National
Foreign
Assessment
Center

~~Secret~~
~~NOFORN~~

[redacted]

Defense Modernization in China

An Intelligence Assessment

~~Secret~~

SR 80-10138
October 1980

Copy 363

T-25850/80

National
Foreign
Assessment
Center

~~Secret~~
~~NOFORN~~

Defense Modernization in China [redacted]

An Intelligence Assessment

Information available as of 31 August 1980 has been used in the preparation of this report.

[redacted]

~~Secret~~
SR 80-10138
October 1980

Defense Modernization in China [redacted]

Overview

China's defense modernization program, a two-decade effort aimed at improving the People's Liberation Army (PLA) and the defense industries, is off to a good start but has far to go. The effort arises from deep-rooted apprehension over Soviet military capabilities and from the leadership's desire to "move China into the front rank of nations" by the year 2000. It will be successful only if the nation enjoys prolonged political stability, retains access to foreign capital and technology, avoids costly foreign military campaigns, and moves forward in science, education, and industry. [redacted]

China's prospects for military modernization are influenced by strengths and weaknesses in its political, economic, and technical bases. The country suffers from serious shortages of trained technicians, deficiencies in key technologies and defense industries, and inadequate foreign exchange. The principal factors favoring success of the modernization drive include the leadership's stability and dedication to modernization and the willingness of foreign governments to provide technical and financial assistance. [redacted]

The defense modernization program has two distinct aspects: (1) improving PLA capabilities at low cost through 1985 while (2) simultaneously reorganizing defense industries and selectively investing in new tooling and technology. Low-cost improvements include such measures as providing realistic combat training, encouraging younger leadership at all echelons, promoting officers on the basis of merit, and reducing military involvement in local political and economic matters. Upgrading the defense industries will involve training more engineers, technicians, and design specialists and modernizing plant layout and management. In some cases, China must arrange technology licensing agreements and purchase new equipment. [redacted]

A key factor in creating a professional military force is the PLA's emphasis on realistic combat training. This effort is designed to get more out of the weaponry and equipment now on hand and to prepare troops and commanders for new equipment in the mid-1980s. The training program encourages competition between units and individuals and presents awards for outstanding performance. PLA officers and soldiers are receiving more and better technical education and practical experience. [redacted]

In 1977 the defense industries began a lengthy process of reorganizing plants, retraining workers, and assimilating foreign technology that ultimately will provide the PLA with modern weapons and equipment. China

Contents

Defense Modernization in China [redacted]

Background

The Chinese consistently describe modernization of the PLA as a process of gradual force improvement, based upon self-reliance, that will require many years to accomplish. In China the term "force modernization" implies making fundamental institutional changes in the PLA and the military industrial base, instilling new thought patterns and skills in PLA commanders and troops, and—eventually—introducing new weapons and equipment. [redacted]

China can achieve its goal of significantly modernizing its defense forces by the year 2000 only if:

- It remains politically stable.
- It receives sufficient foreign capital and technology.
- It avoids military attack upon its industrial base in Manchuria and a large-scale war with Vietnam.
- It succeeds in higher priority efforts to modernize agriculture, industry, and science and technology.

[redacted]

The genesis of the present military modernization drive was Premier Zhou Enlai's [redacted] program set forth in 1972. Zhou proposed to modernize agriculture and industry and to "move China into the front rank of nations" by the year 2000. This program provided the core of what later became the "Four Modernizations." [redacted]

Defense modernization emerged as an issue in 1973, when China made its first inquiries about the Harrier V/STOL ground attack aircraft and resumed negotiations for the transfer of Spey turbofan engine technology. In 1974, Deng Xiaoping, rehabilitated from his Cultural Revolution disgrace, assumed a prominent role in promoting military modernization. [redacted]

The watershed year for defense modernization was 1975, [redacted] the rehabilitation of former Chief of Staff and modernization advocate Lo Ruiqing, and the signing of an agreement to transfer Spey engine technology. [redacted] The Spey transfer signaled China's willingness to seek foreign technology that would fill military needs. [redacted]

