



Naval Weaponry of the People's Liberation Army Navy

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The **People's Liberation Army Navy** (PLAN) is the naval branch of the People's Liberation Army (PLA), the armed forces of the People's Republic of China. The PLAN force consists of approx. 250,000 men and over a hundred major combat vessels, organized into 3 fleets: the North Sea Fleet, the East Sea Fleet, and the South Sea Fleet.

Most of the naval weapon systems used by the PLAN were developed prior to 1990. The naval weaponry of the PLAN is based on three tiers : artillery, torpedoes, and missiles, each geared to a specific threat range and type.

History

Throughout its early history from 1949 to the early 1980s, the PLAN had principally relied upon artillery and torpedoes as its main weapons. This resulted in the development of many types and calibers of anti-aircraft and anti-ship guns. Torpedoes were secondary weapons, playing an important role in PLAN's coastal defense doctrines. Many destroyers, frigates and torpedo craft all carry an array of anti-ship torpedoes to this day.

The adoption of the missile, like in most navies, has completely revolutionized Chinese naval capabilities and tactics. In addition, there has been growing attention given to ASW, electronic, and air borne weaponry.

It must be noted that the Cultural Revolution was a major disruption to many weapons development programs of the PLAN. Advanced weaponry concepts were always in the minds of PLAN thinkers since the 1950s, even if they were unable to be implemented at the time. Therefore, a lot of modern weapon systems such as SAMs, modernized torpedoes and missile/sensor systems were not introduced into service until the early 80s. Furthermore, economic and technical sophistication to produce the fire control, targeting systems, and tracking capabilities were not in place until the mid 80's.

Artillery Systems

In the PLAN, artillery takes the form of anti-ship guns and anti-aircraft guns. Anti-ship guns are typically found on destroyers and cruisers, with smaller versions on frigates. Smaller ships utilize torpedoes for anti-ship weaponry. The increasing use of missiles means less attention is paid to pure anti-ship weapons. The PLAN never possessed battleships or battlecruisers, and the use of a ship's main guns is mostly in standoff capacity, as they have never engaged in close shore support from cruisers or destroyers.

Anti-aircraft guns vary in size and power from swivel-mount 25mm machine guns to advanced Close-In Weapon Systems (CIWS) and radar-assisted 57mm rapid-fire anti-aircraft weapons. Almost all classes of PLAN vessels maintain at least some anti-aircraft capability. Most destroyers and cruisers augment this with surface-to-air missiles.

Older and Legacy Artillery Systems currently in use

- Soviet ZIF-32 twin 57 mm open gun mount (Type 66)
- Type 76 automatic twin 37 mm open gun mount
- Soviet Bu-11 (Type 61) manual twin 37 mm open gun mount
- Soviet 2M-8 (Type 61) manual twin 25 mm open gun mount
- Type 69 single or twin 14.5 mm heavy machine gun (open mount)
- Single or twin 12.7 mm heavy machine gun (open mount)

The most commonly carried artillery system in most indigenous ships is the 37 mm anti-aircraft artillery (Type-61/76)^[1]. This is a manually operated gun, with a gun crew on an open mount. The Type 61 is carried by most Chinese surface combatants, ranging from the small Shanghai and Hainan coastal combat vessels to the largest combatants of the Luda and Jianghu class. These guns are highly limited -- they can only be operated in clear weather conditions, and are only effective in daylight conditions since they lack radar coordination or any form of automatic or autonomous targeting. They are, however, economical and highly reliable. Their firepower has been effectively utilized not only against aircraft, but against surface and land targets.



Type 61/76 37mm AA gun

The old manually operated Type-61 37mm weapon is gradually being phased out in favor of automatic weaponry, but it nonetheless remains onboard many littoral and major combatant vessels. In

addition to the manual 37mm, there is the Type-66 57mm (120 rounds per minute at 12,000 meters) and Type-61 25mm cannon systems (800 rounds per minute at 2,500 meters). These are also manually mounted. The 57mm is prominent onboard the Hainan class and several LSTs. This system like the 37mm has its almost totally ineffective ^[2] against modern jet aircraft and incoming missiles. However it has been combat proven to be effective against enemy shipping, particularly in the Sino-Vietnamese naval battle near the Spratley Islands on several occasions.

