

The Chinese Type 98 Main Battle Tank:

A New Beast from the East

by James M. Warford

On October 1, 1999, during a parade in Beijing marking the 50th anniversary of the People's Republic of China, the world got a look at the current Chinese armored force, including a first glimpse of the new Type 98 main battle tank (MBT). This huge parade, the first since 1984, reportedly involved 500,000 PLA personnel, and provided an unprecedented view of the Chinese army's latest weaponry and equipment.

The PLA paraded three different tank types, with one of the most significant surprises being the new Type 98, which resembles a Russian T-72 MBT with a new and well-protected "box-like" turret. The Type 98 (and other improved and evolving armored vehicles like it) represent a potentially significant and continuing heavy threat confronting U.S. Army forces in the future.

While two of the tanks paraded by the PLA were shown for the first time in their latest forms — the Type 80-III/Type 88B and the Type 85-III/Type 88C — the Type 98 had never before been seen in public. This tank, also known as the WZ-123, represents a significant improvement in Chinese MBT development.

The Type 98 actually began during the continuing development of another Chinese tank known as the Type 90-II/Type 90-IIM. In late 1991, the China North Industries Corporation (NORINCO) released initial information describing the development of the Type 90-II. Reportedly, a deal had been signed in May 1990 between China and Pakistan allowing for the production of this new tank in Pakistan. As of early 1999, however, the Type 90-II had still not been put into production in either China or Pakistan.

Although the Chinese consider the Type 90-II a tank development for the export market, there apparently is a future for the tank in Pakistan. In January 1998, a photograph was published showing the prime minister of Pakistan in the driver's position of an "Al-Khalid" or P-90



The New Chinese Type 98 – Configuration of the turret roof, from left, includes the covered commander's machine gun, the Laser Warning Receiver, wind sensor, and the Laser Self-Defense weapon.

MBT. The photo confirms that the Al-Khalid is either based on the Type 90-II or is, in fact, the same tank. Pakistani press reports in August 1999 finally confirmed that the Al-Khalid is now in production at the Heavy Industries facility in Taxila, Pakistan. Reportedly, this new tank has evolved into a three-way development effort between China, Pakistan, and Ukraine, with Ukrainian support focused on the addition of the 6TD 1200-hp diesel engine. Finally, the Chinese exhibited a model of the Al-Khalid labeled the "Type 2000" tank in 1999. According to the available information, the Type 2000 tank is the international version of the Al-Khalid currently being marketed by the Chinese.

Since the Type 90-II/Type 90-IIM failed to meet expectations during trials in China, a major effort was initiated to improve its performance. Unconfirmed reports claim that in 1997 the Russians conducted a series of secret demonstrations of Russian MBTs in China at a PLA tank test-center in the city of Zhang Jia Kou. Reportedly, these demonstrations pushed the PLA to demand even better performance from its next MBT. That new, previously unseen tank was shown for the first time in model form during an exhibition in Beijing in 1999. The model clearly showed a new tank development which combined a T-72-like hull with a

new "box-like" turret. Additionally, the tank model was fitted with what appear to be hunter-killer style optics for the commander and gunner, a wind sensor, and two new devices on the turret roof (see photo at left). Undoubtedly timed to coincide with the October 1st parade, photos of this new tank on maneuvers with the PLA suddenly appeared in the Chinese press. While the exact role and designation for this tank are unconfirmed, it is probably a prototype of the Type 98, known as the Type 96 MBT. It is safe to say, however, that the Type 96 is not exactly the same tank that was in the anniversary parade through Beijing.

When the Type 98 was first seen during the rehearsal for the parade, it was initially incorrectly identified as the Type 90-II/Type 90-IIM. Photos taken during the actual parade, however, confirmed that it was only a relative of the Type 90-II and was still different from the Type 96. The Type 98 incorporated a variety of subtle differences from the Type 96, including different style hull skirts, tracks with rubber pads, and a slightly different box-like device behind the gunner on the turret roof. The Type 98 is armed with a 125mm smoothbore main gun fed by a carousel autoloader. The source of this gun and autoloader, which allow the crew of the tank to be reduced to three men, is believed to be the former Soviet Union/Russia. While not much is known about the tank's fire control system, it is fitted with a new stabilized independent sight for the commander.

