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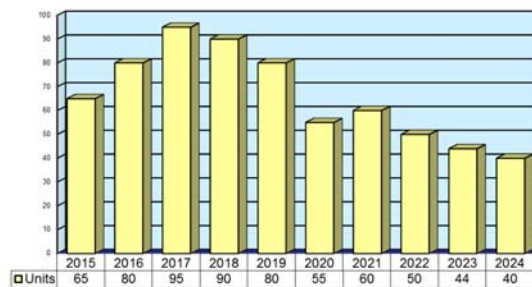
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ZBL-09

Outlook

- Serial production of ZBL-09 series vehicle ongoing for Chinese domestic procurement and export
- First export order of ZBL-09 series vehicles was from Venezuela, deliveries began in December 2014
- Forecast reflects domestic Chinese production for PLA procurement and export sale, as well as possible licensed production in Argentina and Pakistan

Unit Production Forecast
2015-2024



Orientation

Description. A wheeled armored vehicle.

Sponsor. The People's Republic of China Ministry of National Defense, through the People's Liberation Army (PLA), sponsors the development and PLA procurement of the ZBL-09 series.

Licensees. A tentative licensed-production contract for the VN1 export model APC was signed with Argentina's Tandanor shipyards in early 2015.

Status. Development through serial production.

Total Produced. Through 2014, we estimate the prime contractor has produced 493 ZBL-09 series vehicles.

Application. A wheeled armored personnel carrier and infantry fighting vehicle optimized for transporting infantry during both offensive and defensive operations.

Price Range. In 2014 U.S. dollars, the baseline ZBL-09 IFV variant carries an estimated unit cost of \$320,000

Contractors

Prime

**China North Industries Corp
(NORINCO)**

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Technical Data

ZBL-09/VN1

ZBL-09

Crew. Three: gunner, driver, and commander. The vehicle carries seven to 10 fully equipped infantrymen.

over the sides and rear. The vehicle can also accept additional appliqué armor.

Armor. All-welded steel armor, which provides protection against 30mm armor piercing (AP) projectiles over the frontal arc, and 7.62mm projectiles

Dimensions. The following data reflect the latest production-standard ZBL-09 vehicle.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	8.00 m	26.24 ft
Width	3.01 m	9.88 ft
Height	2.10 m	6.89 ft
Combat weight	21.1 tonnes	23.25 tons

Performance. The automotive performance data reflect use on a paved road.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	100 kmph	62.13 mph
Maximum range	790 km	490.89 stat mi
Step	60 cm	1.96 ft
Trench	1.8 m	5.9 ft
Slope	40%	40%
Gradient	60%	60%
Fording	Amphibious	Amphibious
Water Speed	8.0 kmph	4.98 mph

Engine. Deutz BF6M1015C six-cylinder liquid-cooled diesel engine. This powerplant generates 440 kilowatts (590 hp).

cannon and a 7.62mm coaxial machine gun. In addition, the turret is capable of accommodating one HJ-73 Red Arrow anti-tank guided missile (ATGM).

Gearbox. Unspecified automatic gearbox, with one reverse and six forward gear ratios.

The baseline ZBL-09 IFV variant mounts the same two-man turret as that found on the ZBD2000/ZBD-05 amphibious IFV. This turret module mounts a different 30mm, derived from the Ukrainian Shkval design, but retains the same 7.62mm coaxial machine gun and ATGM outfittings as the one-man module.

Suspension and Running Gear. Fully independent torsion-bar suspension with struts on each of the vehicle's eight wheels, with hydraulic power-assisted steering. The vehicle utilizes R20 run-flat tires.

Both turret modules generally mount three electrically operated smoke grenade launchers on each side of the turret, but other configurations integrating fewer or greater numbers of launchers have also appeared in photographic and video materials.

Armament. The ZBL-09 was designed as a modular vehicle concept, and as such, it can mount a wide variety of weapons systems and turret modules.