The 25mm is a one-man operated weapon that complements the larger caliber artillery systems. It remains as a popular gun mount on smaller vessels, particularly landing ships and mine warfare designs. Machine guns such as the 12.7mm and 14.5mm are also classified as automatic weapons; being widely operated as short range self defense weapons on most amphibious craft. It is interesting to note that the majority of Chinese naval auxiliary ships possess manually operated anti-aircraft artillery, in contrast to the majority of Western navies that have little or no armaments onboard their auxiliaries.

Current Ship Artillery Systems

Anti-Aircraft



Type 76F automatic AA gun

- Type 76A automatic twin 37 mm enclosed gun mount
- Type 76F automatic twin 37 mm enclosed gun mount
- AK-230 (Type 69)

Anti-aircraft artillery still is important to PLAN combatants, but its concept has been radically changed recently. All new combatants and those that have been upgraded now possess a fully automatic variant of the 37mm cannon. This system is known as the Type 76A dual anti-aircraft artillery system (180 rounds per minute engaging at 4,500 meters)^[3]. The Type 76A is a direct descendant of the Type 76 twin 37 mm gun, which in turn, is a the successor of Type 61 manual twin 37 mm gun. Although the Type 76 twin 37 mm gun is fully automatic, it has an open turret and thus is subject to harsh environment, which causes reliability problems. Another shortcoming of the Type 76 twin 37 mm gun is that like its manually operated predecessor, it lacks fire control systems. Type 76A twin 37 mm gun was thus developed to solve these problems by introducing an enclosed turret and fire control systems. A fire control radar guides these weapons, and can engage targets in most conditions. There is also an optronic device that enables manual and optical aiming. The Type 76F is a Type 76A system with simplified fire control system, which only has electro-optic system but lacks the radar. In addition, there is a console for one human operator inside the gun mount for local manual control, though the gun can be fully

automated. Unlike the old manual mounts that require a full crew of men to steer, aim, load, and fire the weapon, the Type 76F only requires the single operator to aim the system. In addition to the 37mm guns, a number of Russian AK-230 were also purchased and reverse engineered (as Type 69) for small boats.

Anti-ship

- Type 76 twin 130 mm enclosed gun mount
- Soviet 130/58 M1957 twin 130 mm enclosed gun mount
- Soviet 130/50 M1936 130 mm semi-enclosed gun mount
- Type 79 automatic twin 100 mm enclosed gun mount
- Type 79A automatic twin 100 mm enclosed gun mount
- Type PJ33A automatic twin 100 mm enclosed gun mount
- French Creusot-Loire Compact 100 mm gun mount
- Type 210 100/55 automatic single 100 mm enclosed gun mount
- Type HPJ87 100/55 automatic single 100 mm enclosed gun mount
- Soviet 100/56 Bu-34 single 100 mm semi-enclosed gun mount
- Soviet AK-176 automatic single 76 mm enclosed gun mount
- Soviet AK-130 twin 130 mm enclosed gun mount

Most PLAN surface combatants in the class of destroyer and frigate operate a main gun (mostly a forward turret, and many ships have an aft turret as well). Anti-surface artillery has been primarily based on Soviet designs of 76mm to 130mm designs. The Type-76 130mm twin mount is the main artillery mount on the Luda class destroyers. A more indigenized ship artillery gun system was the Type 79 dual 100mm gun (as well as single versions). The gun can be operated with one operator or completely automatically guided by radar or optronic aiming. These guns can achieve accurate fire at roughly 25 rounds a minute. A new indigenous 100mm mount is available on the latest combatants. This is a single rapid fire weapon similar to the French Creusot-Loire weapon.

Close-In Weapons Systems



AK-630 CIWS

- AK-630
- AK-630 mod
- Type 730
- Kashtan CIWS

Many navies in the world operate a variety of Close In Weapons Systems (CIWS). These systems are designed to engage high speed, low altitude targets at close range. One particular target for the CIWS is incoming anti-ship missiles. A CIWS with its rapid fire and radar control could hopefully

defeat incoming missiles. China until very recently has mostly lacked a CIWS system. The Russian built Sovremenny class destroyers that were purchased in a 1996 deal gave China it's first CIWS capability. These used a CIWS called the AK630, with mounts that ^[4] were exclusive to the Russian ships only. China however has more recently been either able to reverse engineer the AK630 or buy the cannon turrets. These have been fitted onboard the Type 054 Ma'anshan class frigates and the new Type 220X missile attack craft.^[5] A Chinese system, the Type 730, is China's first entirely indigenous CIWS. Though externally similar to the Dutch Goalkeeper, it is thought to operate indigenous radar and optical systems. It has seven barrels, and fires 30mm caliber shells in rapid succession (4,500-5,800 rounds per minute)^[5]. This system has been fitted onboard the 052B, 052C and 051C destroyers so far, and is expected to replace some Type 76 mounts on older combatants, as well as being standard for all new surface combatants. The purchase of two additional Sovremenny class destroyers will give PLAN the Kashtan CIWS system (gun and SAM combination).

