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**Collection:**

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**Folder Title:**

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# WITHDRAWAL SHEET

## Ronald Reagan Library

Collection: LAUX, DAVID N.: Files

Archivist: mjd

FOIA ID: F98-054

File Folder: Taiwan Arms Sales - Indigenous Fighter Aircraft (3)

Date: 10/28/1999

RAC Box 90856 32

(5)

DOCUMENT NO. & TYPE	SUBJECT/TITLE	DATE	RESTRICTION
1. memo	Laux to Robert McFarlane re: technology assistance, 5p Part 12/6/05 M03-1453 #11	5/31/85	P1/F1
2. memo	Laux to John Poindexter re: technology assistance, 4p Part ~ ~ #12	4/26/85	P1/F1
3. chart	re: LWDF development, 2p D ~ ~ #13	5/30/85	P1/F1
4. memo	McFarlane to the President re: Response to Sen. Goldwater, 1p R 5/30/02 F98-054 #27	5/25/85	P1/F1
5. memo	Laux to McFarlane re: response to Sen. Goldwater, 1p R ~ ~ #28	5/23/85	P1/F1
6. charts	re: LWDF program status, 29p D 9/5/02 NLSF98-054 #29 D 12/6/05 M03-1453 #16	5/22/85	<del>P1/F1</del> F4 B1
7. charts	re: LWDF program status, 29p D ~ ~ #30 D -	5/17/85	P1/F1 F4 B1 #17

### RESTRICTIONS

P-1 National security classified information [(a)(1) of the PRA].  
P-2 Relating to appointment to Federal office [(a)(2) of the PRA].

P-3 Release would violate a Federal statute [(a)(3) of the PRA].  
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA].  
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA].  
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA].

C. Closed in accordance with restrictions contained in donor's deed of gift.

F-1 National security classified information [(b)(1) of the FOIA].  
F-2 Release could disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA].  
F-3 Release would violate a Federal statute [(b)(3) of the FOIA].  
F-4 Release would disclose trade secrets or confidential commercial or financial information [(b)(4) of the FOIA].  
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F-7 Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA].  
F-8 Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA].  
F-9 Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA].

# WITHDRAWAL SHEET

## Ronald Reagan Library

Collection: LAUX, DAVID N.: Files

Archivist: mjd

FOIA ID: F98-054

File Folder: Taiwan Arms Sales – Indigenous Fighter Aircraft (4)  
Box 90856

Date: 10/28/1999

DOCUMENT NO. & TYPE	SUBJECT/TITLE	DATE	RESTRICTION
1. paper	re: Indigenous Aircraft Project [annotated], 5p D 11/16/01 F98-054 #31 D 12/6/05 MOS-1453 #18	5/4/85	P1/F1
2. memo	Laux to John Poindexter re: technology assistance, 4p PART 12/6/05 MOS-1453 #19	4/26/85	P1/F1
3. briefing paper	re: New Taiwanese Fighter [annotated], 3p PART " #20	nd	P1/F1
4. memo	Richard Clark to Lt. General Chain re: meeting [annotate], 2p D " " #21 AND F98-054 #34	4/26/85	P1/F1
5. paper	re: IDF, 3p D " " #22 AND " #35	nd	P1/F1
6. notes	re: IDF speech [annotated], 3p D " " #23	5/17/85	P1/F1
7. memo	Wolfowitz/Chain to the Secretary re: IDF [annotated], 13p D " " #24 AND F98-054 #37	nd	P1/F1
8. talking points	re: assistance, 2p D 9/5/02 NLSF98-054 #38 D 12/6/05 MOS-1453 #25	3/-/85	P1/F1
9. talking points	re: technology cooperation, 1p D " " #39 D " " #26	nd	P1/F1
10. talking points	re: LOA's, 1p D " " #40 D " " #27	nd	P1/F1
11. talking points	re: PRC, 1p R 12/6/05 MOS-1453 #28	nd	P1/F1
12. charts	re: PRC, 6p PART " " #29	3/13/85	P1/F1
13. memo	Pratt/Anderson to William Brown re: IDF, 10p D " " #30 AND F98-054 #43	3/-/85	P1/F1
14. memo	Paul Wolfowitz to Armacost re: EAP views, 4p PART " " #31 AND " #44	3/7/85	P1/F1
15. memo	Frank McNeil to Chain re: IDF [annotated], 2p D " " #32 AND " #45	3/1/85	P1/F1

### RESTRICTIONS

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THIS FORM MARKS THE FILE LOCATION OF ITEM NUMBER 7 LISTED ON THE  
WITHDRAWAL SHEET AT THE FRONT OF THIS FOLDER.