Perhaps the most interesting characteristic of the Type 98 is the addition of what appears to be a previously unknown active self-defense system. Unlike contemporary Russian active tank self-defense systems like Drozd, Drozd-2, and Arena, which launch projectiles to disable or "shoot-down" incoming anti-tank missiles and projectiles, the Chinese system apparently uses a high-powered laser to directly attack the enemy weapon's optics and gunner. The system includes what



Chinese Type 98 MBTs on parade in Beijing in October. Note new hull skirts, rubber padded tracks, and the raised turret roof.

appears to be a laser warning receiver (LWR - the dome-shaped device on the turret roof behind the commander's position), that warns the crew that their tank is being illuminated by an enemy range-finding or weapon-guidance laser. The turret of the tank can then be traversed to face the direction of the enemy threat, and the laser self-defense weapon (LSDW - the box-shaped device on the turret roof behind the gunner's position), can be employed against the source of the enemy laser.

While the engagement procedure of the Type 98's self-defense laser is unknown, published reports concerning similar weapons describe a procedure where the laser weapon would first use a low-powered beam to locate the optics of the enemy weapon. Once the enemy weapon was located, the power level of the laser would be immediately and dramatically increased. Such an attack would disable the guidance optics of the enemy weapon and/or damage the eyesight of the enemy gunner.

The turret-mounted system carried by the Type 98 is very similar to a tripod-mounted laser weapon that was seen for the first time at an arms exhibition in Manila in 1995. Identified at the exhibition as the "Laser Interference Device," it matched the description of a known Chinese laser weapon called the ZM-87. According to its promotional information, one of the ZM-87's major uses is to "injure or dizzy targeted individuals." The ZM-87 can reportedly injure the human eye at 2-3 kms, this rising to over 5 kms using a 7-power magnification device. Additionally, short-term "flaring blindness" can be inflicted on the human eye at up to 10 kms. The ZM-87 and the laser weapon carried by the Type 98 should not be confused with electro-optical

"dazzlers" like those turret-mounted devices used by the Iraqis during Operation Desert Storm. Those Iraqi devices (some of which are believed to have been supplied by the Chinese), are designed to confuse the tracking systems of Western/NATO anti-tank guided missiles (ATGMs), without directly attacking the controlling optics or the eyesight of the weapon's gunner. The available photos of the Type 96 have also confirmed that the laser weapon can be elevated to a higher angle than the tank's main gun, indicating that the engagement of attack helicopters is possible.

The Type 98 reportedly weighs 50 tons and is powered by a new 1200-hp diesel engine. As far as armor protection is concerned, some initial observations can be made. Generally speaking, the Type 98's turret is larger than the turrets of other PLA tanks. More importantly, the turret has been lengthened or extended forward, creating a noticeable gap between the lower edge of the turret-front and the hull decking. This new gap is most visible just to the right and left of the driver's position (see photo on top of next page). It is very likely that the Chinese decided to increase/improve the turret frontal armor protecting the Type 98 to the point where extending the turret forward became a requirement.

For comparison, the Type 90-II/Type 90-IIM prototypes, which carry a smaller turret and are two tons lighter, do not have this tell-tale gap between the turret frontal armor and the tank's hull decking. While details concerning the type and design of the Type 98's armor are lacking, there is the possibility that its armor is based on, or influenced by, the Russian T-80U MBT. When the PLA's relatively recent purchase of Russian T-80Us is combined with what was learned during the parade, a Russian armor connection is

certainly possible. Like the T-80U, the Type 98 incorporates turret frontal armor cavities (one on either side of the main gun — clearly visible when viewed from above), covered by plates which are fitted flush and bolted to the turret roof. The purpose of these cavities may be to allow the composite contents of each cavity to be easily upgraded and changed during the life of the tank.

