PHANTOMS-FROM A-S

Test Pilot Robert Little surveys the area as he prepares to enter the cockpit of the first F-4. Note the single cockpit. As best as I can tell, this photo has never appeared in any of the major books on the F-4. McDonnell Douglas photo.

Navy Phantoms-

The Beginning!

by

Paul F. Collins

Over the years there have been a great number of books published on the F-4 Phantom II. The three articles to be published in this series, I hope, will give you a better idea of what the differences are between an F-4B and a F-4M, in both appearance and internally. The series will start with the Navy, then the USAF and finally the foreign or export versions of the Phantom. Should you notice any discrepancies in this series, for what you know as fact, pleast contact the Editor and such changes will be noted in the next issue of SMOKE TRAILS. These articles will contain charts and other visual material that will make additional text unnecessary. Should you have any questions on the material presented, please contact the Editor and he will be happy to try and answer them.

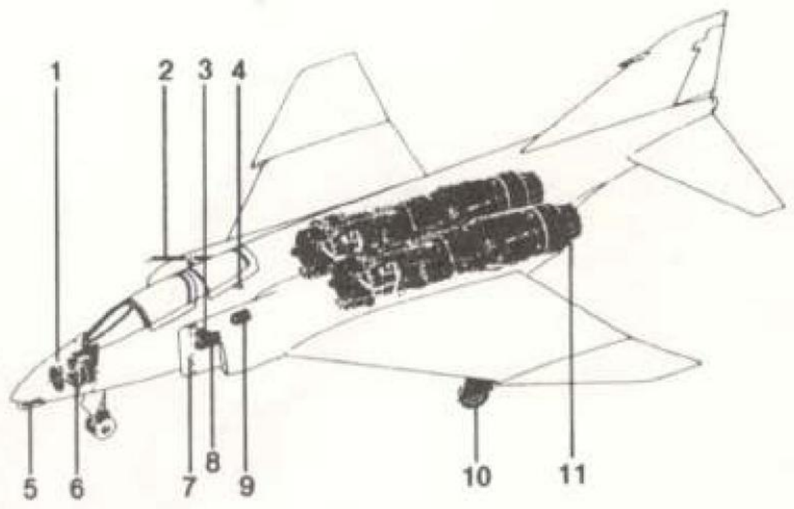
Phantom II Versions

MODEL	MILITARY SERVICE	OFFICIAL GO-AHEAD	FIRST FLIGHT
F-4A	USN	OCT 1954	MAY 1958
F-4B/G/N	USN, USMC	SEPT 1959	MAR 1961
RF-4B	USMC	FEB 1963	MAR 1965
F-4J (FGR MK1)	USN, USMC, RAF	JUNE 1964	MAY 1966
F-4S	USN, USMC	OCT 1973	JUN 1975

F-4A

U.S. Navy

The F-4A, formerly the F4H-1F, first flew in May 1958. Its main features included two J79-GE-2 General Electric engines and the APQ-72 Westinghouse air intercept radar. Four Raytheon Sparrow III air-to-air guided missiles are semi-submerged in the bottom of the fuselage. The first 18 aircraft delivered were equipped with 24 inch radar antennas. To increase radar performance a 32-inch radar antenna was added to aircraft No. 19 and subsequent which required that the aircraft nose be enlarged. The seats and canopies were raised to improve pilot visibility over the larger nose. All F-4A aircraft were assigned to test facilities and training squadrons and have now been retired.



