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THE SHENYANG AIRCRAFT COMPANY REORGANIZES THE PRODUCTION OF PRODUCTS FOR MILITARY-CIVILIAN USE



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TITLE: THE SHENYANG AIRCRAFT COMPANY REORGANIZES THE
PRODUCTION OF PRODUCTS FOR MILITARY-CIVILIAN USE

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This article was translated from the U.S. "Aviation Weekly and Space Technology" for December 11, 1989. This article is the second in a series of reports on the current situation of Chinese aviation written after a visit to our country by Tangnade Fenke (phonetic approximation) and his group in October of last year. The first article was a visit to the Chengdu Aircraft Company. The translation was carried in this publication in March of this year. In publishing a translation of this article, this publication most certainly does not express approval for its point of view or verify its contents.

In periods of peak production, the Shenyang Aircraft Company's plant is capable of producing several hundred MIG-19's in one year. During the period when the delegation from "Aviation Weekly and Space Technology" magazine visited, only 4 F8-I and F8-II fighters were being assembled. Besides those, there were 6 other aircraft undergoing test flights.

On the other hand, buses, by contrast, can be speedily manufactured and leave the assembly line completed at a rate of 4 a day. The factory is still in the midst of carrying out a package contract worth 40 million U.S. dollars in orders from Western aircraft firms.

According to what the Deputy Director of the factory and high level engineer Xu Guosen (phonetic) said, due to a shortage of regular customers, production of military aircraft products has almost stopped. As a result of this, the plant is just in the midst of fitting itself for economically profitable speeds and lot sizes in order to manufacture F8-I and F8-II fighter planes. Moreover, this is not slow but of a continuous and unvarying speed in order to set production in order.

xu Guosen said that, now, the factory's total income is approximately 70% drawn from products for non-military uses. These products include medical treatment and food processing equipment as well as light model vehicles resembling jeeps.

THE "PEACE PEARL" ENGINEERING FOR REFITTING AVIATION ELECTRONICS EQUIPMENT

According to what Xu Guosen said, the cooperation between the U.S. Gruman Aviation Company and the U.S. Air Force's Systems and Equipment Department advanced the development of the Peace Pearl aviation electronics equipment of the F-8II. Because of the influence which was exerted on China by the U.S. in carrying out technology transfer sanctions, although the speed of development was reduced to a slow one, the effects were certainly not severe. He said that, although the U.S. Government went through the forcing of the Chinese engineers who were working at the Gruman Company in Vespucci, New York, to leave this project, the work on this engineering project, however, still continues to be carried out independently on the two respective shores of the Pacific Ocean.

During the period when the delegation from "Aviation Weekly" was visiting, the Chinese engineers assigned to the Peace Pearl project were just beginning to return to the U.S.

The Peace Pearl project, with a value of 500 million U.S. dollars, makes use of a payment for goods from the U.S. Foreign Military Sales plan. As far as the content of this project is concerned, it will involve the improvement of the Westinghouse AN/APG66 radar and fire control computer, the Leyden (phonetic) Company's LN-39 on-board flight guidance system and head up display device, as well as mission and atmospheric data computers, and their installation in China's F-8II aircraft.

The "Aviation Weekly" editors obtained permission to get into and look at the F8-II Peace Pearl cockpit at the company in question. We saw that, within the cabin, was installed an automatic pilot device which was capable of maintaining altitude and increasing stability, as well as Ultra High Frequency, Very High Frequency, and single frequency channel High Frequency radio equipment. This aircraft also

has radar and missile detection devices, as well as jamming emission device systems. The windshield glass is capable of being heated. As a result of this, the pilot's field of vision is limited. This is due to the fact that two curved pieces of windshield glass have a number of support rods. Moreover, all the fuselages are manufactured with a dorsal spine running from behind the cockpit and extending straight back to the vertical tail.

Besides the head level display devices, the positioning and set up of the inside of the cockpit can compare favorably with earlier generations of the F-4 product used by the U.S. Air Force and made by the McDonnell Douglas Company. The instrumentation in the cockpit also has an instrument landing system. On the currently existing instruments and gauges, there are installed standard red colored indicator lights for use when flying at night.

Under the aft fuselage of the F8-II, there is a folding type belly fin which can be deployed in flight. This aircraft has a completely controllable horizontal stabilizer surface. Under the fuselage is installed an emergency turbine air pressure engine which can be activated as needed. To jam radars, a device for scattering metal strips, an illumination round launcher, a drag parachute, and other similar items are all installed in the tail section of the aircraft.

The aircraft in question has seven outside points from which things can be hung. These are able to suspend bombs, 23mm cannon compartments, medium range air-to-air missiles and air to ground missiles. On the axis line of the fuselage, there is a single point for adding fuel with a fuel receiving connector and its equipment. There are also exterior suspension frames for droppable auxiliary fuel tanks.