**AT-3**



# AT-3

## INTRODUCTION

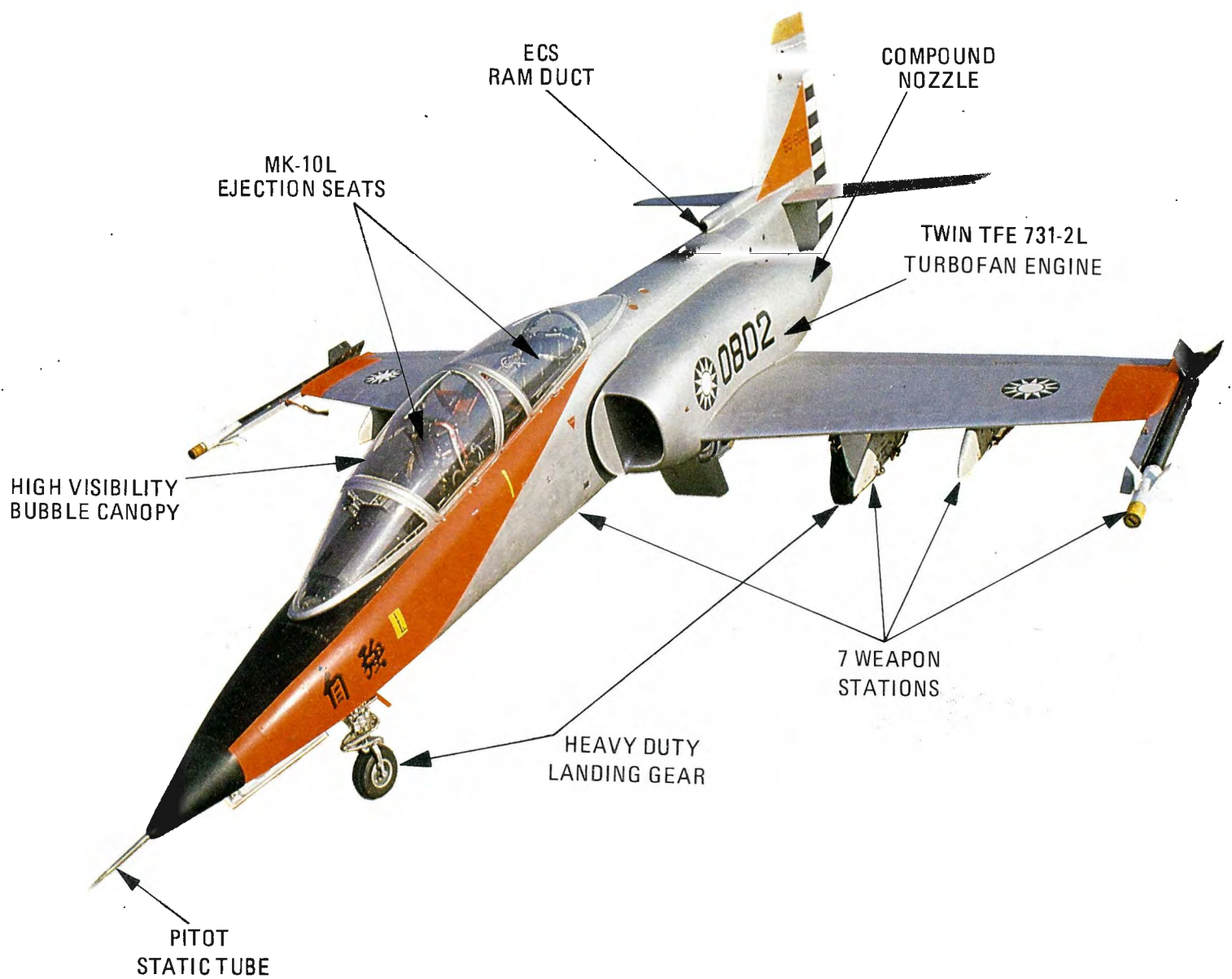
AIDC was awarded in July 1975 a contract for the design and development of a new advanced military jet trainer. The AT-3 is designed to meet the newest advanced training concept and to provide the most effective training at the lowest cost which includes both the initial acquisition and operation/maintenance costs for the air

forces of the world. Construction of two prototypes was started in January 1978. The first flights of the AT-3 occurred on 16 September 1980 and 30 October 1981 respectively. Extensive flight tests revealed AT-3's outstanding performance, maneuverability, ease of handling, maintainability, high reliability and low operating cost.

It is exceptionally well suited for advanced fighter pilot training as well as ground attack roles. Production was started in March 1982. AIDC stands ready to serve its customers with attractive industry-participation opportunities in terms of advanced technology, management and production methods.



# THE PERFORMANCE TO WIN







**MISSION OPTIMIZED,  
PRECISE FLIGHT CONTROLS**



# TECHNICAL DATA

## DIMENSIONS

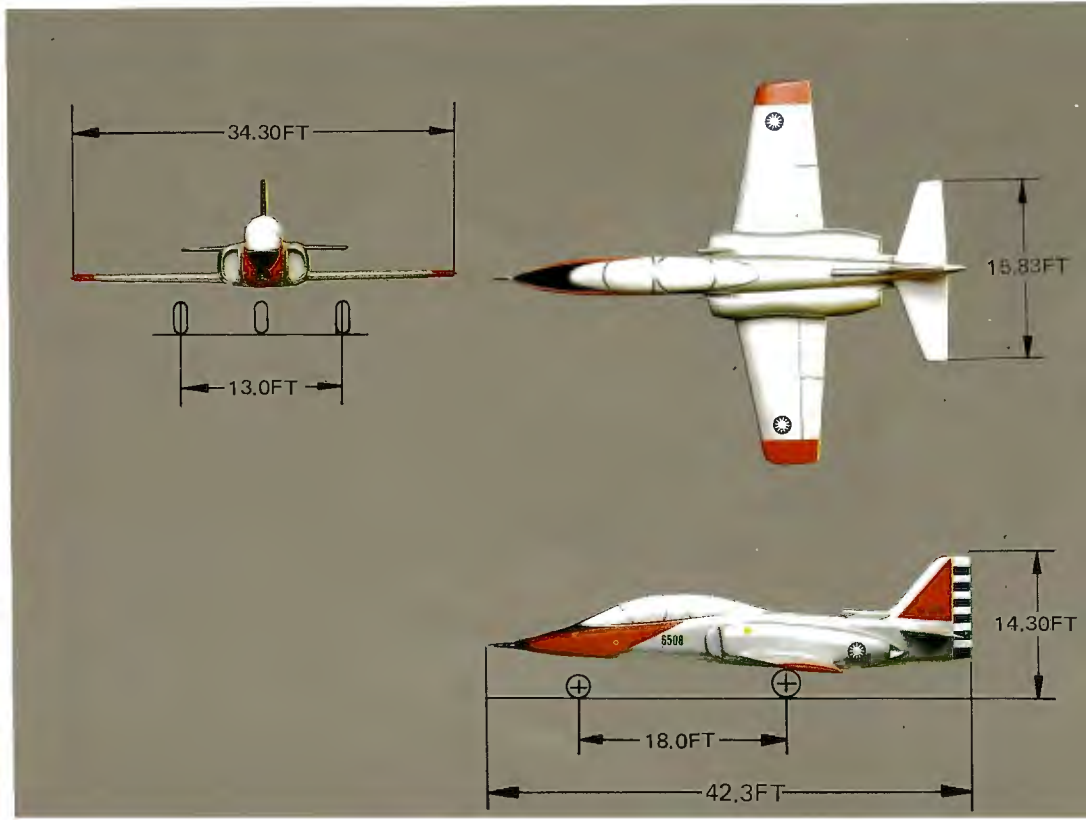
Wing span . . . . . 10.46m (34 ft 3.6 in)  
 Wing chord, at root . . . 2.8 m (9ft 2 in)  
 Wing chord, at tip . . . . 1.4 m (4 ft 7 in)  
 Wing aspect ratio . . . . . 5.0  
 Length overall . . . . 12.90m (42 ft 4 in)  
 Height overall . . . . 4.36m (14 ft 3.6 in)  
 Tailplane span . . . . 4.83m (15 ft 10 in)  
 Wheel track . . . . . 3.96m (13 ft)  
 Wheel base . . . . . 5.49m (18 ft)

