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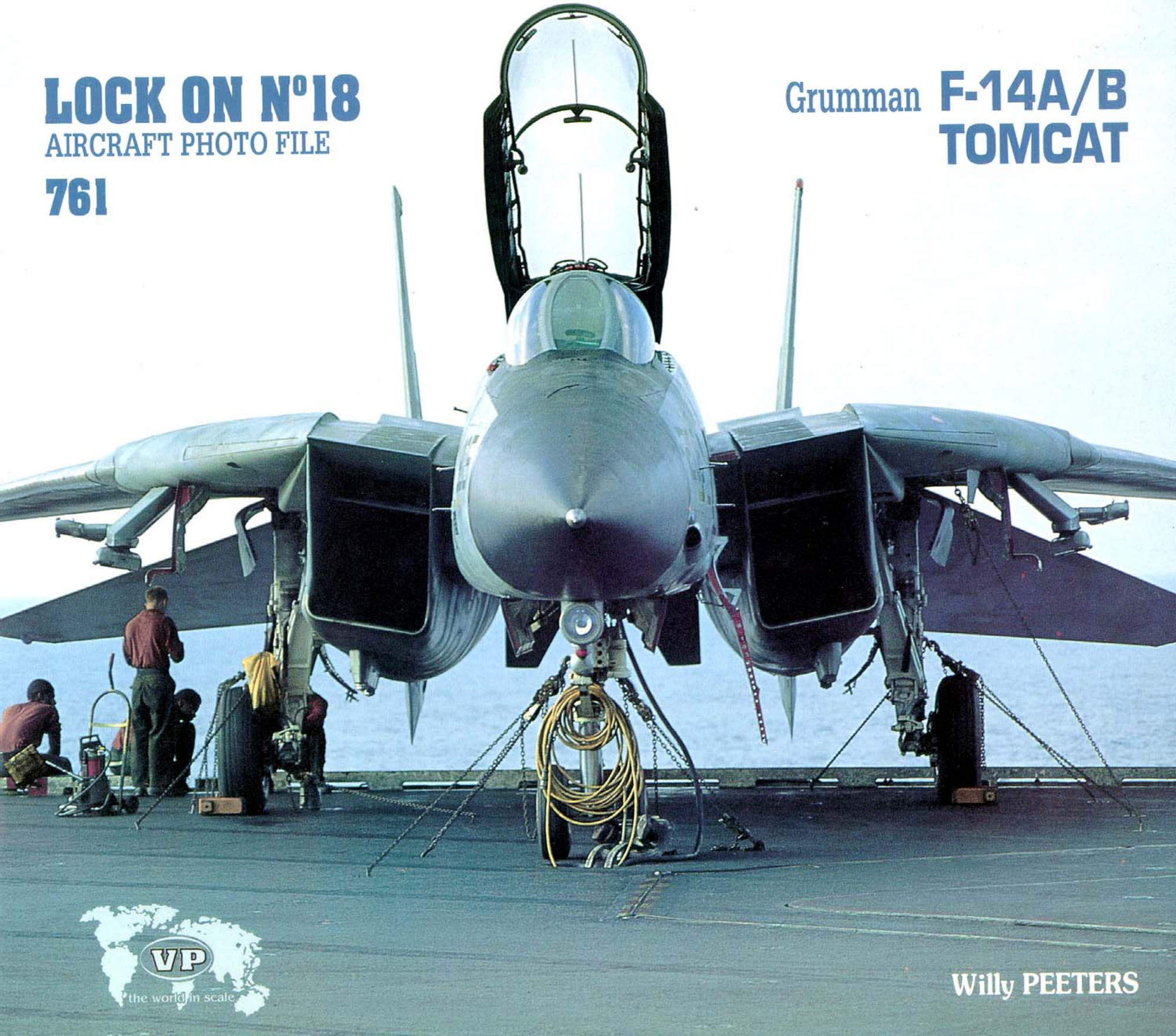
AIRCRAFT PHOTO FILE
761

Grumman F-14A/B TOMCAT



VP
the world in scale

Willy PEETERS

F-14A TOMCAT
VF-11 "Red Rippers"
USS Forrestal, US NAVY

VP
the world in scale
VERLINDEN PUBLICATIONS

Cover : Agressive looking F-14A Tomcat aboard the USS FORRESTAL, secured to the deck and having its brakes checked by the plane captain and his assistants. This picture was taken in mid August 1991 while the ship was touring the Mediterrenean on its final operational cruise.

Title page : Tomcat106 of VF-11"The Red Rippers" readied for launch from cat number one. A green-shirted "deck boy" is awaiting the launch shuttle, already having installed the launch holdback bar under the watchful eyes of the flight deck officers and the back seater of the aircraft to be launched. Except for a spotless canopy the aircraft is showing heavy weathering.

Page 3: Painted a different shade of low viz grey, "205" of VF-31 "TOMCATTERS" filling the picture with nothing but the deep blue sea as backdrop. No weapons or fuel tanks are carried but the "below intake" pylon is installed which is rather unusual. Canopies are left open for cooling purposes.

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US Editor : Bob LETTERMAN
Text & Research : Willy PEETERS
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Two important happenings allowed this photographic coverage of the F-14 Tomcat. First was my visit aboard the USS FORRESTAL in August 1991, made possible by the following persons : Commander QUIGLY, Lt FALLON and Lt O'SHAUGHNISSY of US Navy Sixth Fleet, Italy; CPT P.C. BISHOP and Lt PAPP of US Navy HQ /London.
Aboard the ship we (myself and my friend Ronny MEURIS) were welcomed by Rear Admiral Walter J. DAVIS, Jr Commander Carrier Group Six and the skipper Captain Robert S. COLE. I want to thank them for a warm welcome.
Lt. John F. KIRBY, Personal Affairs Officer aboard the ship had the shootings carefully planned within the limited time frame. His assistance and that of "Stevie", (our guardian angel on the flight deck with operations in progress) was greatly appreciated.
A great "thanks" is also due to Peter MIDDELBURG and Lt. NEVINS at Tel Aviv for arranging the hop to the seaborne carrier and to the COD crew who got us there (and back again) safely.
The second event was the visit of five USS SARATOGA birds to the Koksijde Air Show in July 1992, allowing a close look at the F-14 Plus or B version. Pilot LCDR Al "Frenchy" BYRNE and WSO LCDR Greg "Octo" HIGHTAIAN of VF-74 "The Bedevilers" have been rightfully honored with a full page in the back of the book for their valuable assistance.
Belgian Air Force staff members LtCol Janssens de VAEREBEECKE and AdjCh PATERNOTTE deserve a warm thanks for allowing me on base to welcome the USS SARATOGA jets.
To all of them : "Thanks guys, you were wonderful !".
Finally, assistance of Mrs. Dina JUDGE from the GRUMMAN AIRCRAFT CORPORATION was greatly appreciated.

Willy PEETERS

Readers are invited to send in slides and/or clear color photographs on military subjects which may be used in future LOCK ON publications. Additional information on military aircraft of any kind is also welcomed. Material used will be paid for upon publication and unused material will be returned upon request. Original slides and photographs will be handled with extreme care.
Clearly state name and address when sending in your material.

INTRODUCTION

Hundreds of books have been written on one of Grumman's most successful fighters ever, the F-14 Tomcat, and most of these monographs hold an accurate description of its history and development which cannot possibly be comprehended in the limited pages of this photo book.
It is very likely every aircraft enthusiast and modeler has at least one of these books on his or her shelves, so it seemed a better idea to gather as much as possible on the physical characteristics of this formidable fighter, and let the large color pictures show what has been written elsewhere.
Like any of todays military aircraft, this "fighter of the nineties" which has been around for almost 20 years now and which is likely to take pilots and RIO's up in the air well beyond the year 2000, is subject to consequent updating. So, the days of an F-14G version waving the carrier decks are not far away and although it will not show significant external differences it will hold even more sophisticated avionics and weapons systems which will be hard to counter.
Meanwhile, this book shows the F-14A and F-14 A Plus (now redesignated F-14B because of logistical problems), which are the most widely used variants of this sweep-wing fighter and although it is far from complete (it would require twice as much space) it will clarify what a magnificant fighter it is.


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PC ATAN WIODUSKI


LTJG GEORGE MICHAELS
LT JOHN YOUNG

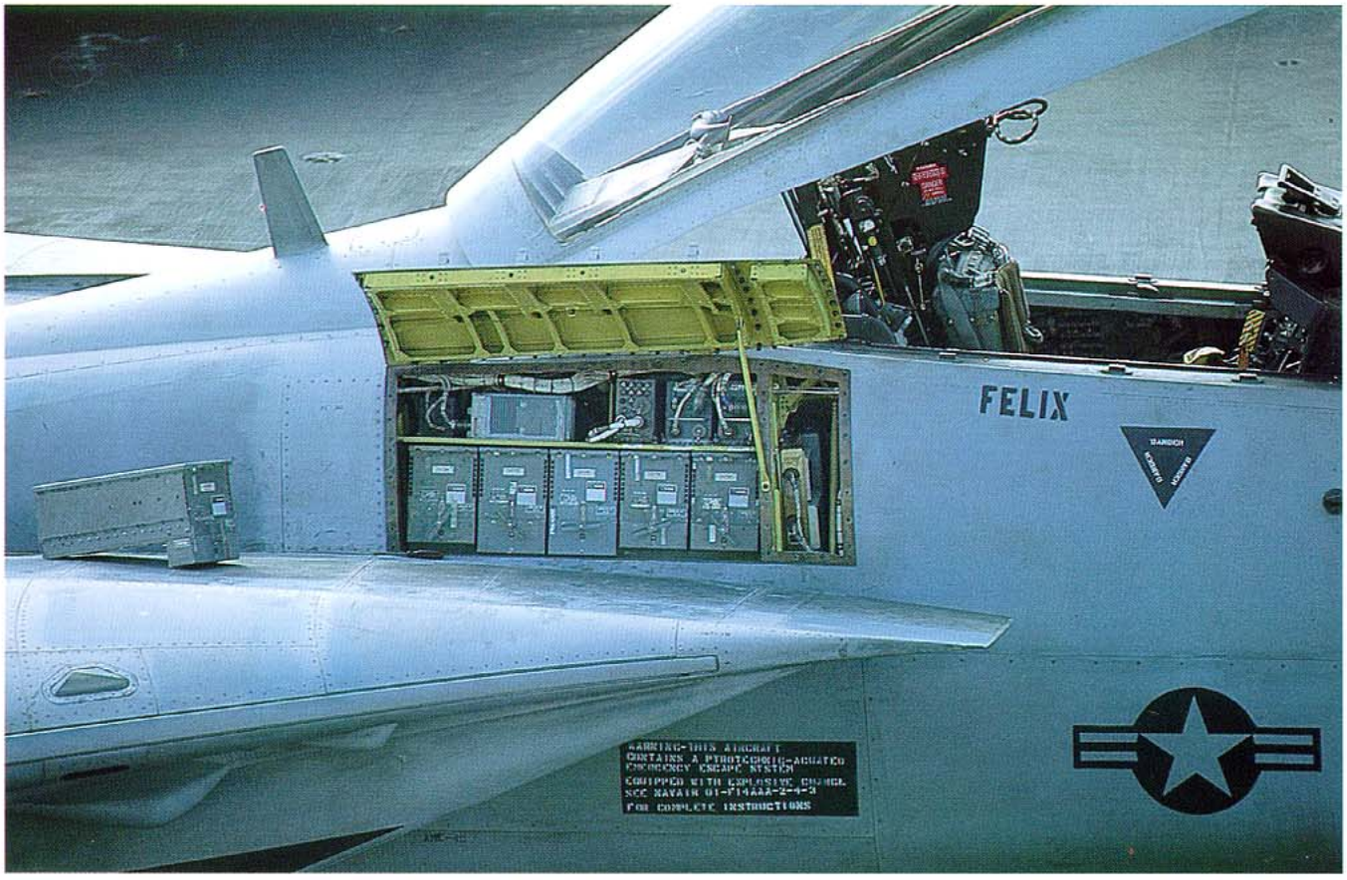
(Previous page) The most distinctive feature of the F-14 is its wide body nose section holding two cockpits in tandem underneath the single-piece canopy, most of the avionics and flight control systems, with a powerful Hughes AN/AWG-9 radar inside the braced radome. The top picture reveals the missing panel over the retractable inflight refueling probe on an aircraft about to be directed to a holding pattern behind the blast shield, awaiting its launch. The bottom right picture is showing two ordnance men about to replace a radar related control unit in the aft radome bay. Maintenance on all aircraft systems is done onboard with each type of aircraft having its own maintenance facilities.

