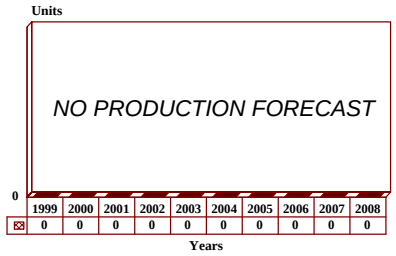
Shield - Archived 10/2000

Outlook

- Believed out of production in 1999
- Last known order delivered to Singapore in 1998
- **BARRING ANY FUTURE ACTIVITY, THIS REPORT WILL BE ARCHIVED NEXT YEAR, 2000**

10 Year Unit Production Forecast
1999-2008



Orientation

Description. Anti-ship missile decoy dispenser system providing a layered defense against IR and radar homing missiles.

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Licensee. No production licenses have been granted.

Status. Out of production but in service.

Total Produced. An estimated 150 Shield systems (of all variants) had been delivered through 1998.

Application. Shield is a multipurpose missile decoy system using both chaff and infrared flares to provide attractive decoys to counter IR, radar or hybrid seeker missiles.

Price Range. According to GEC-Marconi, a Shield system (variant unknown) costs approximately US$370,000. The price includes approximately US$250,000 for the unit, plus US$120,000 for radar absorbent cladding (1993 dollars). GEC-Marconi apparently will not sell one without the other.

Technical Data

Metric	US

Characteristics

Chaff rocket range:	2,000 m	2,200 yd
IR flare range:	160 m	176 yd
Chaff payload:	8 kg	17.6 lb
Number barrels:	3-12 in banks of 3	
Chaff time-fuse settings:	0.5-12 sec	

Design Features. Shield is a modular broad-band chaff/ decoy system featuring batteries of parallel or crossed tubes containing from three to 12 tubes in a battery. Each launcher carries two three-rocket modules either parallel or crossed at an 80-degree angle with elevation fixed at 30 degrees. The launcher is strong enough to carry three modules, so that in the crossed-tube configuration the number of forward-firing barrels can be doubled. For larger ships, four parallel batteries are suggested to give the correct scale of decoy chaff cloud. The systems can be operated manually or in interface to the ship's own EW suite. Two types of rounds have been developed. These include the P6 IR decoys and P8 chaff rockets.

Operational Characteristics. Chaff can be deployed at ranges between 35 and 2,000 meters to distract or seduce inbound missiles. Variable chaff range is obtained by setting a time fuse that ignites a secondary gas generator in the rocket nose, initiating the deployment of the chaff packs. The infrared (IR) flare rockets have ranges of 40-160 meters and carry seven IR submunitions. These cover a large area and are effective in the 3-5 and 8-14 micron bands.

Variants/Upgrades

DLE: (UK Royal Navy designation for Shield)

Shield: (Manually fired variant)

Shield II: (Automatically fired variant)

Shield III: Derived from the Shield 2 system, Shield 3 introduces an updated man-machine interface using touch-sensitive plasma screen technology, additional operating modes, and a more flexible design architecture based around an Ethernet local area network. Additionally, the central control unit has been updated with Motorola 68040 processors replacing the elderly Z-80. Decoy deployment is based on off-line simulations – generated in the Shield MOS scenario simulator – which are then embedded as on-line tactics. In operation, the system automatically selects the optimum decoy pattern from this rule-base according to the threat scenario.

Ship fit configurations are matched to the size and role of individual platforms: 12 barrel (two cross six-barrel) for small vessels: 18 barrel (two cross nine-barrel) for corvettes; and 24 barrel (four straight six-barrel) for frigate-size ships. It is thought that the Shield III systems currently on order are 12-barrel systems. Current munitions still consist of P8 (time-fixed chaff) and P6 (sequentially deployed infrared) rounds, but GEC-Marconi Defense Systems says there is potential within the system to deploy active offboard decoys.

GEC-Marconi revealed that initial anti-torpedo capability studies had been conducted to examine the use of Shield as part of an integrated surface ship torpedo defense system. The results of the nine-month feasibility phase were described as very encouraging by program officials. As well as assessing the applicability of rule-based systems to subsurface defense, the studies considered the performance and propulsion requirements of acoustic countermeasure payloads. A package of follow-on work is anticipated.