## AREAS

Wings, gross. . . . 21.93 sq m (236 sq ft)  
 Ailerons. . . . . 1.33 sq m (14.37 sq ft)  
 Trailing-edge flaps . . . . . 2.53 sq m (27.28 sq ft)  
 Fin . . . . . 3.45 sq m (37.12 sq ft)  
 Rudder . . . . . 1.15 sq m (12.4 sq ft)  
 Tailplane . . . . . 5.02 sq m (54 sq ft)

## WEIGHTS AND LOADINGS

Empty weight . . . . 3,864 kg (8500 lb)  
 Take-off weight (clean) . . . . . 5,227 kg (11500 lb)  
 Max. take-off weight . . . . . 7,955 kg (17500 lb)  
 Max. landing weight . . . . . 7,375 kg (16225 lb)  
 Max. internal fuel 1,630 Liter (2800 lb)  
 External fuel capacity . . . . . 1,135 Liter (1950 lb)  
 Max. external store capacity . . . . . 2,727 kg (6000 lb)



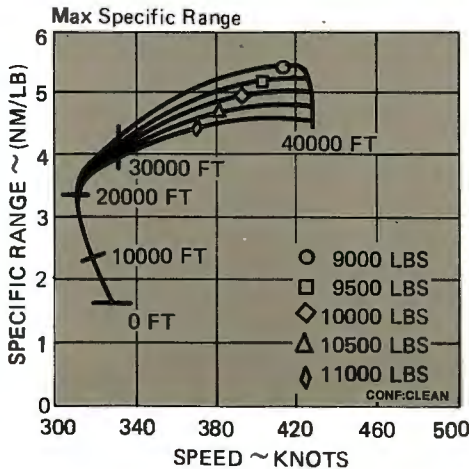
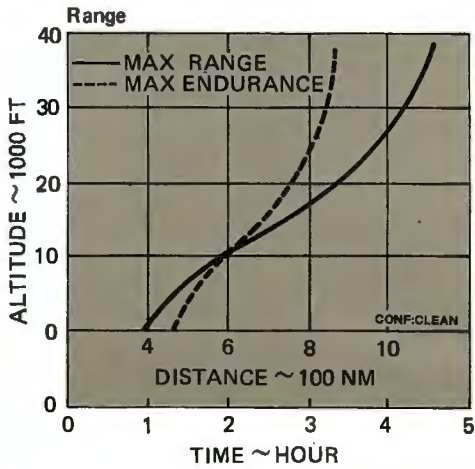
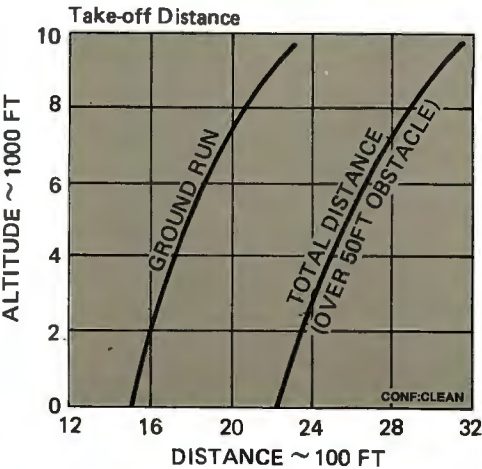
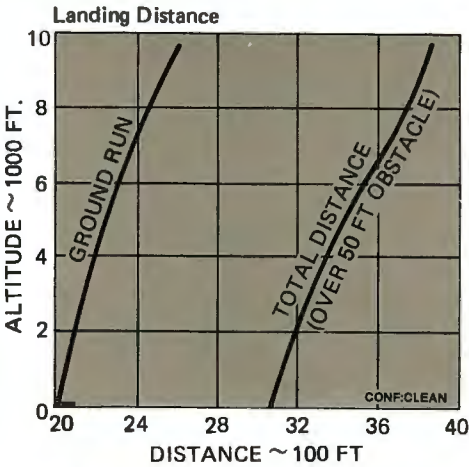
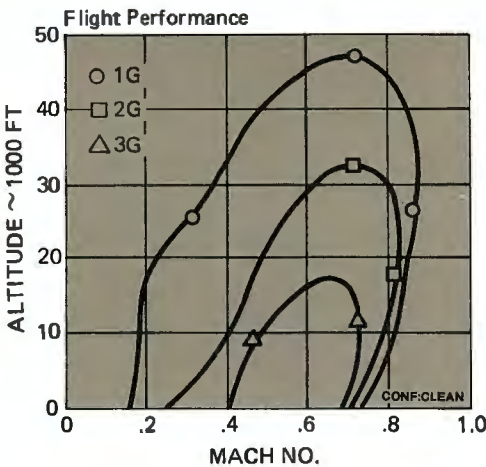
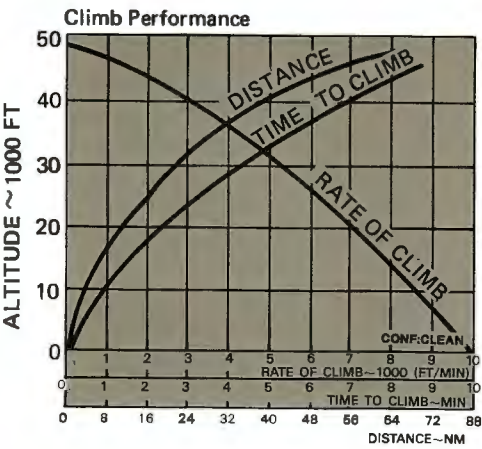