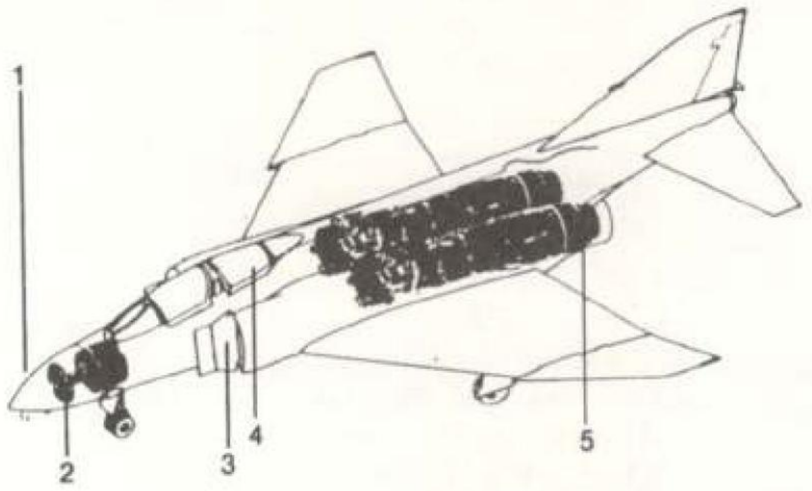
1. 24'' Radar Antenna
2. In-Flight Refueling probe
3. ASA-32 Autopilot
4. AJB-3 Bombing System Computer
5. AAA-4 Infrared Seeker
6. APQ-72 Radar
7. 5° Fixed Ramp/10° Variable Ramp
8. ASQ-19 Comm/Nav/Ident Package (CNI)
9. A/A-24G Central Air Data Computer (CADC)
10. 30'' x 7.7'' Wheels and Tires
11. (2) J79-GE-2 Engines

F-4B

Changes From the F-4A

U.S. Navy
USMC

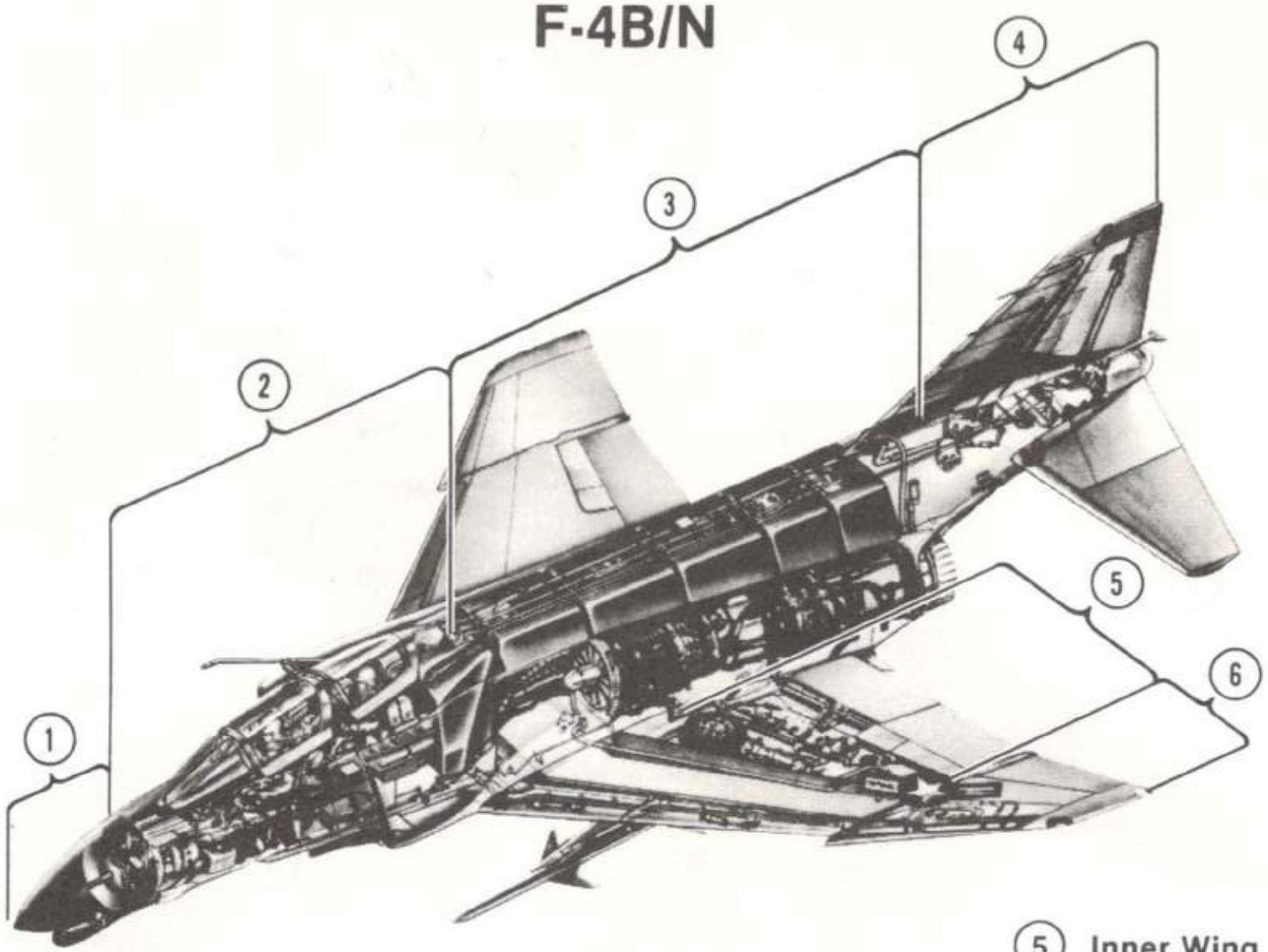
The F-4B was the U.S. Navy's primary fleet air defense interceptor from 1962 up through the fleet introduction of the F-4J in 1967. It was also the primary aircraft for the U S M C all-weather fighter/attack squadrons. Major changes from the F-4A include improved engines, redesigned engine air inlets, structural changes that permit an increase in allowable carrier landing weight, and drooped ailerons and slotted stabilator. All F-4B aircraft have been retired, except those modified into the QF-4B (Drone) configuration.



