

ARCHIVED REPORT

For data and forecasts on current programs please visit

www.forecastinternational.com or call +1 203.426.0800

Grumman F-14 Tomcat - Archived 2/2005

Outlook

- Final F-14 upgrade funding in FY03; no further opportunities anticipated
- USN plans to retire remaining F-14s by 2010

Note: Icons indicate area(s) of current and potential retrofit/modernization activity



Orientation

Description. Twin-engine, dual-seat, all-weather, variable-wing multirole fighter.

Developer/Primary Manufacturer. Grumman Aerospace Corp, Bethpage, NY, USA.

Current Status. Production of F-14D completed in 1992; final remanufactured F-14D delivered in 1993.

Total Produced. A total of 557 F-14A, 38 F-14B (re-engined -As), and 37 F-14Ds were produced.

Application. Long-range fleet air defense, reconnaissance.

Price Range. The FY91 unit cost of a new-build F-14D was \$71.9 million. The FY87 unit cost of the F-14A (Plus) was \$44 million.

Technical Data

(F-14A)

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Length overall	19.10 m	62.65 ft
Height overall	4.88 m	16.01 ft
Wingspan, unswept	19.55 m	64.12 ft
Wingspan, swept	11.65 m	38.21 ft
Wing area, gross	52.49 sq m	565.0 sq ft
Weight		
Empty	18,036 kg	39,762 lb
Max fuel (internal)	7,147 kg	15,756 lb
Max T-O weight	33,724 kg	4,348 lb

Performance

	<u>Metric</u>	<u>U.S.</u>
Max speed	Mach 2.0+	
Ferry range	3,700 km	2,000 nm
Service ceiling	17,073+ m	56,000+ ft

Propulsion

Two Pratt & Whitney TF30-P-414A turbofans		
Thrust (each) with afterburning	93.0 kN	20,900 lbst

Armament. One General Electric M61A1-1 Vulcan 20 mm gun mounted in port side of forward fuselage. Four Sparrow or Phoenix air-to-air missiles under fuselage. Two wing pylons (one under each wing) can carry four Sidewinder air-to-air missiles, or

two Sidewinders plus two additional Sparrow or Phoenix missiles. Bombs and other weapons, cameras, reconnaissance equipment, and electronic countermeasures (ECM) equipment can also be carried.



GRUMMAN F-14

Source: Northrop Grumman

Program Review

Background. In 1969, Grumman’s F-14 Tomcat emerged as the winner of the U.S. Navy’s VFX carrier-based fighter design competition. The first development F-14 made its initial flight on December 20, 1970. The F-14 entered fleet service with the USN in October 1972.

The primary mission of the F-14 is to provide long-range air defense coverage for the U.S. fleet. The F-14A features variable sweep outer wings and a smaller moveable foreplane (called a glove vane). By deploying the variable sweep wings in various ways, the

aircraft can change its flying configuration to different aerodynamic and performance requirements for takeoff or landing on a carrier, participating in air-to-air combat, or conducting a low-level attack against a surface target.

Beginning in 1981, selected F-14As were deployed as reconnaissance aircraft. These aircraft were fitted with the Tactical Air Reconnaissance Pod System (TARPS), which uses film-based sensors. A total of 47 F-14As have TARPS capability.

Variants

F-14A. Initial production version. Originally powered by Pratt & Whitney TF30-P-412A engines. F-14As delivered from 1984 have -414A engines.

F-14B. Designated F-14A (Plus) until May 1991. Interim updated version of F-14A, powered by General Electric F110-GE-400 engines. Total of 38 produced, in

addition to 32 upgraded from F-14A configuration. Second use of F-14B designation, a single prototype of a P&W F401-powered F-14, flew in 1973 prior to cancellation of that program.

F-14C. Never passed design stage. Derivative of F-14A with new electronics and weapons.

F-14D. Advanced version with F110-GE-400 engines, digital avionics and a new radar. Produced as new-production aircraft (37 units) and as remanufactured aircraft (18 units).