A NEW PRESENCE IN AIRPOWER

SUPERIOR PERFORMANCE



# PERFORMANCE





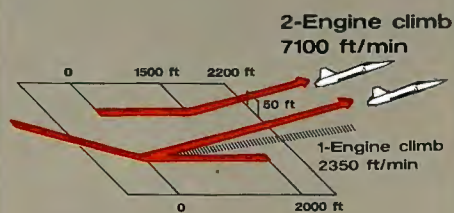
# DESIGNED FOR MISSION FLEXIBILITY

- HIGH THRUST-TO-WEIGHT RATIO
- LOW WING LOADING
- ADVANCED TRANSONIC AERODYNAMICS

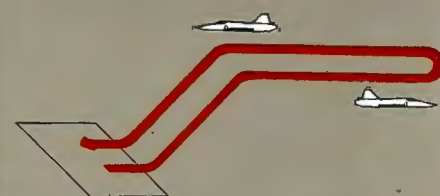


Max Limiting Mach No . . . . . 1.05  
 Max Level speed:  
 at S.L . . . . . 485 Knots  
 at 36,000 ft. . . . . 0.85 Mach  
 Stalling speed:  
 flaps and L/G up . . . . . 100 Knots  
 flaps and L/G down . . . . . 88 Knots  
 Max rate of climb  
 at S.L . . . . . 10,100 ft/min  
 Service ceiling . . . . . 48,000 ft  
 Minimum turning radius . . . . . 1,080 ft  
 at 5,000 ft

## Short Take-off And Landing (STOL)



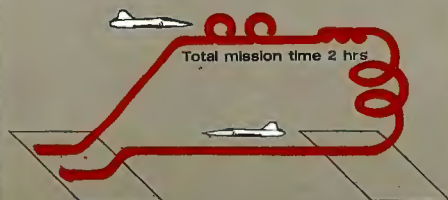
## Endurance



3.2hrs (Max. internal fuel)  
 5.2hrs (Two 150 gal External Tanks Added)

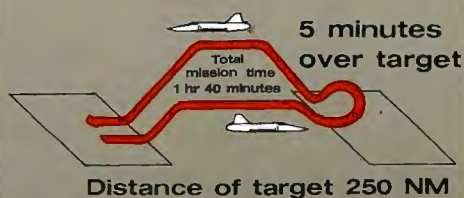
## Training (Maximum Internal Fuel)

Acrobatic & max. performance manoeuvring at 36000 ft



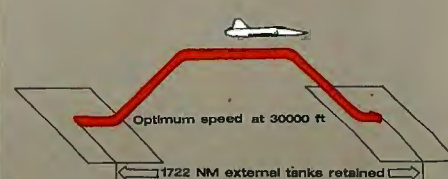
## Lo-Lo-Hi Mission

(Maximum Internal Fuel, 5000 lb External Store)



## Ferry

(Two 150 Gal External Tanks Added)





REMOVE  
BEFORE FLIGHT

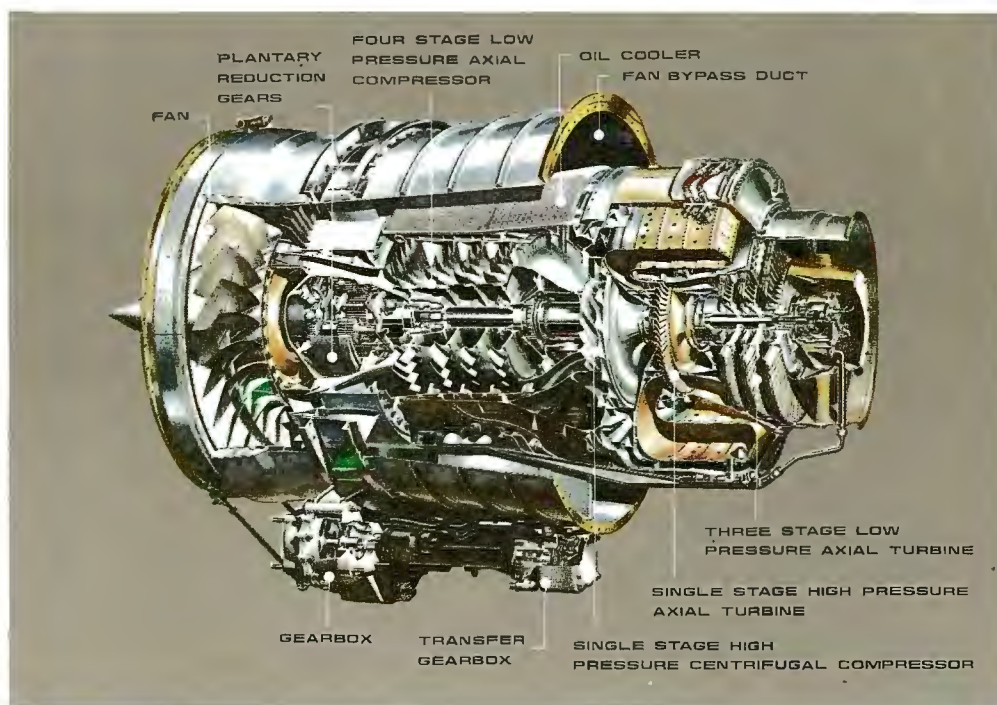


# ENGINE

## Proven TFE 731 Turbofan Engine

The new generation TFE 731 turbofan engine is a high performance engine featuring modular design for ease of maintenance, low fuel consumption, low noise signature, low exhaust emission and low I.R. signature.

