

# ARCHIVED REPORT

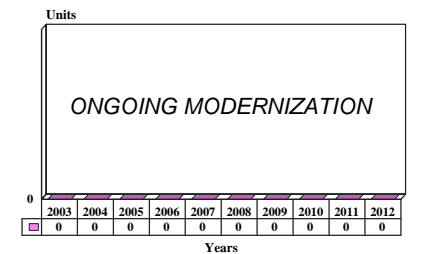
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## Grumman EA-6 - Archived 4/2003

### Outlook

- New production ended in 1991
- Block 89A and ICAP III modification programs are under way

10 Year Unit Production Forecast  
2003 - 2012



### Orientation

**Description.** Twin-engine electronic warfare aircraft; EA-6A accommodated crew of two, while EA-6B accommodates a crew of four.

**Sponsor.** US Naval Air Systems Command, Washington, DC, USA.

**Contractors.** Grumman Corp; Bethpage, New York, USA. In 1994, Grumman was merged into Northrop Grumman Corp.

**Status.** Production of EA-6B aircraft was completed in 1991.

**Total Produced.** Grumman produced a total of 21 EA-6A and 170 EA-6B aircraft. In addition, six A-6As were converted to the EA-6A configuration.

**Application.** Electronic countermeasures (ECM); stand-off jamming of hostile aircraft-, ship-, and land-based weapon systems; and destruction of anti-aircraft missile radars.

**Price Range.** FY89 unit cost of EA-6B, \$47.7 million.

### Technical Data

#### (EA-6B)

**Design Features.** Conventional, semi-monocoque fuselage carrying a cantilevered, mid-wing monoplane wing set with 25 percent sweepback at the quarter-

chord station; hydraulically operated, nearly full-span trailing- and leading-edge flaps. The EA-6B includes fin-tip antenna and seats four.

|                   | <u>Metric</u> | <u>US</u> |
|-------------------|---------------|-----------|
| <b>Dimensions</b> |               |           |
| Length overall    | 18.24 m       | 59.83 ft  |
| Height            | 4.95 m        | 16.25 ft  |
| Wingspan          | 16.15 m       | 53.0 ft   |
| Wingspan, folded  | 7.87 m        | 25.83 ft  |
| <b>Weight</b>     |               |           |
| Empty             | 14,321 kg     | 31,572 lb |
| Max external fuel | 4,547 kg      | 10,025 lb |

|   | <u>Metric</u> | <u>US</u>  |
|---|---------------|--|
| T-O weight  |               |  |
| A   | 24,668 kg     | 54,383 lb  |
| B   | 27,236 kg     | 60,045 lb  |
| <b>Performance</b>                                |               |  |
| Cruising speed at optimum altitude <sup>(a)</sup> | 774 km/h      | 418 kt   |
| Service ceiling <sup>(a)</sup>                    | 11,580 m      | 38,000 ft  |
| Ferry range (max external fuel)                   | 3,254 km      | 1,756 nm   |
| <b>Propulsion</b>                                 |               |  |
| EA-6B   | (2)           | UTC Pratt & Whitney J52-P-408 non-augmented turbojets rated at 49.8 kN (11,200 lbst) each. |

**Armament**

Originally none. Currently capable of carrying High Speed Anti-Radiation Missiles (HARM).

**Crew**

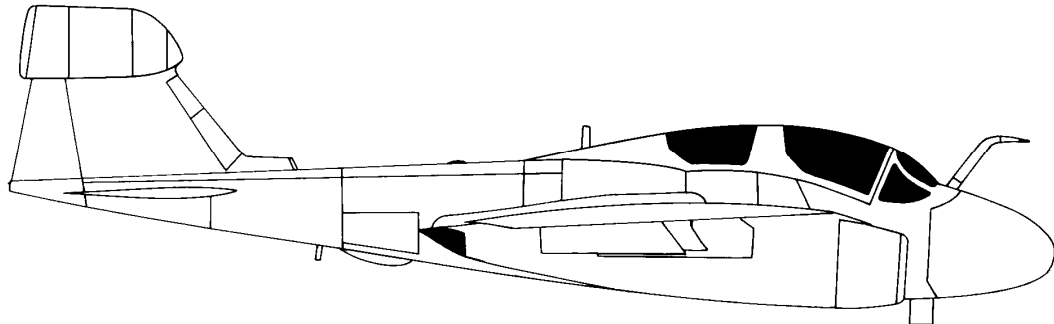
Pilot and three ECM officers.

**Notes**

A: From carrier in stand-off jamming configuration with five ECM pods.

B: From field in ferry range configuration with maximum external and internal fuel.

<sup>(a)</sup>With five ECM pods.



GRUMMAN EA-6

Source: Forecast International

## Variants/Upgrades

EA-6A. Initial EA-6 version. Purchased by the US Marine Corps. Total of 27 were built, including six A-6As converted to EA-6A configuration. Prototype first flown in 1963.

EA-6B. Final production version. The US Navy received the last of 170 EA-6Bs in 1991.