Torpedoes, Mines and ASW Weaponry



Yu-7 torpedo

The torpedo is no longer an important anti-ship weapon in the PLAN. However it was very dominant among the coastal attack craft. With the success of torpedo boats in World War I and World War II, the PLAN sought the use of torpedoes in its defense as well. The agility of small coastal craft coupled with fast torpedoes was a grave threat for larger combat vessels. The 1950s, 60s and 70s saw a large number of torpedo craft built (as many as 200 operated at one stage). In later years, however, with the increasing inability to even detect Russian or American submarines, the PLAN shifted emphasis from torpedoes to ASW applications and submarines. While most surface combat vessels have some torpedo capability, it is secondary and some ships do not feature torpedo tubes at all.

History and Older Torpedoes In Use

- YU-7

In 1978 the PLAN gained significant torpedo capability when a single US MK46 torpedo, thought to be recovered by fisherman, was reverse engineered and became the Yu-7 ASW torpedo. It is thought that during the 1980s, the Yu-7 design also benefited from subsequent batches of MK46 torpedoes supplied to the PLAN from Western sources. The Yu-7 is thought to be not as capable as the latest Western or Russian designs, but has become the corner stone of PLAN anti-submarine warfare. Yu-7 is mostly seen carried by the Z-9C and Z-8 helicopters, and shipboard variants can be launched from destroyers and frigates.

Current Torpedos



YU-5 torpedo

- YU-1
- YU-2
- YU-5
- Shkval

Chinese submarines have operated a variety of indigenously designed torpedoes. These range from the basic unguided Yu-1 to the much more long ranged and highly advanced Yu-5. Little has been documented on PLAN torpedo designs. It was thought that PLAN torpedoes were old and lacked the advanced capabilities to home in against agile or quiet targets. However with the delivery of Russian

Kilos, China also obtained some highly advanced Russian torpedo designs. One such weapon is the Wake homing torpedo that homes on a surface ship's wake rather than just sonar readings. It is believed such technology has been applied to new Chinese torpedoes such as the YU-5. In addition, Jane's Information Group reported in the late 1990's that China had already purchased numerous 200 knot Russian Shkval torpedoes from Kazakhstan, and was negotiating in purchasing the Soviet torpedo factory in Kazakhstan.

Anti-Submarine Warfare

- CY-1
- CY-3

ASW warfare apart from torpedoes remains a limited area in the PLAN. PLAN vessels have traditionally utilized depth charges and A/S Mortars. PLAN ships also are commonly armed with multi-barreled ASW rocket launchers. These are based on Russian designs, and are capable of firing rocket bombs at short ranges. It is believed^[6] to be effective against shallow targets as well as a possible shield of stopping incoming torpedoes. Most PLAN combatants have traditionally two to four multi-barreled launchers in front of the main gun.

There has been evidence that PLAN had embarked on developing a modern ASW rocket system similar to the ASROC. This was a medium ranged rocket that carried a torpedo as its warhead. The system is known to be CY-1^[7] (and perhaps a new model the CY-3). CY-1 never entered production however, and its status as an active project is in doubt. PLAN forces have had their ASW capabilities somewhat improved with the introduction of Variable Depth Sonar (VDS), which is mounted on some frigates and destroyers. In addition, PLAN helicopters operate dipping sonar and sonobuoys to enhance their detection capabilities. When targets are found, they can drop depth charges, depth bombs or torpedoes.

