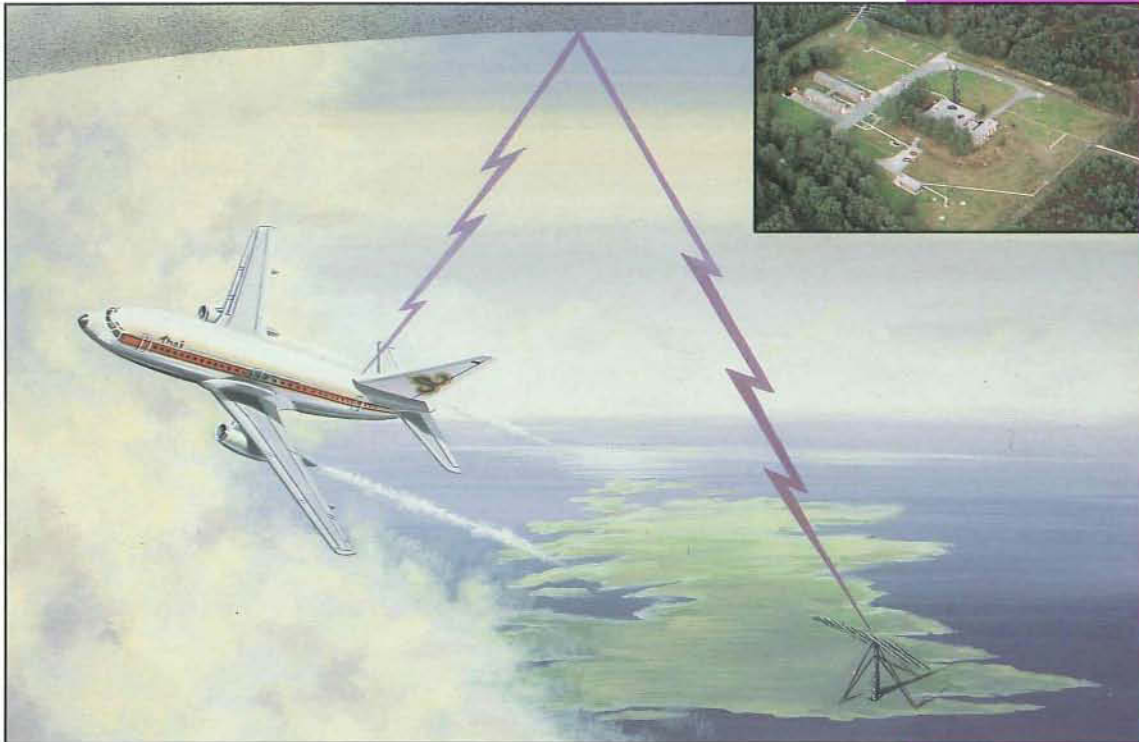


# HF RADIO SYSTEMS



The DRA are at the leading edge of HF communications. Advanced computer technology, Automatic Channel Selection and Digital Signal Processing have revolutionised High Frequency communications. Circuit availabilities of better than 95% can now be achieved by using robust modulation techniques combined with coding.

The DRA are world leaders in the advanced HF systems field, particularly in the area of long distance communications to aircraft.

- ▶ **DIGITAL SIGNAL PROCESSING**
- ▶ **AUTOMATIC CHANNEL SELECTION**
- ▶ **MODEM DESIGN AND CODING**
- ▶ **IONOSPHERIC STUDIES AND MEASUREMENTS**
- ▶ **AIRCRAFT HF ANTENNA MODELLING**
- ▶ **HF ANTENNA POLAR DIAGRAM AND EFFICIENCY MEASUREMENTS**

Automatic Channel Selection and Link Establishment removes the traditional HF problem of selecting the correct frequency for the required circuit and robust modems give excellent resistance to interference and propagation anomalies, such as fading and multipath. Frequency prediction programs can be used to select the optimum working frequency, but, without real time knowledge of local interference, they are at best only a guide. The DRA has a team of scientists researching and developing automated systems.



10 kW HF Transmitters



Main Communications Console

## TEST FACILITIES

The DRA operates a modern, well equipped HF radio station, comprising a low noise receive and research site at Cobbett Hill, near Guildford, and a transmitting station located at DRA Farnborough. The receive site has a wide variety of antennas that can be accessed through a high performance antenna distribution system. These antennas are available for trials and measurement use. Dedicated user systems can be configured for remote operation via land lines.

The transmit site is equipped with 1kW and 10kW transmitters, together with antennas to support long and short range HF communications.

### For Further Information:

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## IONOSPHERIC RESEARCH

The successful design of modern HF data systems requires an in-depth knowledge of the ionosphere. Until recently there was no measured data giving information of the extent of fading, multipath and Doppler spread, all of which have a significant impact of the performance of HF data systems. The DRA is currently leading a NATO driven programme (DAMSON) to characterise the high latitude ionosphere. The knowledge gained from this work will be invaluable to the design of future civil aeronautical HF systems, particularly for North Atlantic and transpolar routes.

## CURRENT PROGRAMMES

DRA Cobbett Hill has the only calibrated facility in the UK for the measurement of the efficiency and polar diagrams of aircraft HF antennas. The DRA carried out extensive work during the development of the Concord HF system and is currently playing a leading role in the HF system being used for the EH101 helicopter programme.

The radio station, with its combination of skilled personnel and modern equipment, provides an ideal environment for siting dedicated HF systems for company, or ATC use, and has been successfully supporting the British Airways "Speedbird London" operation for the past ten years.

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