Funding

	U.S. FUNDING							
	FY02		FY03		FY04(Req)		FY05(Req)	
	QTY	AMT	QTY	AMT	QTY	AMT	QTY	AMT
F-14 Mods	-	9.9	-	5.3	-	-	-	-
RDT&E								
PE#0205667N	-	1.5	-	-	-	-	-	-

All US\$ are in millions.

Milestones

Month	Year	Major Development
Jan	1969	Grumman declared winner of VFX competition
Dec	1970	First flight of initial prototype
Oct	1972	F-14A enters service
Sep	1986	First flight of F-14A (Plus)
Nov	1987	F-14A (Plus) deliveries begin
Mar	1990	F-14D deliveries begin
	1992	Final F-14D deliveries

Worldwide Distribution

(As of November 15, 2004)

Country	Operator	Variant	Qty	Avg. Age (Yrs)
Iran	Air Force	F-14A	12*	26
USA	Navy	F-14A	70	21; plus 26 in storage
		F-14B	68	18
		F-14D	46	12

* Consensus of estimates of airworthy aircraft.

Opportunities

The U.S. Navy completed its planned F-14 upgrades with FY03 funding and no additional money will be requested.

Current plans call for the retirement of the service's remaining F-14As during the 2006-09 timeframe.

We are not forecasting additional upgrades for the aircraft.

AIRFRAME

Structural Improvements. During full-scale fatigue testing conducted by Grumman, 20 modifications were identified and grouped into four engineering change proposals (ECP) to be installed on U.S. Navy fleet F-14A/B/Ds at or before 3,000 flight-hours. Under this program, the following tasks have been identified as required modifications to the aircraft:

- Replace wing attachment "Y" fitting
- Replace engine attachment stub duct
- Reinforce the Station 569 nacelle inboard flange
- Install redesigned fittings in the upper and lower diverter area
- Reinforce the centerline trough web
- Reinforce bulkhead and support structure at F.S. 395
- Reinforce upper and lower deck skins
- Reinforce nacelle assembly at F.S. 533
- Modify bushing fitting for the wing attachment "Y" fitting
- Install redesigned lower longeron side beam
- Install redesigned wheel-well support in the inlet duct assembly
- Modify longeron at Fuselage Station (F.S.) 569
- Reinforce longitudinal flight control support bracket
- Install interference fit fasteners in the vertical fin assembly
- Tridair panels - corrosion
- Install interference fit fasteners at F.S. 569
- Install 62° spoiler actuator
- Modify F.S. 569 bulkhead super/ultra arch
- Repair F.S. MLG ring nacelle frame cracks

An additional 10 modifications have been identified which are required to extend the service life of the F-14 from 5,000 hours to 9,000 hours:

- Centerbody bulkhead F.S. 453 rework
- Mid-module nacelle frames F.S. 520-526 rework
- Nacelle ring frame F.S. 533 rework
- Mid-module inner duct skin F.S. 533 rework
- Access panel bottom F.S. 345-395 rework
- F.S. 533 breather joint bracket replacement
- Inlet seal assembly
- Obsolete structure/system removal
- Glove vane panel removal
- Composite structural conversions/honeycomb removal

The modification package also includes weight reduction efforts needed to offset long-term weight growth, and several reliability/maintainability improvements. These include modifications to the following:

- M61A1 A armed/safe switch
- Yaw computer Stability Augmentation System (SAS)
- Gun-clearing sector holdback
- Wing sweep
- Rudder servo cylinder port housing
- F.S. 569 bulkhead
- Aft nacelle frame

Funding totaled \$365 million through FY03, with the final increment (\$3.6 million) authorized in FY03. All upgraded aircraft had been returned to service by very early 2004.

This project is included merely for informational purposes.

PROPULSION

Component Improvement Program. The USN Aircraft Engine Component Improvement Program (PE#0604268N) provides in-service engineering support for aircraft engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, fuel systems and fuels, and lubricants. According to the service, this effort is needed because the exposure of

these engines to the operational environment results in unforeseen problems.

This project is included merely for informational purposes.

FI's Opportunity Outlook

Program	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
---------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

AIRFRAME

Structural Improvements

In Progress +> 200+ F-14A/B/D (US)

Program	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
---------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

PROPULSION

Component Improvement Program

In Progress +> 200+ F-14 (US) =====>

Program	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
---------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