1. Large Nose
2. 32'' Radar Antenna
3. 10° Fixed Ramp/14° Variable Ramp
4. Raised Canopy
5. (2) J79-GE-8 Engines

Interior Arrangement

F-4B/N



(1) Radome
- Radar Antenna

(2) Forward Fuselage
- Radar Package
- Cockpits and Controls
- Lower Avionics Equipment Compartment
- Hydraulic and Pneumatic Equipment
- In-Flight Refuel Probe
- Air Conditioning and Pressurization Equipment
- Engine Feed Fuel Cell
- Nose Landing Gear
- Engine Air Intake Ducts and Ramps
- Forward Missile Launchers

(3) Center Fuselage
- Engines
- Fuel Cells No. 2, 3, 4, 5 and 6
- Armament Provisions
- External Fuel Tank Provisions
- Ram Air Turbine
- Aft Missile Launchers

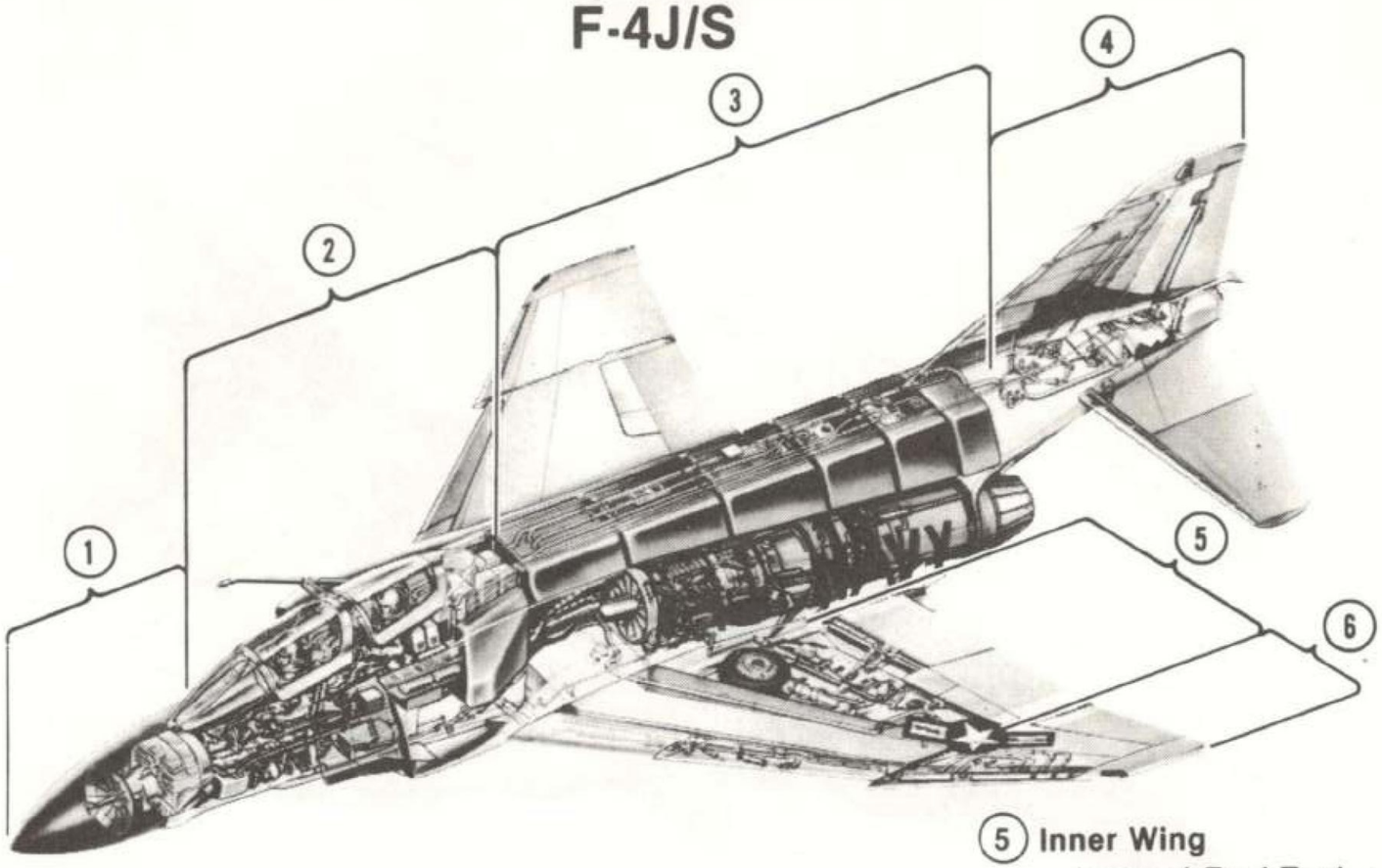
(4) Aft Fuselage
- Stabilator
- Rudder
- Arresting Hook
- Drag Chute
- Vertical Fin

(5) Inner Wing
- Integral Fuel Tanks
- Aileron and Spoilers
- Landing Gear
- Inboard Armament Provisions
- Outboard Armament Provisions
- External Fuel Tank Provisions
- Leading and Trailing Edge Flaps
- Speed Brakes
- Boundary Layer Control

(6) Outer Wing
- Leading Edge Flaps
- Boundary Layer Control
- Wing Fold Components

Interior Arrangement

F-4J/S



(1) Radome
- Radar Antenna

(2) Forward Fuselage
- Radar Package
- Cockpits and Controls
- Lower Avionics Equipment Compartment
- Upper Avionics Equipment Compartment
- Engine Feed Fuel Cell
- Nose Landing Gear
- Engine Air Intake Duct and Ramps
- Hydraulic and Pneumatic Equipment
- Air Conditioning Equipment
- Pressurization Equipment
- Forward Missile Launchers
- In-Flight Refuel Probe
- Cockpit Electronic Systems and Controls

