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Central Intelligence Agency

Washington, D.C. 20505

DIRECTORATE OF INTELLIGENCE

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China's A-5M Ground Attack Aircraft: A Preliminary Report 25X1

Summary

We believe Beijing plans to retrofit some, if not all, of its 600 A-5 ground attack aircraft with Italian-supplied avionics that will enable the A-5s to provide better close air support to Chinese ground forces. The new inertial navigation system and weapons delivery computer--developed by US companies--will improve the aircraft's accuracy in attacking ground targets with bombs or cannon fire and in launching missiles against surface or air targets. We believe upgrading the A-5 will markedly improve China's offensive air capabilities against Vietnam and Taiwan, but will not be effective against Soviet forces--given the likelihood of Soviet air superiority and advanced air defense equipment. Beijing wants to market the improved A-5, or A-5M--to offset the domestic retrofit costs--but will probably have difficulty finding buyers because it will not be a fully advanced ground attack aircraft. 25X1

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Office of Scientific and Weapons Research. Information available as of 5 25X1
October 1987 was used in its preparation. Comments and queries are welcome and may be directed to the Chief, International Security Issues Branch, China Division, OEA, 25X1
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New Avionics for an Old Aircraft

Beijing is reportedly close to an agreement with the Italian aerospace firm Aeritalia for avionics packages to upgrade the Chinese A-5, a ground attack aircraft based on the F-6 (MIG-19) fighter. the Chinese hope to conduct the first flight test of an A-5M prototype in China next April or May--following integration of the avionics in Italy--with series production by the end of 1988.

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Aeritalia is offering the Chinese the avionics package designed for the AMX--a multirole combat aircraft under development jointly by Italy and Brazil--that relies heavily on components developed by US aerospace firms:

- The LN-39A inertial navigation system is a downgraded version[1] of the INS used on the US A-10 ground attack aircraft and is manufactured by the Italian affiliate of a US firm.

- Two digital computers--components of which are built by a US firm--and a military standard 1553B data bus will support a computer-based weapon aiming and delivery system and were developed by a US company.

The AMX also uses the EL/M 2001B radar, an all-weather, range-only radar--used in the Israeli Kfir fighter--that is built under license in Italy.[2]

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Advantages of the A-5M

The Italian avionics will not make the A-5M a state-of-the-art ground attack aircraft, but we believe the new electronics will markedly improve the A-5's performance in air-to-surface missions and air-to-air defensive combat. Although a target must first be visually acquired by the pilot, once the Kfir radar begins tracking the target--which is possible even in heavy ground clutter--it communicates target range to the weapons control computer. The weapon aiming and delivery system then uses this data to enable the A-5M pilot to accurately attack ground targets with bombs or cannon fire

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[1] The following analysis is based on our assessment of the capabilities of the LN-39 INS. If the downgraded version has substantial drift rates, however, the system would be less accurate and some of the applications we discuss--such as TASM launches from a predetermined point--would be difficult to perform.

