

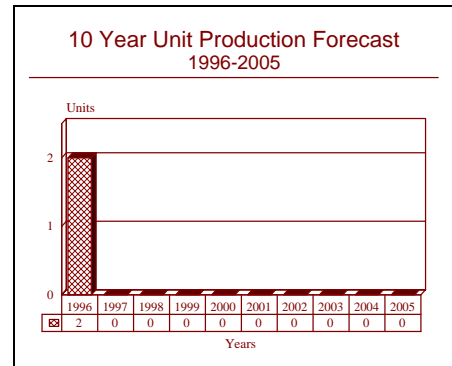
ARCHIVED REPORT

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Project 052 (Luhu) Class Frigates - Archived 8/97

Outlook

- Program seriously delayed by design problems
- Construction at slow rate due to funding problems
- Reportedly, there are serious delays in electronics deliveries
- Ships on order may not enter service for many years



Orientation

Description. Surface combatants tasked with anti-surface ship warfare.

Sponsor

China National Machinery Import and Export Corp.
 (Machimpex)
 Erligou
 Xijiao
 Beijing, China

Contractors

Jiangnan Shipyard
 China State Shipbuilding Corporation (CSSC)
 Shanghai
 China

Licensee. No production licenses have been granted.

Status. Production and service.

Total Produced. One ship has been completed to date, with two additional hulls being built but seriously delayed.

Platform

<u>Name</u>	<u>Builder</u>	<u>Ordered</u>	<u>In Service</u>
112 <i>Harbin</i>	Jiangnan Shipyard	1985	1/1994
113	Jiangnan Shipyard	1985	1997(?)
114	Jiangnan Shipyard	1985(?)	

Application. The Project 052 class are intended to engage in ASuW operations using long-range anti-ship missiles. Air defense and anti-submarine capabilities are restricted to self-defense.

Price Range. The estimated unit cost of these ships is US\$300 million. Export customers may pay substantially less than this.

Technical Data

Characteristics

Speed (max):	30 kts
Speed (cruise):	18 kts
Range:	5000 nm at 18 kts
Crew:	46 officers, 254 enlisted

Dimensions

	<u>Metric</u>	<u>US</u>
Length:	145.0 m	475.7 ft
Beam:	15.2 m	49.9 ft
Draft:	5.1 m	16.7 ft
Displacement (Standard):		4,200 tons

Armament

	<u>Type</u>	<u>Quantity</u>
Guns:		
Medium:	GIAT 100 mm L55	1x2
AAW:	37 mm DARDO	4x2
Missiles:		
SSM:	C-801 Eagle Strike	8
SAM:	Crotale Navale	8

Armament

	<u>Type</u>	<u>Quantity</u>
ASW:		
Torpedo tubes:	ILAS-3	2x3
Torpedoes:	Eurotorp A-244/S	24
Rocket launchers:	EDS-25A	2
Helicopters:	Harbin Zhi-9	2

Electronics

Radars:		
Air search:	Rice Screen	1
Surface search:	Hai Ying (Jupiter)	1
Target acquisition:	Sea Tiger	1
Gunnery fire control:	Rice Lamp	2
DARDO fire control:	Orion RTN-10X	2
Navigation:	Racal-Decca 1226	1
Electronic warfare:		
ESM	Thomson DR-2000S	1
ECM	Thomson Alligator	1
Decoy launcher	ERC-1	2x26
	SRBOC	2x6
Sonars:		
Bow mounted	DUBV-23C	1
VDS	DUBV-43B	1
Command system:		Tavitac 2000

Propulsion

	<u>Type</u>	<u>Quantity</u>
Main propulsion:	CODOG	
Gas turbines:	LM-2500	2x27,500 shp
Diesels	MTU 12V1163 TB83	2x4,420 shp
Propellers	Cycloidal pitch	2

Design Features. The Project 052 class is the first largely Chinese-designed hull to enter service. Prior ship classes have been either modified Russian or even old Japanese designs. The Project 052 represents an attempt to design a

blue-water surface combatant capable of extended ASuW operations.

The hull shows much Russian influence and appears to follow the lines of the Russian Project 1155 Udaloy class,

scaled down by approximately 20 percent. However, the construction techniques used are reported to be derived from MEKO technology, obtained as a result of the Thai contract to build the Naresuan class. The bow has extensive flare and sheer and the hull form itself is of the full waterplane type. The bow rake is exceptionally exaggerated (again, following the Project 1155 pattern), suggesting that the sonar is bow-mounted. This may not be correct; many Russian designs have similar bow forms yet are only equipped with hull sonars; in these cases the motivation is sea-kindliness in very heavy weather.

The superstructure also shows substantial Russian influence. It seems to be a simplified and reduced version of that used on the Project 956 Sovremenny class combined with a Western-style hangar and flight deck aft. This occupies the full stern position rather than the 3/4 aft location.

These ships have standard CODOG power trains with MTU diesels providing the cruise power and LM-2500 gas turbines the high-speed boost. The lead ship of the class had to be returned to dockyard hands after launch when it was discovered that the gas turbines were six inches longer than the engine rooms they were intended for. Possible explanations for the problem include cumulative construction and/or drafting errors or a change in designated gas turbine being made without the drafting office being informed. This sort of thing happens more often than naval engineers like to admit (the pre-Second World War US Sims class destroyers had the same predicament while the Iowa class battleships had a very serious difficulty of this sort with their main battery turrets).

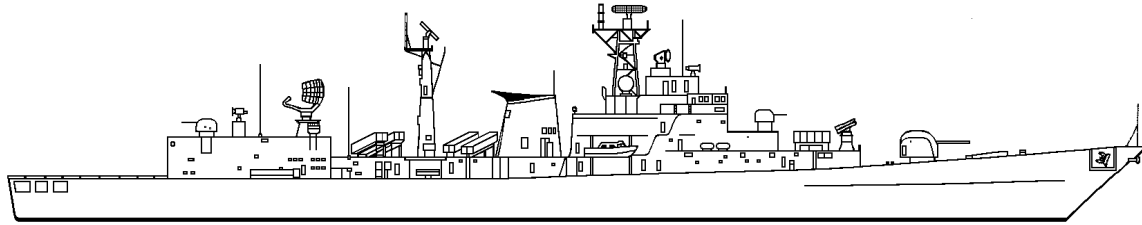
Operational Characteristics. The primary armament of these ships is the battery of eight C-801 Eagle Strike missiles mounted amidships. These are derived from the MM-38 Exocet missile incorporating certain elements of Russian P-15 warhead technology. The C-801 can carry a 165 kg warhead to a range of 22 nm (40 km). It is an interim fit until the turbojet-powered C-802 enters service. This will have a range of 65.6 nm (120 km) and will use the pair of embarked Harbin Zhi-9 (license-built Dauphin) helicopters for midcourse correction. Two of the eight missiles onboard are equipped with nuclear warheads and have a special permissive action link in the command system.

The missiles are backed up by two GIAT 100 mm L55 guns in a new, Chinese-designed twin mounting. Presumably this reflects Chinese concern over the small caliber of the gun. The rate of fire of a single mount is too slow for realistic AAW work; the twin mount is unlikely to have more than marginal effectiveness in the AAW role (as a rule of thumb, a twin mount is about 1.5 times as effective as a single gun).

Air defense is provided by an eight-round launcher for Crotale Navale. This has a range of 13 km. Examination of photographs and diagrams of these ships reveals no fire control radar for these missiles. Either this has not been installed or, more probably, the missiles use an electro-optical package only. The CIWS system is the Italian DARDO with a centralized RTN-10X fire control radar and four Breda-Bofors Twin Fast Forty mounts chambered for Chinese 37 mm ammunition.

Anti-submarine defense is provided by two 12-barrelled EDS-25A rocket launchers in the bows. These are supplemented by ILAS-3 triple 324 mm torpedo tubes housing A-244/S lightweight torpedoes. Additional magazine capacity is provided for three sets of reloads per ship. These weapons are controlled by a French-supplied DUBV-23 low-frequency bow sonar and a DUBV-43 variable-depth sonar (VDS), which feed their input into a common set of signals-processing equipment to form a combined sonar system. This is substantially the sensor fit of a French Navy Georges Leygues class frigate. Although this is a very effective sonar suite, the Project 052 class do not appear to carry CY-1 standoff anti-submarine missiles nor are their helicopters equipped for ASW. Presumably these ships will datalink their sonar data to CY-1 equipped units for prosecution while using that data to keep themselves out of harm's way.

The Project 052 class frigates have a 3-D phased-array radar mounted on the rear mast and a Jupiter radar tasked with air and surface search mounted on a stub mast on the hangar roof. A Sea Tiger target acquisition radar is installed on the foremast. The electronic warfare equipment is based on the DR-2000S threat-warning receiver and the Alligator jammer, coupled with Chinese-built chaff and flare launchers. A pair of satellite communications antenna are mounted alongside beside the foremast.



Project 052 Luhu Class

Source: Forecast International

Variants/Upgrades

EF-5 The Project 052 design is being offered for export under the designation EF-5. Apparently the only differences are the replacement of French EW equipment

with the Italian Newton Beta system and the deletion of the command system facilities for handling nuclear weapons.

Program Review

Background. Design work on the Project 052 appears to have started in around 1983, at a time when Russo-Chinese relations had warmed somewhat. The similarities between the Project 052 and contemporary Russian designs is too marked to be coincidental. There is some suggestion that the Project 052 may have been a rejected alternative to the Russian Project 1154 Neustrashimy class and the design sold to the Chinese when the more advanced project was selected by the Russian Navy. Another possibility is that the Project 052 design is a derivative of an abortive large anti-ship missile-armed frigate designed during the 1970s as a follow-on to the Luda class.

During the period 1983-1985, the Chinese design staff finalized the Project 052 layout. If the belief that the ships were Russian-designed is correct, the missile launchers were moved aft. Some supporting evidence for this is that the bridge structure still shows traces of a typical Russian layout which would include two large quadruple boxes abreast the forward superstructure. The stern was cleared to provide a large helicopter hangar and operating deck. The design was finalized in 1985 and orders placed for an initial batch of ships.

At this point, Chinese naval planning took a major turn. The Chinese Government had negotiated a major trade deal with the French Government, under the terms of which a large number of French weapons and sensors were sold to China. Examination of these showed that the existing Chinese equipment was hopelessly outdated. The Project 052 construction was halted while the design was revised to include the new equipment.

While this was being undertaken, the Chinese Navy received a second major shock. Thailand had purchased four Project 053 Jianghu class frigates. The Royal Thai Navy expressed serious reservations over the construction standards and techniques used in this class and declined an invitation to place a follow-on order for two more. Eventually, this repeat order emerged as two frigates of an entirely new design (the Naresuan class) which used structural design techniques developed by the MEKO consortium. These ships are often called the DEMEKO'd MEKOs.

This technology transfer resulted in yet further delays to the Project 052 design. It would appear that a complete structural redesign was undertaken to exploit the new technology and the opportunity seized to re-engine the ships with German diesels and US gas turbines. It is probably at this point that the error in engine room sizing occurred.

Eventually, the first of the Project 052 hulls was handed over to the Chinese Navy for trials in December 1991. The ship ran sea trials using her diesels only during 1992, then was returned to dockyard hands for the installation of her gas turbines. This was carried out during 1993, and the ship restarted sea trials during the early part of 1994. These trials were still in progress during the early part of 1995 and neither the lead ship of the class nor the two hulls under construction seem to have any prospect of entering active service in the near future.

During the increased period of tension that accompanied the Taiwanese elections and the associated Chinese "military exercises" in the Straits of Formosa, the Chinese Navy released film of its part in those

exercises. These showed the lead ship of the Luhu class firing her surface to surface and surface to air missiles. There was no internal evidence in the film to confirm that it was actual (rather than archive) footage and it probably shows weapons firing trials rather than an operational deployment.

At that time it was confirmed that a third Project 052 class hull had been laid down but that this ship, and the

second of class, were being built at an extremely low rate. Sources have suggested that the principle reason for the delays are shortages of funding and extremely late delivery of the electronics systems for the ship. These problems are quite common in China (see report Project 051 Luda Class).

Funding

The Project 052 class was funded by the Chinese Government.

Recent Contracts

No contracts have been announced.

Timetable

	1983	Design work started
	1985	First orders placed
	1987	Construction halted for design revision
Dec	1991	First of class delivered
	1992	Initial sea trials
	1993	Gas turbines installed
	1994	Sea trials restarted

Worldwide Distribution

China (One built, two building)

Forecast Rationale

The Project 052 and its export variant, the EF-5 are certainly impressive ships and represent a major step forward in Chinese construction. They are by far the most powerful surface combatants in the Chinese Navy and complement the ASW-orientated Luda III design well. The increased hull volume and armaments of the ship strongly indicate a power-projection role which may be intimately connected with the growing tension over the Spratley Islands. Chinese claims in this area (based on nebulous "historical associations") now reach down almost to the coast of Indonesia. Enforcing such claims would require a fleet with sustained blue water staying power.

In spite of this, the Project 052 class may not see a prolonged construction program for the Chinese Navy. Early in 1994, the Chinese Government was negotiating with the Russians for a license to produce the Project 965 Sovremenny class destroyers and for the purchase of two units under construction. These ships are several orders of magnitude more effective than the Project 052 design and are more capable in all aspects of their design. However, the Project 956 is a complex design and will be time- and

resource-consuming to build. We therefore expect to see the construction of the Project 052 design continuing until the Chinese-built Project 956 class ships are ready. Any further construction from that point will be for export only.

Export clients for the Project 052 include Pakistan (reported to be negotiating in 1993) and Thailand (offered the design in 1994 as screen for the new air-capable ship *HTMS Chakkrinareubet*). Project 052 does offer a navy a powerful combatant at very low cost compared with Western-designed warships. Whether this is enough to offset doubts about engineering quality and design efficiency is an interesting question.

The following forecast reflects the pattern of orders (given the structure of Chinese industry, the term "instruction to proceed" may be more appropriate) for the Project 052 design. Now that the Project 052 design is running final sea trials, we believe that orders for six to seven sisterships will be placed during 1994-96, while preparations are made for the construction of Project 956 ships under license. This will complete a squadron of eight hulls or allow for the assignment of three ships to each of the three

main fleets - the pattern of deployment adopted by the Luda class. At this point we do not forecast construction of this class beyond eight hulls or sales to the export

market. The construction of these ships may take some considerable time and they may not join the fleet for a number of years after the order dates shown.

Ten-Year Outlook

Designation	Application	thru 95	ESTIMATED CALENDAR YEAR PRODUCTION High Confidence Level				ESTIMATED CALENDAR YEAR PRODUCTION Good Confidence Level				Speculative		Total 96-05	
			96	97	98	99	00	01	02	03	04	05		
PROJECT 052 (LUHU)	FF (CHINA)	6	2	0	0	0	0	0	0	0	0	0	0	2