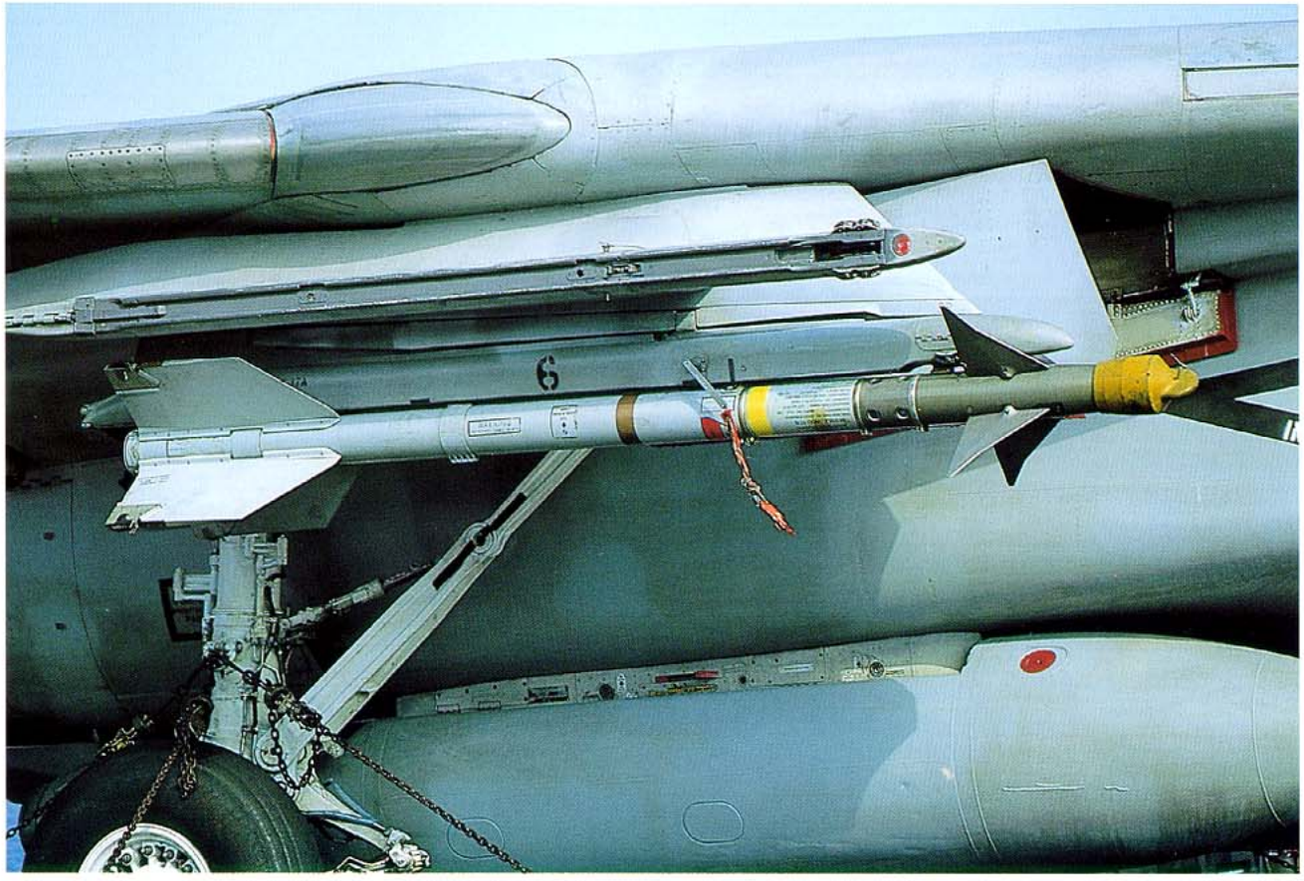
The photo on this page clarifies the difference in painting and markings between Tomcats, with black radome and anti-glare panels on two aircraft and similar areas in low-viz grey on the other.

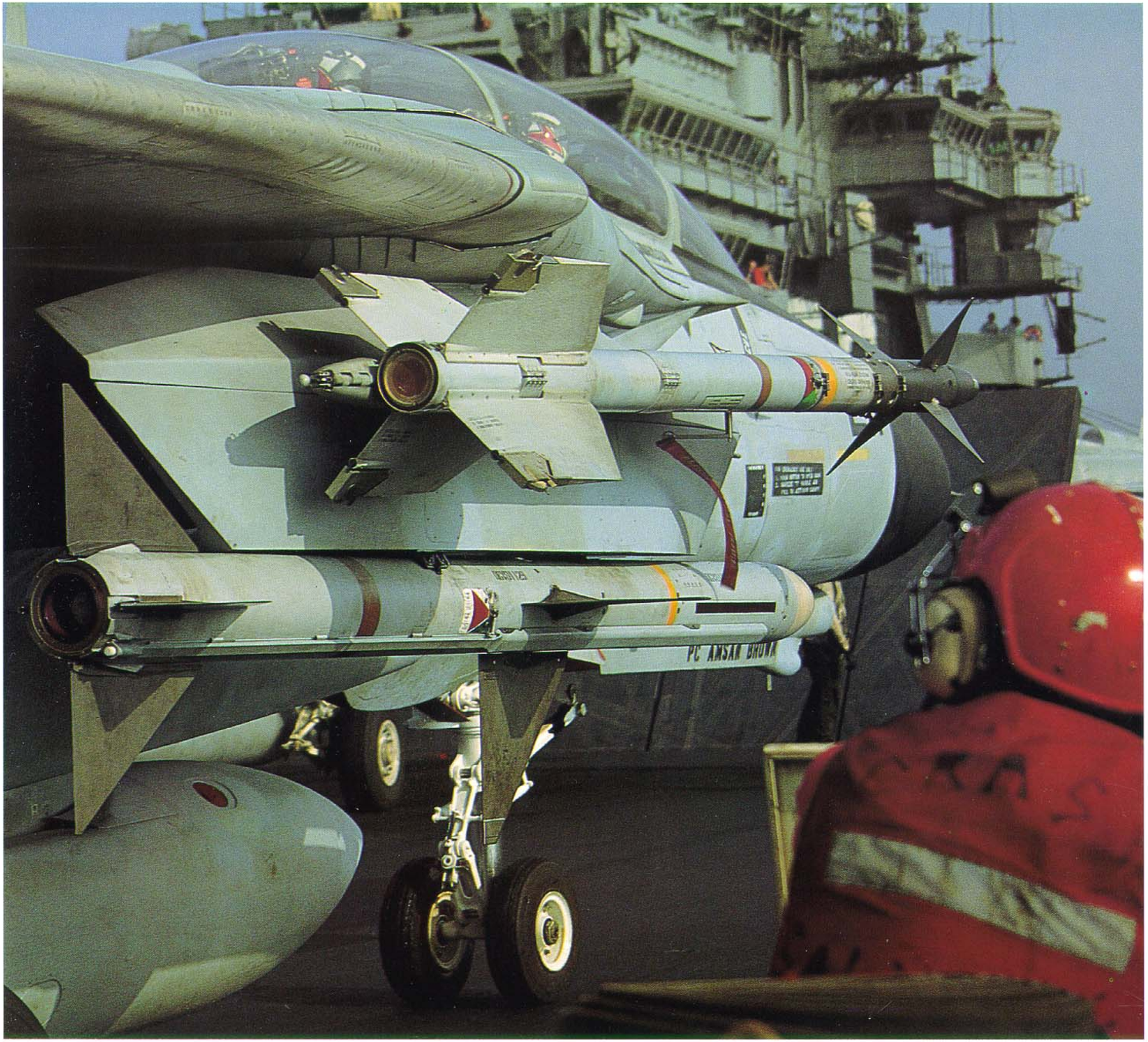
This avionics bay behind the aft seat can be reached from the air intake rake. The retractable glove vane in the wing attack board (which extends 15° outward when the wing sweep angle exceeds 25°)can clearly be seen, as well as the navigation lights (top and bottom).

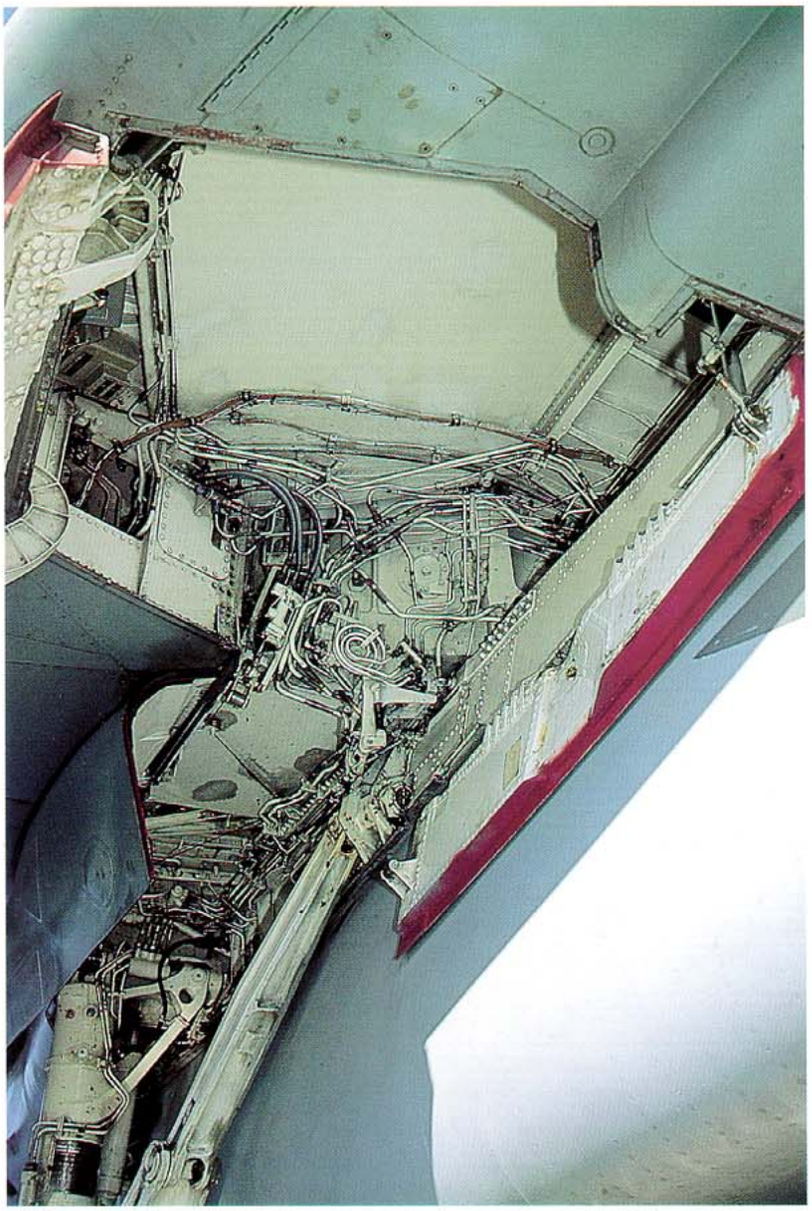
(Bottom left) The rectangular air intake, designed for optimal transonic and supersonic performance, features a variable ramp assembly. Front and rear vane trajectory can be determined from the marks on the intake sides while the number 3 ramp actuator can be seen above.

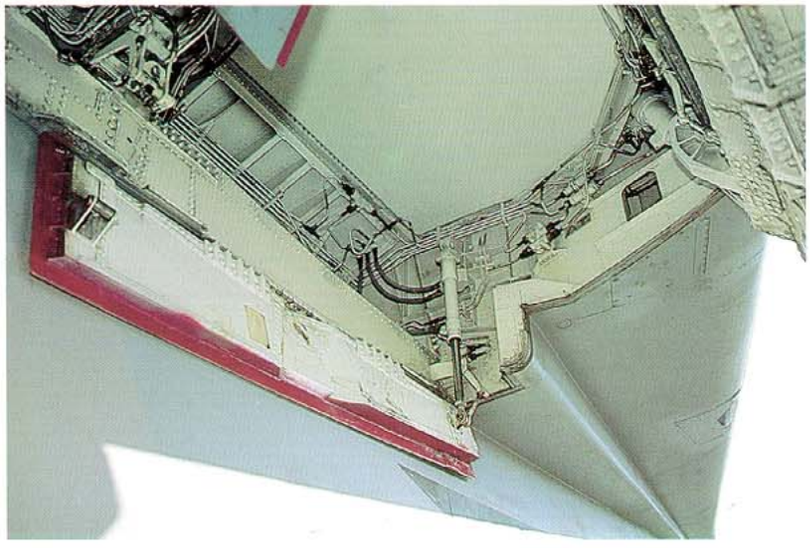
(Bottom right & next page) Underwing pylon of special design, dictated by the location of the main landing gear. Both Sparrow and Sidewinder missiles can be attached (the former with pylon extension).



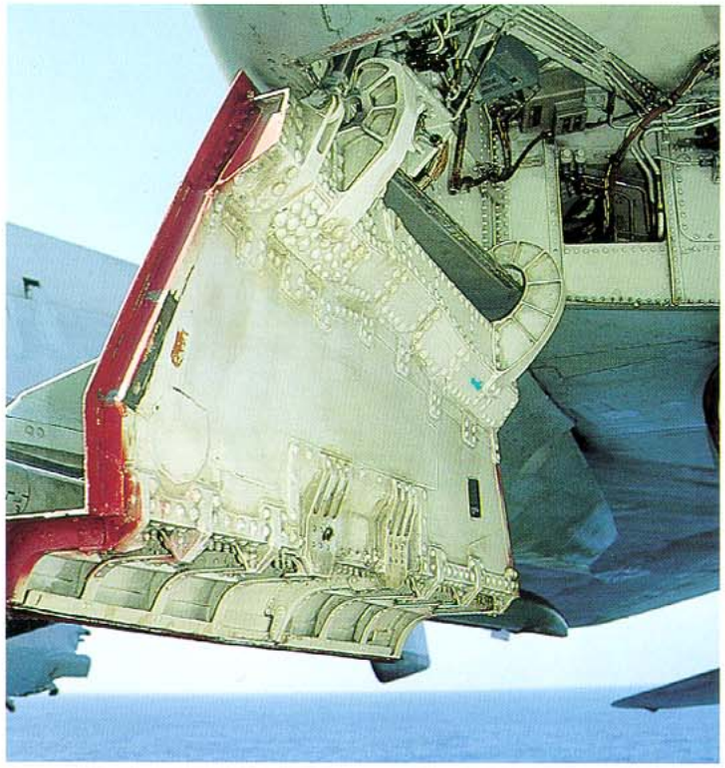



PC AMSAN BROWN





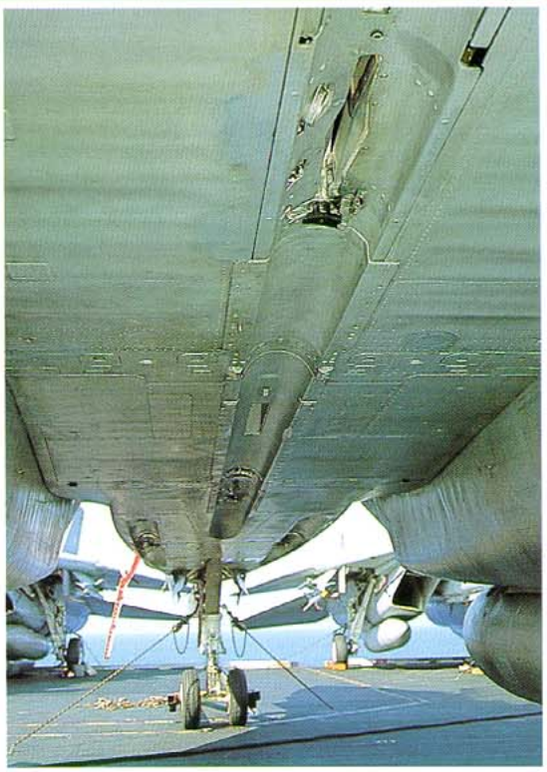
The solid main gear hydraulically retracts forward into the wheel well, mainly located in the inboard wing section. A multitude of pipelines and hoses surround the bay which is painted white. The attack board of the bay doors are finished in bright red for easy spotting by ground crew.
Note the pylon instalment left of the main gear door in the picture above.
The bottom left picture on the next page shows three tiedown chains being hooked up to the single tiedown ring on the main strut.