The most prevalent configuration of the ZBL-09 APC mounts a one-man turret, integrating a 30mm automatic

Variants/Upgrades

Variants. The modular ZBL-09 design is intended to serve as the foundational platform for a broad range of specialized variants. Prominent variants of the ZBL-09 include:

<u>Designation</u>	<u>Description</u>
Armored Command Vehicle	Intended for operation as a mobile command post, this ZBL-09 variant is outfitted with an array of specialized communications equipment and features a modified hull that expands the rear compartment space for command and control activities.
Armored Recovery	Intended to perform a protected recovery function, this variant is outfitted with an unspecified roof-mounted crane system.
Armored Vehicle Launched Bridge	Intended for a specialized tactical bridging role, this variant mounts a powered, folding scissor-type bridge of unspecified length on the roof of the vehicle hull.
ZTL-09	Intended to serve as a direct-fire support vehicle, this variant (also referred to as the PTL-09) mounts a large three-man turret module and integrates a 105mm

<u>Designation</u>	<u>Description</u>
	cannon.
PLL-09	This ZBL-09 variant (sometimes referred to under the designation PLZ-09) is outfitted with a specialized artillery tower module for deployment in a mobile, self-propelled artillery fire support role. The tower mounts a 122mm howitzer.
30mm Anti-Air Platform	This ZBL-09 variant is outfitted with a unique turret module and mounts a CA/SA5 30mm six-barrel cannon intended to intercept incoming missile targets or low-flying air and rotorcraft. The module and weapons system is produced by China South Industries Group.
ST1	Intended primarily for the export market and designed to perform direct-fire support as well as anti-vehicle and anti-tank roles, this variant mounts a two-man turret integrating a 105mm cannon and a 7.62mm coaxial machine gun.
120mm Self-Propelled Mortar	This ZBL-09 variant integrates a dual-barrel 120mm mortar configuration, and is intended to provide close-artillery support for infantry operations.
Communications Vehicle	Intended to operate as a frontline communications vehicle, this variant integrates an array of specialized technical equipment and features an overhauled rear compartment.

Modernization and Retrofit Overview. Not applicable at this time.

Program Review

Background. The highly opaque nature of China's domestic defense industry often makes it difficult for outside observers to obtain reliable and comprehensive information regarding the development histories of its latest armored vehicle products.

Nevertheless, open-source reporting indicates that the prime contractor and PLAGF-associated institutions launched development of the ZBL-09 series of vehicles in the late 1990s or early 2000s.

The design for what would eventually become the production-model ZBL-09 was likely the maturation of a wheeled vehicle design witnessed in photographs during the mid-2000s, and generally designated as the PF2006.

Although wheeled armored personnel carriers have been a ubiquitous component of mechanized military force structures since the 1950s, the past two decades have seen a renaissance in wheeled armored vehicle design that has permanently altered how military planners conceive of, and deploy, such vehicles.

The introduction of modular functionality, increasingly innovative hull configurations, and reformed tactical methodologies have considerably elevated the operational potency of new wheeled armored vehicle designs and made them uniquely tailored to confront the varied and rapidly evolving threat scenarios faced by 21st century militaries.

The PLAGF's introduction of the ZBL-09 series is a clear indication that the service desires not only to modernize its military equipment to a higher

performance and technical standard but also to reform its operational outlook and tactical procedures.

The design of the ZBL-09 derives considerable inspiration from many of the most prominent Western European and North American wheeled armored vehicle products, most notably MOWAG's famous Piranha III.

The Piranha III design has served as the foundational platform for the development of Canada's LAV III and the United States' Stryker 8x8 wheeled armored vehicle series.

These wheeled armored vehicle inventories are intended to provide the operating force with the means to rapidly respond, and deploy, to evolving threat environments.

Ideally, modern wheeled armored vehicles grant the operator with a level of mobility and operational flexibility that is nearly comparable to that offered by lighter tactical vehicles while also possessing the same potency of firepower that is traditionally associated with more cumbersome tracked armored vehicles.

The modularity of these vehicle concepts also allows the operating party to produce a wide array of variants for the fulfillment of niche operational roles while still maintaining a high standard of technical commonality across its vehicle fleet.

The PLA intends for the ZBL-09 series to serve as one of the foundational pillars of its modernized armored force structure as it transforms its tactical doctrines and moves away from the military legacies of the Cold War past.

ZBL-09

The acquisition of vehicles such as the ZBL-09 and tracked ZBD-97 series will play a pivotal role in making these tentative reforms into an implementable reality.

Although the PLAGF has long operated more traditional wheeled armored vehicles, such as the ubiquitous WZ551 series, the ZBL-09 is intended to assume an offensive vanguard role within the service's mechanized force structure.

NORINCO first publically unveiled the ZBL-09 design in 2009, at the IDEX International Defense Exhibition and Conference. However, sources suggest that PLAGF acquisition of the vehicle began in small quantities several years earlier.