## Program Review

**Background.** The US Navy/Grumman EA-6 electronic countermeasures aircraft was directly derived from the

Long Island (New York) manufacturer's A-6 Intruder medium attack bomber. Grumman was selected as the

winner in the US Navy's A2F-1 competition in December 1957. The first A-6A flew in April 1960, and the type entered service in early 1963. Grumman received a development contract for the EA-6B in 1966, flew a prototype EA-6B in May 1968, and began deliveries in January 1971. Since that time, a total of 170 EA-6Bs have been produced for carrier- and shore-based operations.

Mission and Technical Characteristics. The Prowler's primary mission is to protect the surface fleet and aircraft by jamming hostile radars and communications. As compared with the two-seat A-6, the nose of the EA-6B was lengthened to accommodate two additional crewmen. The EA-6B can also be distinguished from its attack counterpart by the large antenna fairing atop the vertical stabilizer. The aircraft carries five integrally powered pods containing a total of 10 jamming transmitters. Each pod covers one of seven different frequency bands, and any mix of pods and fuel tanks may be installed depending on particular mission requirements.

Production Configurations. The EA-6B was manufactured in several different versions. The aircraft progressed from the Standard configuration of 1971 to EXCAP (Expanded Capability), ICAP (Improved Capability) I, ICAP II, ICAP II Block 82, and ICAP II Block 86.

All US Navy ICAP I aircraft have been upgraded to the ICAP II standard, which features improved computer-generated jamming techniques. Included in the ICAP II upgrade were installation of the ASN-123 signal data converter/digital display group and the ASN-130 inertial navigation system, and replacement of the AYA-6 computer with the Navy standard AYK-14 computer. The ICAP II upgrade also included incorporation of cooperative countermeasures and Band 7 frequency extension. The upgrade program was completed in 1991.

EA-6B ADVCAP Remanufacturing. In 1993, the US Navy canceled its plans to remanufacture a total of 102 EA-6B aircraft into the Advanced Capability (ADVCAP) configuration, which was also known as

Block 91. The Block 91 configuration included structural, propulsion, and electronics modifications. Among the changes were improvements to the EA-6B's tactical jamming system that included incorporation of a modern detection/processing system called the Receiver Processor Group (RPG). The RPG was designated OR-262(XN-1)/ALQ-99(V). The Block 91 standard also included the Sanders ALQ-149 countermeasures set, J52-P-409 engines, the Standard Attitude Heading Reference System, a Global Positioning System (GPS) receiver, head-up displays, dual AYK-14 computers, and two additional ALE-39 chaff/flare dispensers.

The decision to cancel the ADVCAP effort was driven by a combination of threat changes and affordability concerns. The high cost of the program (\$7.3 billion) had been a concern to the Navy.

The Navy is funding several other EA-6B improvement efforts. These efforts include a Structural Improvements program, which involves certain avionics modifications as well as the correction of structural deficiencies. Another effort is the ALQ-99 Pods program which involves the procurement of certain jammer pod components.

J52-P-409 Powerplant. The ADVCAP configuration included a new powerplant, the Pratt & Whitney J52-P-409 turbojet engine.

Under contract to the US Navy, Pratt & Whitney had been developing the J52-P-409 to replace the EA-6B's J52-P-408 engine. The improved engine, also known as the PW1212 and still available for orders, provides higher performance, improved fuel economy, and enhanced durability. New features include an improved low-pressure turbine, an increased-capacity fuel pump, modified fuel control, and an upgraded high-pressure turbine. It can deliver 53.4 kN (12,000 lbst) and provides 20 percent faster engine acceleration, increased mission range and time on station, and stall-free operation throughout the EA-6B's flight envelope. The upgrade in addition increases service life by over 20 years. The -408 can be upgraded to the -409 configuration through kit modification.

## Funding

Recent and planned US Navy EA-6 funding is as follows:

|           | <b>US FUNDING</b> |            |             |            |             |            |                   |            |
|-----------|-------------------|------------|-------------|------------|-------------|------------|-------------------|------------|
|           | <u>FY00</u>       |            | <u>FY01</u> |            | <u>FY02</u> |            | <u>FY03 (Req)</u> |            |
|           | <u>QTY</u>        | <u>AMT</u> | <u>QTY</u>  | <u>AMT</u> | <u>QTY</u>  | <u>AMT</u> | <u>QTY</u>        | <u>AMT</u> |
| EA-6 Mods | -                 | 255.9      | -           | 184.4      | -           | 149.7      | -                 | 223.5      |

All \$ are in millions.