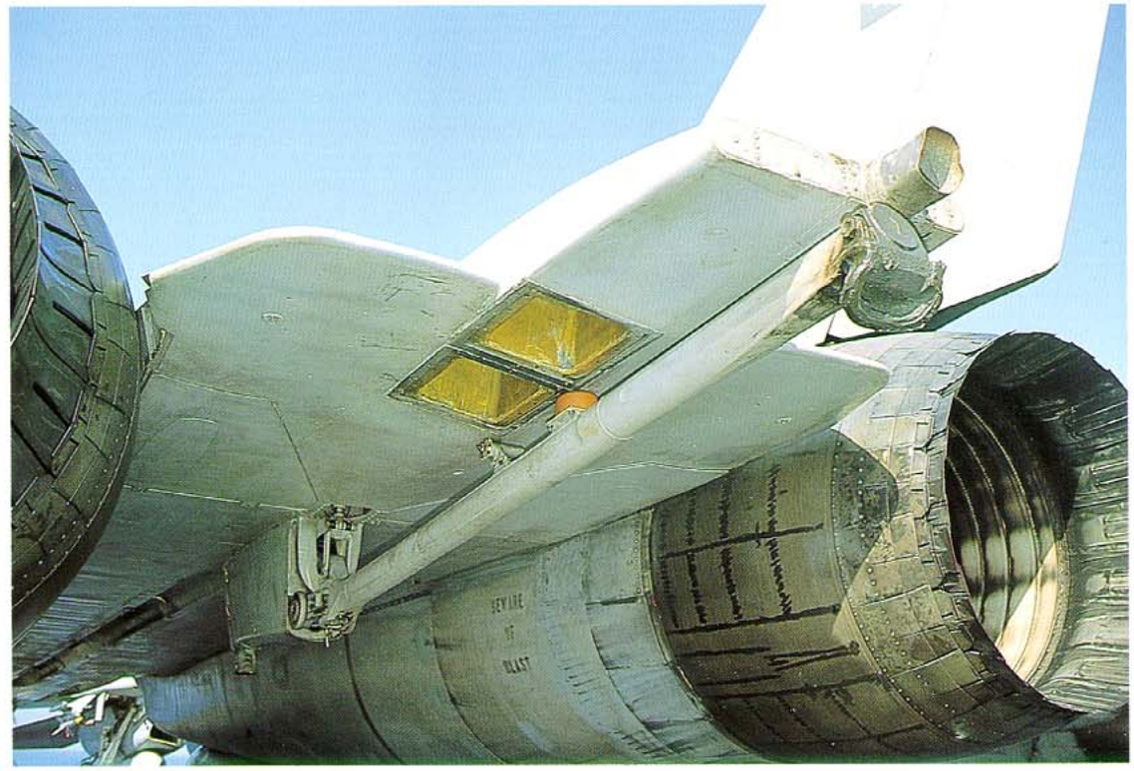


Partially opened inspection hatch of the engine compartment and some inspection panels on the bottom fuselage fairing. Note the discoloration on the partially retracted sweep wing.

Partially dilated (left) and fully dilated (right & below) exhaust nozzle of the Pratt & Whitney TF30-PW-414 turbofan engine.

(Below) Arrestor hook/fuel dump assembly on fuselage empennage section. Chaff/Flare dispenser box is not installed.





Like so many high-maneuverable jets, the F-14 is equipped with two ventral fins to improve directional stability at high AOA (Angles Of Attack), seen here with a cooling air intake at the aft end. Note the different hinges of the engine access covers and various small inspection panels on the fuselage fairings. Also note the shape of the nacelle fuel tank and the advanced discoloration of the fuselage.

(Right) F-14A approaching "Cat 1", wings still in 75 degree oversweep position. Very apparent in this view is the inner wing section dihedral, mainly to reduce supersonic wave drag. Note the open bleed air doors on top of the inner wing section.

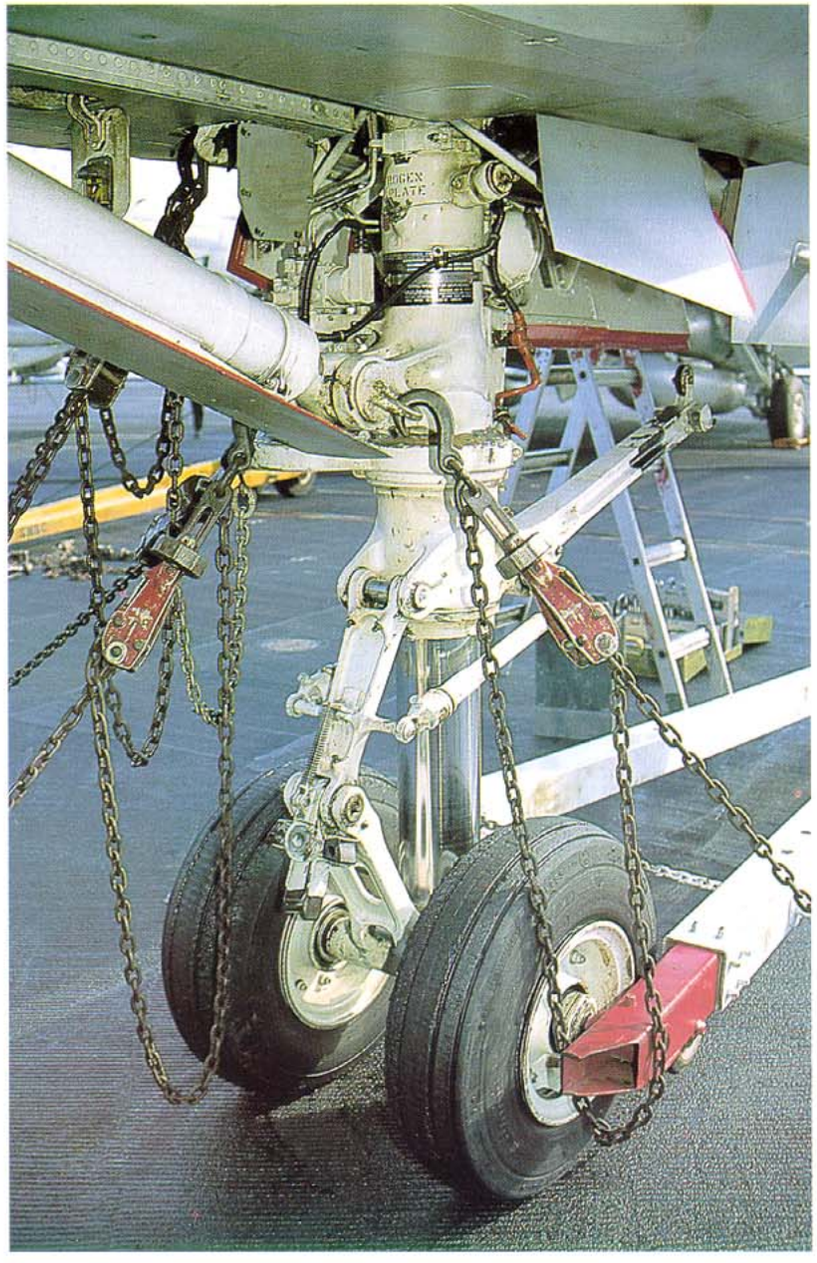
Dual AIM-9 Sidewinder launch rails on the underwing pylon with a clear view on the wing pivoting area.

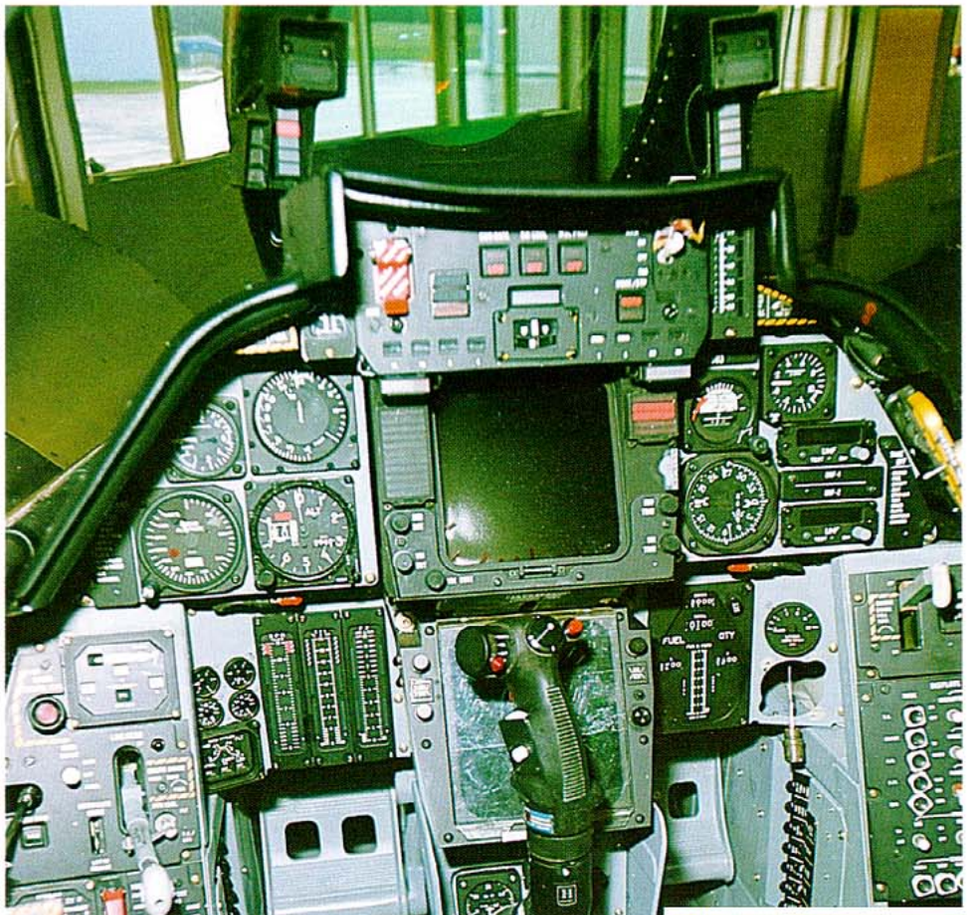
A lot of time and effort was spent designing the variable-geometry air intake with rectangular cross section and highly raked intake lips. Various probes and sensors provide data for the Air Inlet Control System (AICS) which independently controls actuators and hydraulic power systems of right and left intake. Note the lower lip of the inlet duct is bare metal.

(Right) A centrally located, retractable access ladder is located on the left side of the cockpit alongside the nose gear strut. Two more boarding platforms are hinged on either side and on top of the ladder. Note the tinted windscreen glass.

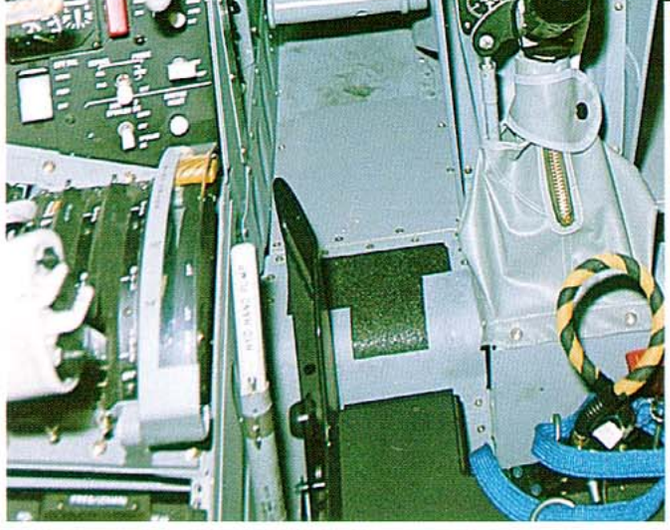
(Left) Left nose section detail with M-61 gun fairing up front. The front fairing is located over the multi-barrel assembly while the aft fairing clears the actual gun housing. Note the initial F-14 gun gas slots have been replaced by cooling air intake scoops. Also note interior canopy frame detail.

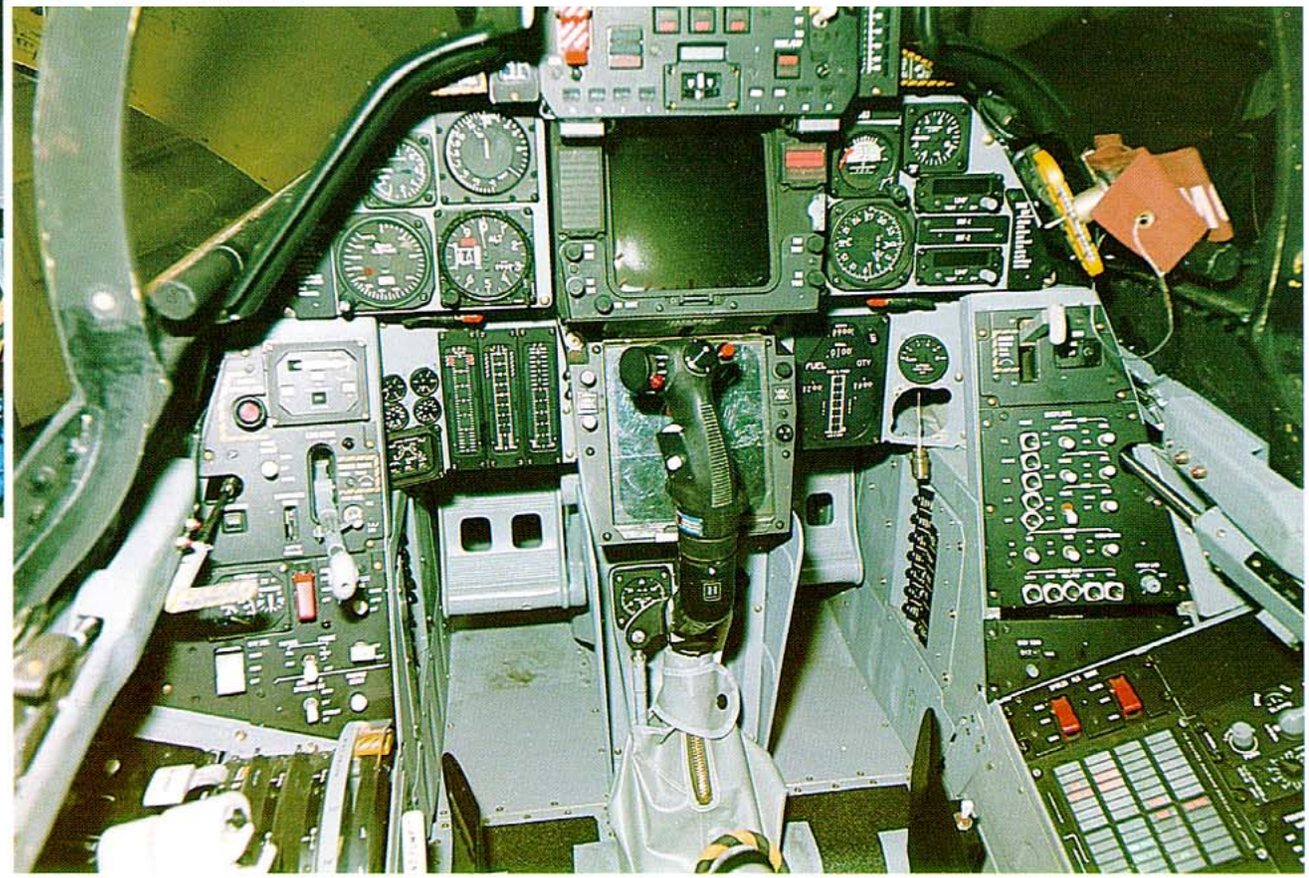
(Below) Dual wheel nose gear strut from behind with a clear view on the launch holdback bar connector. Note the two small doors aside the strut.





