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Central Intelligence Agency

Washington, D.C. 20505

DIRECTORATE OF INTELLIGENCE

CHINA UPGRADES ITS FIGHTER AIRCRAFT [redacted]

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31 December 1984

Summary

Concerned with the growing Soviet air threat along its northern border, China over the past several years has been attempting to upgrade the combat capabilities of its fighter aircraft with Western hardware and technology. The Chinese effort is specifically directed at improving the F-7 and F-8 fighters so that they can more effectively combat advanced Soviet aircraft. The Chinese seek assistance in avionics and fire control systems, air-to-air missiles, and jet engines. [redacted]

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If Beijing is successful in obtaining the necessary technology and equipment for all of these areas, China would significantly increase its ability to defend against attacking Soviet bombers in a limited air war but still would not be able to challenge Soviet air superiority in an all-out conflict. We believe China already has the ability to establish air superiority over Taiwan if willing to accept heavy losses. Modernized F-7s and F-8s, which challenge the qualitative advantage of Taiwan's F-5Es, would reduce the cost of an air war. Upgraded figher aircraft would also improve China's capabilities against the Vietnamese Air Force, although in any conflict the Chinese would sustain heavy losses from Hanoi's modern aircraft and air defense systems. [redacted]

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This memorandum was prepared by [redacted] China Division, Office of East Asian Analysis. Information available as of 15 December was used in its preparation. Comments and questions are welcome and may be directed to Chief, Defense Issue Branch, OEA, [redacted]

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Adjusting Strategy to Meet the Soviet Threat

In response to the continuing buildup of Soviet forces opposite China, Beijing over the past several years has embarked on a major campaign to modernize its military forces--a campaign that is modifying China's historical military philosophy of fighting the Soviet Union's qualitatively superior forces with quantitative superiority. Over the past several years, for example, the Chinese have developed new or modified existing conventional weapons, including a wheeled amphibious vehicle, a portable surface-to-air missile, an antiship missile, and an improved tank.* In addition, they have developed more realistic training scenarios--including combined arms operations--and are seeking to increase the level of education of their troops.

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Essential to a more aggressive defense of China's land borders is the development of fighter aircraft able to counter Soviet warplanes on air strikes and bombing missions and to provide air cover for ground forces. In the three Soviet military districts that border China, the USSR has based over 1,600 fighters, including some of their newest and most advanced aircraft. While the Chinese have the numerical advantage--4,200 fighters in their northern military regions--the Soviets have the qualitative edge because of the sophistication of their radars, weapons systems, and

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AIR ORDER OF BATTLE ALONG THE SINO-SOVIET BORDER*

	Air Defense	Ground Attack	Total
China	1,885	2,364	4,249
Soviet Union	725	905	1,630

*Fighter aircraft; reconnaissance or ECM aircraft not included.

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engines. With their advanced radars and longer range air-to-air missiles, Soviet pilots can detect Chinese aircraft and fire their missiles before the Chinese pilots locate the Soviet aircraft. Because of the limited range of Chinese airborne intercept radars, it is possible that a Chinese pilot could be shot down without even knowing the enemy was in the area.

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[redacted] 25X1

In addition, older Chinese aircraft, because of less powerful engines, cannot obtain speed and altitude as quickly as the Soviet aircraft. [redacted] 25X1
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The Troubled F-8 Program

Recognizing these weaknesses, Beijing has authorized several developmental and production programs aimed at replacing its large but rapidly aging fleet of F-5 (MIG-17) and F-6 (MIG-19) fighters. A major focus of these programs has been the F-8 FINBACK, China's indigenously designed and produced high-speed, high-altitude interceptor. Research on the F-8 began in the mid-1960s and, since series production began in 1982, 65 F-8s have been built, with 32 assigned to operational airbases in northern China. [redacted] 25X1

Although some of the aircraft have been deployed, the Chinese are still trying to solve a number of serious problems--a heavy airframe, underpowered engines, short engine life, and poor avionics. As a result, the Chinese are now seeking Western technology and equipment that will change the mission of the F-8 to an all-weather, day/night interceptor with a look-down/shoot-down radar. [redacted] 25X1

The Chinese are planning a three-phase upgrade for the F-8 to include avionics modernization, purchase of a modern air-to-air missile, and the development or purchase of a jet engine.

