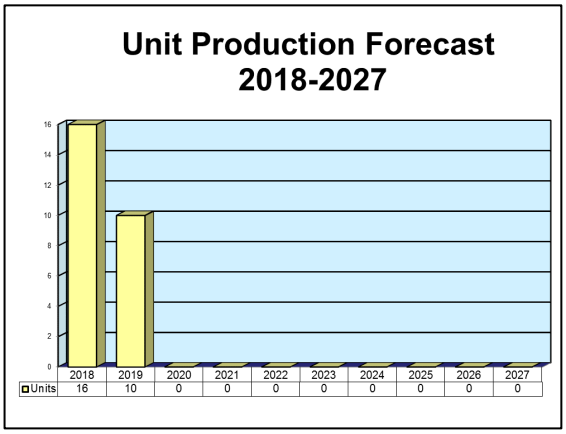
# Outfit DLH/Siren

## Outlook

- Outfit DLH/Siren to possibly remain in limited demand for replacement, replenishment, and upgrades
- Systems provide important last line of defense for a wide variety of vessels
- In 2016, SELEX's parent company, Finmeccanica, became Leonardo




## Orientation

**Description.** The Outfit DLH/Siren system is an active off-board decoy system that uses an autonomous radar jammer against anti-ship missiles. It primarily uses seduction techniques as a means of jamming. Outfit DLH is the launching system, and Siren is the decoy round.

**Licensee.** No known production licenses have been granted.

**Status.** In production and service.

**Application.** Through adjustment of the transmitter, this system has the capability to be used by ships ranging from patrol craft to major combatants.

**Price Range.** The estimated unit price of Outfit DLH is about $125,000. The cost of Siren is estimated at $75,000 (2016 U.S. dollars).

## Contractors

### Prime

| | |
|---|---|
| **Leonardo MW Ltd** | http://www.uk.leonardocompany.com, Sigma House, Christopher Martin Rd, Basildon, Essex, United Kingdom, Tel: + 44 1268 823 400, Fax: + 44 1268 883 140, Prime |

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

## Outfit DLH/Siren

# Technical Data

| **Characteristics** | | |
|---|---|---|
| Deployment time (maximum) | 10 sec | |
| Flight duration | 180 sec | |
| Frequency coverage | I/J band | |
| | **Metric** | **U.S.** |
| **Dimensions** | | |
| Round length | 170 cm | 67 in |
| Round diameter | 130 mm | 5.1 in |
| Round weight | 28 kg | 62 lb |

**Design Features.** Outfit DLH/Siren is an expendable radiating decoy system. (Siren also goes by the military designation Mk 251.) It is intended to provide last-resort platform protection against radar-homing missiles fired at surface vessels. This is accomplished through seduction of the inbound missiles using jamming techniques. The system consists of a decoy controller and the decoy round, which can be launched from any standard 130mm launcher. Additionally, both infrared and chaff rounds can be added if desired. Although chaff and IR can be controlled using the fire control system (FCS), the chief component of the system is the decoy round.

The Siren decoy round consists of a rocket-propelled unit equipped with an integrated EW package. Once deployed, it descends under a parawing in the chosen sector, where it proceeds to seduce the approaching missile by means of a lightweight, low-power expendable jammer. The round, which is fully self-contained, can operate without further support after launching, allowing the launch vessel to maneuver away from the threat zone.

**Operational Characteristics.** Outfit DLH/Siren is a fast-reaction system designed to operate in a significantly shorter time than a conventional chaff round. Unofficial reports suggest that the round can be operational within six to eight seconds after leaving the launcher. At a preset distance from the ship – usually 400 to 500 meters – it deploys the parawing. Then, using range-gate pull-off seduction techniques, it switches on its own receiver, transmitter, and control electronics.

The decoy takes approximately one and a half minutes to descend. During that time, the receiver detects an approaching missile's radar emissions and a transmitter directs a jamming signal toward it. Operation off the ship means that the device can seduce missiles away from the ship, whereas shipborne jammers can only confuse and distract the oncoming missiles.

GEC-Marconi (now BAE Systems) considered the entire range of ship sizes and types during system development. Software flexibility has been built into Siren, permitting the system to adapt to new threats throughout its production career and offering protection to ships ranging in size from patrol craft to major combatants.

# Program Review

**Background.** Marconi Defence Systems Ltd (now BAE Systems) began development of the active electronic countermeasures system, Outfit DLH, in 1982. Early feasibility studies and concept proving were started in 1983. Work then proceeded steadily, with extensive trials initiated under both laboratory and field conditions.

In 1988, a preproduction Outfit DLH/Siren was delivered to the U.K. Royal Navy (UKRN) for evaluation, including the testing of demonstration hardware. Feasibility studies related to this program were completed, and a Project Definition Phase contract was scheduled to follow in 1989, but the program was delayed until the following year because of financial constraints.

The U.S. Navy also expressed an interest in the system. An extensive three-stage test and evaluation was performed in 1989 under the auspices of the Foreign Weapons Evaluation – now called the Foreign Comparative Test (FCT) program. No contract emerged from this testing.

In June 1990, two project definition contracts were awarded for the program, which by then had been officially designated Outfit DLH by the UKRN. One of the contracts went to a Thomson-CSF/Thorn EMI consortium, the other to the GEC-Marconi Defence Systems/Dassault Electronique team. The contracts covered an 18-month period, with a competition between the prototypes leading to final development and production. In July 1994, GEC-Marconi Defence

Systems (now BAE Systems) won a deal from the UKRN worth $125 million for final development and production of the expendable off-board active jammer.