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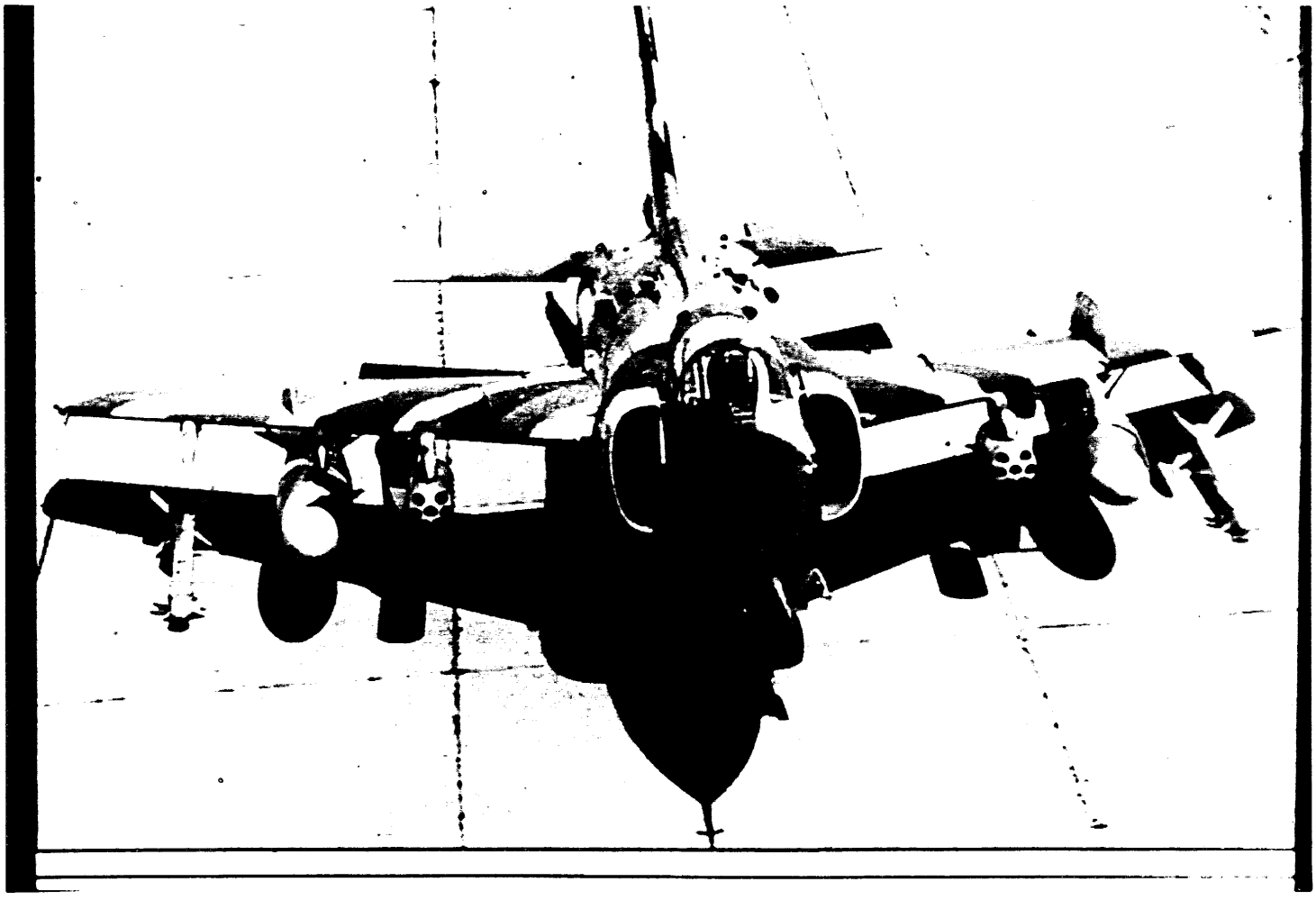

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while flying at a level altitude or while diving.[3] In contrast, the best version of the A-5 found in the Chinese Air Force today--the A-5-III or A-5-C--has no radar and must be guided to targets by either visual sightings or ground controllers.

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the inertial navigation system will give the A-5M China's first ability to provide close air support at night and in bad weather.[4]

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the inertial navigation system and weapons delivery computer will greatly enhance the A-5's combat capability. The Chinese can preprogram the coordinates of a fixed ground target and the desired launch point of air-to-surface missiles on board the A-5M in the weapons delivery computer prior to takeoff or during flight. The INS monitors the A-5M's location during flight and thereby keeps track of the aircraft's position relative to the target. At the launch point, the pilot fires the missile which uses its own guidance system--infrared, active radar, or antiradiation--to acquire and track the target. The maximum launch range is limited only by the capabilities of the missile being fired.