The death of Zhou Enlai in January 1976 triggered a series of political upheavals that led to the second ouster of Deng Xiaoping and the subsequent reign of the Gang of Four.[2] The Gang reversed or slowed many of the military programs [redacted]. The death of Chairman Mao Zedong in September, however, ended the Gang's activities, and the four were arrested in October. A new leadership centered around Hua Guofeng and Ye Jianying began to take shape in late 1976. [redacted]

The new leaders resumed the interrupted military modernization drive in 1977, dispatched numerous delegations to Europe and Japan to study foreign military technology, and began to reorganize selected defense plants. The leadership also accelerated the drive for military professionalism and more realistic training begun two years earlier. In August 1977 the PLA announced a new doctrine of "People's War Under Modern Conditions,"[3] and Deng Xiaoping again returned to power. [redacted]

[redacted]

[2] The Gang of Four consisted of radical leaders Jiang Qing (Madame Mao), Zhang Chunqiao, Wang Hongwen, and Yao Wenyuan, all of whom gained prominence during the Cultural Revolution. (U)

[3] "People's War Under Modern Conditions" posits defeat of technologically superior invaders by use of China's geographical advantages and immense manpower. Modern weaponry is recognized as complementing and improving the defensive potential of manpower and terrain. Resistance could include all forms of armed struggle ranging from guerrilla warfare to nuclear strikes. [redacted]

[redacted]

Beijing regards the ground forces as absolutely essential for defending against a Soviet conventional attack, and their modernization is receiving strong attention. Development of weapons to counter armor and aircraft is of immediate concern, and the Chinese evidently are concentrating resources on producing a new main battle tank, increased numbers of antitank guided missiles and antitank mines, improved antiaircraft artillery, and a new surface-to-air missile, the CSA-X-2. Other important concerns are the provision of reliable tactical radios and the production of heavy trucks and some tracked vehicles. As the major gaps are filled, attention will turn to improvement of tank and artillery ammunition and production of improved artillery pieces, mobile bridging equipment, and a broader range of infantry weapons. [redacted]

The PLA Navy has some deficiencies but could effectively perform its primary mission of defending China's coast. A sizable force of diesel attack submarines serves as a first line of defense against approaching hostile fleets. This is backed up by a small but growing force of major surface combatants, numerous missile and torpedo boats, and finally naval shore defense sites. The Navy is deficient in air defense and antisubmarine warfare, but these weaknesses apply mainly to open-ocean operations beyond the continental shelf and the range of land-based aircraft. With an air arm of some 800 aircraft, the Navy can provide near-shore air cover to the fleet, maritime surveillance, and supporting attacks. However, the Navy cannot perform major amphibious operations, because it lacks the resources for transporting tanks and for providing fire support for large assaults. [redacted]

China's 6,000-plane Air Force is the service least capable of successfully performing its mission. The Air Force lacks advanced avionics, air-to-air missiles, and electronic countermeasure equipment. Moreover, it is the most difficult service to modernize because needed technologies currently are beyond China's grasp and are extremely expensive. (C)

[redacted]

Until recently, China's most advanced jet engine was that in the MIG-21, [redacted] The inability of Chinese engineers to design and build turbine aircraft engines with performance better than that of older, Soviet-designed models spurred the Spey engine negotiations and the continuing exchanges with Western aircraft manufacturers. [redacted]

Along with engines, the Chinese want to develop better avionics equipment and aircraft weaponry. [redacted] China also hopes eventually to build helicopters, wide-body transport aircraft, and improved combat aircraft. [redacted]

[redacted]

alloys are imported from the USSR.[7] The Chinese do possess large supplies of aluminum ore and produce enough aluminum to meet military demands. A similar abundance of titanium ore will permit China to meet demand for this metal when sufficient refining capacity has been built. China will have to make a major effort, however, in advanced metallurgy.

Most Chinese-produced radars, sonars, and communications systems are technically deficient because China's electronics sector lacks essential manufacturing technologies to move advanced components from the laboratory into production. China produces a broad range of electronic equipment and components, and although experimental items are sometimes near Western standards, the electronics industry cannot mass-produce these items.

