3 MW 10 cm-band Airways Surveillance Radar Type S 306

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 306 is designed to meet this wide need. The main features of the 10 cm-band wavelength are good discrimination between close targets and relative freedom from siting difficulties.

Compact, modern design and very competent control system combine to render the Type S 306 well suited for siting at optimum positions and operating unattended.

Features

Very high-power output.

Good definition and discrimination.

Highly stable and 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 video 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 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.

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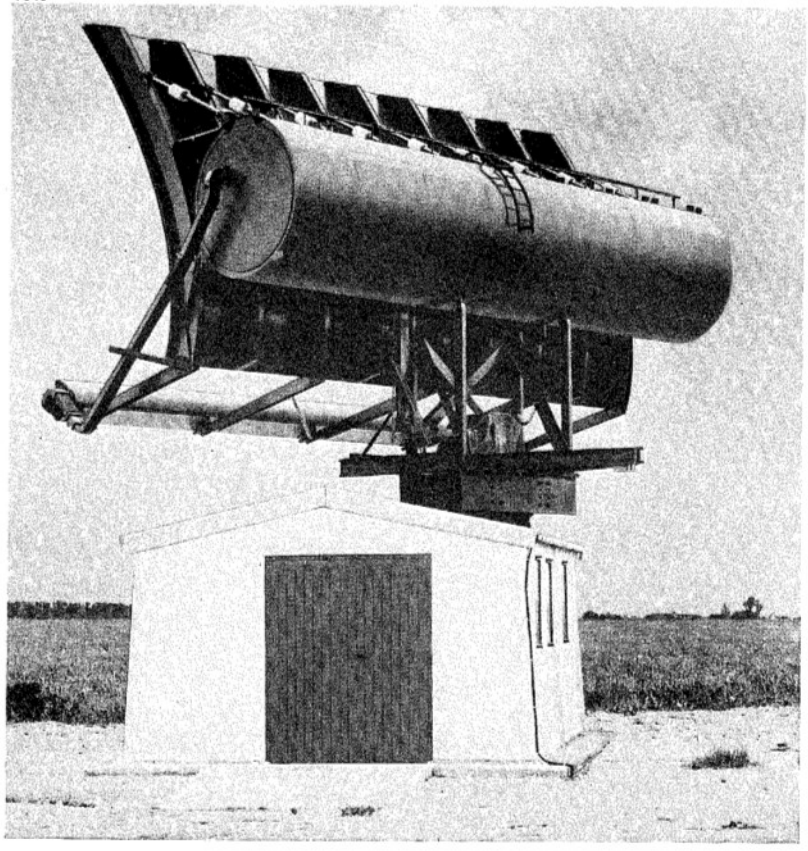

Transmitter/receiver. The transmitter/receiver employed is the well-known Type SR 1000, described on page 285.

Moving-target indication system. The MTI system employs the technique of triple pulse cancellation which gives a substantial improvement in sub-clutter visibility. 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 ranges: 2700–2900, 2900–3100 or 3100–3300 Mc/s.
Peak power output: 3 MW max.
Pulse recurrence frequency: 375 p.p.s.
Pulse length: 4 μs.
Noise factor (overall): 8·5 dB max.
AFC: Pull-in range $\pm$5 Mc/s.
Hold-in range $\pm$10 Mc/s.
Deviation per Mc/s drift 5 kc/s.
Intermediate frequency: 13·5 Mc/s.
Receiver bandwidth: 0·4 Mc/s at −3 dB points.
Output signal-to-noise ratio: 10:1.
Max. ambient temperature range: −30° to +55°C.
Outputs: Simultaneous linear and logarithmic.
Aerial system: Horizontal beamwidth: 0·75° measured −3 dB points (one way).
Side-lobes: 22–25 dB down on main lobe.
Power supplies: 380–415 V, 50 or 60 c/s ($\pm$5%), 3-phase AC.
Power consumption: 18 kVA max.
Dimensions:

	Height	Width	Depth	Weight
Transmitter/receiver	7 ft 3 in. (221 cm)	6 ft 1 in. (186 cm)	3 ft 4 in. (102 cm)	2 tons 8 cwt (3000 kg)
Aerial system	15 ft (460 cm)	30 ft (910 cm)		
MTI cabinets, each of 3	7 ft (213 cm)	2 ft (61 cm)	2 ft (61 cm)	

A 25-cm (L)-band version is described on page 277 and a very compact combination of both 10 and 25-cm systems. Type S 247, on page 280.

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