(3) Center Fuselage
- Engines
- Ram Air Turbine
- Fuel Cells No. 2, 3, 4, 5, 6, and 7
- Armament Provisions
- Aft Missile Launchers
- External Fuel Tank Provisions

(4) Aft Fuselage
- Slotted Stabilator
- Rudder
- Arresting Hook
- Drag Chute
- Vertical Fin

(5) Inner Wing
- Integral Fuel Tanks
- Ailerons and Spoilers
- Landing Gear
- Center Leading Edge Flaps (F-4J)
- Trailing Edge Flaps
- Speed Brakes
- Boundary Layer Control (Except F-4S)
- Inboard Armament Pylon Provisions
- Outboard Armament Pylon Provisions
- External Fuel Tank Provisions
- Leading Edge Slats (F-4S)

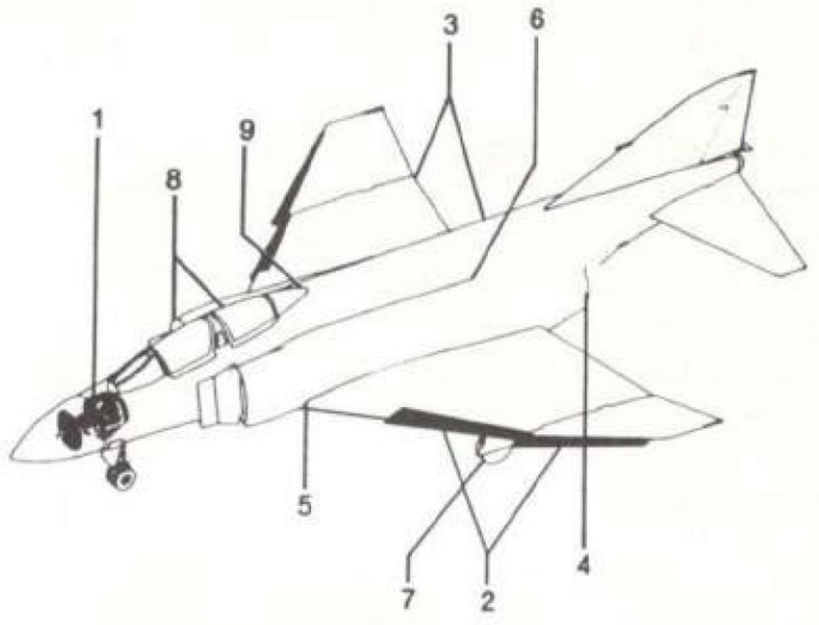
(6) Outer Wing
- Outboard Leading Edge Flaps (F-4J)
- Boundary Layer Control (Except F-4S)
- Wing Fold Components
- Leading Edge Slats (F-4S)

F-4S

Changes From the F-4J

USMC
USNR
USMCR

The F-4S is the latest version of the carrier suitable Phantom and be used primarily for beachhead air superiority. It will be equipped with the highly effective maneuvering slats which will increase the F-4Ss combat turning capability over 50%. The aircraft's high angle-of-attack handling qualities are also substantially improved. The Digital AWG-10B Weapon Control System will provide the aircrew with more accurate missile launch information and computed air-to-ground conventional weapon delivery, a feature not previously incorporated in USN and USMC Phantoms. The increased reliability and maintainability of the Digital AWG-10B combined with the systems' added air-to-air and air-to-ground capability and the greater maneuverability from the slats will substantially increase the overall effectiveness of Marine aviation.