Manufacture of special materials such as composites, plastics, ceramics, and synthetic fibers is in its infancy.

s. One exception may be development of a Kevlar-like[8] fiber used to produce lightweight, high-strength components for aircraft and space vehicles. This material can be used in relatively small quantities to manufacture missile casings, aircraft components, and parts for shoulder-launched antitank and air defense weapons.

Military Industry. Despite excess plant capacity that resulted from the large building program between 1969 and 1974, much of China's defense industry cannot yet support the modernization drive.

An unpredictable supply of raw materials, components, and electric power also slows production.

Outmoded machinery or equipment of local manufacture presents a lesser problem. Though such equipment may be less efficient than comparable Western or Japanese equipment, it generally is adequate for producing parts and components needed for weapons.

Still, despite extensive reorganization, China's major effort in jet engine development remains hampered by inadequate test facilities. To improve their testing capabilities, the Chinese are actively seeking advanced wind tunnels and computers for engine testing and component research.

Institutional. Deficiencies in the People's Liberation Army itself constitute another major constraint to military modernization. The forces are not well organized, trained, or equipped to receive new weapons. The absence of a modern logistics organization calls into question the PLA's ability to obtain spare parts when needed or to maintain and repair advanced weapon systems.

[7] China's drive to lessen dependence on foreign sources of steel is noted in an article on tank production in the March 1980 issue of *Liberation Army Pictorial:* "China's successful development of armor plate and structural steel to replace various lines of chrome-nickel steel from abroad has been an important contribution and has resulted in the granting of first-class awards in national science and technology."

[8] Kevlar is a US-developed and patented polyamide fiber used in place of fiberglass or composite materials.

and films, invited European defense attaches to lecture to PLA audiences, and exchanged senior military academy groups with the United States, Canada, Great Britain, and France. [redacted] The Chinese clearly gain from this program at least a basic familiarity with the doctrine and strategies of many Western forces—and probably a better understanding of Soviet forces as well. [redacted]

Indigenous Weapons Development Program

For all their weaknesses, China's military industries already represent far more than a zero base for future progress. Despite the disruptions of the Great Leap Forward, the cutoff of Soviet aid, and the Cultural Revolution, China succeeded in developing nuclear weapons, strategic missiles, [redacted] in the decade before the fall of Lin Biao. The Chinese have added a number of conventional weapons since 1974. For the ground forces, they have deployed a new 130-mm multiple rocket launcher, copies of the AT-3 Sagger antitank guided missile, rocket-scattered antitank mines, tank laser rangefinders and night-vision devices, and limited numbers of the SA-7 low-altitude surface-to-air missile. The Navy has received China-class submarine rescue ships, underway replenishment ships, [redacted] In late 1978 the Chinese unveiled an air-to-air missile that is now deployed with a number of Air Force units. These achievements suggest that some development and production of new weapons and equipment will take place well before completion of the defense industry reorganization program. [redacted]

How the Modernization Program Will Work

The Chinese realize that military modernization requires improvement of both the PLA and the defense industries that support it. China's industry cannot produce modern weapons and equipment in quantity, and the PLA is ill prepared to use and support new armament. The leadership has therefore devised a dual-track program: the track for the forces emphasizes military professionalism and better training, and the track for the defense industries stresses methodical reorganization and acquisition of technology. At present the key to military modernization lies in learning how to get more out of current military equipment and industrial plants. China's military capabilities probably will improve significantly sometime after 1985, as the defense industries produce more advanced weaponry and the PLA is increasingly able to use it. [redacted]

Professionalism [10]

The first step toward modernizing the PLA was the decision made following Lin Biao's fall in 1971 to remove the Army from civilian matters and direct its attention toward national defense. Professionalism was a major point of disagreement between the Leftists and the group of modernizers around Zhou Enlai. The Leftists saw the PLA as an ideological tool for spreading the correct political line throughout the country. As a result of Cultural Revolution violence, the PLA had assumed a greatly increased responsibility for internal security. Collapse of civil authority in many areas led the PLA into widespread involvement in civil government, factories, railroads, and communes. Under former Defense Minister Lin Biao, many officers were promoted solely on the basis of political credentials or personal loyalty. By the early 1970s, the very concept of "professionalism" was looked upon with suspicion by civilian Party members and career PLA officers alike. [redacted]