F-14A front cockpit with mainly analog instruments and control switches. The center windscreen serves as Head-Up Display (HUD) while two monitoring screens (Vertical Display Indicator on top and Horizontal Situation Display Indicator at bottom) are centrally located behind the control column. Main flight monitoring instruments are located on the left of the main panel (usually occupied by the weapons control panel in single-seat aircraft) while navigation instrumentarium is located at right in lieu of the engine monitoring instruments which are located on the left knee panel. Fuel quantity indicator and oxygen contols are on the right knee panel.
Side consoles show only minor difference with F-14B consoles displayed on page 32 and next.





(Both photos Grumman Aerospace Corporation)

Deadly accurate AIM-54 "Phoenix" missile on missile adapter cart being moved across the deck of the USS FORRESTAL.

(Below) Equipped with a Northrop developed Television Camera Set (for optical acquisition of targets) and with the nose landing gear strut fully compressed, this F-14 is waiting for the launch holdback connection to snap. Note the old style gun gas slots on this aircraft.

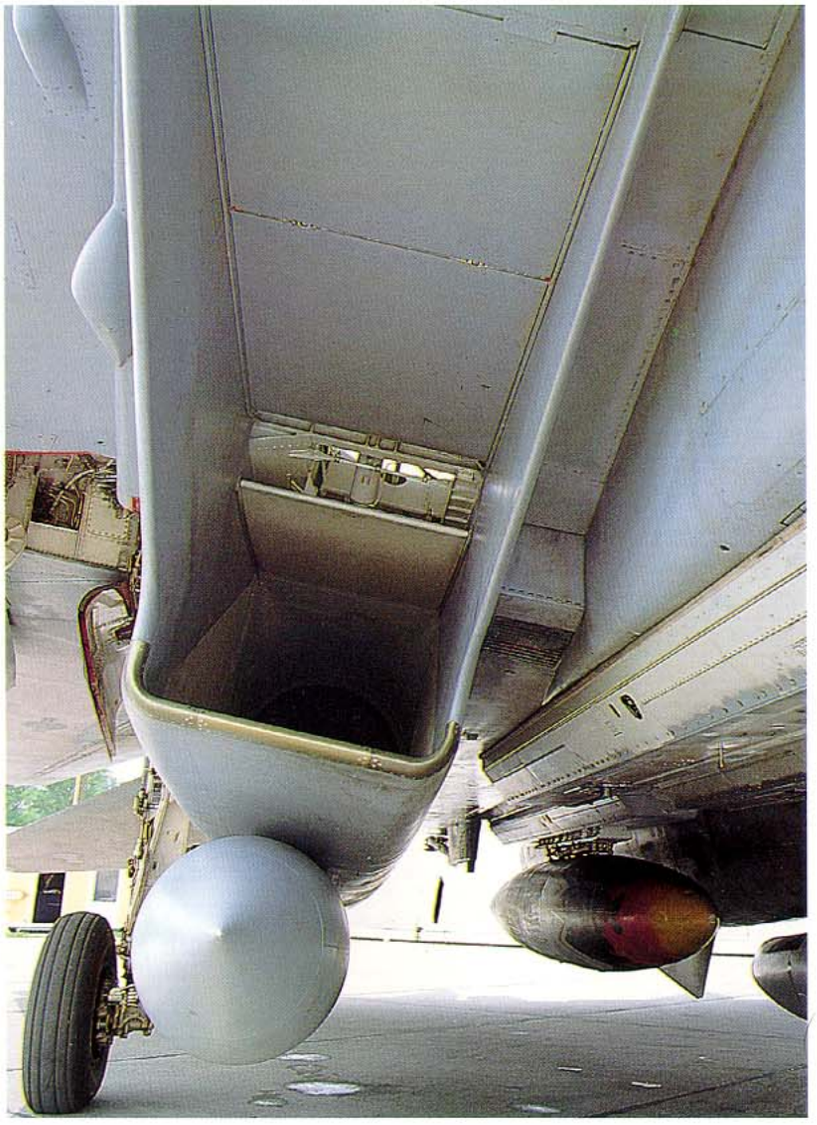
The "Mighty Tomcat" of the "Tomcatters" tied to the front deck elevator, its tail and exhaust nozzles well over the side. Sunlight reflection clearly shows the tinted glass of the TCS and the front windscreen annex HUD. On top, a green-shirted ordnance men is replacing some malfunctioning avionics while red-shirted weapon specialists are awaiting the arrival of the "Sidewinder trolley".
Note the ECM fairing on the wingroot/air intake nacelle and the radome/anti-glare panel demarkation.

F-14B "105" of VF-74 "BEDEVILERS" being inspected by Belgian Air Force F-16 pilots, minutes after having touched down on Belgian soil, ending a short trip from the Atlantic based carrier USS SARATOGA. Not many NAVY aircraft visited Belgian airshows in the past making the arrival of this aircraft and four of its fellow shipmates (F/A18C Hornet, A6-E Intruder, EA6-B Prowler and S3-B Viking) a special event.
The F-14B (previously F-14 Plus) differs mainly in avionics and upgraded weapon delivery systems, but is equipped with a more powerful Pratt & Whitney F401-PW-400 engine with an incredible 50 per cent less fuel consumption. The much lighter engines amount for some 16,000 pounds thrust increase and can be recognized by the different exhaust nozzles.
Additional ECM fairings underneath the wingroot fairing distinctify it from early Tomcats.
Apparently, low-viz paint schemes were retained but anti-glare panels on top of the nose were eliminated, probably of the matt appearance of the new paint used.

F-14A TOMCAT
VF-31 "TOMCATTERS"
USS Forrestal, US NAVY
(Photo by Willy PEETERS)

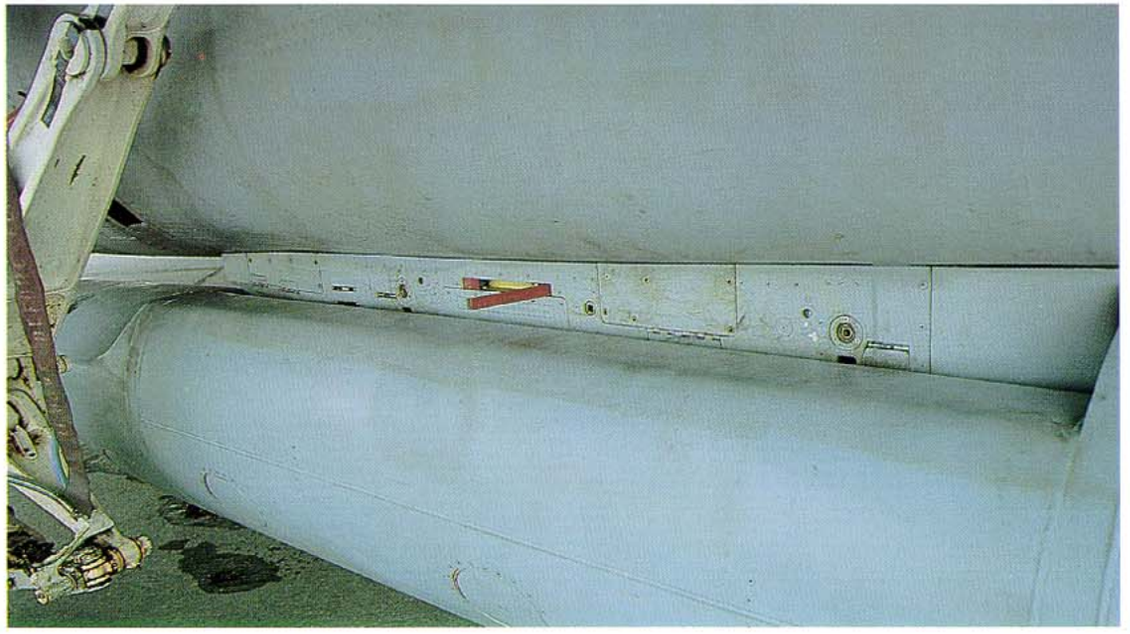
The larger panel aft of the rescue panel covers the liquid oxygen compartment, this one holding only one bottle although two are usually installed.

Ground refueling panel and control switches is located just above the nose gear well and in front of the rescue panel. Note the fuel servicing marking next to the panel.

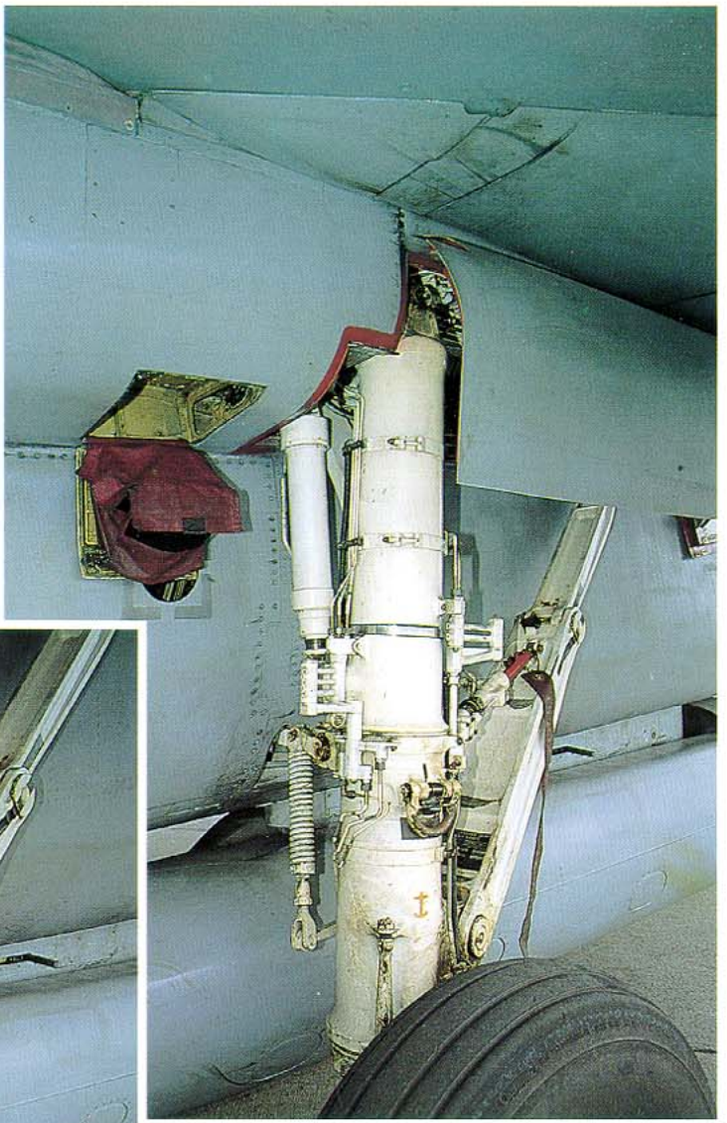


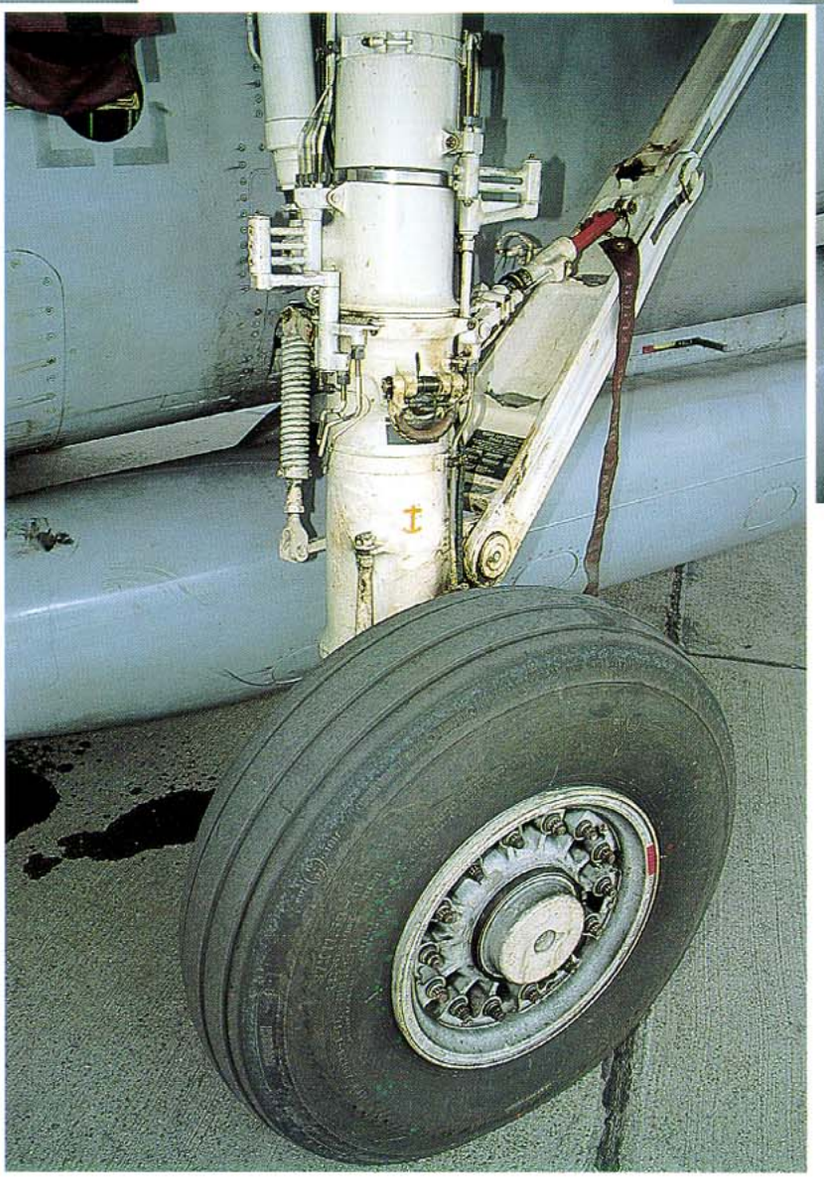
(Left) The air intake nacelle is installed some distance from the fuselage which is very clear in this view. Also, the N°1 and N°2 air intake ramp can be seen at the intake roof.

