



## Tank Biathlons Help PLA Make Improvements to Type 96-Series MBTs

**OE Watch Commentary:** The accompanying excerpted article is an interview with Zhang Peng [张鹏], Executive Deputy Chief Designer of the Type 96B main battle tank (MBT) and deputy director of a scientific research institute at the Inner Mongolia First Machinery Group Corporation [内蒙古一机集团]. The First Machinery Group Corporation is part of Chinese defense conglomerate NORINCO, and primary developer of tanks for the Chinese military.

The Type 96B is the latest upgrade of the Type 96, which was first fielded in 1997. Compared to China's most advanced MBT, the Type 99, the Type 96B is roughly 10 tons lighter. As of 2019, the PLA is reported to field some 2,500 Type 96 MBTs and less than 900 of the Type 99s, likely due to lower production and maintenance costs. Some parts of China's extensive coastal and mountainous terrain is also less suited for heavier tanks.

The bulk of the interview is regarding China's use of the Type 96 series tank participation in annual tank biathlon competitions held in Russia. China first joined the competitions in 2014. China fielded the Type 96A in previous competitions but began bringing the Type 96B to competitions in 2016, partly informed by their experience in the biathlons. In the latest competition, held in August of this year, the Type 96Bs performed well during a series of tests such as firing while moving, and the Chinese team emerged as victors for the group competition.

According to the article, the tank biathlons have proven to be a useful testing ground for PLA crews and the design team, allowing them to more rapidly identify and address a wide range of issues from serious design flaws to crew comfort issues.

According to Zhang, Cao Fuhui [曹福辉], the lead designer of the Type 96B, was very conscientious about making small improvements to the design to better accommodate the crew's needs, such as optimizing the seat height for the drivers or improvements to controls. The Type 96A, for example, used a traditional lever system to control direction, but the Type 96B adopted civilian car-like steering wheel and controls. This appears to be part of a larger shift in the PLA's vehicle design philosophy as seen in the Type 15 MBT's adoption of similar controls. The article notes that these improvements have been popular with the tank crews who appreciate the increases in ease of use and reliability. (Also see: "China: Type-15 MBT Export Variant Shows Off Enhanced Protection and Mobility," *OE Watch*, September 2019) **End OE Watch Commentary (Wood)**



Type 96B MBT.

Source: Vitaly V. Kuzmin via Wikimedia, <https://upload.wikimedia.org/wikipedia/commons/f/f8/TankBiathlon2016Final-09.jpg>, CC BY-SA 3.0

*“The 96B tanks have given solid performances and achieved second place.”*

**Source:** “追求极致之路—96B坦克常务副总师张鹏:访谈录 (Pursuit of the ultimate path – Interview with 96B Tank Executive Deputy Chief Designer Zhang Peng),” *Ordnance Knowledge* [兵器知识], Issue 4 (April) 2019.

*Zhang Peng is deputy director of a scientific research institute of the Inner Mongolia First Machinery Group Corporation, and deputy chief of the Type 96B tank development project. He has a long career in tank and armored vehicle development and has participated in main battle tank powerplant system and defensive system research and a wheeled armored vehicle's brake system development. In recent years, he has published several papers in relevant forums on weapons and equipment, such as “An Overall Solution to Improve the effectiveness of Active Protection Systems” and “Performance Analysis and Optimization of High-Pressure Intake System Filtering Elements.”*

**Reporter:** Chief, first of all, please briefly discuss the Type 96 series MBTs' participation in tank competitions.

**Zhang Peng** (hereinafter referred to as “Zhang”): The 2018 competition was already the Type 96 series' fifth appearance at a tank competition. The first year the Type 96A participated, so it was the unimproved version. For the next year, we fielded the Type 96A1, a slightly improved version. Beginning in the third year of the competition we began fielding the Type 96B, and so far it has participated three times. The 96B tanks have given solid performances and achieved second place.

**Reporter:** These competitions have had a big impact on the tank, especially the road wheel accident right? [referring to an accident where 96Bs at their first tank biathlon threw a road wheel, which keeps the tank tread aligned]

**Zhang:** The road wheel incident happened in 2016, right after the 96B upgrade was, and the preparation time is relatively short. The first upgraded Type 96B tank came off the assembly line by the spring festival of 2016 [early February] and was delivered to the PLA to begin training at the end of April. In two months it is difficult to resolve all reliability issues. The tanks arrived in Xinjiang for training and two months later were sent to Russia for the competition. In the later stages of training, suspension system fatigue related issues like the wheels increased, and despite a series of emergency measures and further optimization and improvement of the key components, the new structural spare parts did not have time for a full cycle of reprocessing and manufacturing. From a technical point of view alone to analyze this problem, the root cause of the issue is that the demands of the competition exceeded the design's limitations for fatigue.

**Zhang:** The 96B tank has been a great help for our design philosophy. For example, in terms of reliability, equipment used really hard to be able to design appropriately, but also training must be realistic or close to the harsh environment of actual combat, that is to say, during the development and assessment process we cannot hesitate to push equipment to its limits in order to truly test the reliability of equipment. After all, equipment is being developed for the stress of combat and even if the performance requirements are very high, once on the battlefield, there is no time to go back and make improvements...

**Reporter:** How did the 96B tank perform when it was first used in PLA training?

**Zhang:** The 2016 tank biathlon team was resistant at first to use the 96B, despite its significantly enhanced performance compared to the 96A tank. The controls of the 96B are different from the 96A in all aspects. For example, the 96A uses the traditional lever steering while the 96B has a steering wheel. The troops were concerned that they were only familiar with the operation and support of the other equipment. Coupled with the short training time, adopting the new equipment meant that the soldier's time to learn the new equipment and become physically and mentally accustomed with it was compressed. But by the end of the training period, the 96B tank was widely accepted by the troops as they became more proficient with it.