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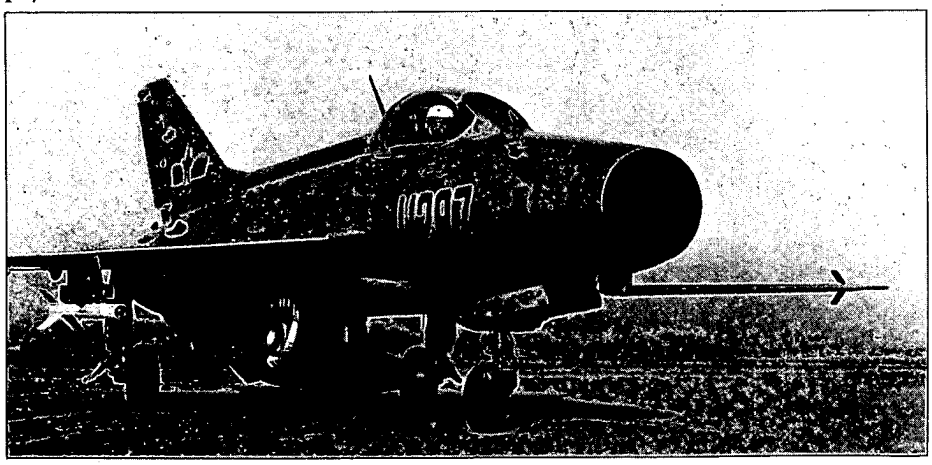
Dimensions of the F-7 and F-8

F-7



Fuselage	
Length (m)	12.2
Width (m)	1.2
Height (m)	1.6
Wing	
Span (m)	7.2
Area (m^2)	23.0
Maximum takeoff gross weight (kg)	8,210

F-8

Fuselage	
Length (m)	16.8
Width (m)	2.1
Height (m)	1.9
Wing	
Span (m)	9.4
Area (m^2)	42.3
Maximum takeoff gross weight (kg)	17,300

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The Second Solution: An Improved F-7

While the Chinese are pushing ahead with plans to modify the F-8, they are also using Western technology to upgrade the more widely deployed F-7. The F-7, China's version of the Soviet MIG-21 Fishbed, is rapidly becoming the mainstay of the Chinese Air Force. The delta wing, single-engine aircraft's primary role is air defense, but it can also be used as a fighter-bomber and in ground support. The Chinese currently have over 280 F-7s at 14 operational bases, schools, and flight test facilities. Sixty percent of all operationally deployed F-7 aircraft are located in the military regions along the Sino-Soviet and Sino-Vietnamese borders.

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The Chinese have recently begun production of an improved F-7, designated F-7-3 or F-7M, with upgraded avionics, greater fire power, and a longer range.

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Other enhancements of the upgraded aircraft include the addition of underwing fuel tanks to increase loiter time and an additional 30mm cannon.

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According to Chinese sales brochures, Beijing is also putting more powerful engines in the F-7-3. The new engine, the WP-7B, has more thrust, allowing for greater maximum speed and an increased climb rate.

