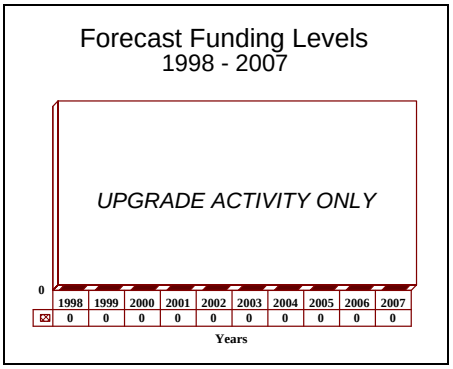
# ALQ-136(V) - Archived 4/99

## Outlook

- In service; ongoing logistics support and pre-planned upgrades
- Will be replaced by ALQ-211 in many applications
- FMS sales to Saudi Arabia and Greece approved




## Orientation

**Description.** Airborne Electronic Countermeasures System.

**Sponsor**
US Army
Army Communications-Electronics Command (CECOM)
AMSEL-IO
Ft. Monmouth, New Jersey (NJ) 07703-5000
USA
Tel: +1 201 532 2534

**Contractors**
ITT Defense & Electronics Corp
1650 Tysons Blvd, Suite 1700
McLean, Virginia (VA) 22102
USA
Tel: +1 703 790 6336
Fax: +1 703 790 6365

**Status.** In service, in production, ongoing logistics support.

**Total Produced.** An estimated 1,967 systems had been produced.

**Application.** AH-1S, AH-64, AH-1/J/T/W, EH-60A, OV-1D, MH-60K, MH-47E, RC-12N/P (Guardrail Common Sensor).

**Price Range.** The estimated cost is US$250,000 per system.

## Technical Data

| | Metric | US |
|---|---|---|
| **Dimensions** | | |
| Weight: | | |
| ALQ-136(V)1/5 | 19 kg | 42 lb |

| | | |
|---|---|---|
| ALQ-136(V) | 236.3 kg | 80 lb |
| Receiver/Processor: | 19 X 34 X 46 cm | 7.3 X 13.4 X 20.5 in |
| Volume: | 0.31 $m^3$ | 1.1 $ft^3$ |

**Characteristics**

| | |
|---|---|
| Frequency: | 8 to 16 GHz |
| Reliability: | MTBF 400-500 hr<br>(300 hours continuous operation demonstrated during Operation Desert Storm) |
| LRUs: | Receiver/Processor<br>Operator Control Unit<br>Spiral Antennas (1 tx, 1 rx) |

**Design Features.** The ALQ-136(V)1/5 is an automatic, power-managed, microprocessor-controlled jamming system. It was designed to be light weight and uses cold plate cooling. Its modular design allows for growth, and its small size makes installation easy.

The system is made up of three Line Replaceable Units.

LRU-1 The receiver/processor performs the system's receive, processing, sorting, ECM generation and transmit functions.

LRU-2 This unit contains the spiral receive and transmit antennas.

LRU-3 The operator control unit.

The heart of the ALQ-136(V) is the ITT CX-475 microprocessor. It interfaces with the APR-39 radar warning receiver.

This system incorporates Thick Film Hybrid (TFH) technology and multi-layer printed circuit boards. Future growth potential was provided for by the system's modular architecture, software, and MIL-STD 1553B data bus interface.

The design was based on the ITT ALQ-129 jammer and was the first Army system scheduled for VHSIC technology insertion. It was also slated to receive Microwave/Millimeter Wave Integrated Circuit (MIMIC) gallium arsenide (GaAs) components.

**Operational Characteristics.** The ALQ-136(V)1 features a fully automatic transponder system, automatic ECM technique selection, simultaneous handling of multiple threats, software programmability and high receiver sensitivity. Should an ALQ-136-equipped aircraft be illuminated by a radar, the jammer automatically analyzes and counters the signals.

The ALQ-136(V) was specifically designed to jam the Gun Dish radar on the ZSU 23-4 anti-aircraft artillery system, one of the more formidable threats to helicopters and slow fixed-wing aircraft.

It prioritizes threat emitters and is programmed to decide which system should be jammed first. The defensive system employs phase front distortion and other range and angle techniques in a coordinated manner. The ALQ-136 makes it possible for a helicopter to perform low-level missions, approaching the target area and using a pop-up maneuver to perform its mission before anti-aircraft systems can be effective.

## Variants/Upgrades

**ALQ-136(V)1.** This is the baseline hardware.

**ALQ-136(V)2.** This re-programmable version of the basic equipment can respond to a wider range of potential threats. It was tailored for Special Electronic Mission (SEMA) aircraft and is carried by the Guardrail Common Sensor RC-12N/P. The equipment features RF memory sub-modules and is specifically designed to enhance low-level missions. Enhanced features include expanded simultaneous threat handling and rapid reprogrammability.

**ALQ-136(V)5.** This is an enhanced version for select mission aircraft.

The Army's **ALQ-211 Suite of Integrated RF Countermeasures (SIRFC)** will replace the ALQ-136 pulse jammer, ALQ-162 CW jammer, and APR-39 radar warning receiver in many applications. The heart of the countermeasures system was developed under the Advanced Radar Technology Jammer (ATRJ) program. SIRFC will integrate with the SIIRCM/CMWS IR/EO/Missile Warning suite.