This proven engine is used on 14 different aircraft including 4 military aircraft and has accumulated more than 4 million hours on more than 3500 engines.

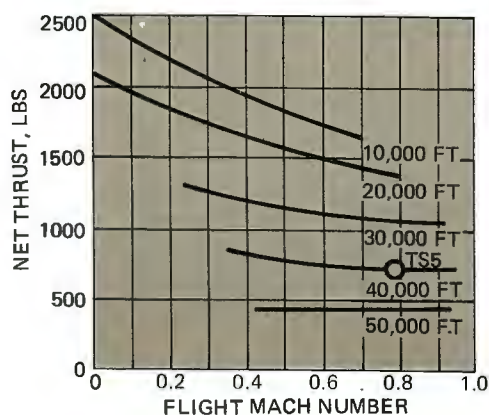


### PERFORMANCE RATING-TFE 731-2L

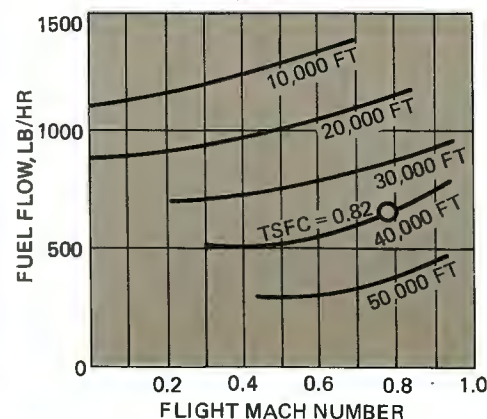
	Sea Level Static (Std. day)	40,000 ft. 0.8 Mach Std. Day (Max. Cruise)
Thrust	1,587 kg (3,500 lbs)	344 kg (755 lbs)
Bypass Ratio	2.82	2.70
TSFC	0.493	0.815

Typical engine weight is 725 lbs.

### NET THRUST-TFE 731-2L CRUISE RATING



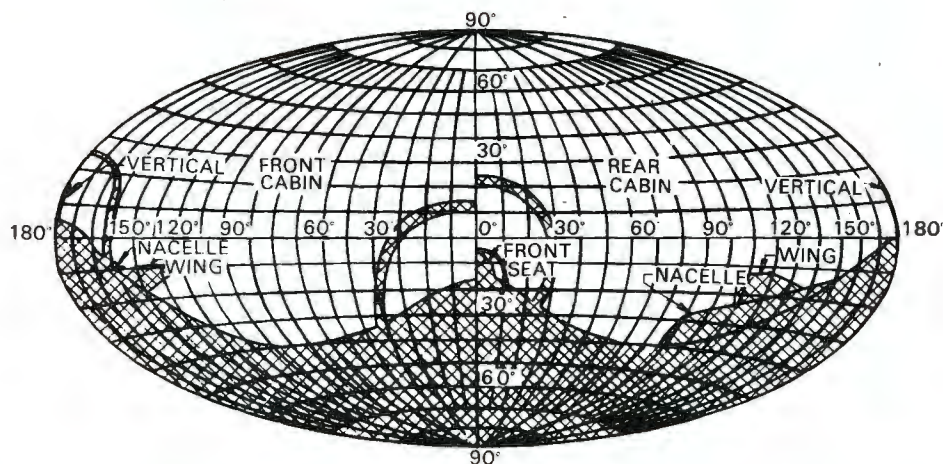
### FUEL CONSUMPTION-TFE 731-2L CRUISE RATINGS HEATING VALUE OF FUEL LHV = 18,000 BTU/LB.