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To attack moving targets--such as ships or fighter interceptors beyond the range of the Kfir radar[5] --the A-5M pilot would have to be given an accurate reading of the target's location by radio communications. By providing the A-5M's own coordinates and heading, the inertial navigation system would allow the pilot to determine his position relative to the target's location and to navigate the aircraft within missile-firing range of the target. Beijing has advertised that the A-5M can carry--in addition to air-to-surface rockets and bombs--PL-5B or PL-7 tail-attack, infrared-guided missiles for use in dogfights against enemy interceptors.[6]

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We believe China will also arm its A-5Ms with C-801 air-launched, antiship missiles--China's active radar-guided missile which is similar to the Exocet and is Although the C-801--also designated the CSS-NX-4--has an active radar seeker which searches for and tracks its targets, the

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[3] Specifically, the weapon aiming and delivery system uses the radar's measurement of target range to perform continuous calculation of impact point (CCIP) or continuous calculation of release point (CCRP) which assists the A-5M pilot in firing his machine guns or releasing his bombs accurately.

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[4] To land under these conditions, however, the A-5M must be able to communicate with ground-based navigation aids--such as an instrument landing system (ILS). An ILS receiver may be part of the Aeritalia avionics package.

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China also apparently plans to upgrade the A-5M further by making the aircraft capable of launching laser-guided tactical air-to-surface missiles[7] --a move that would bring the A-5's attack capabilities closer to those of Soviet dedicated ground attack aircraft.

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Financing the A-5M

The need to hold down defense spending has led Beijing to use a "creative financing" scheme for the A-5 modernization program.

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designed or modified for export--such as the A-5M--comes, not from the state budget, but from a mix of funds borrowed from the Bank of China and from foreign countries interested in purchasing the aircraft or involved in its development. Italy is reportedly lending money to China for the A-5 avionics upgrade--which,

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1986-1991 five-year economic plan--and presumably will be repaid from sales of A-5M aircraft.

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Why Modernize the A-5?

The upgrade package of the A-5M is an attractive way for Beijing to enhance its ground attack capability at relatively low cost. Although China has some 600 A-5s fielded with the Air Force, it is a rudimentary ground attack aircraft first deployed over 20 years ago. According to the A-5M brochure distributed at the Paris Air Show in June, the Aeritalia package is easily retrofitted into existing A-5 aircraft and Beijing would only need to incur the cost of the avionics packages to enhance its existing force.

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[7] TASMs are relatively short-range missiles used to attack point surface targets, such as bunkers, bridges, and ships.

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If foreign buyers are found for the A-5M, profits from foreign sales may offset domestic retrofit costs or finance the production of new A-5s for the Chinese Air Force.

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We believe the Chinese General Staff is particularly interested in fielding the A-5M because of an increasing concern with providing adequate close air support to Chinese ground forces. 25X1 have discussed attaching ground attack aircraft to ground force armies in an attempt to provide close air support and battlefield interdiction capabilities. The Chinese have already established a ground and air joint operations training area in the Shenyang Military Region opposite the Soviet Union, according to the military newspaper Liberation Army Daily. Since 1986, joint exercises have been held there with scenarios including Air Force support for tank assaults and defensive combat, and air raids against enemy targets. The radio equipment in the A-5M would facilitate communication with forward air controllers on the ground, and with this target information the new avionics would improve its accuracy in ground attack. 25X1

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The A-5M and Regional Air Balance

We believe upgrading the A-5 will improve the Chinese Air Force's ability to provide support to ground troops, but--given the likelihood of Soviet air superiority and sophisticated air defense equipment with Soviet maneuver formations--the Chinese would be hard-pressed to use the A-5M effectively against a conventional Soviet attack. Besides the older MIG-21 and MIG-23 fighters, Moscow has also deployed to the Soviet Far East two of its most advanced fighter aircraft--the MIG-31 Foxhound and the SU-27 Flanker--which could readily intercept A-5M aircraft, even when the A-5s were armed with PL-5B or PL-7 air-to-air missiles. Even Beijing's upgraded fighters, the F-7M and the F-8-2--that we presume the Air Force would deploy to protect A-5s performing their ground attack mission--would not be a match for Moscow's fourth-generation interceptor aircraft.[8] In addition, the Soviet Union has hundreds of advanced mobile surface-to-air missile systems in East Asia--such as the SA-8 Gecko and the SA-9 Gaskin vehicle-launched systems--that would travel with its troops, prepared to fire on low-flying Chinese ground attack aircraft. 25X1