The smoothness and cleanness of the surface of the aircraft shows the excellence of the level of the industrial processes. The connections of the seams in the skin are smooth and regular. The assembly and rivet joints are flat and smooth. In a situation such as this, in those non-critical portions, such as the interior of the landing gear compartments, it was also possible to see this.

CAPABILITY FOR THE APPLICATION OF STRENGTHENING COMPOSITE MATERIALS

The relevant people at the factory said that, although the fuselage of the F-8 aircraft makes relatively small use of composite materials, its tail section, however, still opts for the use of 80% composite materials. On the basis of several remarks, the Shenyang Aircraft Company is just in the midst of strengthening its capability to use composite material spare parts which it produces on its own.

The two augmenting thrusts on the aircraft in question are 14815 pound 13-A turbine jet engines installed on the tail section of the fuselage and just in front of the vertical tail or stabilizer. In order to make it easy to move the engines when it is time for maintenance, there is no choice but to have the fuselage structure break open at the aft edge of the wing bases or roots.

In this way, it resembles the majority of China's other fighter and attack aircraft. This type of structure, which the F-8 aircraft possesses, has a life of approximately 3500 hours. According to disclosures by the relevant people project plans are just being drawn up to extend the useful life.

The initial contract in the Peace Pearl project to carry out the modernization refit of the F-8II includes complete sets of equipment on 50 aircraft and 5 equipment components. The original plan for test flights of two F8-II aircraft after their refits at Edwards Air Force Base in California, as drafted up in 1989, has already been pushed back.

In order to rescind the orders forbidding the technology transfer associated with the carrying out of this type of refitting of Chinese aircraft, the Gruman Company is currently in the process of going around the U.S. Government lobbying and selling the idea. Following the completion of the Peace Pearl modernization and refit project, it is predicted that the F8-II's will be deployed along the Sino-Soviet border. This type of supersonic fighter is China's main strength in high and low altitude defense systems.

Before sanctions on China, the U.S. Government limited the aviation electronics equipment of the Peace Pearl project, only permitting its use within China's borders.

According to remarks by Xu Guosen, the Shenyang Aircraft Company has already gone through the manufacturing of several tens of F-8I's and standard model F-8II's. These two models of aircraft are both in service with the Chinese Air Force. These two types of aircraft, up to the present time, have still not been exported.

The various sections of the full fuselage of the F8 and F8-II's are manufactured, for the most part, by the Shenyang Aircraft Company and its subordinate divisions. The aviation electronics equipment and engines, by contrast, are purchased abroad. In conjunction with this, as a final step in the assembly, they are installed in the aircraft.

As far as production of the aircraft parts is concerned, it is dispersed over the 50,000 square meters within the plant area of the factory. Within this, there is only one final assembly workshop that looks from the outside like an "assembly line" structure.

According to remarks by the Director of the Shenyang Aircraft Company's Test Flight Station, Shao Jinhong (phonetic), there is almost no appearance of the aircraft structures having the defects that come from production lines. The checks before flights include the operation of various systems as well as the status of the connections between them. After flights are completed, it is only then that spray painting of the aircraft surfaces is carried out. It is possible to clearly see the parts which were bargained for in the package contract as coming from the Shenyang Aircraft Company in its responsibility. The manufacturing activities belonged, for quite the most part, to the aviation side. According to remarks from the Company's Deputy Director and Chief Economist, Xu Mingshan (phonetic), the Shenyang Aircraft Company has an overseas contract worth over 40 million U.S. dollars for additional aircraft parts and spare aircraft components.

He said that these contracts included 100 sets of cargo bay doors for Boeing 757's, to be manufactured by the Company in question, with a value of 4,200,000 U.S. dollars. The British Aerospace Company signed up for the assembly of 100 sets of directional rudders for the ATP transport plane at a value of 800 thousand U.S. dollars.

The Shenyang Aircraft Company is just in the midst of manufacturing 100 sets of cargo bay doors for the De Haviland (phonetic) Company's Model 8 Aircraft at a value of 16 million 350

thousand U.S. dollars. It has signed a contract worth one million U.S. dollars with the West German MBB Company requiring the Shenyang Aircraft Company manufacture 300 sets of emergency cabin exit doors for the "Air Bus" A320 transport plane.

Xu Mingshan said that the company in question has also just signed several contracts for such small items as additional aircraft parts and ribs for the A320 aircraft and with Boeing, Sabo (phonetic), British Aerospace Company, and MBB, as well as other similar firms.

