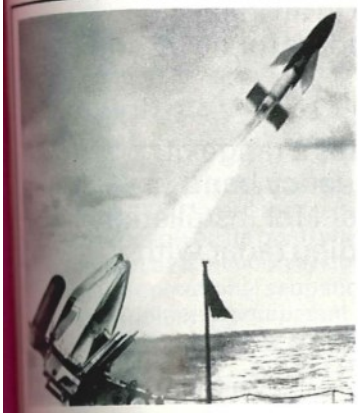
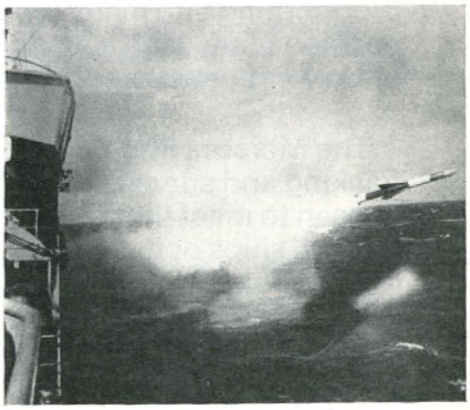
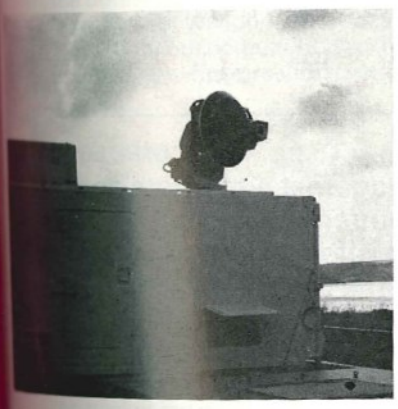
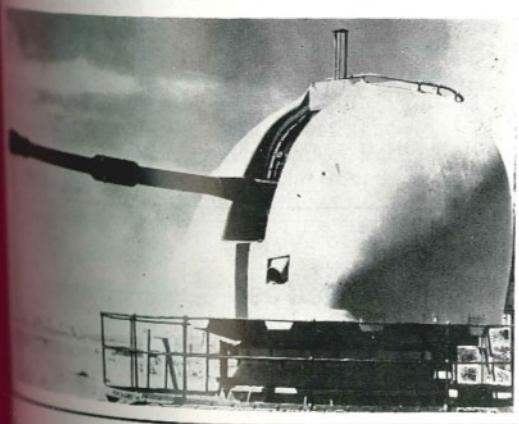
Marconi Radar Data Sheet LO

The 800 Series X Band Weapon Radar Systems









Type 801 to 839 : Naval weapon radar systems
Type 840 to 849 : Coastal defence radar systems
Type 850 et seq : Land-based weapon radar systems

Marconi 800 Series Weapon Radar Systems

A weapon system is totally dependent upon its surveillance and tracking radars, to detect and track the target, for successful defence against modern methods of attack. The experience of Marconi Radar Systems Limited in designing and supplying equipment for such missile systems as Seaslug, Sea Dart, Seawolf, Bloodhound and many types of guns has placed the Company in an ideal position to develop a new range of surveillance and tracking radars for naval and other weapons systems.

The Marconi 800 Series of weapon radar systems incorporates a range of tracking and surveillance radars operating in X Band. This frequency band is chosen to meet the need for lightweight and compact equipment for installation in small ships or military vehicles whilst at the same time providing radar with high performance in fire control systems including :

1) Guns with calibre from 20mm to 4·5in.

2) Short range point defence missile systems such as Seacat and its land variant Tigercat

3) Sea-skimming missiles such as Exocet or Penguin

X Band gives good detection and tracking performance against air targets and is particularly effective against surface targets, a major requirement for fast patrol boats and coastal defence. A magnetron transmitter offers frequency tuning over 10% of its band to avoid jammers and at the same time maintains the stability necessary when MTI signal processing is incorporated. This is an essential feature to meet the need for detecting sea-skimmers and low-level hostiles which take advantage of the natural cover provided by the sea or terrain.

When automatic control of command to line-of-sight missiles such as Seacat or Tigercat is required, 800 Series tracking radars are fitted with the Marconi television autogather system.

The Marconi 800 Series of weapons radar systems is designated as :

Type 801 to 839—Naval weapon radar systems.

Type 840 to 849—Coastal defence radar systems.

Type 850 et seq.—Land-based weapon radar systems.

Prefix S—Surveillance.
Prefix ST—Surveillance and tracking.

The 800 Series ranges from a tracking radar (Type ST801) to a dark fire missile radar system incorporating television assisted tracking and surveillance (Type ST850) ; weapon radar systems in the 800 family are detailed on the following pages.