## Recent Contracts

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| <u>Contractor</u> | <u>Award<br/>(\$ millions)</u> | <u>Date/Description</u>  |
|-------------------|--------------------------------|--|
| Northrop Grumman  | 21.0                           | Jan 2001 – Contract from US Navy for the fabrication and assembly of 23 Block 82-89A EA-6B upgrade kits and six Block 89-89A EA-6B upgrade kits.   |
| Northrop Grumman  | 16.2                           | Jun 2001 – Contract from US Navy to continue work already in progress to perform the FY01 requirement for the standard depot-level maintenance and concurrent upgrade of two EA-6B Block 82 aircraft to the Block 89A configuration, eight EA-6B Block 89 aircraft to the Block 89A configuration, and four EA-6B Block 82 aircraft to the 89A configuration.    |
| Northrop Grumman  | 9.7                            | Jun 2001 – Contract from US Navy for systems and software development for installation of the Multifunction Information Distribution System on the EA-6B aircraft.   |
| Northrop Grumman  | 30.0                           | Nov 2001 – Modification to US Navy contract to develop 10 wing center sections in support of the EA-6B aircraft.   |
| Northrop Grumman  | 9.6                            | Dec 2001 – Modification to US Navy contract to exercise an option for the fabrication and assembly of eight Block 82-89A EA-6B upgrade kits and six Block 89-89A EA-6B upgrade kits.   |
| Northrop Grumman  | 9.9                            | Dec 2001 – Modification to US Navy contract to exercise an option for installation of three modification kits (Block 89A) into three EA-6B aircraft (Block 82) to be done concurrently with standard depot-level maintenance requirement, and installation of two modification kits (Block 89A) into two EA-6B aircraft (Block 82) as a stand-alone requirement. |
| Northrop Grumman  | 16.1                           | Sep 2002 – Modification to US Navy contract for systems and software development for installation of the Multifunction Information Distribution System on the EA-6B aircraft.  |
| Northrop Grumman  | 23.3                           | Oct 2002 – Modification to US Navy contract for the production of 10 wing center sections for the EA-6B aircraft.  |

## Timetable

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| <u>Month</u> | <u>Year</u> | <u>Major Development</u>                   |
|--------------|-------------|--|
|              | 1957        | Competition for A2F-1 development contract |
| Dec          | 1957        | Grumman design selected                    |
| Apr          | 1960        | A-6A first flight                          |
| Feb          | 1963        | A-6A enters service                        |
|              | 1963        | EA-6A prototype first flight               |
| May          | 1968        | EA-6B prototype first flight               |
| Nov          | 1970        | A-6E first flight                          |
| Jan          | 1971        | EA-6B enters service                       |
| Sep          | 1972        | A-6E enters service                        |
| Sep          | 1988        | Last metal-wing A-6E delivered to USN      |
| Jul          | 1991        | Final EA-6B delivery                       |
| Feb          | 1992        | Last delivery of A-6E                      |
|              | 1993        | US Navy EA-6B ADVCAP program canceled      |

## Worldwide Distribution

|            |     |       |
|------------|-----|-------|
| US Marines | 20  | EA-6B |
| US Navy    | 102 | EA-6B |

## Forecast Rationale

The US Navy plans to keep the EA-6B in service until about the year 2015. Since the retirement of the US Air Force EF-111, the EA-6B has provided offensive electronic warfare capabilities for the Navy and the Air Force.

The Navy has begun modifying 122 EA-6Bs to the Block 89A configuration. The Block 89A improvements include new radios, an Embedded GPS Inertial Navigation System (EGI), a commercial off-the-shelf electronic flight instrumentation system, and enhancements to the AYK-14 computer.

A further EA-6B modification program, called ICAP III, is also under way. This program will provide the EA-6B with a reactive tactical jamming system to counter state-of-the-art frequency-agile radars. ICAP III will also provide new displays, controls, and software.

In March 1998, the Navy awarded a \$144.2 million contract to Northrop Grumman for engineering and manufacturing development for ICAP III. Northrop Grumman is teamed with BAE Systems on the program.

Northrop Grumman has modified two EA-6Bs to the ICAP III standard to serve as test aircraft for the program. The first ICAP III EA-6B made its initial flight in November 2001.

Eventually, all 122 of the US military's EA-6Bs are to be converted to the ICAP III configuration.

For further information on planned and projected EA-6 upgrades, see the Forecast International/DMS publication, *Airborne Retrofit & Modernization Forecast*.

## Ten-Year Outlook

### ESTIMATED CALENDAR YEAR PRODUCTION

| Aircraft         | (Engine)   | ESTIMATED CALENDAR YEAR PRODUCTION |    |                          |    |                          |    |             |    |    |    |    |   | Total<br>03-12 |
|------------------|------------|------------------------------------|----|--------------------------|----|--------------------------|----|-------------|----|----|----|----|---|----------------|
|                  |            | thru 02                            | 03 | High Confidence<br>Level |    | Good Confidence<br>Level |    | Speculative |    |    |    |    |   |                |
|                  |            |                                    |    | 04                       | 05 | 06                       | 07 | 08          | 09 | 10 | 11 | 12 |   |                |
| GRUMMAN          |            |                                    |    |                          |    |                          |    |             |    |    |    |    |   |                |
| EA-6A            | J52        | 21                                 | 0  | 0                        | 0  | 0                        | 0  | 0           | 0  | 0  | 0  | 0  | 0 | 0              |
| EA-6B            | J52-P-408A | 170                                | 0  | 0                        | 0  | 0                        | 0  | 0           | 0  | 0  | 0  | 0  | 0 | 0              |
| Total Production |            | 191                                | 0  | 0                        | 0  | 0                        | 0  | 0           | 0  | 0  | 0  | 0  | 0 | 0              |