# SAFE AND COMFORTABLE ACCOMMODATION

*Cockpit Visibility Chart*



## Front Cockpit



## Rear Cockpit



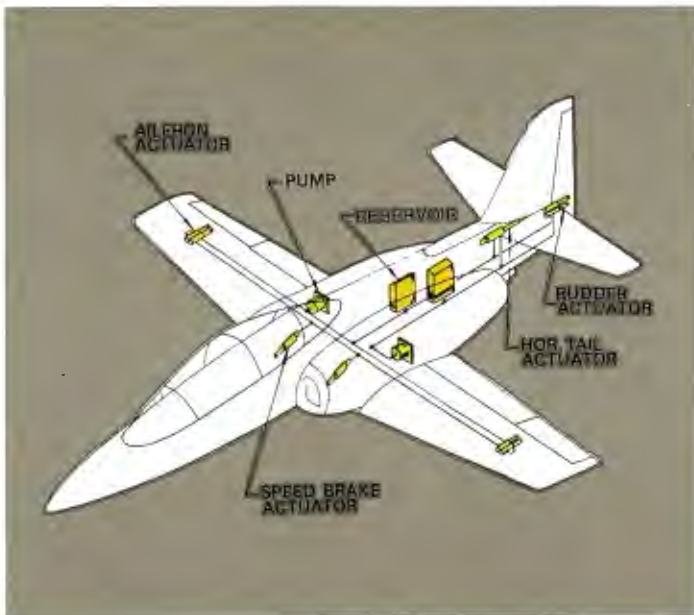
## HUD



# RELIABLE SYSTEMS

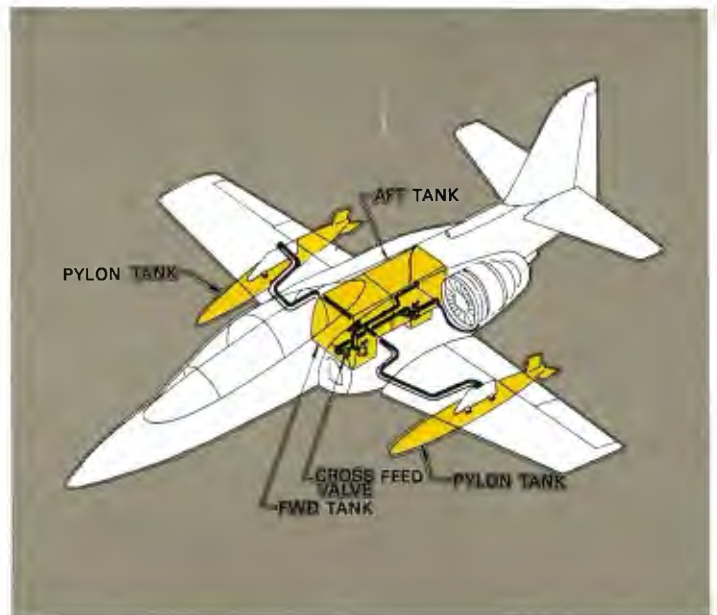
## Hydraulic System

Hydraulic power is supplied by two independent systems at a pressure of 207 bars (3,000 PSI). The flight control hydraulic system provides power for operation of primary flight control surfaces. The utility system provides hydraulic power for the primary flight control surfaces and for the operation of the landing gear, landing gear doors, speedbrakes, wheel brakes, nose-wheel steering, and the stability augmentation system.



## Fuel System

The two fuel systems are independent of each other, however having a cross-feed function. Fuel for each engine is supplied from the rubber impregnated nylon fabric cell which has 1400 lbs(215 US gallons) capacity. Total fuel capacity is 2,800 lbs. No fuel is carried in the wings. An auxiliary jettisonable fuel tank of 975 lbs (150 US gallons) can be carried on each inboard underwing pylon. Refueling is provided through a single-point receptacle in the lower fuselage for all the internal and external tanks. A gravity refueling point is located above each fuselage tank.



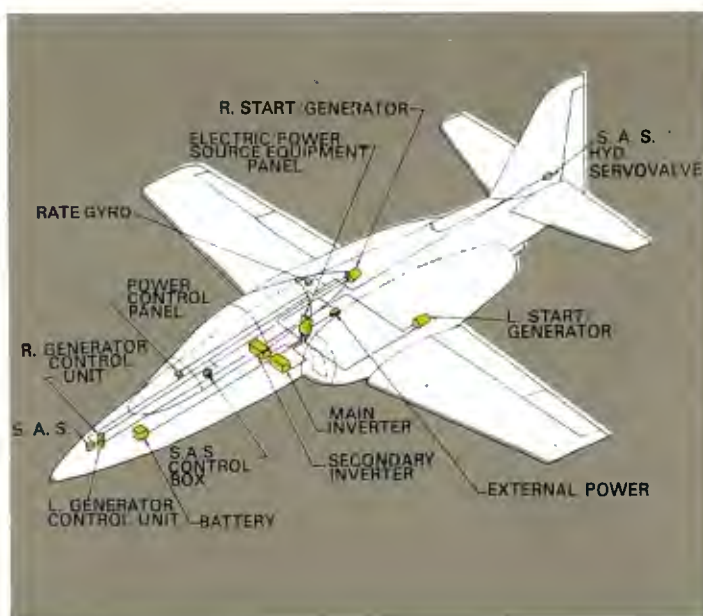
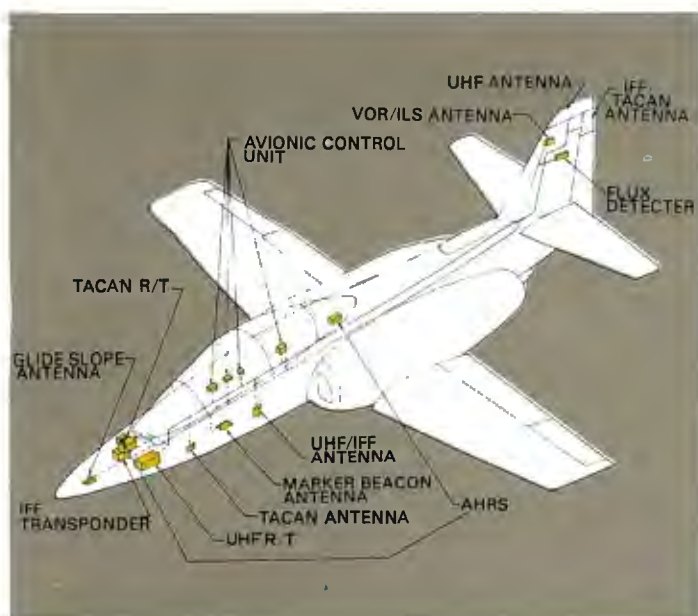


## Avionics System

Large avionics bays in the forward fuselage contain most of the radio and navigation equipment. The AT-3 is equipped with UHF, intercom system, IFF/SIF system, TACAN, attitude and heading reference system, angle of attack system, and full blindflying instrumentation. A wide range of alternative avionics is available, such as HUD, RWR, Chaff dispenser system, radar altimeter, INS, doppler radar, FLIR etc.

## Electrical System

Main electrical power is supplied by two 28V, 12kw DC starters/generators, one on each engine. A 40 AH nickel-cadmium battery provides power for starting the engines and two static inverters supply AC power at 400 Hz. An external ground DC power receptacle is located on the right side of the center fuselage. The AT-3 is equipped with a stability augmentation system (SAS) which provides outstanding handling characteristics and a stable platform for accurate weapons delivery.