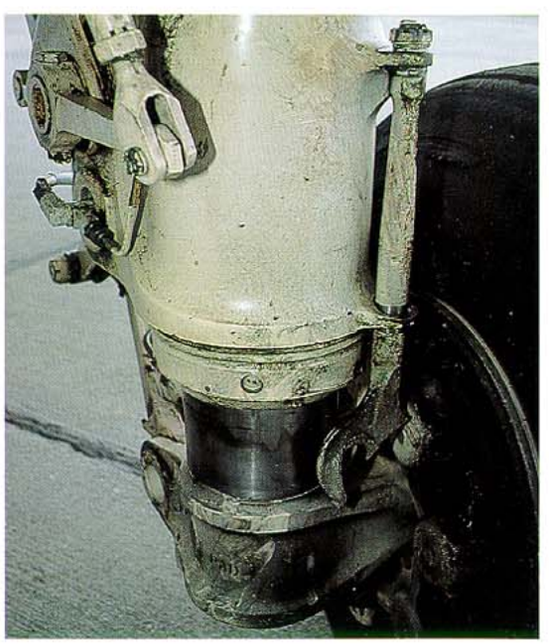
(Below) Rare view of slot at top of the nacelle drop tank. Support pylon recessment is dictated by minimal ground clearance of tank below nacelle.

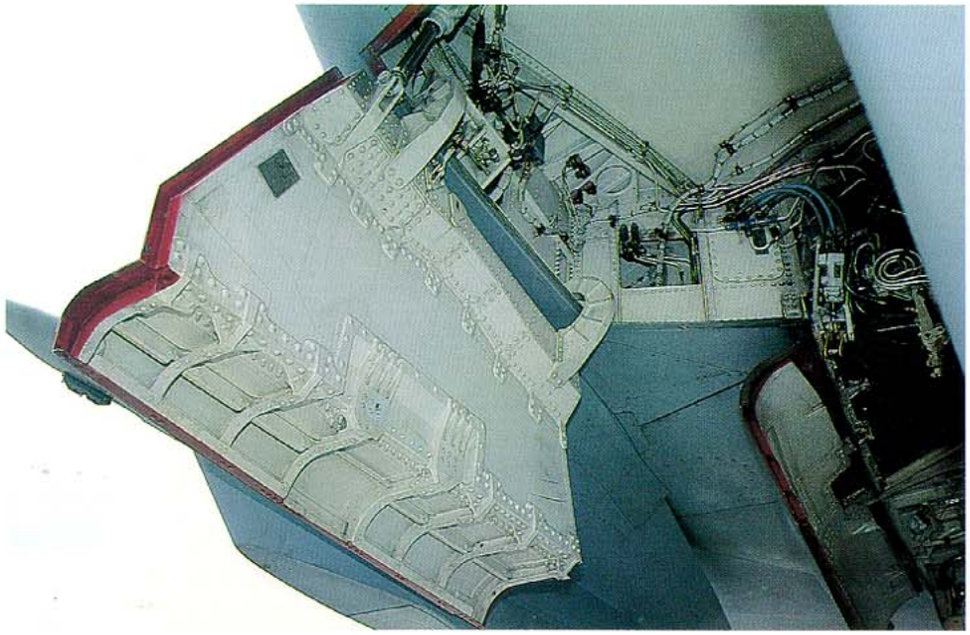


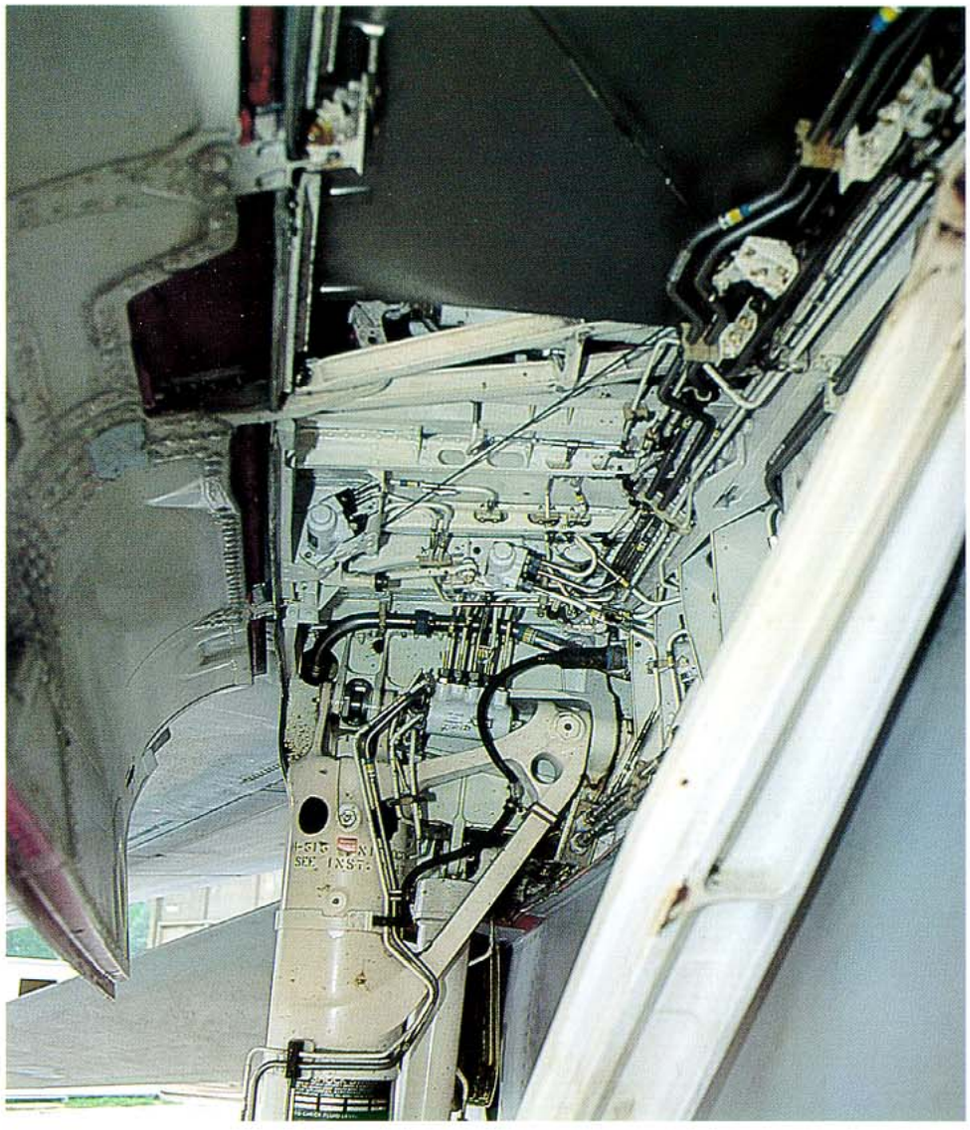
Massive main landing gear strut of conventional concept located aside the engine nacelles, designed to take the heavy punishment of deck landings. Note bottom left detail shot of the main gear locking bracket in the lower nacelle edge.

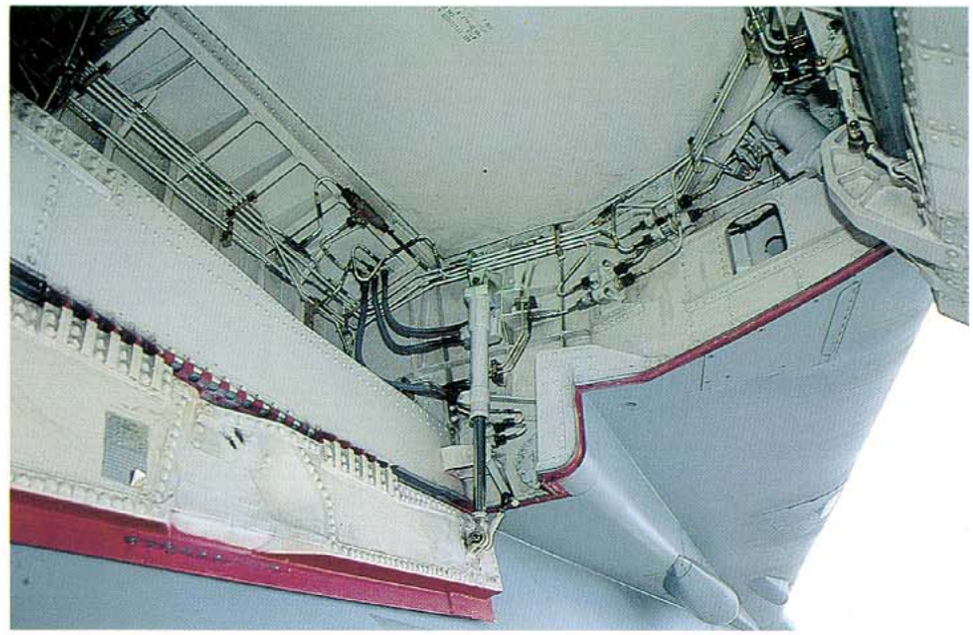






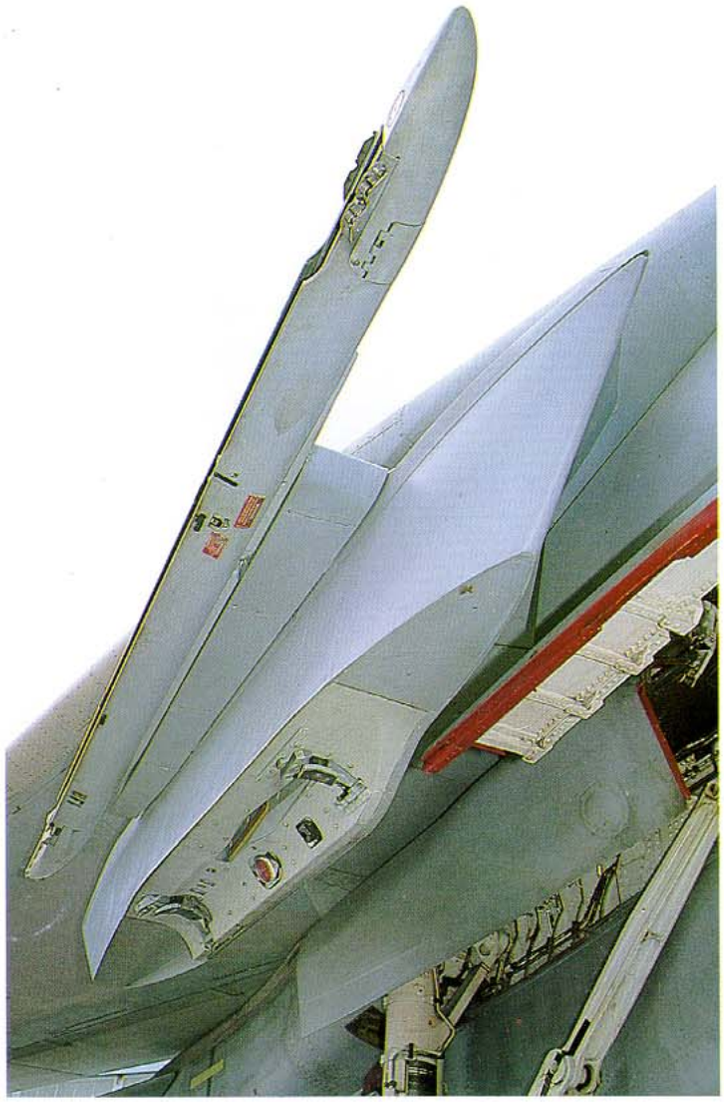


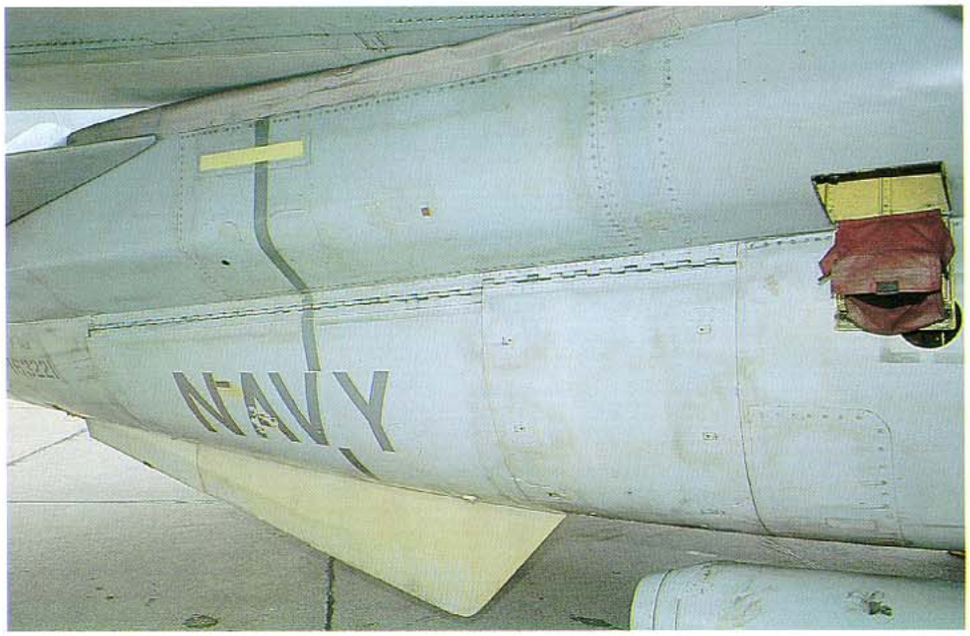




The main gear is hydraulically retracted forward into the wing glove housing which is relatively clean in comparison to the rest of the aircraft. Gear door physics are dictated by the existance of wing root fairing. Gear door actuators are located at the front. Like all navy aircraft, door inner surfaces are painted white with bright red edges.