Naval Systems

Type ST801

Type ST801 is a naval monopulse search/tracking radar with MTI, for use as the auto-tracking element in gunfire direction systems and in missile launching and guidance systems with automatic operation controlled by a central computer complex.

For automatic control of command to line-of-sight missiles, a television channel is fitted. Full details of the Type ST801 are contained in Marconi Radar Data Sheet L1.

Type ST802

Type ST802 is the autonomous version of the Type ST801 with the facilities necessary to allow it to function on its own, without the interface and control by a weapon system computer. Selection of the operational sequences in the radar is manual and additional equipment is incorporated for providing stabilized scan patterns.

Type ST802 with a television camera aligned to the boresight provides independent control and 'dark fire' for weapons such as Seacat. A variant of Type ST802 in conjunction with a predictor, is used for gun-fire direction systems.

Type S810

Type S810 is a stabilized naval surveillance radar with MTI. The stabilized aerial is contained in a radome and measures 1·25m wide by 420mm high. Its vertical cosec^2 beam shape ensures good coverage against air targets whilst the narrow horizontal beamwidth gives accurate target indication data for pointing weapons and putting-on tracker radars. The Type S810 can also operate as the ship's navigation radar, where space and weight restrictions on the masthead limit the number of aerials, and for inshore navigation the radar can be fitted with an optional short pulse and low power transceiver to provide the necessary discrimination. Further information is given in Marconi Radar Sheet L3.

Type S811

Type S811 is similar to Type S810, but without the MTI signal processing.

Type S815

Type S815 is similar to Type S810 except that it has a stabilized 3·5m (8ft 2½in) wide by 0·9m (3ft) high cosec^2 antenna mounted in a radome to increase the surveillance cover against air targets.

Type S816

Type S816 is similar to Type S815, but without the MTI signal processing.

Land Systems

Type ST850

Type ST850 is a fire control unit incorporating the radar and weapon control system which forms part of the radar enhanced Tigercat missile system. It comprises a pulse-doppler tracker with MTI facilities, the Marconi television autogather system and weapon control consoles, all of which are fitted in an air-conditioned cabin.

The Tigercat system, with the Type ST850, can therefore be used by day or night and in poor visibility conditions. The system is simple to use, flexible in operation and easy to maintain. Further information is contained in Marconi Radar Data Sheet M3.

Type ST851

Type ST851 is a fire control unit similar to the Type ST850, but is specifically designed to control up to four separate guns automatically, against aircraft or surface targets. It incorporates a digital prediction system to provide aim-off data and to automatically slew and control the guns. Further information is contained in Marconi Radar Data Sheet M3.

Type S860

Type S860 is a mobile surveillance radar, with MTI, using a 3·5m (8ft 2½in) wide by 0·9m (3ft) high cosec^2 aerial. The radar provides target indication data for point defence systems employing Tigercat missiles or small calibre anti-aircraft guns. Two display consoles are included, one for target detection and tracking and the other for threat assessment, target allocation and weapon assignment.

Target indication data on up to four targets can be allocated to four separate weapon systems.

Like the Type ST850, the equipment is installed in a mobile air-conditioned cabin.

Type S865

Type S865 has similar characteristics to the Type S860 without the target indication displays. Instead, it provides outputs to drive the PPI display in the Type ST850 mobile cabin.

Coastal Systems

Type S842

Type S842 is a surface-surveillance radar which provides continuously updated, accurate range and bearing data for weapon fire control systems. The system provides a detection range against a typical fast patrol boat in excess of 40km. A parabolic antenna rotated at 20 or 60rev/min, gives an azimuth beamwidth of 1·3°.

A target designation display console is provided with 4 auto-track channels and electronic marking.

The system is designed to control the firing of surface-to-surface missiles, such as Exocet or Penguin, from shore batteries.

Type S844

Type S844 is a similar radar to the Type S842 but has a low-level air defence capability in addition to providing surface cover. Target data is extracted for passing to rapid-firing anti-aircraft guns.

In addition to linear and logarithmic processing, the Type S844 has a digital MTI processor which facilitates the detection of low flying aircraft.

Two display consoles are fitted, one to deal with surface targets and one for air targets.

The system is designed to control the firing from shore batteries of surface-to-surface missiles such as Exocet or Penguin, and additionally, to feed air target data to a fire control unit such as the Type ST851 or to open-sighted guns.

Type S845

Type S845 is similar to the Type S842, in that it is designed for long-range detection of small surface targets. The system is not intended for weapon control however, and a 400mm (16in) Radiolocator display is provided, rather than the more sophisticated display console fitted in the Type S842.

Mobile and Static Equipment

In all cases the equipment may be supplied for static installations or in a mobile cabin. Provision is made for standby equipments with interswitching.

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