[redacted]

[10] As applied to China, "professionalism" connotes separation of the forces from local politics, administration, and internal security and the promotion or assignment of individuals on the basis of merit rather than personal or political relationships. [redacted]

[redacted]

The new emphasis upon quality of training is a key aspect of the military modernization program. Competition between units and individuals is now encouraged, with awards for outstanding performance. The military school system, largely shut down during the Cultural Revolution, has been reopened, [redacted] Greater attention is also being given to technical education for PLA officers and possibly for selected soldiers.

Reorganization of Industry and Assimilation of Technology

After several false starts prior to the fall of the Gang of Four, China began in 1977 a program to reorganize industry and to import technology and equipment—an effort intended eventually to broadly transform the defense industry. Reorganization will permit the Chinese to make better use of existing plants and technology and in some cases will prepare the way for absorption of foreign technology. China currently seeks key foreign technologies pertaining to [redacted] aircraft production, military electronics, advanced metallurgy, and shipbuilding, and it intends to assimilate and improve on foreign technology.[13]

To justify this important policy shift—bitterly attacked by the Gang of Four—the modernizers extensively quote Mao Zedong, Lenin, and even Karl Marx as favoring the importation of foreign technology. The leadership, however, carefully recognizes and appropriately rewards domestic inventiveness and publicizes instances in which Chinese workers improve upon foreign technology. In this way, the leadership easily represents its policy of importing technology as "making foreign things serve China." [redacted]

[redacted]

[13] China's policy was well summarized in the Beijing *Xinhua* of 22 April 1979 by one Zhang Dehua, described as a worker-engineer in the Capital Iron and Steel Works: "We do not import things for the sake of importing. Our purpose is to assimilate the advanced technology and equipment of other countries by importing them. We should not remain satisfied with the ability to use or copy them, though. We should digest, transform, and overtake them." [redacted]

[redacted] For the present, the main avenue for technology transfer will continue to be the exchange of technical groups and delegations, which will attempt to obtain as much free technology as possible. Licensing arrangements will be few and chiefly in areas of technology that support broad sectors of industry. [redacted]

Rumors and reports of China's interest in equipment purchases and technology-transfer agreements have excited unwarranted hopes among Western businessmen. The Chinese did sign the $200 million Spey engine agreement in December 1975 after four years of negotiations. [redacted] To date, however, no further contracts have been signed. The Chinese probably will eventually consummate several major weapons technology licensing agreements, but only after exhaustive study and careful preparation.

Technology purchases offer the advantages of (1) direct foreign assistance in the form of equipment and prototypes, materials, blueprints, and specialized industrial training, and (2) eventual independence from foreign suppliers. Coproduction arrangements may even provide Western management expertise, on-site technical representatives, and Western design and production technology on a "partnership" basis. The disadvantages, however, include high and sometimes

but may enable China to improve radars, sonars, electronic warfare equipment, and military communications. Beijing is purchasing wide-body aircraft for use by the Civil Aviation Administration, but such aircraft can be quickly converted to military transport use. [redacted]

The PLA of the Future

Although China's defense modernization is still in an early stage and undoubtedly faces severe tests, the program is off to a good start. Many aspects of the program—such as developing military professionalism—are already bearing fruit, and others—the education of technicians and the acquisition of technical literature—are well under way. If China remains politically stable and systematically assimilates foreign technology, it can achieve and maintain a steady pace of military modernization. For the near term, the PLA will continue to emphasize better classroom instruction and will conduct field training that involves regimental and divisional units and combined arms. Meanwhile, the defense industries will acquire the tools, technicians, and technology needed to provide improved weapons and equipment. After 1985, a combination of improved PLA training and increased defense output probably will begin to accelerate improvements in military capabilities. [redacted]

Over the next five years Beijing will emphasize low-cost measures designed to get more out of existing forces and equipment and introduce only a few new weapons into the inventory:

[redacted]

- Commanders will become more familiar with Soviet tactical doctrine and strategy.
- Limited numbers of weapons new to the PLA will enter the inventory. [redacted]

Despite notable gains by 1985, the PLA will still suffer from serious material deficiencies resulting from weaknesses in military industry:

- Problems in the aviation industry will continue to hamper improvements in the Air Force, though a few multirole fighters with twin Spey engines may enter the force by 1985.

