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NEW VARIANT DF-5C JOINS THE EQUATION WITH TEN MIRVs

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The PLA Rocket Force has test fired another nuclear capable ICBM which is a new variant in the DF-5 series referred to as the DF-5C. The missile is MIRV capable and is believed to be capable of carrying 10 nuclear warheads.[1] The DF-5 design is the oldest ICBM (by design) in the PLARF's arsenal and surprisingly still keeps evolving. Earlier, China had MIRVed the same design with three warheads designated as the DF-5B which was shown during the September 2015 parade. China, at present, has a very advanced nuclear deterrence capability and is also constantly working towards improving it. China continues to have three variants of ICBMs in its nuclear structure. Considering the sub variants, there are now three different MIRV capable ICBMs: DF-5B, DF-5C and DF-41.

The test launch of the DF-5C, a new variant in the DF-5 series, comes as the biggest surprise to China military watchers. The DF-5 ICBM is a vintage design that was inducted in the early eighties as a unitary warhead platform. At present, China's missile capabilities have grown to a high level of sophistication with mastery of solid rocket motors and missile guidance systems. Hence, it would normally be expected that the old silo based liquid fuelled missile would be decommissioned eventually, particularly as the new, mobile, advanced, Multiple Independently targetable Re-entry Vehicle (MIRV) capable missile – the DF-41 – is entering service. But, to the contrary, China has been improving on the DF-5 series by adding MIRV capability to the missile.

The max range of the DF-5 is between 12000 km to 14,000 km,[2] which makes it capable of reaching almost all parts of the United States mainland. However, given that this old design will be carrying a heavier payload (10 MIRVs), some reduction in range is bound to happen because of the variation in the thrust to weight ratio. This is unless the liquid fuel motors were enhanced or a better fuel with higher burn rate is used. Conversion to a better fuel or enhanced engine can be confirmed if more tests are

conducted in future than what would be required for a modification.

On the recent test, China's Ministry of National Defence in a written statement said, *"It is normal for China to carry out scheduled scientific research and tests within the Chinese territory and the tests don't target any specific country or object".*[3] It is pertinent to point that the indirect and still hazy confirmation came only after Shenzhen TV raised the issue citing the US media reports on the test.[4] China stills restrains from revealing information regarding its nuclear force, though this attitude has seen quite some change compared to earlier times when complete secrecy was maintained.

However, the revelations have been mostly via indirect means like unconfirmed low resolution images spread in the Chinese internet media. There were, at times, propaganda video releases in the state controlled CCTV showing PLARF capabilities. But most of the revelations were seldom followed by official confirmations. Even if there were official confirmations, they have been very vague and highly diplomatic with high restraint on any information that could help remove the ambiguity on the issues for external observers.

The biggest question is, why China would build more versions of older generation liquid fuelled ICBMs when it has developed the most modern solid fuelled and mobile missile: the DF-41. One possible reason could be that a mobile missile like the DF-41, though it offers better survivability, requires complex command and control structure. Particularly, in a still largely communist style military where centralised control is emphasised more than flexibility, silo-based static missiles can easily (in comparison to mobile) be controlled directly from the top command.

The latest test might point to the possibility that China's nuclear arsenal is far bigger than previously thought and might even be expanding. It was believed until now that China has just 250 nuclear warheads.[5] With more missiles being MIRVed the number of warheads stockpiled could actually be more. Hence, spreading more of these warheads across the Chinese mainland with smaller mobile missile brigades will relatively weaken central control in the sense of securing these weapons. Here, control refers to the typical communist sense of having absolute party control over the armed forces and its resources. This could be a reason for opting for more silo based missiles.

China at present is speculated to be having around 20 vintage DF-5 operational ICBMs. Assuming that half of this is upgraded to DF-5C and the other half to DF-5B, the total number of warheads assigned would be 130. Hence, a vertical proliferation is a real possibility if China does not possess sufficient numbers at present. However, China binds itself to the No First Use doctrine and minimum but credible

deterrence force structure. But the uncertainty here is on how the credible minimum deterrence requirement number is arrived at given that there are multiple factors involved in determining the number for assured retaliation.

