

ARCHIVED REPORT

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ALE-45(V) - Archived 2/2009

Outlook

- In February 2002, the Republic of Korea chose ALE-47 as part of its TEWS, favoring newer system over older ALE-45
- Because ALE-45 designed specifically for F-15, the aircraft's diminishing sales reducing chances that ALE-45 will be chosen for any new aircraft
- Delays with F-35 JSF and inaccessibility of F-22 for most countries may convince some global air forces to purchase more F-15s, at least as a stopgap until the newer aircraft become available
- No further production is expected for the ALE-45 at this time, thus this report will be archived next year

Orientation

Description. The ALE-45 is an airborne chaff and flare dispenser system and part of the Tactical Electronic Warfare System (TEWS). It is being replaced by more modern systems on new-production aircraft.

Sponsor

U.S. Navy
Naval Air Systems Command
NAVAIR HQ
47123 Buse Road Unit IPT
Patuxent River, MD 20670-1547
USA
Tel: + 1 (301) 342-3000
Web site: <http://www.nawcad.navy.mil>

Status. In service, ongoing logistics support.

Application. The ALE-45(V) is installed on the F-15 as part of the TEWS.

Price Range. The ALE-45 was sold as part of the TEWS. Most price information is for the TEWS. By analyzing past contract information and comparing the system with other similar systems, Forecast International estimates the average price of a single unit to be \$60,000.

Contractors

Prime

BAE Systems Sensor Integration

<http://www.ids.na.baesystems.com>, 6500 Tracor Ln, Austin, TX 78725-2070 United States, Tel: + 1 (512) 926-2800, Fax: + 1 (512) 929-2381, Email: idsmarketing@baesystems.com, Prime

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Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

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Technical Data

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Programmer Assembly (one)		
Weight	4.7 kg	10.3 lb
Length	20.8 cm	8.20 in
Width	19.4 cm	7.62 in
Height	13.7 cm	5.38 in
Dispensing Switch Assembly (each)		
Weight	4.5 kg	9.8 lb
Length	38.7 cm	15.2 in
Width	14.7 cm	5.8 in
Height	10.7 cm	4.23 in
Characteristics		
Units	Dispenser Switch Assembly (4) Stores Magazine (8)	
Loads (eight magazines)	RR-170 and/or RR-180 chaff cartridges MJU-7 and/or MJU-10 flare cartridges Other payloads as required	

Design Features. The ALE-45(V) is a microprocessor-controlled countermeasures dispenser designed to respond automatically to input from the ALR-56C radar warning receiver, a tail warning system, or pilot-generated commands. The processor is programmed to dispense selected countermeasures in dispersal patterns tailored to provide optimum protection from missile attacks with a minimum expenditure of protective stores.

Preprogrammed data and dispensing programs are stored in memory and govern the system. The program can be changed on the flight line through a front panel connector. The software selects dispensing programs based on threat source information from the radar warning receiver or the pilot, or on aircraft flight data.

The four dispensing switch assemblies are identical and interchangeable. Their primary function is to fire the payload. The firing switches are solid-state hybrid drivers designed for reliability.

The ALE-45(V) is equipped with Built-In Test (BIT) functions. Payload management, chaff, and flare inventory, and system status can be monitored on a cockpit display.

Operational Characteristics. The microprocessor analyzes threat warning information and, based on established criteria, responds with a selected countermeasure dispensing sequence. In the case of radar-guided threats, the proper dipole length chaff cartridge is selected and dispensed. Program parameters can select payload class, burst count, and interval, as well as payload count and interval.

Variants/Upgrades

The ALE-45J is the only specifically identified variant; it is carried by Japan.

Program Review

Developed for F-15

The ALE-45(V) countermeasures dispenser system was developed specifically for the F-15 aircraft. The F-15's protective system, the Tactical Electronic Warfare System (TEWS), was the first operational dual-mode self-protection system ordered by the U.S. Air Force; it operates effectively over a wide-frequency spectrum.

The USAF began adding the ALE-45(V) to F-15C/D fighters in 1985 following an improvement program for the ALR-56(V) radar warning receiver, which made it possible for the aircraft sensors and dispensing system to detect and counter a wider variety of anti-aircraft threats. TEWS improvements centered on software and integration enhancements to the system that expanded the range of threats against which the aircraft is

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protected. The Air Force continues to upgrade the system software based on threat analysis.

The Air Force developed a system that automatically detects faulty firing circuits in the dispensers. The Warner Robins Air Logistics Center developed a test system that can determine if any of the 18 circuit cards in the system are faulty and need to be replaced.

South Korea Chooses ALE-47

In February 2001, the Defense Security Cooperation Agency notified Congress of a possible Foreign Military

Sale (FMS) of munitions, subsystems, and related equipment for 40 F-15K aircraft to the Republic of Korea.

In October 2002, the Republic of Korea awarded Northrop Grumman Corporation, via Boeing, a \$160 million contract for 40 TEWS, which included the ALQ-135(V) radar jammer, the ALR-56C(V)1. However, South Korea requested the ALE-47(V) equip the aircraft rather than the ALE-45(V). An additional 40 aircraft could potentially be fitted, depending on fiscal and other issues.



The ALE-45 is a vital part of the F-15's EW suite.

Source: U.S. Air Force

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1981	Initial development
	1983	Selected for F-15C/D
	1986	Production deliveries begun
	1992	Sale of 72 F-15S to Saudi Arabia approved
	1993	Final USAF F-15E production; ANG retrofit begun
	1995	Congress funds six additional F-15Es
	1999	Last projected deliveries of F-15S
May	2002	Delivery of latest USAF procurement (10 aircraft) begun
	2001	S. Korea selects F-15K
Oct	2002	S. Korea selects ALE-47 as part of the F-15K TEWS instead of ALE-45
Mid-	2004	Last USAF F-15E delivery
	2009	Last RSAF F-15S delivery

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Worldwide Distribution/Inventories

Japan	F-15J
Saudi Arabia	F-15C/D, F-15S
United States	F-15A/B/C/D/E

Forecast Rationale

Outlook for ALE-45 Bleak

With South Korea's decision to purchase the ALE-47 for its F-15Ks, the outlook for the ALE-45 looks bleak. Other than the sales to South Korea and Singapore, no further F-15 sales are forecast at this time, and countries looking to upgrade older EW systems, such as the ALE-39, will choose newer systems, such as the ALE-47, over the older ALE-45.

Despite the bleak outlook, there are glimmers of hope for the F-15-specific chaff/flare launcher. Delays with the F-35 JSF and the inaccessibility of the F-22 for most countries may convince some air forces around the world to purchase more F-15s, at least as a stopgap until the newer aircraft become available. Many of these

potential customers may decide that the ALE-45 is adequate for their needs.

ALE-45 Specifically Designed for F-15

While this is possible, no one has stated an intent to follow this plan, and therefore no production is expected at this time. Any new production would most likely be for new-build F-15 Eagles, as the ALE-45 is specifically designed for the Tactical Electronic Warfare Systems (TEWS), which equip the F-15. However, many countries may also follow the lead of South Korea, ordering their new F-15s with the ALE-47.

The large numbers of units that have been fielded over the years will ensure a vibrant spares/repair parts market as long as the F-15 is flying.

Ten-Year Outlook

Since no further production is expected for the ALE-45 at this time, this report will be archived next year.

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