On November 1st, a team from Lockheed Company arrived here and inspected the status of the 36 sets of goods produced by the Shenyang Aircraft Company, which they had contracted to buy at a cost of 1 million 300 thousand U.S. dollars. These goods were C-130 "Hercules" transport plane tail cones, landing gear compartment doors, and exterior suspension frame spare parts.

Xu Mingshan said that the Shenyang Aircraft Company is longing to expand its package contract activities with foreign firms. The company in question is just in the midst of pursuing this. Including the production of spare parts for flaps, they have tendered a bid to the De Haviland (phonetic) Company. He said that their factory possesses very strong competitive power due to its low labor costs.

The company in question is also gradually expanding the scope of its package contracts with foreign nations.

The contracts that the Shenyang Aircraft Company undertook with foreign countries were formerly only limited to the production of extra machine parts and the carrying out of assembly operations on parts. Now, they are already set up to produce, for the DeHaviland Company, the auxilliary processing clamps or jigs which they need made. They will be used in the manufacture of these newly added products. Canadian firms are just in the process of supplying to the Shenyang Aircraft Company templates or prototypes for the clamps and jigs.

Due to the fact that it is possible to keep a large portion of the foreign exchange which is gained from the contracts described above, as a result, overseas contracts are very attractive to the Shenyang Aircraft Company. This foreign exchange has often been used

to purchase Western manufacturing tools and equipment. From 1986 onward, the Shenyang Aircraft Company has had the authority to sign overseas contracts right along. However, all the relevant business in the aviation arena must appear before and be decided on by the China Aviation Technology Import Export Company (CATIC), that is, China's official organization for managing aviation import and export activities.

According to remarks by Xu Guosen, the Chinese Government took out a certain percentage of the total foreign exchange that the Shenyang Aircraft Company created as income.

Xu Mingshan said that, as far as the plan being proposed for Chinese aircraft trunk lines is concerned, and, in particular, the production of spare parts for the various sections of the fuselage and short engine compartments, the Shenyang Aircraft Company is also planning to submit a bid.

One personage from the Shenyang Aircraft Company said that, speaking in terms of his company's "current" productive capability, the airframes for the manufacture of medium and small model transport planes and utility aircraft do not pose a problem. However, due to the fact that there are clear deficiencies in the knowledge of how to make one's own products or production capabilities break into the market, as a result, the development in the area of increasing the signing of domestic and overseas contracts has been limited. Although the factory has a formal supply and marketing department, even so, during the period when the delegation from "Aviation Weekly" looked around, they did not see anyone at all taking care of marketing and sales. Besides those tapes made for the Paris Air Show, they did not see any introduction in the area of marketing for the relevant aviation products of this factory or other advertising materials either.

BLUE PRINTING INSTRUMENTS LEFT IDLE

Like the other aviation factories of China, these several aspects of high technology equipment as applied to firmly grasping and applying Western design and production seem to be not entirely reasonable. One digitally controlled blueprinting device, because production tasks were not adequate, was left idle. Among 4 West German manufactured digitally controlled multi-axis milling machines, three were not used.

If these are activated, these digitally controlled milling machines are capable of processing large model parts with dimensions of 0.8x1.6 meters (31.5x63 English inches). They are also capable, at the same time, of milling up to 4 small model parts. These milling machines are not only capable of milling parts manufactured from steel. They are also capable of milling parts manufactured from aluminum alloys. They are not only used in order to manufacture aviation products, but are also used in order to manufacture products for foreign trade.

In the center of the plant in question, there is a striking area which is the 1000 square meter computer center. Here, there are the IBM Company's 5080, 3031, and 3250 series computers as well as computer assisted design (CAD) equipment. There are also two sets of Memonekesi (phonetic, possibly Memorex) Company's 2078 equipment. This computer center was set up in 1985 with the help of the IBM Company.

Following the construction of the new computer building, a direct connection network will be set up between the Shenyang Aviation Company's computer assisted design equipment and the numerically controlled graphics instruments.

In order to make use of the new technology and new equipment to train employees, the Company built a 6 storey building as a training center. It has 8,000 square meters of classrooms (86,000 square English feet). This training center is not used to train Air Force maintenance personnel.

REFORM OF THE PERSONNEL SYSTEM

The Shenyang Aircraft Company, due to the structures associated with the shift toward taking civilian products as the foundation, has been led, as a result, to a sweeping reform of the personnel system.

At the present time, the factory's management department must take responsibility for turning a profit, that is, a growth in profits. Xu Guosen said that, under the new personnel system, in the period from 1985-1987, profits increased 20%. From October of 1988-1989, by contrast, they exceeded the target of a 10% increase.

The Shenyang Aircraft Company has over 20,000 workers and operating personnel. There are 2872 high level and middle level engineers. The factory covers a land surface area of over 6 million square meters.

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