With China increasing the number of silo based MIRV ICBMs, the problem of survivability comes into question. Unlike mobile missiles carried in TELs, silos are static and hence if the location is known to the adversary, they can possibly be targeted. The general practice to counter this is to create multiple silo locations with dummy silos to increase targeting complexity. The silos are usually hardened to withstand a nuclear strike. During the Cold War, silos that could withstand 1000 psi were built. These types of silos could withstand anything but a direct hit or a very close proximity nuclear explosion. In addition, considering the improving conventional precision strike capability of the United States – particularly the capability to effectively operate in a contested airspace and to strike Hardened and Deeply Buried Targets (HDBT) – China, in addition to making passive countermeasures to protect the silos, might also consider active measures by coordinating other techniques. For instance, the ASAT capability might come in handy in degrading the accuracy of enemy precision strike weapons and the effectiveness of deep penetration air strike aircraft.

It is very likely that China would be adopting these countermeasures, and with increasing numbers, more of dummy silos are very likely. This will increase the targeting complexity for any adversary, particularly for the United States if they consider counter force targeting. In addition, the silo based missiles are kept in semi alert state at all times to be able to launch within the shortest possible time when under attack. It is known that ICBMs like the DF-5 take around two hours to fuel while inside the silos. It is to be noted that, as a result of the START treaty between US and Russia, the number of warheads in both countries are being reduced[6], which actually strengthens China's deterrence capability as with reduced numbers, the option of counter force targeting fades. However, there are speculations among China's military analysts that if PRC increases its nuclear arsenal, the US might withdraw from its treaty commitments and might move towards a nuclear build-up [7] which will complicate Chinese deterrence equations, and it might have to do more by throwing in huge amounts of additional capital to enhance deterrence. The US arsenal was built to cater for the massive Russian arsenal and the smaller Chinese nuclear force.[8] A large arsenal – even if China thinks it is within the minimum deterrence requirement – will be a cause for serious concern if it goes even close to upsetting the deterrence equation with the US. This might kick up an uncontrollable nuclear arms race.

The improvements in the US ballistic missile defence system might be forcing China to increase its nuclear arsenal, as argued by some military strategists. But, though it is improving, it would take a long time to become effective. This observation is based on the technological challenges involved in ICBM defence. Those technical challenges exist ever since the seventies when the US Star Wars programme was conceived with very minimal progress achieved so far. Further, the actual improvements are taking place with systems that are being designed against the threat from SRBMs, MRBMs and IRBMs, but not ICBMs. In addition, the only dedicated BMD system the US has deployed against ICBMs is the Ground- based Mid-course Defence (GMD) system. This system is well known for its ineffectiveness, given the massive test failures despite the scripted nature of the tests. The system at best can take on a lone rudimentary unitary warhead without countermeasures. Even in this scenario the kill probability might not be very high. So, given the minimal level of progress made in defence against ICBMs, and considering the timeframe it took to achieve it, it can be observed that the technology for defending against ICBMs would take a long time to perfect to a point where it would have real impact in the nuclear deterrence equation.

The Chinese ICBMs are claimed to be quite sophisticated and are likely to be incorporated with effective countermeasures. It is to be remembered that countermeasures are quite easy to deploy; they are technologically simple and are highly cost effective, while on the other hand, BMD systems are technologically very complicated and very expensive. Hence, at present, the Chinese nuclear ICBM force will not be affected by the US BMD capability, and is not likely to be a factor in Chinese nuclear force calculation, at least for the present.

With China's SSBNs yet to be an effective third leg of deterrence, the PLARF will continue to enhance the land based systems. With continuous improvements being done to the Chinese nuclear force, China will continue to remain the country with the most active ballistic missile programme in the world.

(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] "China tests DF-5C missile using 10 warheads", http://www.chinapost.com.tw/international/americas/2017/02/01/490545/China-tests.htm, 1 February 2017

[2] "东风-5C 导射程超 1 万公里 10 枚分导弹头战力倍增"http://mil.huanqiu.com/china/2017-02/10116172.html, 13 February 2017

[3] "China says its trial launch of DF-5C missile normal", http://eng.mod.gov.cn/TopNews/2017-02/06/content_4771782.htm, 6 February 2017

[4] "PLA drill features advanced missile", http://english.cctv.com/2017/02/06/ARTIV4ZdgYFQOs2Gn9VgzBsU170206.shtml, 6 February 2017

[5] "美媒热炒中国试射东风 5C 导弹 哀叹第一岛链已不保", http://mil.news.sina.com.cn/china/2017-02-09/doc-ifyamkzq1187302.shtml, 9 February 2017

[6] ibid

[7] No.1

[8] ibid