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The Sino-Vietnamese Balance

China's A-5Ms would fare far better against Vietnam's less sophisticated air defenses, particularly if Beijing decided to again launch a limited border incursion into Vietnam or if Vietnamese troops crossed into Chinese territory. The Chinese Air Force would probably sustain only minimal casualties in attacks on Vietnamese targets close to the border. Vietnam's well-integrated air defense system could inflict heavy losses, however, on any deep strikes by Chinese aircraft, particularly in the Hanoi-Haiphong

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The Taiwan Strait Balance

Fielding improved ground attack aircraft--along with modernized F-7 and F-8 fighters--will advance the China-Taiwan air balance in Beijing's favor. China's main advantage has been, and will continue to be, its vastly larger air force. But arming A-5Ms with antiradiation missiles and TASMs would pose a new threat to Taiwan's surface-to-air missile defenses, reducing the aircraft losses China would otherwise suffer in an attempt to gain command of the air over Taiwan. We believe that if Beijing launched an invasion of Taiwan, the Chinese Air Force would probably send A-5Ms--with fighter support-- against primary targets, such as:

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[9] See DI Intelligence Assessment EA 84-10064C March 1984, China: Military Options Against Vietnam.

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[10] Beijing also moved A-5 ground attack regiments to airfields opposite Vietnam during the 1979 conflict. This deployment, however, was evidently for defensive purposes only, and China's air activity was limited to reacting against Vietnamese aircraft violating Chinese airspace.

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[12] The PL-8 is equivalent to the Israeli Python III air-to-air missile--an all-aspect, infrared-guided missile with a range of 15 kilometers.

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- Maintenance complexes, aircraft, and petroleum storage facilities at Taiwan's military airfields.
- Taiwan's ground-controlled intercept (GCI) and early warning (EW) radar sites.
- Taiwan's Hawk and Nike-Hercules SAM sites.
- AAA sites defending various targets. (S NF)

The A-5M's Export Potential

We believe that finding buyers for the A-5M--outside of the Chinese Air Force--will be difficult because of the longstanding presence of the United States and the Soviet Union in the international aircraft market. The upgrade program calls for production of 600 A-5Ms for export, according to press reports from the Paris Air Show. But, [redacted] few spectators at the exposition visited the booth set up by the China National Aero-Technology Import and Export Corporation (CATIC)--the aviation industry's marketing firm--and Aeritalia, despite the display of an A-5 aircraft and a mockup of the nose section with the Italian-supplied avionics. [redacted] 225X1 25X1

In addition, the A-5M will probably also face competition in the export market from the AMX ground attack aircraft--due to enter the Italian and Brazilian Air Forces in 1988 and 1989, respectively. Although both aircraft will carry the same avionics package and a comparable weapons mix, the AMX will offer a newer airframe--a 1980s Aeritalia design, as opposed to a modified Soviet MIG-19 of 1950s vintage--and will be powered by a more reliable Rolls-Royce Spey engine in contrast to the A-5's two relatively short-lived WP-6A engines. [redacted] 25X1

We believe China's most likely customers for the A-5M will be countries seeking extremely affordable aircraft. Zimbabwe, for example, purchased F-7 fighters last year for its developing air force and may consider buying Chinese ground attack aircraft as well. Thailand turned down the A-5 in 1985 after sending a pilot to China to test fly the ground attack aircraft, [redacted] but may reconsider if Beijing offers the upgraded A-5M at a friendship price. Two countries have already purchased A-5s--Pakistan bought 54 aircraft in 1983 and 1984 and Bangladesh took delivery of its first 16 A-5s last year, [redacted] 225X1 25X1
[redacted] but we believe they will probably choose to add the Italian avionics to the A-5s in their inventories rather than buy more aircraft [redacted] 25X1 25X1 25X1

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