Program Review

Background. Shield was developed by Plessey as a private venture following the Argentina/UK Falklands conflict. The system has been subject to continuous development parallel to production for various requirements. This is currently aimed at improving the IR decoy capability and the degree of interface available with shipboard EW suites.

The P8 rocket was developed from the broad band chaff rocket which has been in service with the Royal Navy for a number of years. The major differences include a larger chaff payload and a programmable electronic fuse. The P6 rocket was developed in conjunction with Buck of West Germany and has been adopted by the German navy for its Hot Dog decoy system.

Following the acquisition by GEC-Marconi of many parts of the former Plessey group, responsibility for the Shield system was transferred from the former Plessey Avionics to Marconi Underwater Systems Ltd.

Responsibility was later transferred to GEC-Marconi Defense Systems as part of a corporate reorganization. There have been numerous other corporate shuffles since that time.

Shield is designated DLE when applied to UK Royal Navy warships and to UK Royal Navy fleet auxiliaries.

Originally, the introduction of Sea Gnat-compatible launchers saw Shield installations start to decline. However, continued problems were experienced with the Sea Gnat Mk. 218 IR distraction round and this was finally canceled in 1994. As a result, the Outfit DLB Sea Gnat system is incapable of firing an IR decoy.

Shield III received its launch order from Singapore in July 1993. This was for 12 systems to equip 12 new fast attack craft. Since that time there have been no known additional activities surrounding this 15+ year system.

Funding

Shield was developed by GEC-Marconi as a private venture.

Recent Contracts

Contractor	Award ($ millions)	Date/Description
GEC-Marconi (formerly Plessey)	4.4	July 1993 – An order for 12 Shield III systems for deployment on the Fearless class patrol craft. All systems delivered as of 1998.

Timetable

Month	Year	Major Development
	1983	Selected by Brazil for Inhauma frigates
		Fitted to British HMS *Diligence* repair ship
	1985	Ordered by UK for HMS *Sir Galahad* landing ship
	1986	Fitted by Pakistan to Gearing destroyers
	1987	Selected by Canada for Halifax frigates
	1988	Thailand orders Shield for ASW corvettes
		Canadian order for Iroquois refit
Jul	1993	Launch order for Shield III from Singapore
FY	1998	Last known Shield system delivered to Singapore

Worldwide Distribution

The following distribution list contains those countries and vessels known to be using the Shield system:

Brazil:
Unknown number on one Colossus class CV
8 on 4 Inhauma class FSG

Canada:
48 on 12 Halifax class FFG/FFH
16 on 4 Iroquois class DDH/DDG

Pakistan:
6 on 3 Gearing class (FRAM-I) DDG

Singapore:
12 on 6 Victory class FSG
12 on 12 Fearless class PG

UK (a)**:**
Up to 4 on 2 OL class AO
Up to 2 on 1 Oakleaf class AOT
Up to 6 on 3 Appleleaf class AOT
Up to 6 on 3 Rover class AOL

	Up to 8 on 2 Fort Victoria class AOR
	Up to 4 on 2 Fort Grange class AFS
	Up to 8 on 4 Sir Bedivere class LSL
UK (a)**:** (continued)	
	Up to 4 on 1 Sir Galahad class LSL
	Up to 4 on 1 Stena Type class AR

(a) All vessels mentioned have the potential to be fitted with the Shield system, but most do not mount the system during peacetime. Additionally, other systems such as Corvus, Sea Gnat, etc., could be mounted in place of Shield.

Forecast Rationale

Shield had a fairly successful run in the naval electronic countermeasure (ECM) market during the late 1980s and early 1990s. Amid the rapidly evolving technology of the late 1990s, the Shield system is generally considered antiquated.

Designed primarily as a result of lessons learned during the conflict in the Falkland Islands, GEC-Marconi's Shield system offered (then) cutting-edge protection against inbound anti-ship missiles. The program has since been surpassed by a variety of low-cost chaff and flare dispensing defense systems.

The last known contract for Shield was completed in 1998, when Singapore outfitted its Fearless patrol craft with 12 of the systems. This contract likely represents the end of the program's production run. Shield, as well as the aging Barricade system, will likely be replaced in the British Royal Navy by the advanced DLM defense system.

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