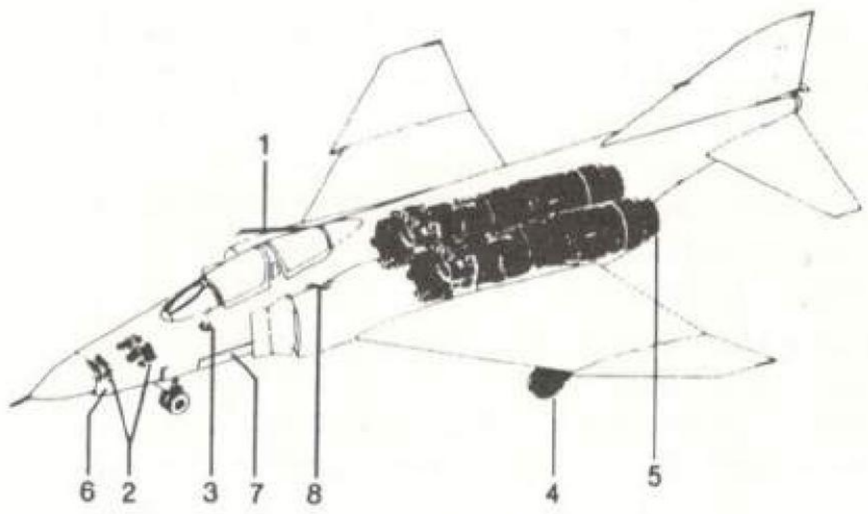
1. Digital AWG-10B Weapon Control System
2. Maneuvering Slats
3. Wing/Fuselage Structural Improvements
4. J79-GE-10 Engines (Smokeless)
5. Complete Rewire (Kapton Wire)
6. Stainless Steel Hydraulic Tubing
7. Landing Gear Improvements
8. AN/ARC-159 Dual UHF Radios
9. AN/ARN-118 Tacan

RF-4B

Changes From the RF-4C

USMC

The RF-4B is the reconnaissance version of the carrier based F-4J. As in the RF-4C, the missile control system has been removed and the forward fuselage redesigned to accommodate the optical and electronic sensor equipment. Interial navigation capability, not found in the F-4J, has been added to the RF-4B. The performance and handling characteristics of the F-4J have been retained in the RF-4B. All remaining RF-4B aircraft have undergone a service life extension program (Project Sure).



1. In-Flight Refueling Probe
2. Rotatable Camera Mounts
3. Flight Controls in Front Cockpit Only
4. 30'' × 7.7'' Wheels and Tires
5. (2) J79-GE-10 Engines
6. UPD-8 Data Link
7. UPD-8 SLR
8. AN/ASN-92 CAINS

F-4N

Changes From the F-4B

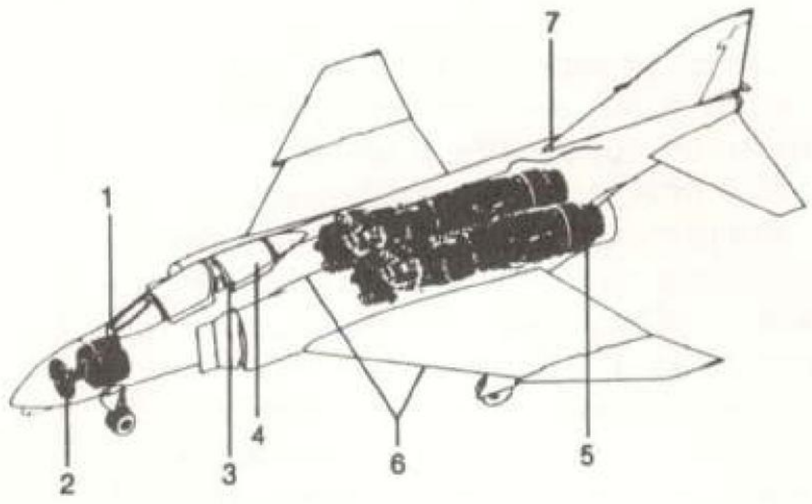
U.S. Navy
USMC

Selected F-4Bs from block 12 through block 28 underwent a service life extension and configuration update via Project Bee-Line at the Naval Air Rework Facility, NAS North Island. Changes incorporated include:

- Structural beefup (fatigue)
- Complete rewiring
- 30 KVA generators
- One-way data link
- Air-to-Air IFF
- Visual Target Acquisition System (VTAS)
- Sidewinder Expanded Acquisition Mode (SEAM)
- Automatic Altitude Reporting (AIMS)
- Dogfight computer

The updated F-4B was then redesignated F-4N.