[redacted]

- Tactical mobility and logistical support will be hampered by shortages of vehicles and by limited capacity for repair and maintenance.

[redacted]

Technology licenses and coproduction arrangements in the electronics and aircraft industries probably will be concluded in the early-to-middle 1980s and begin to help China resolve major problems in military production. Agreement appears likely for Chinese coproduction of the Douglas DC-9 aircraft, the Lockheed Jetstar, and the Aerospatiale Twin Dauphin helicopter. [redacted] Increased heavy truck production—probably using Japanese technical assistance—will begin to improve tactical mobility. [redacted]

After 1985, marked improvements in force capabilities probably will occur as the defense industries become able to meet PLA requirements for weapons and equipment. Emphasis on antitank and air defense weaponry will continue, and the numbers of these weapons in the PLA inventory will increase substantially. Mobility

Appendix A:

Role of Military Trading Companies in Modernization

The Chinese have established a number of trading companies to systematically acquire arms, technology, and military equipment from Europe, Japan, and the United States. The best known firm, the Northern Industrial Corporation, appeared in 1975 and has been followed [redacted] Most were originally chartered to study foreign technology and report to the parent ministry, which then would place orders through MACHIMPEX or TECHIMPORT—arms of the Ministry of Foreign Trade (MFT). [redacted]

Since mid-1979 the companies have become more aggressive in their pursuit of foreign technology and increasingly independent of the MFT. [redacted] Military trading companies now are empowered to conduct direct negotiations with foreign firms, offer licensing or coproduction arrangements on behalf of the Chinese Government, and engage in arms sales. [redacted]

Northern Industrial Corporation. NORINCO was chartered in 1975 [redacted] to study foreign military technology on behalf of the Fifth Ministry (Land Armaments). Over the years the firm has exhibited broad interest in advanced metallurgy, electronics, shipbuilding, aircraft, and land armaments. [redacted] NORINCO's latest effort has been to offer for sale Chinese-produced tanks, artillery, SAMs, and other weapons to earn foreign exchange for the defense modernization drive. [redacted]

Great Wall Industrial Corporation. GWIC was chartered sometime before 1978 and serves as an extension of the Seventh Ministry (Missiles and Space). Its representatives participated in the negotiations with German and US firms for communications satellites and with the Japanese for launch technology. [redacted]

China National Aero-Technology Import and Export Corporation. CATIEC, chartered in 1979, acknowledges the Third Ministry (Aviation) as its parent and has taken charge of several key negotiations with US aircraft and engine manufacturers that had been begun by MACHIMPEX. The firm may conclude coproduction deals for wide-body aircraft, helicopters, and jet engines. [redacted]

China Shipbuilding Industrial Corporation. CSIC appeared in 1978 and has held talks with Japanese and European firms regarding modernization of Chinese shipyards. The Corporation is headed by the Minister of the Sixth Ministry (Shipbuilding). We know little of its technical interests, but CSIC representatives have attempted to buy ASW detection equipment and weapons and have studied advanced steel forging technology. [redacted]

China Precision Machinery Import and Export Corporation. CPMIEC was chartered in July 1980 for the purpose of studying Western military electronics technology applicable to flight controls. Recent information suggests that CPMIEC is subordinate to the Eighth Ministry, which was formed—or at least publicly announced—in late 1979. According to *Xinhua*, CPMIEC will seek precision navigation instruments for aircraft, spacecraft, and ships, and advanced electronic and optical products. We believe that [redacted]