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Impact on the Air Balance Along China's Borders

The USSR will continue to hold a commanding lead in all aspects of air power: aircraft, weaponry, avionics, electronic warfare, early warning, communications, and pilot skills and proficiency. Once completed, however, the program to upgrade the F-8 and F-7 will significantly increase China's ability to defend against intruding Soviet aircraft. Nonetheless, the upgrades China makes on its fighters will have an impact on the air balance

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with the Soviet Union only if the modified aircraft are produced and deployed in great numbers. If the modified aircraft are not deployed in strength, Chinese interceptors would quickly yield air superiority to the Soviet Union's air forces in any contested area. [redacted] 25X1

The combined capability of upgraded F-7 and F-8 will give the Chinese a credible air defense against low-, medium-, and high-altitude threats. [redacted] 25X1

[redacted] 25X1

[redacted] This force mix would benefit the Chinese not only in air defense, but would also provide Beijing with a limited tactical projection capability. [redacted] 25X1

Although we expect the bulk of the improved aircraft to be deployed opposite the Soviet border, they could also be brought to bear in any conflict with Taiwan or Vietnam. In both cases, however, China's quantitative advantage of currently deployed aircraft would allow it to gain the upper hand in an air war and improved aircraft would serve mainly to reduce the heavy price of conducting such operations. [redacted] 25X1

The production and deployment of modernized F-7s and F-8s would reduce the qualitative advantage currently enjoyed by Taiwan's F-5E fighters.

[redacted] 25X1

Beijing for several years, however, has had the ability to gain command of the air over Taiwan if willing to take heavy losses, and improved fighters would simply reduce the cost. Beijing probably still would lose a prohibitive number of aircraft to Taiwan's ground-based air defenses unless it corrected severe deficiencies in ground attack aircraft and air-to-ground missiles. [redacted] 25X1

China also has the quantitative edge over Vietnam in fighter aircraft. The Vietnamese Air Force, comprised of MIG-21 Fishbeds and SU-17 Fitters, can muster only 260 combat fighters compared with over 600 Chinese fighters based in the two military regions bordering Vietnam. But nearly 90 percent of the Chinese fighters are older F-5s and F-6s, which would suffer high attrition rates in any conflict. Deployment of upgraded F-7s and F-8s to the southern military regions would significantly improve the Chinese Air Force opposite the Vietnamese. [redacted] 25X1

[redacted] 25X1

[redacted] 25X1

[redacted] Nevertheless, the 25X1
Chinese would still sustain heavy losses, both from Vietnam's more modern
aircraft and its well-integrated air defense system. [redacted] 25X1

Closing the Gap: The Follow-on Improvements

Because any significant change in any of these air balances depends on deployment in strength of the improved aircraft, we see the F-7 upgrade program as the most efficient solution for improving the air balance along the Sino-Soviet border over the short term. The Chengdu Plant, where the F-7 is manufactured, has the capacity to increase production from its average of 10-12 aircraft per month up to 30. Many pilots and maintenance personnel in the Air Force and Naval Air Force are already familiar with the aircraft, and training time and costs could be held down. Moreover, the Chinese can partially finance production of F-7s through foreign sales of the aircraft.* [redacted] 25X1

Despite these advantages, the F-7 alone is not capable of providing the necessary defense of Chinese air space without extensive modifications that in the long run would prove very costly. [redacted] 25X1

[redacted] 25X1

As a result, we look for the Chinese to continue to examine Western technology to upgrade the F-8 and to support development of a new generation fighter. In addition to the equipment and technology now under negotiation, we expect [redacted] 25X1
[redacted] China will seek cockpit design technology-- 25X1
including creature comforts for the pilot--as well as aircraft design, electronics, and aircraft skin/finishing technology. [redacted] 25X1

We have little information on the specific technologies the Chinese might be seeking for the development of follow-on fighters. China acquired copies of Soviet MIG-23 fighters from Egypt and US F-5 fighters from Vietnam that it has undoubtedly exploited, but [redacted] 25X1
[redacted] Chinese engineers are still having problems developing modern fighter 25X1
airframes and engines. As a result, we doubt that a new model will reach the prototype stage within the next five years or that a modern, advanced fighter will reach production within the next 10 years. Until that time, we expect China to strengthen its air defense by phasing out its F5s and F-6s, gradually replacing them with improved F-7s and F-8s. [redacted] 25X1

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SUBJECT: China Upgrades Its Fighters Aircraft
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