05
VF-74

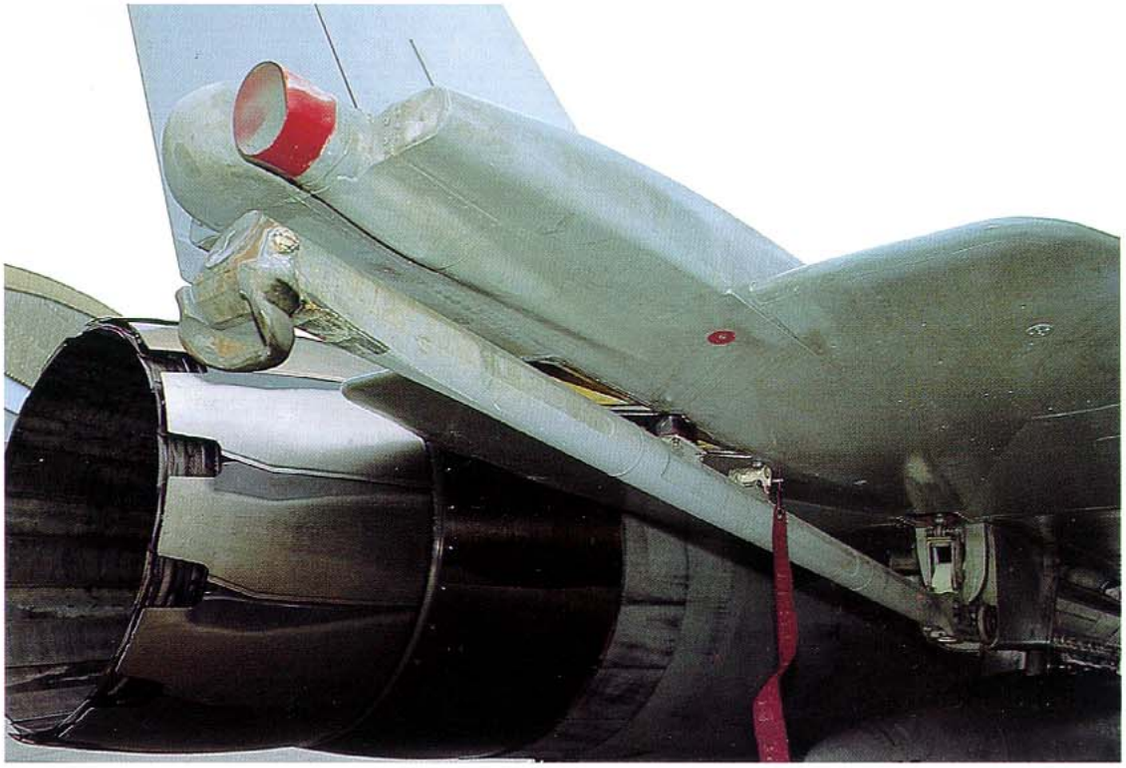


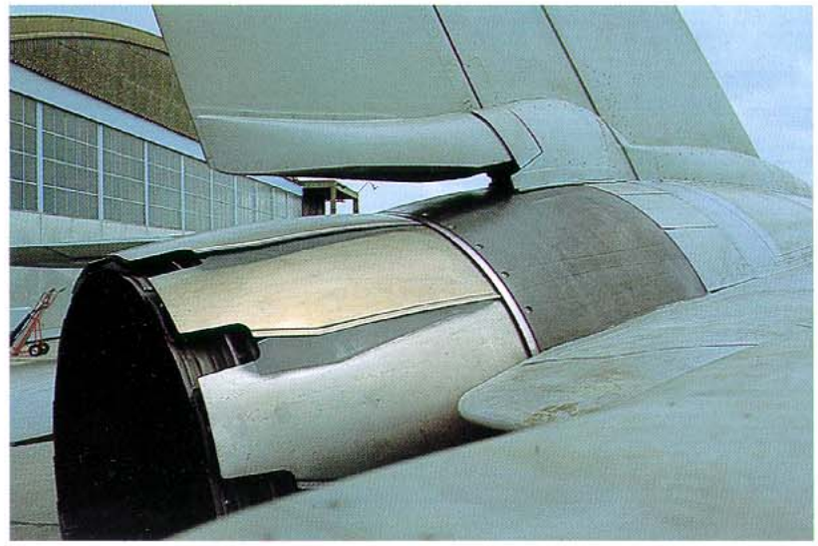

NAVY


F 14B
16322

(Previous page) Part of the F-14 weapon arsenal is the AIM-7 Sparrow missile of which six can be carried. Two of these can be hooked up under the wing pylon (instead of the Sidewinder adapter seen on page 6). The forward fin slot can be distinguished in the center of the pylon.

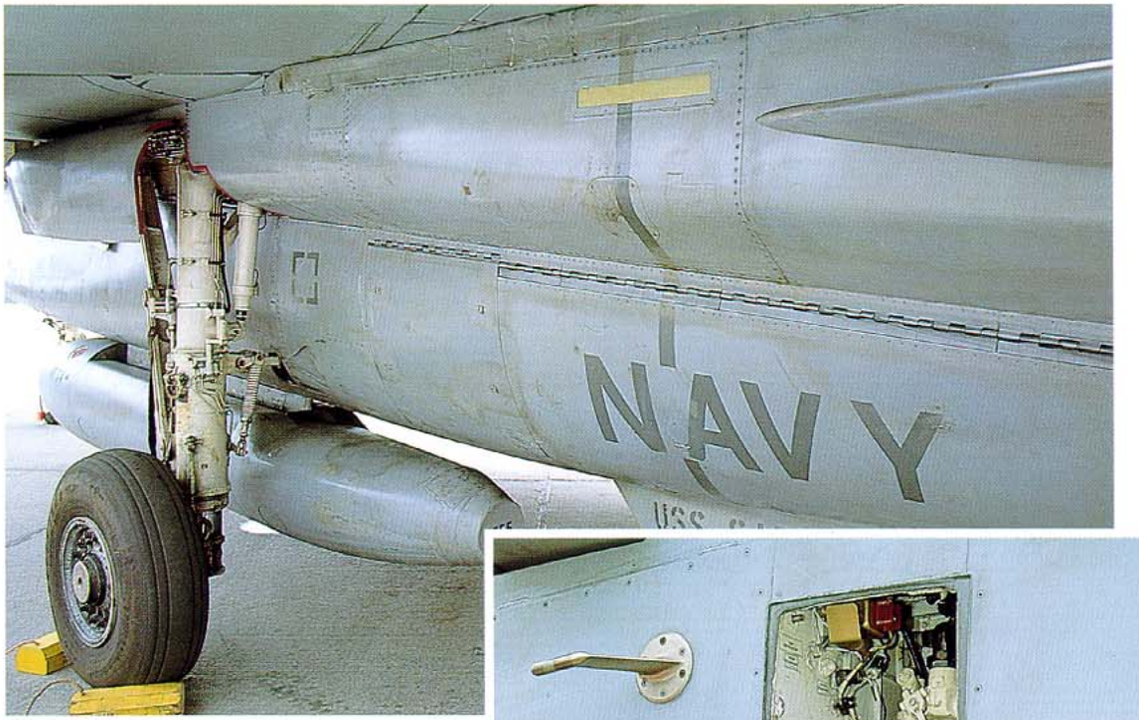
(This page) Movement of the large single pivoting slab-stabilator of boron composite construction is limited with the wings folded. The bulkier but much shorter exhaust nozzles of the new F401-PW-400 are well inside the empennage.
Note the inboard cooling duct in the ventral fin and the heat absorbing material over the engine in the bottom right picture.



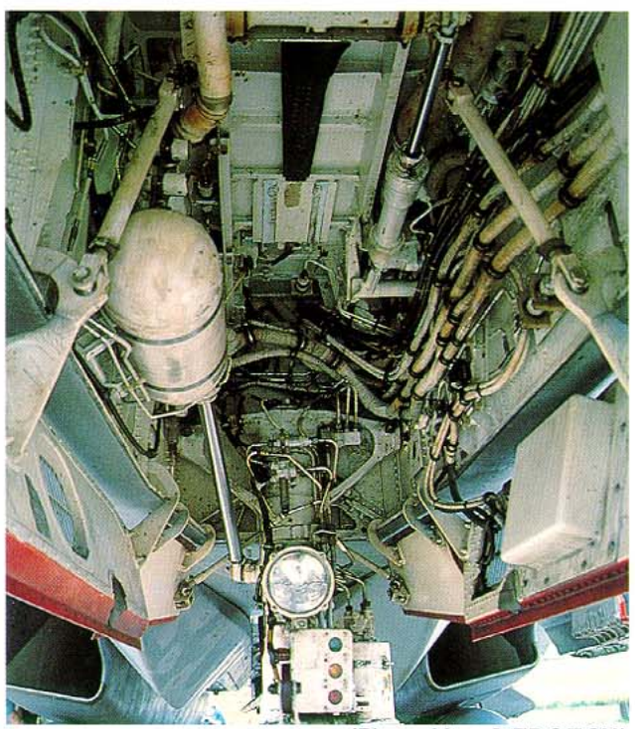


The twin vertical fins feature conventional rudders which are activated by actuators in the base of the fin, requiring complex fairings for coverage. Note the antenna housing next to the fuel dump.

On the ground the arrestor hook is secured with a safety pin halfway up the bar. Just forward of it is a rubber block assembly blocking the hook inches from the bottom fuselage.
Chaff/Flare dispenser is, again, not installed.

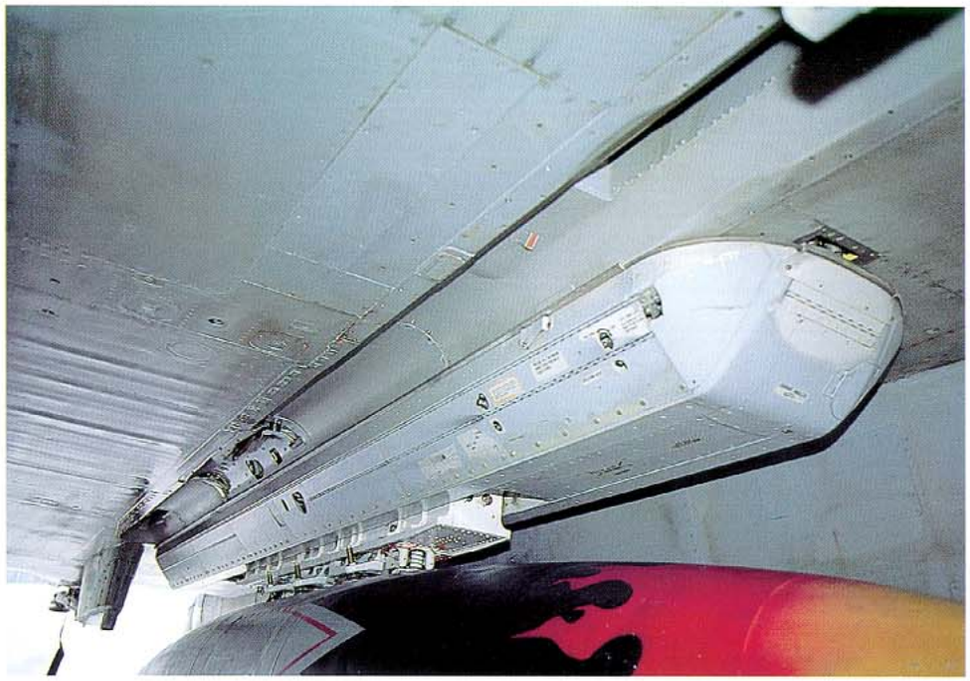


Details of the left side, rear to front, and continued on the next page.

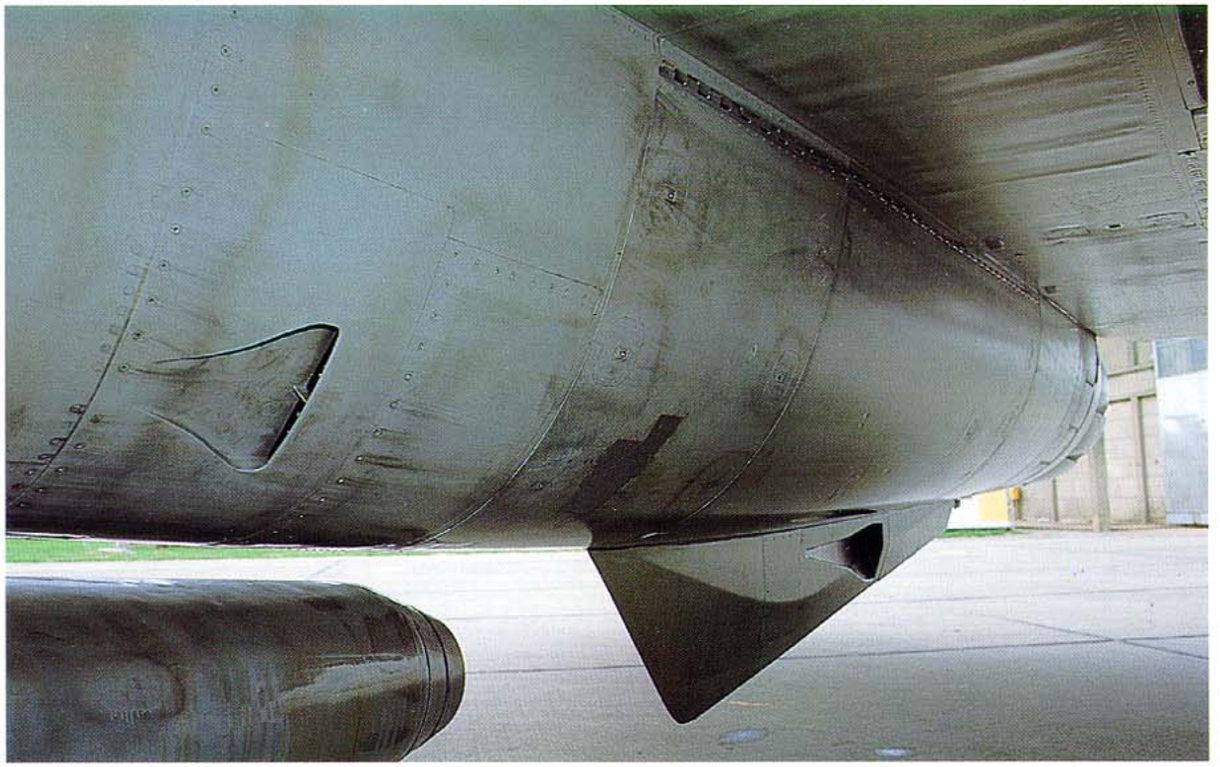


(Photo Nico DEBOECK)

The flat bottom of the F-14 is perfectly suited for weapon storage. Pallets for mounting Phoenix missiles are installed next to Sparrow recesses alongside the centerline.