At the time of writing, the prime contractor is pursuing full-rate serial production of the ZBL-09 design for domestic procurement by the PLA and sale on the international export market.

In keeping with the contractor's recent efforts to produce a more standardized designation system for Chinese military vehicle products being sold on the international export market, NORINCO has assigned the baseline ZBL-09 APC vehicle with the export designation VN1.

Various press sources sometimes also refer to the ZBL-09 or one of its many variants under the designations ZBL-08, ZBD-09, ZSL-09, Type-09, or using its informal title, "Snow Leopard."

Description. The ZBL-09 features a conventional layout for a modern wheeled APC/IFV.

The driver's position is located on the front-left of the ZBL-09's hull, with the commander's position situated directly to its rear.

Both the driver's and commander's stations feature three forward-facing periscopes. A single-piece access/egress hatch cover is also located directly above each of the two positions.

The troop compartment is located behind the commander's station and comprises the majority of the center and rear space of the vehicle hull.

The troop compartment includes two outward firing ports located parallel to each other, one on each side of the vehicle hull.

Infantrymen can exit the troop compartment through two emergency hatches located directly above their seating arrangement, but the primary means of access/egress is a large forward-opening hatch located on the rear of the vehicle hull.

Although some variants of the vehicle are reported to integrate a large power-operated vehicle ramp for rear access/egress, the dearth of photographic evidence suggests that this is an uncommon configuration.

The ZBL-09's turret module or weapons system is integrated into the center-rear of the vehicle chassis.

Two propellers are mounted on the lower-rear of the hull, for amphibious propulsion.

Related News

Venezuela Takes Delivery of Tactical Vehicles from China – The Venezuelan armed forces have received a large batch of tactical vehicles from China.

The exact number of vehicles delivered has not been disclosed. The shipment included about 100 6x6 North Benz 2629 tactical trucks and several 4x4 SAIC-Iveco ambulances.

Venezuela has purchased several types of vehicles from China recently. In 2012, Venezuela purchased 121 4x4 VN4 armored reconnaissance/personnel carriers, 8x8 VN1 and VN18 wheeled amphibious armored vehicles, tractors, 30T tanks, and VN16 amphibious tanks from China North Industries Corporation (NORINCO). (FI, 6/15)

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Funding

The Ministry of Defense of the People's Republic of China funds the development and domestic procurement of this vehicle.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
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<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Late	1990s	NORINCO and PLA initiate development of new 8x8 platform
	2006	Initial trials and testing of new wheeled APC/IFV reported in press
Oct	2009	NORINCO officially unveils ZBL-09 series at the annual IDEX International Defense Exhibition and Conference
	2015	Full-rate serial production of the ZBL-09 and assorted variants ongoing for domestic procurement by the PLAGF and sale on the international export market

Worldwide Distribution/Inventories

Export Potential. The ZBL-09 series offers nations, particularly in the developing world, the potential means to substantially improve the mobility and technical relevancy of their mechanized inventories without incurring the steep fiscal costs associated with the procurement and maintenance of the most modern North American and Western European wheeled APC and IFV designs.

Despite its relative newcomer status, the VN1 has already secured multiple potential licensed-production contracts with Chinese partners Argentina and Pakistan. In addition, NORINCO concluded the first export sale for the vehicle, to the Venezuelan Navy, in early 2015. These early successes suggest that the VN1 will continue to generate a considerable level of market interest through the forecast period.

Countries. **People's Republic of China** (478 ZBL-09 series vehicles), **Venezuela** (approximately 10 VN1s)

Forecast Rationale

Full-rate serial production of ZBL-09 series vehicles is ongoing in the People's Republic of China for domestic PLAGF procurement and international export sale.

At the Forefront of PLAGF Modernization

In the roughly six years since the public debut of the ZBL-09 series, the PLAGF has pursued vigorous procurement of both the basic IFV and APC models, as well as an array of more specialized variants derived from its chassis.

The scale and pace of ZBL-09 procurement are clear indications that the PLAGF considers these vehicles among its most important assets in the wider campaign to elevate China's mechanized force structure to a higher technical and operational standard.

Along with other new vehicles such as the tracked ZBD97 series, the PLAGF's current fleet of ZBL-09 vehicles is intended to form the embryo of a reformed ground forces tactical doctrine that better accounts for the nature of 21st century warfare by emphasizing rapid deployment capabilities and enhanced operational flexibility.