# Program Review

**Background.** Developed for the Army as a helicopter defensive system to thwart radar-guided missiles and anti-aircraft guns, the ALQ-136(V) evolved from the ALQ-129. Engineering and advanced development began in 1977 with deliveries starting in 1982.

The Army began a modular upgrade to the ALQ-136(V)1 in 1982 and announced in FY84 that it planned to insert VHSIC technology to improve the processing speed and system reliability. FY85 upgrade efforts included beginning development of monopulse digital memory sub-modules.

The ALQ-136(V)2 entered development and flight phase in 1986. This system was designed primarily for Special Electronic Mission Aircraft, but could be retrofitted onto other aircraft. The first production contracts were awarded in FY89 and continued after that.

**Eagle Claw Jamming Pod.** In December 1990, Army CECOM announced a market investigation to seek interest in the ECM Eagle Claw Integrated ECM Program. The pod would integrate ALQ-136(V)2 and ALQ-162(V)2 radar jammers. It would also include new ECM technique modulators and highly accurate direction-finding capabilities. Sensor data would be analyzed to develop a consolidated situation report. Based on this report, jammer resources could be applied to counter the system. In addition, the situation report would be provided to a digital map display to assist the pilot in deciding to engage or avoid threats.

The eventual result was the ALQ-211(V) SIRFS (Suite of Integrated RF Countermeasures), a fully integrated electronic combat system designed to specifically operate in the digital battlefield of the 21st century. SIRFS replaces the ALQ-136(V) jammer and combines self-protection and situational awareness, making it possible for helicopters to share inputs and create a comprehensive picture of the battlefield electronic character. It will locate threats and other emitters of interest. Plans are for the suite to enter production soon.

In a June 1997, *Commerce Business Daily* US Special Operations Command released a notice that it intended to upgrade 53 ALQ-136(V)2 LRUs with a blanking circuit for the ALQ-136A(V)1. Plans also included upgrading User Data Modules with the latest Operational Flight Program and User Data Base for field reprogramming capability. A third part of the announcement addresses acquiring 27 integrated transmitter antenna assemblies which would allow proper individual system operation while achieving system-to-system isolation levels needed to insure ALQ-136, ALQ-162, and APR-39 interoperability. The acquisition included 104 new radomes. 110 Government owned antenna assemblies to incorporate narrow beam lenses.

A November 10, 1997, *Commerce Business Daily* notice announced that the US Special Operations Command (USSOCOM) Technology Applications Contracting Office intended to issue a Firm Fixed Priced delivery order against a Blanket Ordering Agreement (USZA95-97-G-0001) with ITT Corporation, ITT Avionics Division, for up to 60 High Power Remote Transmitters (HPRTs) plus peculiar support equipment, initial provisioning for spare parts, and technical data. These HPRTs would be installed on MH-60K and MH-47E Special Operations Aircraft and used to amplify the ALQ-136(V)(2) and ALQ-162(V)2 jammers. The HPRT would have to be forward-compatible with the ALQ-211 jammer. The HPRT was developed by ITT.

# Funding

Funding is from platform procurement and O&M lines.

# Recent Contracts

No recent DoD contracts over US$5 million recorded.

## Timetable

| | |
|---|---|
| 1976 | Development began |
| 1979 | Development completed |
| 1980 | Production began |
| 1984 | Development of monopulse and digital RF memory submodules initiated |
| 1987 | ALQ-136(V)2 DT/OT II testing scheduled for completion |
| 1988 | Completion of full-scale development of ALQ-136(V) and conduct program review for Milestone III decision |
| FY90 | Initial production of ALQ-136(V)2 |
| 1997 | SIRFS/ATRJ deliveries to start |

## Worldwide Distribution

Export to **Saudi Arabia** and **Greece** has been approved.

## Forecast Rationale

In preparation for regional, contingency conflicts, self-protection has become increasingly important. Sophisticated weapons are being procured by small and developing countries' armed forces, and Special Operations missions are now an important part of tactical plans.

The US, and any high-technology military force, must protect its Low Intensity Conflict operations. The increased emphasis on missions such as those of the Special Electronic Mission Aircraft (SEMA) furthers the need for EW protection.

One of the primary applications for the new ALQ-136(V)2 variant was to protect the Army's AH-64A Apache attack helicopters until the newer ALQ-211(V) SIRFS system becomes available. The new jamming suite features advanced capabilities and is integrated with IR/EO protection. It is configured so the suites on individual helicopters can fuse their threat location data into large-area situational awareness for the entire battlefield. This will be important to the digital Force XXI planned for the turn of the century.

The new SOF variants of the Chinook and Black Hawk, the MH-47E and MH-60K, are going to receive the new system because their missions make additional survivability a necessity. The ALQ-136(V) is an effective standalone system; however, the new sensors are being specifically designed to be part of a multi-sensor, multi-platform situational awareness regime. Sensor and data transfer capability are both part of the new architecture. It is more cost-effective to create a new system with the latest technology and interfaces, rather than add the interfaces and data transfer/fusion capability to existing systems.

Production is complete, for all practical purposes. The Army pushed the development of the SIRFS suite, integrating it with the SIIRFS IR/EO protective system. This cut off the likelihood that more ALQ-136(V) units would be needed.

The large number of units in service will support an ongoing spare parts and repair market through the remainder of the reporting period. Users, especially the USSOCOM, are aggressively pursuing upgrades which will insure the usefulness of the ALQ-136 as long as it remains in service.

## Ten-Year Outlook

No further production expected.

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