F-4N aircraft now serve with the Marine Corps Reserve and a number have been converted to QF-4N target drone aircraft



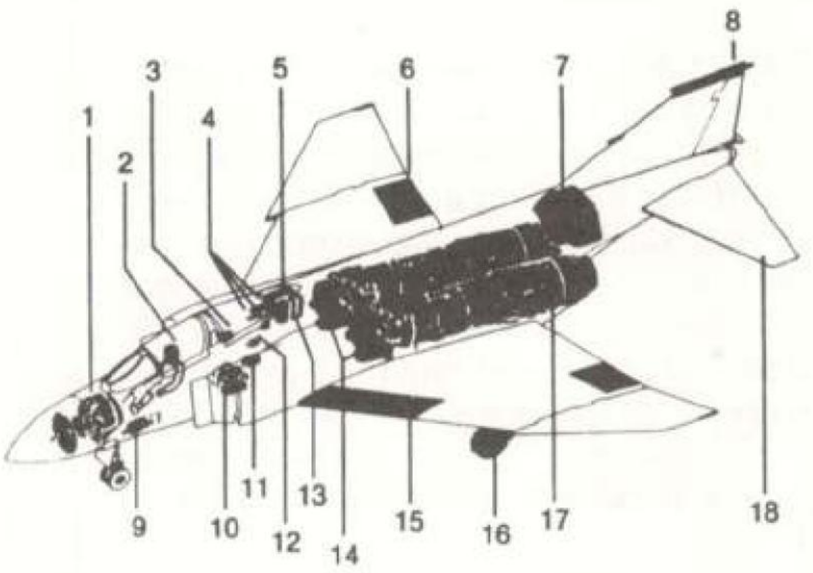
1. Visual Target Acquisition System (VTAS)
2. Automatic Altitude Reporting (AIMS)
3. Dogfight Computer
4. Sidewinder Expanded Acquisition Mode (SEAM)
5. Engine Smoke Abatement
6. Wing/Fuselage Structural Improvements
7. Project Shoehorn RHAW Installations

F-4J

Changes From the F-4B

U.S. Navy
USMC
UK

The fleet air defense problem for years has been compounded by the inability of air intercept pulse radars to detect and track aircraft flying at low altitudes in radar sea/ground return. Incorporation of the higher powered AWG-10 pulse-doppler radar with look-down capability in the F-4J greatly enhances the Navy's air defense posture. In addition to the new radar, the F-4J has more efficient, higher thrust J79 engines, one way data link with automatic carrier landing, and drooped ailerons and slotted stabilator to reduce landing speed. Structural changes to permit heavier carrier landing weights have also been included. All remaining F-4J aircraft have been converted to F4S, except selected aircraft which have undergone drone conversion or have been transfered to the United Kingdom.



1. AWG-10 Missile Control System
2. Visual Target Acquisition System (Helmet Sight)
3. AJB-7 Bombing System
4. ASW-25 Data Link (one way)
5. Special Electronics
6. Drooped Ailerons
7. No. 7 Fuel Cell
8. Fin Cap Antenna
9. Modified Equipment Cooling Unit
10. Miniaturized CNI and Special Electronics
11. GVR-10 Vertical Reference
12. Approach Power Compensator
13. AWG-10 Computer and Control Units
14. 30 KVA Generators
15. Fixed Inboard Leading Edge
16. 30''×11.5'' Wheels and Tires
17. (2) J79-GE-10 Engines (Smokeless)
18. Slotted Stabilator