Storm Detection Radar
Type SNW 51

THE STORM DETECTION RADAR Type SNW 51 operates in the 'X' band (9360–9460 Mc/s) and is specially designed for use in the meteorological field. It is capable of presenting an accurate plan picture showing the location of storms and rain-producing clouds over ranges of up to 200 nautical miles. It can therefore give a service meeting the navigational requirements of most types of modern aircraft and is particularly valuable in areas where the stationing of a large number of recording posts is impractical or uneconomic. Among its many useful functions are:

(*a*) The plotting of electrical disturbances.
(*b*) The tracking of hurricanes and typhoons.
(*c*) The study of rainfall densities in extensive rainbelts.
(*d*) Studies in cloud physics.

FEATURES

High-power working. 40 kW nominal peak power output.

High-gain tiltable aerial, with power-operated tilting and tell-back facility, remotely controlled from the main display.

Robust scanner, capable of operation in 80-knot gales and 120-knot gusts.

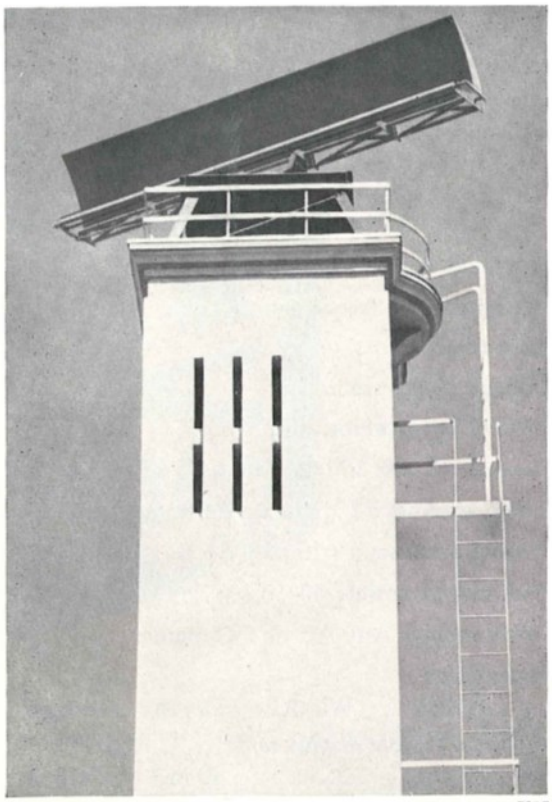
Off-centring facility on the displays enables any sector of the sweep to be expanded to cover the whole area of the tube.

Remote displays can be accommodated in addition to the main display.

Static or mobile versions are available.

EQUIPMENT

The whole equipment is of sturdy design and capable of heavy duty. The four main units are the display unit, the transmitter/receiver unit, the scanner unit and the power supply outfit. The principal electronic equipment is contained in the transmitter/receiver unit. Remote displays are supplied as additional items when required.



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Displays. The display unit employed is the moving coil plan position indicator Type SD 701 (see page 535).

Transmitter/receiver unit. This consists of a compact cabinet with a small base area which permits installation in a restricted space. The two

main sections are withdrawable on runners and all components are easily accessible. The use of metal rectifiers throughout contributes to the extreme reliability of the equipment. The front of the cabinet is covered by a quickly detachable louvred panel.

Scanner. The aerial is a section of parabolic cylinder fed by a length of waveguide having shunt-inclined slots in one of its narrow faces and mounted in a flared horn. It is erected on a pedestal consisting of a pivot mount powered by a 3 h.p. motor. Scanning is at 6 rotations per minute.

Power supply unit. Power for the electronic equipment is derived from a motor alternator with an associated automatic control panel. Motor alternators can be supplied to suit any particular input voltage and frequency.

Installation. The normal static installation is in the form of a concrete blockhouse containing the transmitting/receiving equipment and the power supply unit. The scanner is mounted on the roof. The display equipment is normally housed in a separate building in the vicinity and may be situated up to 1000 yards from the scanner. A composite building capable of accommodating all the equipment, together with associated facilities, can be constructed if desired. In cases where an elevated aerial is required, the scanner unit may be mounted on top of a steel tower adjacent to the transmitter building. Mobile versions of the equipment can be provided.

DATA SUMMARY

Frequency band: 9360–9460 Mc/s.

Pulse repetition frequency: 350 pps.

Pulse length: 2 μs.

Azimuth beam width: $\frac{1}{2}°$
Vertical beam width: 4° } at half-power points.

Ranges: 40, 100, 150, 200 nautical miles.

Range accuracy: 2% maximum range in use.

Bearing accuracy: Within $\frac{1}{2}°$.

Peak output power: 40–50 kW.

Power supply: Any AC or DC mains.

Dimensions:

	Height	Width	Depth	Weight
Main and remote display units	42½ in. (108 cm)	25 in. (63·5 cm)	40 in.* (101·6 cm)	410 lb (186 kg)
Transmitter unit	52 in. (132 cm)	19¾ in. (50 cm)	28 in. (71 cm)	500 lb (227 kg)
Motor alternator	12 in. (30·5 cm)	11 in. (27·9 cm)	30 in. (76·2 cm)	310 lb (136 kg)
Auto control panel	31 in. (78·7 cm)	21½ in. (54·6 cm)	12 in. (30·5 cm)	70 lb (32 kg)

Scanner unit

Radius of rotation: 6 ft 9 in. (206 cm).
Height of aerial above pedestal seating: 3 ft approx. (92 cm).
Total height of scanner unit: 7 ft 6 in. (229 cm).
Weight: 1400 lb (636 kg).

* *29 in. (73·7 cm) without desk.*

Marconi

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