Mine Warfare

Mine warfare has also been another traditional component of PLAN weaponry. Mines remain to be seen as a very useful power amplifying tool by the PLAN. Strategic minefields could be laid around the Taiwan Strait to deny access or delay deployment of US Navy forces, particularly aircraft carrier battle groups and submarines. Chinese mines have continually been addressed by many analysts and scholars as a very dangerous weapon that could be employed against the US Navy. Most PLAN destroyers, frigates, littoral craft and submarines can lay mines. Chinese mines vary in type, from basic contact/magnetic mines to more modern and complex systems.^[6] China first decided to establish dedicated factories for naval mines in 1954, and in 1958, several programs of naval mines were launched simultaneously by Fengxi Machinery Factory. The first of these, Moored-1 (Mao-1), a large sized moored mine entered mass production in 1962 after being tested multiple times and evaluated by the navy. Most early Chinese mines are either Soviet origin, or direct copies of Soviet mines, with the exception of remotely controlled mine.

The first three types of naval mines entered the Chinese service are all moored mines equipped with contact fuses, and all of them are developed by the Fengxi Machinery Factory. Moored-1 is a large sized mine and Moored-2 (Mao-2) is a medium sized mine, a copy of Soviet KSM mine, and both types

require target to strike the mine for detonation. Moored-3 (Mao-3) is a mine with contact wires so that targets would not have to strike the mine itself for detonation, and the mine can be detonated some distance away, still causing enough damage if the target is within range and comes in contact with the contact wire. Moored-1 and Moored-2 entered mass production in 1964 and 1965 respectively. In the 1970's, China had successfully developed non-contact fuses such as the acoustic fuse, and earlier contact fuse equipped mines were upgraded with non-contact fuses. Also in 1970, Fengxi Machinery Factory and Engineering Technology Equipment Research Institute begun to jointly develop a riverine moored mine that can be remotely controlled fuse. The project was completed in 1974, and the ultrasonic remote control can be either used to arm or disarm the mines, or alternatively, directly detonate the mine.

Since the 1990's, all of mines in the Chinese inventory are upgraded with computerized controls and a new series of Chinese mines were actively marketed for the export, and these include derivatives from existing mines, as well as brand new design such as the one similar to American CAPTOR mine.

Chinese naval mines with known designations:

- Drifting-2 drifting mine
- Moored-1 moored mine (large)
- Moored-2 moored mine (medium)
- Moored-3 moored mine (contact wires)
- Moored-4 moored mine
- Sinking-1 bottom mine
- Sinking-2 bottom mine
- Sinking-3 bottom mine
- Sinking-4 bottom mine
- Sinking-5 bottom mine
- Specialized-1 rocket propelled mine
- Specialized-2 remotely controlled mine
- Training-1 Training mine
- Type 500 Training mine
- EM12 bottom mine (mainly for export)

Missiles

The PLAN has three main categories of missiles: anti-ship, anti-air and land-attack.

History and Use



HY-1 Missile

Imported Missiles

The missile had been an ever evolving component of PLAN weaponry since the late 1960s. The Soviet Union's assistance to Chinese military developments included the SS-N-2 Styx anti-ship missile technology. Since the 60s, China has manufactured its own models of anti-ship missile based on the SS-N-2 Styx, in the form of HY-1, SY-1, SY-2, and other air borne and ground launched systems. The oldest designs have since been phased out, but late variants remain in service. The fundamental shortcoming of missiles based on the SS-N-2 Styx are being short ranged (only 40-100 km), slow, in agile and rather large and easily detectable targets for modern SAM and CIWS. Later Chinese variants have vastly superior electronics, radar guidance and performance to the older Soviet models.^[6] As China has normalized its relationship with the former Soviet Union and subsequently Russia, the importation of Russian missiles resumed, and a new generation of Russian anti-ship missiles have been imported, including the supersonic SS-N-22 and Kh-31, Klub-S, (the Russian equivalent of the anti-shipping version of American BGM-109 Tomahawk), and AS-20 Uran (the Russian equivalent of the air-launched American AGM-84 anti-shipping Harpoon missile).