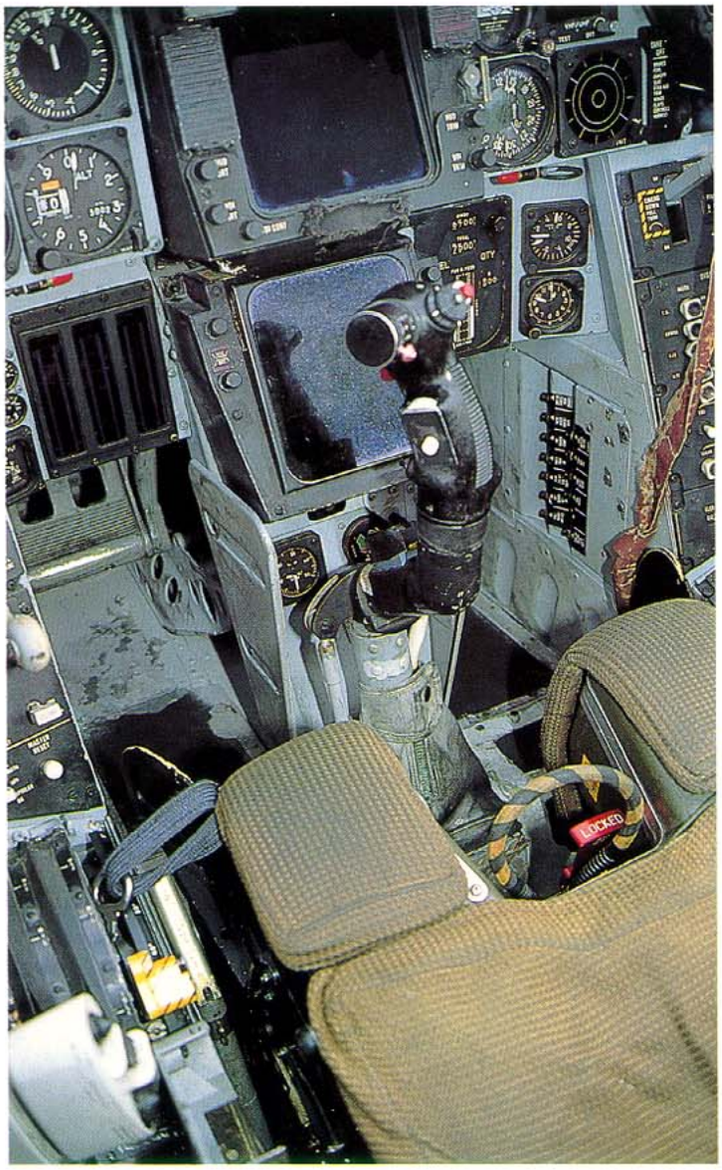
The rear pallets have a different front fairing as seen in this view. This "B" model had only one rear pallet installed, featuring a colorful travel pod.



Three photos to conclude the external walkaround of the F-14B Tomcat with a final view on the solid tail hook fairing and the rear of the travel pod.

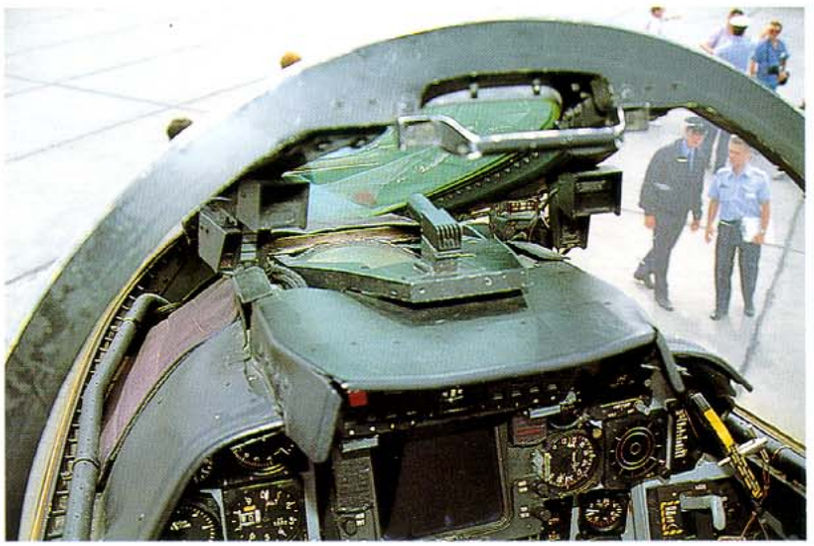
Pilot LCDR Al "FRENCHY" BYRNE and backseater LCDR Greg "OCTO" HIGHTAIAN of VF-74 "BEDEVILERS" are wearing the popular lightweight flight helmets and late type oxygen masks.

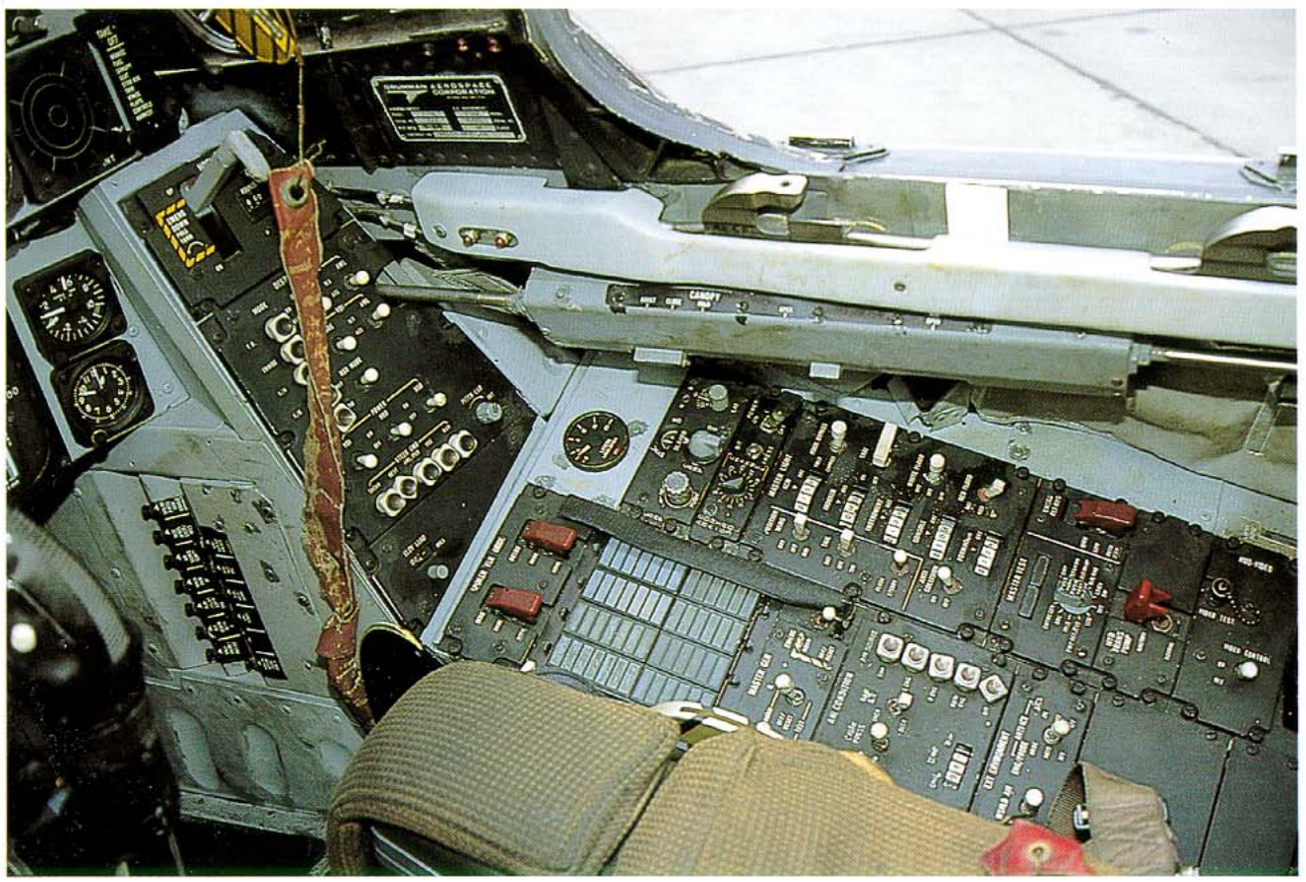
F-14 B cockpit layout is not much different than the one in the "A" model, except for navigation instruments on the top right main panel. Note the engine related instrument on the left knee panel shows no markings unlike the F-14A instrument.
Knee protecting side panels are mounted on either side of the center console. Various switches and control knobs are located on the pilot's control stick.
Also note the handhold on the upper windscreen frame and the warning light assemblies on the forward windscreen frame in the large picture.

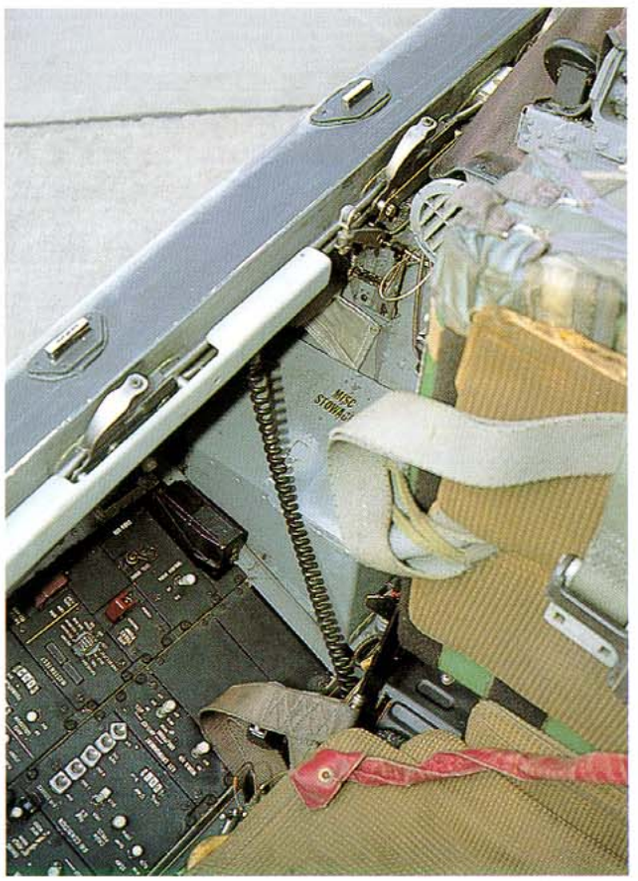


The HUD glass covers most of the front windscreen and has a greenish appearance. The windscreen defogging pipe can be seen at left in the picture below.

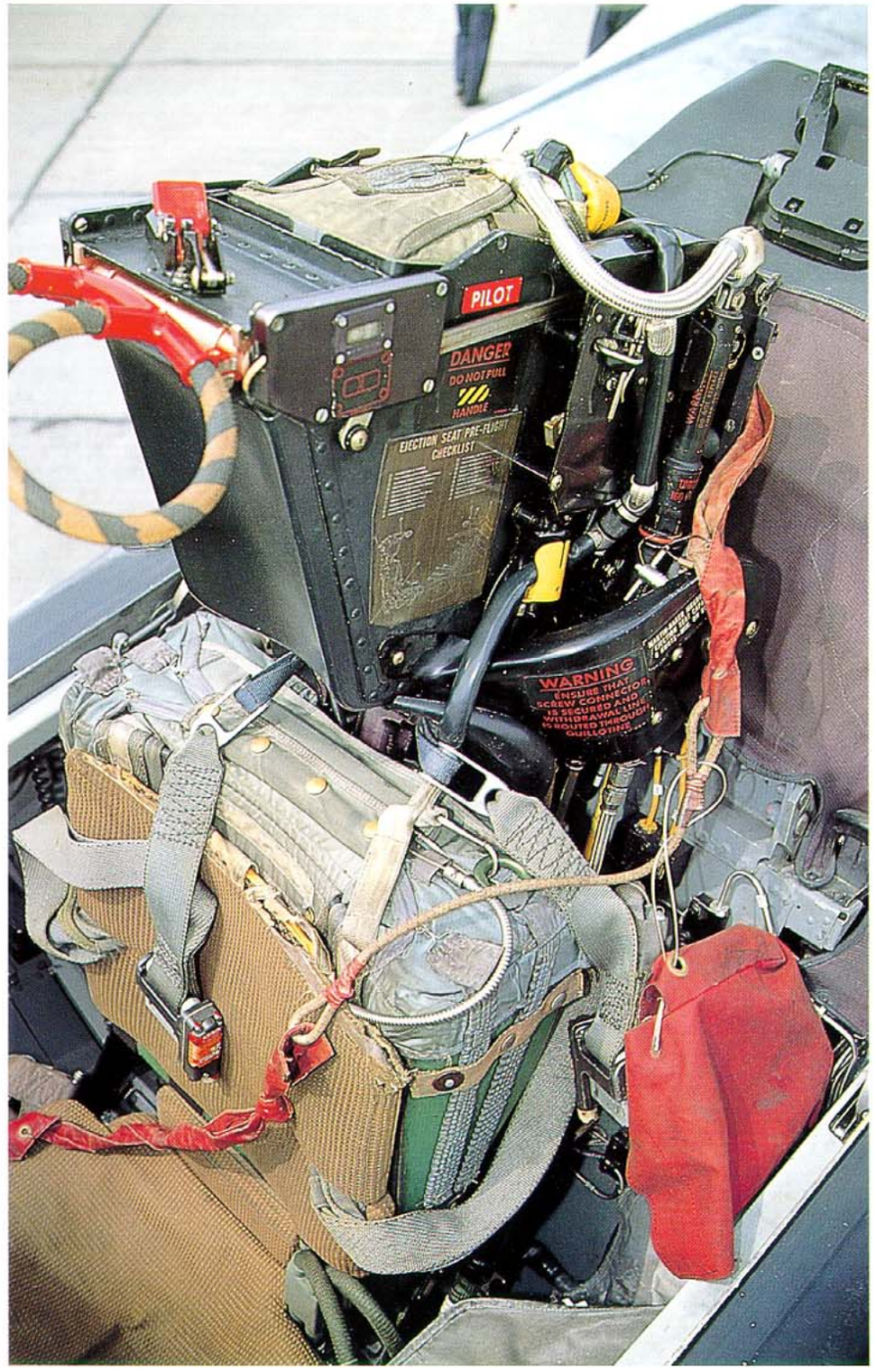
The main difference between "A" and "B" model right side console is the addition of the spoiler control panel and oxygen quantity gauge at front (forcing movement of all subpanels rearward) and the replacement of the blank panel (top, second panel) by the ARA control panel.



