

# ARCHIVED REPORT

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## ALQ-137(V) - Archived 5/96

### Orientation

**Description.** Airborne self-protection countermeasures system.

Countermeasures Division  
Nashua, NH

**Sponsor**

US Air Force  
Warner Robbins Air Logistic Center  
Robbins AFB, GA

**Status.** Production complete, logistics support ongoing.

**Total Produced.** Total production was just over 101 units.

**Contractors**

Lockheed Sanders Inc

**Application.** EF-111A.

**Price Range.** The estimated cost is \$1.5 million per unit. Estimated unit cost of Low-Band upgrade is \$600,000 per system.

### Technical Data

**Characteristics**

Frequency

Band 1: 2 to 4 GHz

Band 2: 4 to 8 GHz

Band 3: 8 to 15 GHz

Pulse power: 1 kW

CW power: 100 W

Jammer response time: 100 ns

Memory duration: 2.5 usec

**Design Features.** The ALQ-137(V) system is an upgraded version of Sanders' ALQ-94 Trackbreaker ECM system, which was installed in F/FB-111 fighter-bomber aircraft to counter enemy radar threats during the late 1960s and early 1970s. Sanders built more than 500 ALQ-94s. The ALQ-137 includes an additional transmitter and receiver located in the aft fuselage of the aircraft. The actual configuration varies with the aircraft model.

The system is used in conjunction with the ALR-62 on the F-111. The ALQ-137(V), ALR-62 and ALQ-99E form the Tactical Jamming System on EF-111A aircraft. The ALQ-137(V) was developed for use aboard FB-111 and F-111 aircraft. The system provided increased frequency

coverage, and improved threat analysis. It was designed to allow for future upgrading as technological changes occur. The system was designed to interface with the ALR-62 radar warning receiver.

According to the Air Force, the ALQ-137(V) uses a building-block architecture with equipment designed to counter known threats, but capable of growth to counter developing threats. The system uses a wide-band crystal video set-on receiver.

The ALQ-137 is one of three major systems which compose the Tactical Jamming System installed on the EF-111A series. Specific components of the system include the ALQ-99E Jammer Subsystem, the ALR-62

Terminal Threat Warning System, and the ALQ-137 Self-Protection System. In addition, the current program for FB-111 modernization and upgrade calls for the installation of a new Environmental Cooling System, and updated generation capability.

**Operational Characteristics.** The ALQ-137(V) is a deception RF pulse/CW repeater deceptive jamming

system. The system prioritizes threats in dense threat environments and affords maximum ECM protection for the EF-111A during jamming support missions. Operational jamming modes include: Range Gate Pull Off (RGPO), Velocity Gate Pull Off (VGPO), and selective range jamming.

## Variants/Upgrades

**ALQ-137(V)4.** This variant, coupled with the ALE-28 countermeasures dispenser, forms the EF-111A's Self-Protection Subsystem (SPS) to protect that aircraft against

radar-directed anti-aircraft artillery and missile and aircraft intercept threats.

## Program Review

**Background.** The Air Force selected the ALQ-137(V) over the ITT ALQ-117 for F/FB-111 aircraft in the mid-1970s, awarding Sanders a \$20 million contract to build pre-production models of the set. Sanders received a \$24 million contract in October 1977 for follow-on production of the set.

In September 1979, Sanders received a \$40.8 million contract for a higher frequency band capability ALQ-137(V) system for the EF-111A aircraft. This award brought total ALQ-137(V) funding to Sanders to nearly \$100 million. In December 1982, the Air Force awarded Sanders a contract for the fifth and final production lot of ALQ-137s.

Twenty four FB-111A aircraft were transferred from the Strategic Air Command to TAC (now part of the Air

Combat Command) in 1991 and converted from strategic to tactical missions. These have since been retired, leaving the EF-111A as the prime carrier of the ALQ-137.

In 1994, the Air Force made it known that they were evaluating the possible retirement of the EF-111A fleet to save money. Officials were trying to determine if standoff and escort jamming missions could be supported with the EA-6B, either operated by the Navy or, possibly, by transferring some of the aircraft to the Air Force. However, the idea may prove less workable than originally thought because fewer Prowlers were available than originally thought. The original idea was to begin retiring the aircraft in FY96. But that is likely to be slipped to FY97 at the earliest.

## Funding

Funding is from Operations and Maintenance funding lines.

**Analysis.** During Operation Desert Storm EF-111As and EA-6Bs were workhorses of the electronic warfare effort. The ALQ-99E was a superior performer in the standoff and escort role with the ALQ-137 providing self-protection for the Aardvark. No aircraft were lost to a known attack, although one crashed on returning from a mission in Iraq. The strike F-111Es and Fs carried the ALQ-131 pod for protection.

The ALQ-137 was a capable, reliable performer in the type of combat the force can expect to face in the future. This will reduce any tendency to embark on further upgrades of the system, enhancing or replacing operational systems.

With the conversion of the F-111 fleet to conventional missions and the success of the podded protection strategy

in the Persian Gulf, EW suite enhancements are not likely in the future. There may be minor upgrades to the system in the future; but there will be no major effort at developing a replacement self-protection jammer. The more demanding missions can be accomplished with pods, should planners consider the ALQ-137 inadequate to counter the anticipated threat for the remaining operational life of the F-111 fleet.

The Air Force is involved in trying to decide on its idea of retiring the EF-111A. The basic ALQ-99 jammer works and is being tailored for the anticipated future threat environment. Budget constraints are causing the services to look at a wide variety of money-saving ideas. Terminating all F/EF/FB-111 aircraft will generate significant savings for the Air Force. The question is whether or not it can accomplish the stand-off and escort

jamming mission effectively. A decision may be made sometime later in the year.

## Recent Contracts

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No recent DoD contracts over \$5 million recorded.

## Timetable

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|       |       |   |
|-------|-------|---|
|       | 1974  | Initial test trials                       |
| Early | 1977  | Initial test series, modified F-111A      |
|       | 1977  | First orders                              |
| Jan   | 1983  | Award for fifth production lot of ALQ-137 |
| Early | 1990s | ALQ-137 Upgrade for EF-111                |
|       | 1995  | Possible EF-111A decision                 |

## Worldwide Distribution

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This is an US-only program.

## Forecast Rationale

ALQ-137(V) production was completed in the mid-1980s. Production is now limited to spares activity to support the system through the remaining operational life of the EF-111A. The ALQ-94 and ALQ-137 were considered obsolete against advanced radar and guided missile systems; but they and podded jammers proved satisfactory in Operation Desert Storm.

The ALQ-137 jammers in use on USAF EF-111A aircraft will need some spares support to maintain them in their current configuration as long as the aircraft remain operational.

## Ten-Year Outlook

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No further production is planned.

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