Indigenous Missiles

China's first completely indigenous anti-ship missile program was the YJ8 series. This missile externally appears similar to the French Exocet and American Harpoon, but is essentially a Chinese designed weapon system. The basic YJ8 appeared in the early 1980s, with a short range of 22 miles (40 or so kilometers). It was successful in its test launches however, hitting and sinking targets of up to 10,000 tons with a high hit probability. Unlike older designs, the YJ8 could attack targets at low altitudes to reduce its vulnerability to CIWS, and has greater Electronic Counter Measures (ECM) to prevent enemy jamming. The YJ8 entered widespread service, becoming the standard anti-ship missile on most second and third generation Chinese built warships, ranging from destroyers and frigates, to missile craft and submarines. The missile can also be launched from shore platforms and aircraft.^[8]

Several models of the YJ8 have since emerged. The YJ82 was significantly a better missile with a significantly improved range of 120km and far more advanced ECM. The latest variant is the YJ-83, with a range exceeding 250km, and capable of making its final approach at Mach 1.5 to penetrate ship defenses. In addition, a variant revealed at 2006 Zhuhai Airshow designated as C-802KD/YJ-82KD has

ground attack capabilities similar to the AGM-84 SLAM. All YJ8 models can be launched from a common boxed launcher. Most littoral combatants carry four to six missiles, while larger surface ships can carry eight. PLAN destroyers have mounted sixteen missiles. Though the YJ8 series does not have the advance 'pop up' approach or checkpoint flight characteristics of the Harpoon, it is respected as one of the most potent anti-ship missiles ever developed. The YJ83's performance in some areas is superior to even the latest variants of Harpoon and Exocet, though it's ECM and agility is slightly inferior.

Current Missiles

The PLAN inventory includes a mixture of foreign and domestic missiles, and Russia was the largest foreign provider.

Anti-ship Missiles

- YJ83 (C-803)
- SS-N-22 Sunburn
- Kh-31 (equipped by naval air force)
- YJ81 (C-801)
- YJ82 (C-802)
- YJ62 (C-602)
- HY series
- SY series
- FL series (Can and has been used by Iran & Iraq for land attack)
- C-701 (Can also be used as air-to-surface missile)
- C-704
- SS-N-27 Klub S
- C-101
- C-301
- FL-7
- TL-6 series
- TL-10 series
- AS-20 Uran

Supersonic anti-ship missiles have been a key development in China. The Russian ramjet SS-N-22 Sunburn is operated by China onboard its Sovremenny class destroyers. These missiles are highly potent as they are capable of penetrating ship defenses (even in AEGIS simulations). Its high velocity hypersonic approach and its large warhead make the SS-N-22 a valuable weapon for the PLAN. Since the importation of SS-N-22, China has long sought to produce its own supersonic and eventual hypersonic anti-ship system. High speed missiles are seen as the most effective means of attacking modern warships. Only Russia and China have so far successfully developed such weapons, and therefore gives China some edge over other navies in hypersonic missile experience.

Chinese missiles of such capability include the C-301 (also known as **HY-3**). With its four ramjet engines, it has a range of 130km and a speed greater than Mach 2.5. Though a success, the missile is far from being as potent as the SS-N-22, mainly because it can only fly at a higher cruise altitude of 50 meters, rather than cruising at wave tops (such as the 20 meter cruise altitude of SS-N-22), so it is easier to intercept in comparison to SS-N-22. the PLAN's air force has also purchased both the KH31 ramjet supersonic missile and the AS-20 turbojet subsonic anti-ship missile from Russia to arm its fighters.

Apart from ramjet technology, China has successfully developed some supersonic anti-ship missiles that can fly above Mach 1.0 (as most anti-ship missiles currently fly at Mach 0.9). The C-101, also known as **FL-2** features a smaller and thinner body of the original SS-N-2 Styx, but it can fly at speeds around Mach 1.7. It can attack targets at 40 km. However, like the much larger C-301, its cruise

altitude is also at 50 meters and thus prone to interception in comparison to faster SS-N-22 with lower cruise altitude. As a result, both C-101 and C-301 only saw very limited service. The YJ83 also possesses some supersonic attack capabilities.

Anti-air missiles

- HQ-9 long range SAM (vertical launched)
- SA-N-6 long range SAM (vertical launched)
- SA-N-7
- SA-N-12 medium range SAM
- TOR-M1 short-medium range SAM (projected) (vertical launched)
- HQ-7 short range SAM
- HQ-61B short range SAM
- Various MANPAD

China's navy had long lacked an air defense missile system, hence why it has become a major area of weakness. China's SAM development had been seriously jeopardized by the Cultural Revolution, and the break away from the Soviet Union meant that no Soviet assistance in air defense missiles was given. The first naval SAM system was not developed until the late 1960s. This was in the form of the HQ-61 SAM, originally a short range land based system. The first PLAN ship to be armed with SAM was the Type 053K frigate Jiangdong, launched in 1970. However it took many years for the design to mature and the obsolete system was never ideal for naval operations. The Jiangdong had two twin launchers of the HQ61 SAM. The missile was capable of engaging enemy air targets out to 10km. The HQ-61 was only applied to a limited degree. The Jiangwei I class of four units, were armed with a sextuple launcher. The weakness however was lack of automatic reload systems, so the crew had to manually reload.