In addition to these frontal armor cavities, the construction of the turret itself may provide some insights into the Type 98's armor. Close examination of the turret roof reveals that the portion of the roof above the crew compartment is raised and slightly rounded when compared to the lower and flat area of the roof above the frontal armor arrays. Additionally, there has been speculation that the Type 98's turret is actually manufactured in two parts, consisting of a cast crew compartment protected by box-like frontal armor arrays or "packs" that are welded in-place. A close look at the turret roof also reveals prominent welding seams or "beads" that run from the turret front (on either side of the main gun), back to the raised portion of the roof.

Finally, the Type 98's turret is fitted with six lifting "eyes;" four on the turret front (two on either side of the main gun) and two on the turret roof (one on either side of the main gun), just inside the welding seams on the flat part of the turret. While it's clear that these lifting eyes are not intended for lifting the entire turret, their purpose is still the subject of speculation. If they were used solely for the initial installation or attachment of the frontal armor arrays to the rest of the turret, it would be unnecessary to keep them fitted to the tanks after they left the factory. In fact, all 18 Type 98s that participated in the parade were fitted with the lifting eyes.

All of this information concerning this new tank's turret seems to point to a very interesting possibility: that the lifting eyes may be intended to facilitate the removal, upgrade and/or modernization, and subsequent replacement of both turret frontal armor arrays. The triangular arrangement of the lifting eyes does generally support the use of a "T-shaped" lifting "sling" that would certainly be available in a variety of maintenance organizations. If true, this would mean that the Type 98's turret frontal armor could be completely changed on an as-needed basis. Like the Cold War "shell game" established by the evolution of Soviet/Russian tank turret armor, perhaps the Type 98 and the potential of its turret armor has ushered in a shell game all its own.

The production status of the Type 98 is still unclear. The group of Type 98s that participated in the Beijing parade may be prototypes. But unlike the infamous PLA tanks photographed crushing a historic rebellion in Beijing, the tanks that returned to Tianenmen Square for the 1999 parade provide a clear glimpse of both the present and the future of Chinese MBT development.

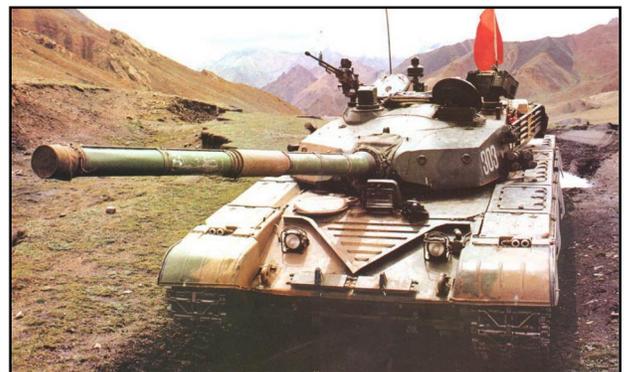
Like the majority of potential threat military forces around the world, the PLA is modernizing at a significant pace. So fast, in fact, that many of the new weapons systems that remain on the drawing boards throughout the West are at risk of being surpassed by our potential opponents.

As the U.S. Army turns its focus inward and reconsiders the design of its own armored force, it could be a costly mistake to underestimate the heavy threat represented by tanks like the Chinese Type 98 — the Beast from the East.

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Elevated view of the Type 98 reveals details of the box-like turret roof, new optics for the commander and gunner, and the triangular lifting eyes along the turret upper edge. The Laser Self-Defense Weapon can be seen on the gunner's left.



This photo of the earlier Type 96 prototype shows the raised Laser Self-Defense Weapon and a dome-shaped Laser Warning Receiver on the rear of the turret roof. This model also had steel tracks.



The earlier Type 90II/Type 90 IIM, seen here in a manufacturer's brochure with simulated add-on armor, did not meet China's expectations, but may be built for export.