# ORDNANCE CAPABILITY

<b>Load Capability</b>	6,000 lb (2,727 kg) In Total
Center pylon	2,000 lb (910 kg)
Inboard pylon (TER adaptable)	1,400 lb (636 kg)
Outboard pylon	600 lb (272 kg)
Wingtip	200 lb (92 kg)

## Ordnance Versatility

### Guns

Large gun bay lower fuselage  
accepts a variety of guns

### Bombs

GP, SE

Cluster

Fire

Flare Dispenser

SUU-25A/A, -25C/A, -25E/A

Aerial Target System

A/A37U-15TTS

Note: Other types of armaments  
can be easily adapted for carriage.

### Missiles

Wingtip IR missiles

### Rocket Launchers

LAU-3/A, -3A/A, -3B/A

LAU-10/A, -10A/A

LAU-60/A

LAU-68A/A, -68B/A

### Training Weapons

Bomb and Rocket

Training Dispensers

Practice Bombs

Rocket Pods



# MINIMUM MAINTENANCE



- **Built-In Bare Base Features**

- Cockpit Access Without Ladders
- Engine Start with Aircraft Battery
- Sufficient Oxygen for Multiple Sorties
- Single-Point-Pressure Refueling/Defueling

- **Short Turnaround Time**

- **Modular Engines For Easy Maintenance**

- **The Lowest Maintenance Man Hours Per Flight Hour of all Comparable Aircraft.**





## **AERO INDUSTRY DEVELOPMENT CENTER**

P.O. BOX 8676  
TAICHUNG, TAIWAN 400  
REPUBLIC OF CHINA

TEL: (04) 2529837  
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SYSTEM IV  
NSC/ICS 400416-redo

MEMORANDUM

NATIONAL SECURITY COUNCIL

~~SECRET~~

May —,  
April 26, 1985

INFORMATION

MEMORANDUM FOR ADMIRAL JOHN M. POINDEXTER

FROM: DAVID N. LAUX

DECLASSIFIED IN PART  
NLS 003-1453 #19  
By CU, NARA, Date 12/6/05

SUBJECT: Technology Assistance for Taiwan's  
Indigenous Fighter Aircraft

The purpose of this memo is to provide you and Bud background on the above subject, since it may be raised by Secretary Shultz or Secretary Weinberger with Bud or you in the near future.

Background. About four years ago, Taiwan embarked on a program to produce their own indigenous fighter aircraft. When the sale of a U.S. FX fighter aircraft was turned down in early 1982, the Taiwan program took on more momentum. They decided that if they were not going to be able to purchase advanced aircraft from us, and probably not from other suppliers (such as Israel) too, they needed to insure against the day their existing inventory would become decrepit or obsolete. We have encouraged them in this philosophy, not only in aircraft, but other equipment, to ease our own problem of living up to the terms of the Taiwan Arms Sales Communique.

The Problem. At present, Taiwan has an inventory of about 400 fighter aircraft, as opposed to the PRC's 5,000. Taiwan's inventory is made up of something over 200 F-5E's and F-5F's, and another 200 of old F-100's, F-104's, and F-5A's and B's. Attrition from age will remove about half of these latter planes from Taiwan's inventory before 1990, and the F-5E co-production line is scheduled to end this year. Extending the co-production line won't particularly help the problem because the F-5E will be an obsolete aircraft in the 1990's. Some improvements to the F-5E's and F's can and will be made, but this is a temporary measure.

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Declassify on: OADR



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7.4d

In sum, Taiwan needs a new fighter aircraft by the early 1990's if it is to retain its relative power balance in the air with respect to the PRC. They have essentially three options: a) obtain it from the U.S.; b) obtain it from other sources (e.g., Israel), or c) build it themselves.

1.4d

On the other hand, if the U.S. is to adhere to the Taiwan Relations Act, the question needs to be addressed. Under certain circumstances it might be possible, in the 1990's, to sell them the F-20 as the only available replacement for F-5E's which by then will no longer be produced -- just as we sold them C-130's last year to replace the technologically inferior predecessor C-119's which were no longer being produced.

Alternative sources of fighter aircraft, such as Israel, Sweden or France, do not appear to be feasible. We have concluded, therefore, that the best policy option is to encourage Taiwan to produce its own aircraft, and assist them with technology transfer, where this is needed.

The Aircraft. The plane Taiwan is planning to produce, like any aircraft, has three major parts: the airframe, the engines, and the instrumentation. The airframe is entirely of indigenous design and will not resemble any U.S. aircraft. The plane is twin-engined, and the powerplant will be the Garret 1042 engine, which was approved for sale to Taiwan in early 1982, before the August 17, 1982 Taiwan Arms Sale Communique. The two engines will provide about 16,700 pounds of thrust with afterburner, which is more than the F-5E's single engine of 10,000 pounds, but less than the single 18,000 pound thrust of the F-104 engine or the F-20's two engine total of 18,000 pounds.

Instrumentation. U.S. assistance in the plane's instrumentation is the issue under discussion, primarily the radar system, a flight data computer, digital flight control system, etc. and some guidance in the integration of these systems -- i.e., how best to fit them into the aircraft. The most important instrumentation package is the radar. What is proposed is the 6-D-53 radar system manufactured by Westinghouse, with a look-down, shoot-down capability. The F-5E does not have this capability, and the system would be less capable than that of the F-16, but about the same as that of the F-20.



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DEPARTMENT OF STATE

BRIEFING PAPER

THE NEW TAIWANESE FIGHTER AIRCRAFT

Intended Missions

The new aircraft will be subsonic (about Mach .8) and rather small, roughly the size of an F-5. It is to have modern avionics, including all-weather radar, a "look-down, shoot-down" weapons aiming system, and a laser gyroscope (which does not require time to "spin up" before the aircraft can take off).