HQ-61B SAM

When China opened up in the late 1970s, it had greater access to Westernized technologies. One vital asset imported was the French Crotale short ranged SAM. Two systems were initially imported and mounted aboard two Luda class destroyers. The design was subsequently indigenized into the HQ-7. The improved-Luda, Luhai, Luhai, Jiangwei II, and 054 class warships. The launcher is an eight celled system, with a reload hatch that has additional missiles below deck. Its engagement range is 10-12 km and is claimed to be capable of engaging low flying missiles and aircraft.

Although the HQ-7 was a significant step towards PLAN air defense capabilities, the PLAN still fell short of possessing a medium to long range missile system that could provide true fleet defense coverage. The purchase of Russian Sovremenny class destroyers meant China obtained the medium range SA-N-7 SAM and its subsequent improved models. This missile was far more advanced than any

Chinese indigenous design. The missile was soon adapted for service onboard the PLAN's 052B class destroyer. China sought to import the Russian SA-N-6 long range SAM system. This was based on the land based S-300 missile, by which time China already was operating.

The SA-N-6 is a vertical launched system (VLS) with a range of 100 km and performance similar (if not superior) to the US Patriot. Two such systems were negotiated for and not ready for installment until late 2005 (onboard the new 051C destroyers). Meanwhile China had developed the HQ-9 system, believed to be based on Russian S-300 and US Patriot technology. This was China's first indigenous long range high performance air defense missile. This was installed on the 052C class warships.

With VLS missiles finally in service with the PLAN, there has been high optimism to see a short range VLS weapon that could replace the HQ-7. Contenders for the future short range SAM of the PLAN include a vertical launched variant of the HQ-7, Russian TOR-M1, Russian SA-N-12, VLS variant of the Chinese LY60N or HQ61, or a completely new design.^[6]

Submarine Launched Ballistic Missiles and Land Attack Rockets

- JL-1
- JL-2
- Jianghu-I Hull 516

JL-1 and JL-2 submarine launched ballistic missiles. The JL-1 was first test fired in 1982 and first successfully launched from the Xia class SSBN in 1987. The JL-1 is currently carried onboard China's sole SSBN, the Xia 092. It has 12 launch tubes. Each JL-1 has a range 2,150 km and a single 250-500kT nuclear warhead. An improved model is in service with a 2,800 km range and possibly higher accuracy. The JL-2 will be the next generation of Chinese SLBM, similar to early variants of the Trident. With a range of 8000km and multiple warheads (MIRV), this missile is essentially based on the land based DF-31 ICBM design. This means that the future 094 class SSBN can patrol near Chinese waters and launch missiles that could hit the American mainland. The JL-2 project remains under secret and the status of the 094 is largely unknown. One vessel was reported launched very recently, while the JL-2 missile's development is believed to be in its mature stages.^[9]

A single Jianghu I (hull 516) was modified very recently. It has its anti-ship missiles replaced with several multiple-rocket launchers. The rockets are of 122mm caliber, and are based on the Type 89 system, which is itself quite similar to the Soviet BM-21 rocket system. The 122mm rockets are launched from a stabilized launcher, meaning that even if the ship is affected by wave motion, the launcher itself will be stabilized. The rockets have a range of up to 40 km, and can achieve reasonable accuracy in fire. This installation may be seen as an experiment by the PLAN to make use of older warship designs, by turning them into shore bombardment platforms. Though only one ship is being tested for now, this is a very possible concept for future PLAN conversions of their large number of old Ludas and Jianghus. Fire support from ships is seen as very important by the PLAN when conducting amphibious operations.

Future Weapons Systems

The current quality and capability of PLAN weaponry has improved significantly, closing the gaps between PLAN obsolescence and Western standards. Future PLAN weapon systems could include land attack cruise missiles, stealthy hypersonic missiles, armed ship launched UAVs, anti radiation missiles, and land based anti-ship ballistic missiles, EMP bombs, long range artillery systems, super-speed torpedoes and ever improved mines.