Over the past two decades, armed forces around the world have been increasingly shifting away from the tactical and strategic legacies of the Cold War era in order to build more responsive mechanized force structures – force structures that are better adapted to meet unforeseen emerging threats and sudden crises.

The remarkable proliferation of the Piranha III series of modular wheeled armored personnel carriers and its

many international derivatives – the Canadian LAV III and U.S. Stryker most notable among them – is perhaps the most potent testament to the primacy and influence of these new tactical concepts.

The PLAGF's acquisition of the ZBL-09 is in large part an effort to update and standardize the service's mechanized force structure in line with such dominant trends, and, in time, provide it with operational capabilities analogous to those of other prominent regional and international powers.

Although the PLAGF is gradually making progress toward a greater level of technical standardization, Chinese contractors are continually developing new vehicle designs and variants, and the PLAGF brass and MoD face the difficult task of assessing these myriad options and determining which are suitable to fulfill the Army's operational requirements while also being sufficiently cost-effective.

Despite the fairly high rate of ZBL-09 production, the pure largess of the PLAGF means that, at time of writing, only a select number of brigades operate the design in any significant quantities.

However, over the next several decades the PLAGF intends to integrate the ZBL-09 series, or one of its potential successor designs, as a standard component of its mechanized fleet.

In this capacity, the ZBL-09 series will function as the rapidly deployable spearhead of any individual PLAGF mechanized division or brigade, acting in close concert with other new armored vehicle designs.

ZBL-09

Considerable Export Potential

In 2012, Venezuela signed a contract with China worth approximately \$500 million for aid in the retrofit and modernization of Venezuela's existing armored vehicle inventories, as well as opening the door to a broad range of new-build vehicle acquisitions.

In July 2014, the Venezuelan Navy reported that this contract included the procurement of an unspecified quantity of new-build VN1 APCs for deployment with the service's Marine Corps arm.

The confirmation of this sale marked the first export order for the VN1/ZBL-09 design.

NORINCO delivered the first batch of VN1 APCs to the Venezuelan Navy and Marines in late December 2014, and deliveries are now thought to be concluded.

Although the number of VN1 APCs procured through the order has still not been reported, photographic evidence from the time of delivery and subsequent Marine Corps training exercises suggests that Venezuela acquired around 10 vehicles.

Of these, the significant majority appear to be the standard VN1 APC model integrating a one-man turret and 30mm automatic cannon. However, a small number of turretless APC, command and control, or communications variants may also have been part of the tender.

Open-source reporting indicates that the Venezuelan Marines may also acquire VN18 tracked amphibious IFVs, and the country's National Guard and Army branches operate and continue to acquire increasingly large quantities of Chinese logistical, tactical and light armored vehicles of varied build.

However, the Venezuelan VN1 order could soon be dwarfed by a potential licensed-production contract penned in Argentina.

In February 2015, Chinese and Argentine officials laid the foundations for a new, far-reaching military-technical cooperation framework between the two nations.

Although the cornerstone of this new relationship is the planned coproduction of new warships for the Argentine Navy, the two parties also outlined a possible licensed-production contract for VN1 APCs to be carried out by Argentina's Tandamor shipyards.

Reports indicate that the contract arranges for Tandamor to produce approximately 110 VN1 APCs for domestic procurement by the Argentine military, but that the contractor will also be able to market the vehicle to other South American consumers.

The deal was reportedly finalized by the Argentine Ministry of Defense in June 2015, but the frequency with which such arrangements collapse means that some degree of uncertainty remains.

Also, in December 2014, officials from Pakistan's Heavy Industries Taxila (HIT) indicated that the company had arranged a licensed-production contract for the VN1 with NORINCO sometime earlier that year. HIT currently produces the Al-Khalid main battle tank, itself the product of Chinese-Pakistani defense cooperation.

The VN1 APC's robust deployment capabilities, modern design, and up-to-date fire control systems all make it a highly appealing product to customers seeking to raise the operational standard of their mechanized forces but who are fiscally, or politically, unable to acquire the most modern Western European or North American APCs.

Although the eventual arrival of Russia's new Bumerang wheeled APC/IFV onto the export market might someday muscle into the VN1's market share, the vehicle's early market successes and high degree of affordability suggest that it will retain its allure for years to come.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program	High Confidence					Good Confidence			Speculative			
	Thru 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
China North Industries Corp (NORINCO)												
ZBL-09												
	493	65	80	95	90	80	55	60	50	44	40	659
Total	493	65	80	95	90	80	55	60	50	44	40	659