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Production

As of a month or so ago, the final configuration of the airplane had not been decided. Two quite different designs (of an original six), both the same size, are under consideration: a twin-tailed machine with two widely separated engines or a single-tailed plane with its engines close together. The engine is a conservative and safe choice, the US Garrett TFE 1042-70, a commercial turbojet already used in Taiwan's AT-3 trainer. Without an afterburner, it has about the same thrust (22-24 Kilonewtons) as the afterburning J-85s which power the F-5. Though there is no indication at present that they have allowed for it in their power, weight and stress calculations, we must assume that the Taiwanese will in future fit the Garrett TFE 731 engine, a closely related powerplant with an afterburner and roughly double the thrust which would put the aircraft in the Mach-1+ category, perhaps as high as Mach-2.

Taiwan plans to roll out its first prototype by March 1987 and enter series production early in 1990. But, given that as late as early 1985 there was no final design decision, it will be difficult for the plane to reach its first flight tests in only two years. We have had some reports of potential stability problems in the designs, which may cause further delay. Despite airframe design advice from General Dynamics and engine assistance from Garrett, integrated with avionics that will be largely imported, we believe that teething troubles common to all new aircraft and Taiwan's lack of design and system integration experience could well cause further slippage.

DECLASSIFIED IN PART

NLS mb3-1453 # 10

~~SECRET/NOFORN~~

By

NARA, Date

12/6/05

Taiwan Air Force Structure

As of this year, the Air Force has more aircraft than at any time in the last decade: over 400 first-line machines, consisting of 248 F-5Es, 106 F-104s and 49 F-100s. There are also 127 trainers which can be used in combat, the most important of which are 62 older F-5As and -Bs and 52 newer F-5Fs. But the only aircraft with any significant useful life are the 309 F-5Es and -Fs produced on Taiwan. Although Taiwan acquired 66 F-104Gs two years ago, they were ex-FRG Luftwaffe trainers, over 20 years old, whose airframes had lived a hard life. Taiwan's other F-104s, acquired through MAP, are even older and are at the end of useful service. The F-100s are all 30 years old and are flown only sparingly; many will be converted to target drones. DIA estimates--conservatively, in our view--that total Air Force fighter strength will drop from 530 in 1985, to 400 in 1990, to 320 in 1995. This projection does not allow for the new fighter coming into service after 1990, but it appears quite unlikely that its production alone will be early or large enough to stem the decline.

Fighter Developments in the PRC

China's present production model MiG-21/F-7 is an early version of the aircraft, inferior on most points of performance except speed to Taiwan's F-5E. It appears likely that China will upgrade it with missiles, avionics and probably engines from the US, Israel or Western Europe. It is a well designed aircraft, relatively simple to improve. China has already fitted some with UK Marconi avionics (but exported them to Iraq via Jordan) and will have the means to make the modern all-aspect Israeli Python-III air-to-air missile (similar to the US AIM-9L). The MiG-21 is used so widely the Third World that many Western aircraft manufacturers, facing declining demand for new fighters, are likely to develop improvements packages for the aircraft. They will see China as a prime customer.

China's MiG-21 force stands at <sup>2847</sup> (240) now, and is expected to grow to nearly 600 by 1990 and 900 by 1995. If China stays with the F-8 program, its 35 present F-8s would increase to 165 by 1990 and would be joined late this decade by a few F-8-2s, which required major fuselage redesign before they could accommodate an improved radar. The F-8 inventory would reach 480 by 1995. Although the F-8 is a Mach-2 aircraft, it suffers from the same design deficiencies of its parent MiG-21--weak radar, low maneuverability, short range and poor weaponry. Both the MiG-21 and the F-8 were designed in the '60s for the primary mission of intercepting unescorted attacking bombers, not for dogfighting. If the F-8 cannot be made into an effective modern fighter--and we doubt that it can be--China might acquire manufacturing rights to a world-class fighter; the most logical candidate is the French Mirage-2000, which will be available in interceptor, attack and reconnaissance versions.



Until more is known about the actual performance of the new Taiwanese fighter and a "Westernized" PRC MiG-21 or F-8, meaningful comparison among the aircraft is not possible. Moreover, the quality of pilot training is as important to the outcome of combat as quality of equipment. In this respect, Taiwan's pilots, trained in a system stressing flexibility and initiative, would enjoy a considerable advantage over the products of China's Soviet-style system, which emphasizes close control from the ground and rigid, copybook combat tactics.

#### Taiwan's Options

For now, Taiwan's only realistic alternatives to a new indigenous fight would probably be stopgaps. It could, but does not wish to, extend production of F-5Es. Or, it could acquire additional F-104s from the 400-500 still in European inventories, but they are obsolescent and have been heavily used; Taiwan knows well the reliability and maintenance problems that would come with them.

New non-US aircraft appear unlikely; the Saudis have already shown that they have considerable leverage (oil supply and construction contracts) to block Taiwanese acquisition of the Israeli Kfir--or, someday, the Lavi. Moreover, Tel Aviv's arms sales to Taiwan have waned and it now has a burgeoning arms relationship with the PRC which it would not likely risk. France and the FRG-UK-Italian Tornado consortium are the only Western European sources. In the case of the Tornado, German policy not to export lethal arms to potential or actual areas of conflict probably would block a Tornado sale, as it did the aborted Leopard tank sale to Saudi Arabia. The British and Italian partners, for their part, have established interests in the PRC market and have not sold Taiwan other types of weapons. We believe that France still sees the PRC's sales potential (though it has had relatively little success so far) as large enough not to sell Taiwan either Mirage F-1s (which would offer little or no improvement over the F-5E) or Mirage-2000s (Dassault has a full domestic and export order book, and at least a chance of licensing the aircraft to the PRC).

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