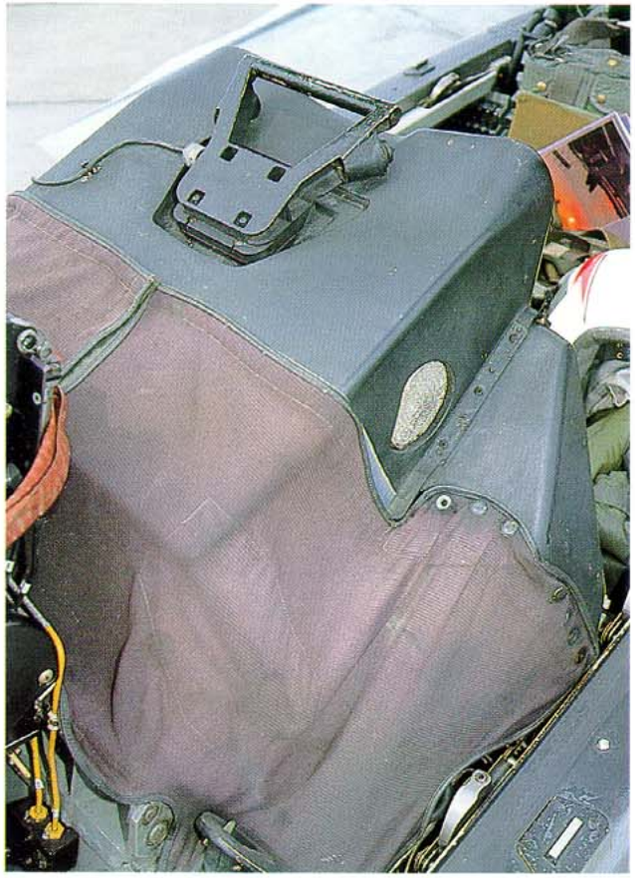




Reliable Martin Baker GRU-7 rocket propelled ejection seats garantuee both crewmembers a safe retreat from the aircraft in case of emergency. Dual activating handle on the headrest and single handle in front of the seat cushion (between the pilot's legs) provides eject options.



Drogue gun, stabilising chute in the headrest and main parachute pack with harness are prominent features in this photo. Note the safety pin instalment and safety pin stowage bag.

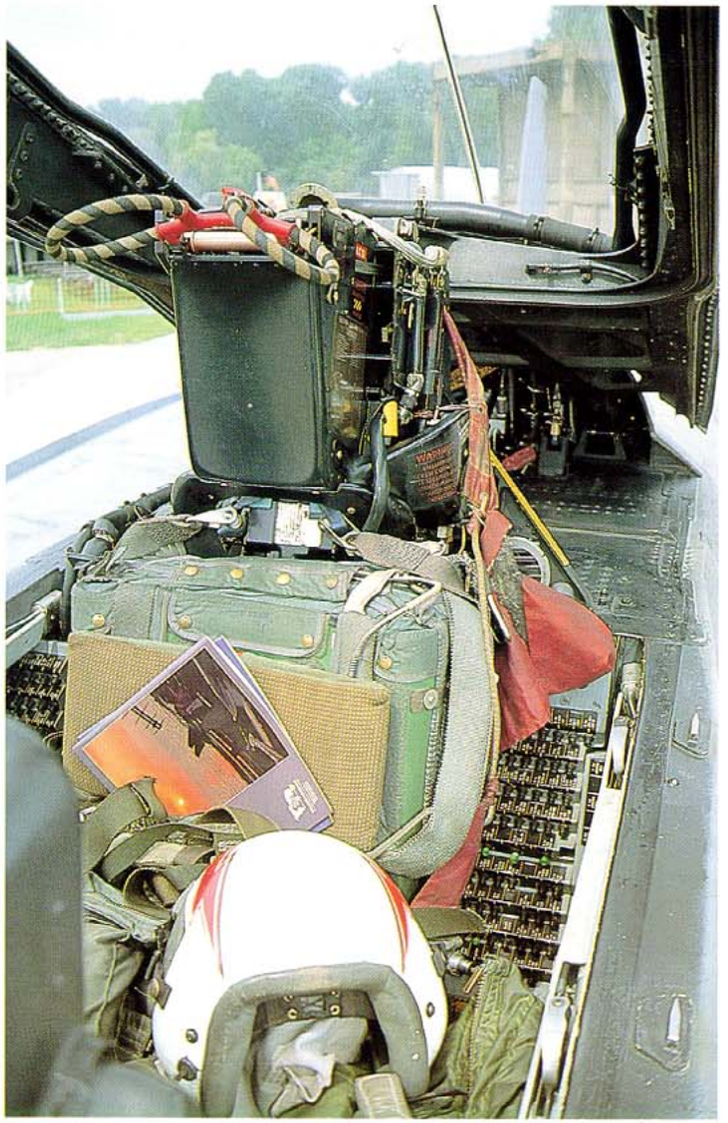


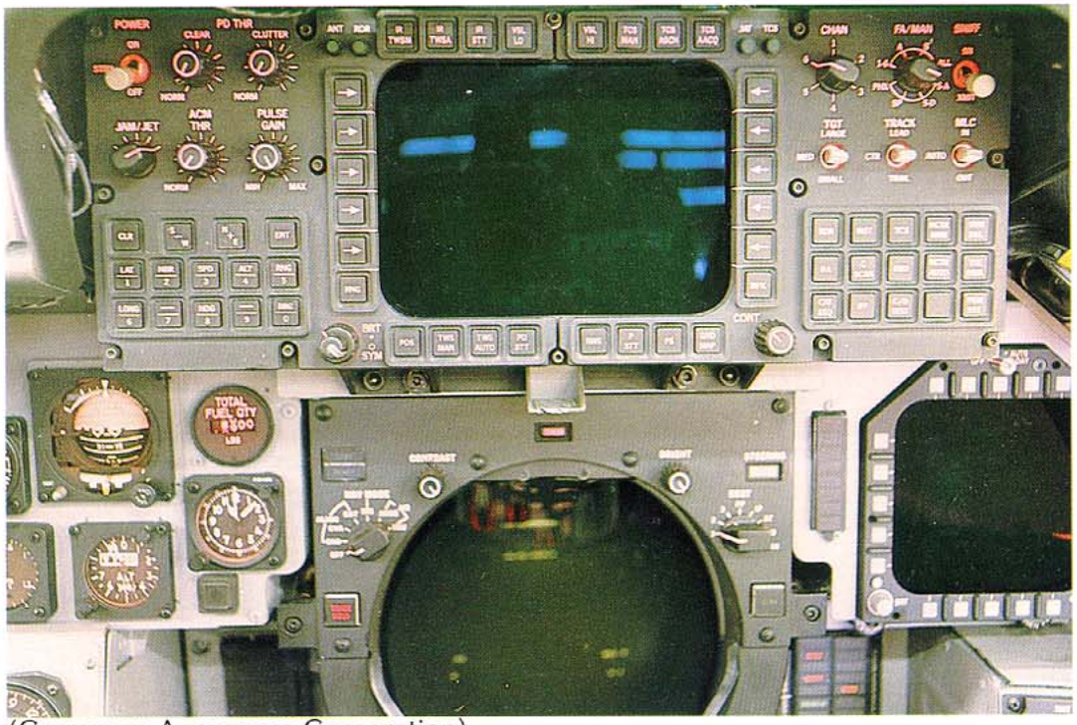
(Top left) A weathered canvas cover protects the rear instruments from dirt and dust. On top is the WSO'S handhold.

(Top right) Close-up of the canopy defogging pipe and connector.

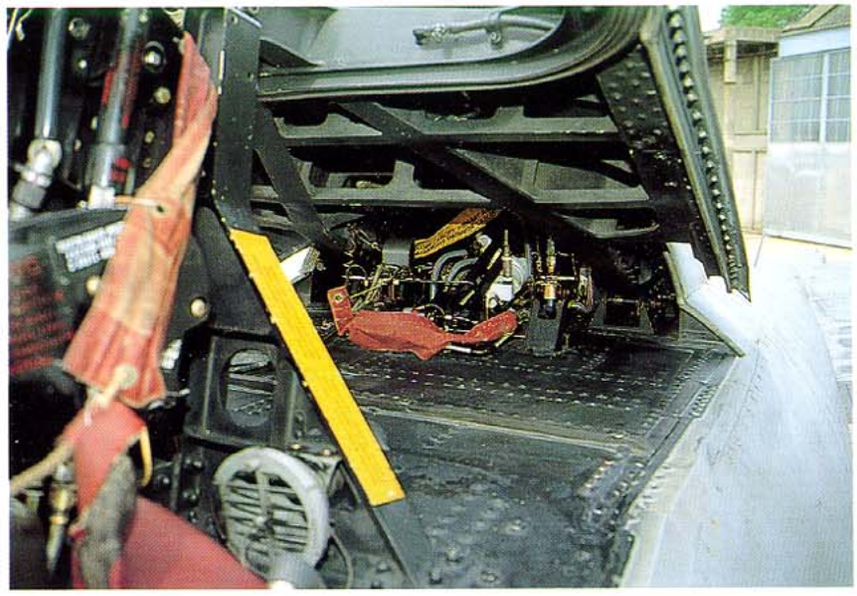
(Bottom left and middle) Dual throttle quadrant and left auxiliary panel with landing gear actuating lever.

(Bottom right) Rear ejection seat with side-mounted circuit breaker panels. Note canopy locking slots in side rail.

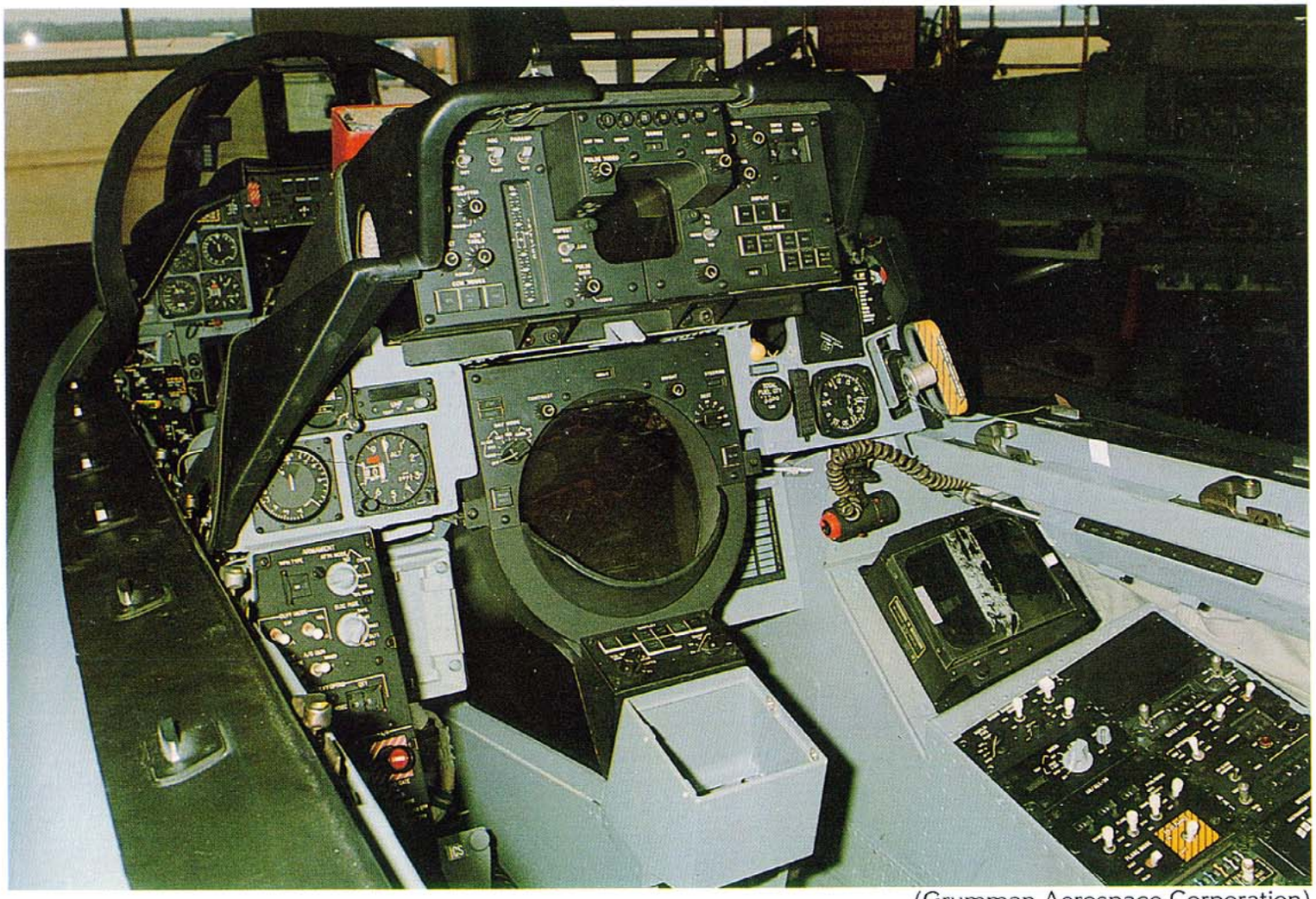




(Grumman Aerospace Corporation)



Canopy actuating mechanism at the extreme aft end of the hood. Note the solid structure of the latter.



F-14B rear cockpit layout but with the center stick control box (for Phoenix and Sparrow missile radar control) missing.
At top left is a view of things to come with rear instrument panel of the F-14D bringing instrument layout up to F/A-18 Hornet standards. Flight control instruments remain analog.

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VERLINDEN PUBLICATIONS
Ondernemersstraat 4
KMO-Zone Mallekot
2500 - Lier / Belgium