Outfit DLH was intended for deployment on all U.K. carriers (both fixed- and rotary-wing), destroyers, frigates, and other surface vessels. The French were also expected to purchase a number of the Siren rounds for use in their Sagaie and Dagaie launchers. This order would cover the production of both the expendable munitions and the shipborne FCS systems launcher required to operate the equipment, though it would not necessarily cover the specialized launch racks.

### *New Contractors Begin to Enter Picture*

The Outfit DLH/Siren contractors underwent a series of mergers and acquisitions during 1999. On the first day of the year, Thomson-CSF Detexis (now part of Thales) was created by the merger of Dassault Electronique, Thomson-CSF Radars & Contre-Mesures, and Thomson-CSF Missile Electronics. Later that year, British Aerospace merged with Marconi Electronic Systems to form what was then the world's second-largest defense contractor: BAE Systems.

Production of Siren rounds was estimated to have reached a combined annual total of over 900 systems in 2001. These went primarily to the United Kingdom and France. A significant portion may have gone to as-yet-unidentified nations.

Amid reports in early 2002 of development problems, it appeared that the in-service date for the Outfit DLH would be delayed by several months. In May 2003, BAE Systems began delivery of Siren rounds for the initial UKRN Outfit DLH order.

In October 2003, a joint venture that included BAE Systems was contracted to perform major upgrade work on the UKRN's Type 23 frigate fleet of 16 ships. The work would entail the installation of the Outfit DLH system.

BAE Systems, in April 2005, displayed a model of the Siren system at the International Defence Exhibition and Conference in Abu Dhabi, calling it a "World Class System" and touting its many benefits.

In 2007, BAE Systems Avionics Ltd and Galileo Avionica SpA merged into a new avionics company, SELEX Sensors & Airborne Systems. Finmeccanica controlled 75 percent, and BAE Systems, 25 percent. Soon after that, Finmeccanica acquired BAE Systems' stake, giving it a 100 percent interest in SELEX S&AS. Thus, Outfit DLH/Siren became the province of SELEX.

In October 2008, SELEX Galileo showcased a range of its most successful capabilities, including Siren, at Euronaval 2008, the 21st international naval defense and maritime exhibition and conference in Paris.

In 2016, SELEX's parent company, Finmeccanica, became Leonardo.

# Funding

Outfit DLH is a UKRN program funded under contract by the U.K. Ministry of Defence.

# Contracts/Orders & Options

| Contractor | Award ($ millions) | Date/Description |
|---|---|---|
| BAE Systems | 21.2 | Oct 2003 – Contract to install Outfit DLH systems on 16 Type 23 frigates of the U.K. Royal Navy. |

# Timetable

| Month | Year | Major Development |
|---|---|---|
| | 1988 | UKRN DLH feasibility study completed |
| | 1989 | Project definition contract originally due |
| Jan | 1989 | Collaborative agreement between MDS and Dassault Electronique signed |
| | 1989 | U.S. Navy completes three-stage test and evaluation program |
| Jun | 1990 | Project definition contracts awarded |
| Jul | 1994 | Outfit DLH contract awarded to GEC-Marconi |
| | 1995 | HMS *Ocean* first ship known to be fitted with Outfit DLH |
| Jan | 1999 | Thomson-CSF Detexis created by merger of Dassault Electronique, Thomson-CSF Radars & Contre-Mesures, and Thomson-CSF Missile Electronics |

### Outfit DLH/Siren

| Month | Year | Major Development |
|---|---|---|
| Mid- | 1999 | British Aerospace merges with Marconi Electronic Systems, forming BAE Systems |
| Oct | 2003 | Contract awarded for Outfit DLH aboard UKRN Type 23 frigates |
| Late | 2004 | Siren believed to have formally entered service with UKRN |
| Apr | 2005 | Siren featured at International Defence Exhibition and Conference |
| | 2007 | Outfit DLH/Siren falls under control of SELEX Galileo |
| | 2016 | SELEX parent company, Finmeccanica, becomes Leonardo |
| | 2018 | Limited production possible |

## Worldwide Distribution/Inventories

The systems are known to be in operation with the navies of the **U.K.** and **France**.

## Forecast Rationale

The forecast period may see limited production of the Outfit DLH/Siren decoy launching system to meet the demand for reliable missile protection for naval platforms.

In the past few years, the U.K. Royal Navy replaced Siren rounds with newer systems like the Chemring TALOS.

While there may still be activity for existing Outfit DLH/Siren customers seeking replacement units, the lack of any new contracts for some time would suggest that the systems are being overtaken by newer technology.

## Ten-Year Outlook

| ESTIMATED CALENDAR YEAR UNIT PRODUCTION | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Designation or Program | | High Confidence | | | | Good Confidence | | | Speculative | | | |
| | Thru 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | Total |
| **Leonardo MW Ltd** | | | | | | | | | | | | |
| **Outfit DLH** Note: Worldwide | | | | | | | | | | | | |
| | 212 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| **Siren <> Navy** Note: Worldwide | | | | | | | | | | | | |
| | 1,272 | 12 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| **Subtotal** | 1,484 | 16 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| | | | | | | | | | | | | |
| **Total** | 1,484 | 16 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |