



25 cm-band Airways Surveillance Radar (2 $\frac{1}{2}$ MW) Type S 255

THE International Civil Aviation Organization has emphasized the need for surveillance radar as an aid to air traffic control not only at airports but also for supervision of *en-route* traffic on busy air lanes carrying high-speed traffic.

Type S 255 is designed to meet this wider need. The main advantage of the 25 cm-band wavelength is that it is less affected by cloud and rain clutter than the 10-cm wavelength. Compact, modern design and a very competent control system render the Type S 255 well suited for siting at optimum positions and operating unattended. The equipment is also very suitable for anti-aircraft and coastal defence warning systems.

Features

Very high-power output.
Cover on small aircraft out to 200 miles.

Highly efficient triple pulse-cancellation MTI system.

Unattended operation with full remote control facilities.

Advanced automatic monitoring system.

Full built-in test facilities.

Simultaneous linear and logarithmic outputs.

Excellent reliability under the most arduous conditions.

EQUIPMENT

The equipment is notably compact and robust, and can function adequately in a wide range of climatic conditions.

Aerial system. The aerial consists of a light-weight linear-fed reflector with a modified cosecant-squared vertical profile. The radiator is a flared slotted waveguide which can be adapted to provide circular polarization.

The Transmitter/receiver employed is the well-known Type SR 1030 described on page 284.

Moving-target indication system. The MTI system used is of the triple pulse cancellation type, which results in an improvement in sub-clutter visibility of 6 dB. In addition the system is crystal-controlled and utilizes the FMQ technique for avoiding the long-term drift usually associated with coho-stalo MTI systems.

Data Summary

Frequency range: 1290–1365 Mc/s.

Peak power output: 2.5 MW.

Pulse recurrence frequency: 375 p.p.s.

Pulse length: 4 μ s.

Noise factor (overall): 8.5 dB max.

AFC: Pull-in range ± 5 Mc/s.

Hold-in range ± 10 Mc/s.

Deviation per Mc/s drift 5 kc/s.

Intermediate frequency: 13.5 Mc/s.

Receiver bandwidth: 0.4 Mc/s at -3 dB points.

Receiver noise factor: Better than 8 dB.

Max. ambient temperature range:
 -30°C to $+55^{\circ}\text{C}$.

Outputs: Simultaneous linear and logarithmic.

Aerial system: Horizontal beamwidth 1.25° measured at -3 dB points (one way).
Side-lobes 22–25 dB down on main lobe.

Power supplies: 380–415 V ($\pm 6\%$) 50 or 60 c/s ($\pm 5\%$), 3-phase AC.

Power consumption: 20 kVA max.

Dimensions:

Height	Width	Depth	Weight
7 ft 3 in.	6 ft 1 in.	3 ft 4 in.	2 tons 8 cwt
(221 cm)	(186 cm)	(102 cm)	(3000 kg)

Transmitter/receiver

7 ft 3 in. 6 ft 1 in. 3 ft 4 in. 2 tons
8 cwt

(221 cm) (186 cm) (102 cm) (3000 kg)

Aerial system

15 ft 45 ft
(460 cm) (1370 cm)

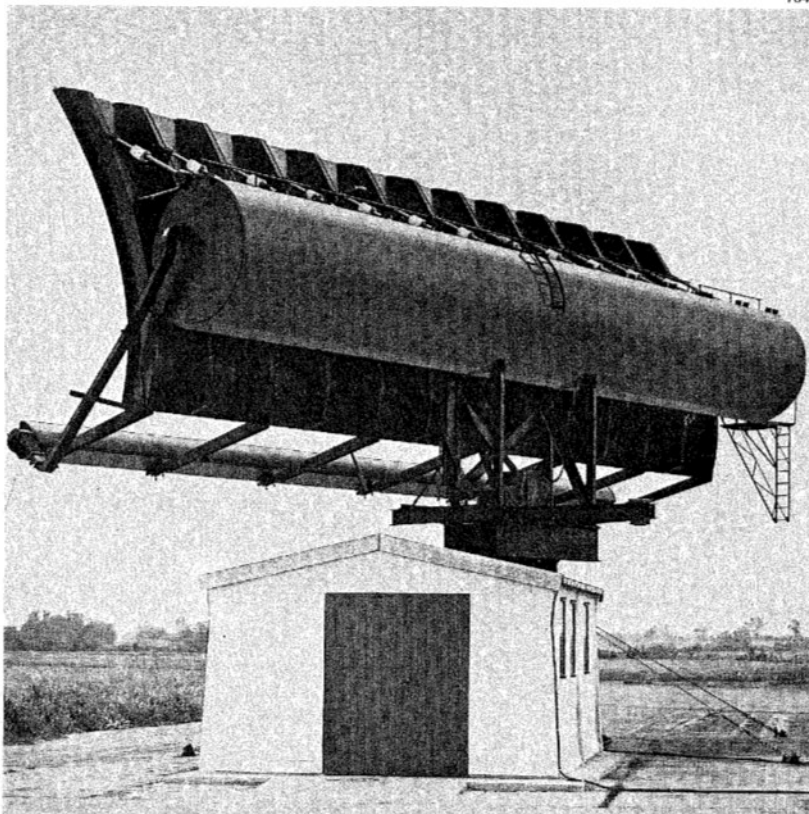
MTI cabinets, each of 3

7 ft 2 ft 2 ft
(213 cm) (61 cm) (61 cm)

A 10-cm (S)-band version of this radar, Type S 306, is described on page 279 and a very compact combination of both 10 and 25-cm systems, Type S 247, on page 280.

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