DF-21D with WU-14 device) in its broad nuclear doctrine.

Takeaway for India

China's WU-14 also increases the threat to India. It is, however, important to note here that India's missile defense program is at its nascent stage. Thus, WU-14's ability to demonstrate extreme maneuver does not make much difference

against India, considering that Indian ballistic missile defenses are still to prove its efficiency against non-maneuvrable re-entry vehicles.

But the frequently conducted flight tests of WU-14 by China feed into the larger strategy adopted by Beijing of the rapid modernisation of its nuclear forces. Traditionally, China has projected itself as a restrained nuclear power with a policy of no-first-use and a moderate qualitative and quantitative expansion of its nuclear capabilities. However, over the last few years, Beijing has pursued nuclear modernisation with much vigor, especially on the qualitative front. Development of advanced technologies pertaining to delivery vehicles and nuclear devices has simultaneously been accompanied by certain doctrinal shifts, for instance, the omission of no-first-use from China's defense white paper. Although these nuclear developments in China are primarily US-centric, it is inevitably going to motivate India to pursue the modernisation of its own nuclear forces, along with the development of its missile defense systems.



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