

RADIO TODAY

News about amateur radio compiled by Richard Lamont G4DYA

Western Woodpeckers?

Britain and the USA are both developing HF over-the-horizon radar systems for military applications, operating in the 5-28MHz range.

The American system, called *Conus OTH-B*, has already been operating in experimental form for three years. (The 'B' stands for Backscatter.) It consists of a transmitter site at the Moscow Air Force Station, Maine, North-East USA, and a separate receiving station 110 miles away at the Columbus Falls Air Force Station, also in Maine.

The system is intended to provide long-range detection of 'air-breathing' threats, ie. bombers and cruise missiles aimed at North America. It would provide the US with an early warning period of hours, rather than the minutes offered by conventional UHF radars.

In spite of the enormous transmitter powers involved (100 Megawatts ERP for the prototype alone) the USAF is claiming that interference is unlikely, because the system would only operate on empty channels in the fixed and broadcasting bands, and that certain frequencies including amateur bands would be considered as 'guarded frequencies' and not used at all. A spokesman for the USAF's Electronic Systems Division (which is developing *Conus*) admits "The Air Force is not denying the possibilities of interference. The signal is awfully small. One of the ham publications has compared this to the Woodpecker. There is no comparison. This system is very sophisticated, whereas the Woodpecker seems to use a brute force approach".

The present system was built by General Electric, which won the contract in 1975. Testing began in June 1980. This first installation is now being upgraded, and it will be the first operational radar, covering the Eastern

approaches to the USA. The USAF plans to build a second site in the West over the next four years or so. Longer term plans exist for a third radar in the South.

British OTH radar

The American *Conus* system uses skywave propagation to achieve its range. The British defence establishment is working on a *surface wave OTH* radar system, operating in the same 5-28MHz frequency range as *Conus*. According to the Ministry of Defence, the British system is not intended to detect incoming nuclear bombers and missiles. The MoD, not surprisingly, refuse to say what the system is for. They did, however, divulge that the system has a pulse repetition frequency of a fraction of a Hertz, and is supposed to have a 'very long range'.

According to an American OTH radar consultant, the only place where you could expect very long range propagation of an HF surface wave is at sea, where the salt water provides a low resistance ground plane. A ship-based HF surface wave radar could be used to

give warning of both enemy ships and sea-skimming missiles such as the *Exocet*. (It would hardly come as a surprise to learn that the MoD wants to improve ships' ability to detect such threats.)

In America, General Electric has conducted studies on surface wave HF radar, and there have been reports that the US Navy is (or has been) doing similar research.

The Ministry of Defence has not yet commented on the likelihood of interference from the British system to existing users of the HF spectrum, including amateurs.

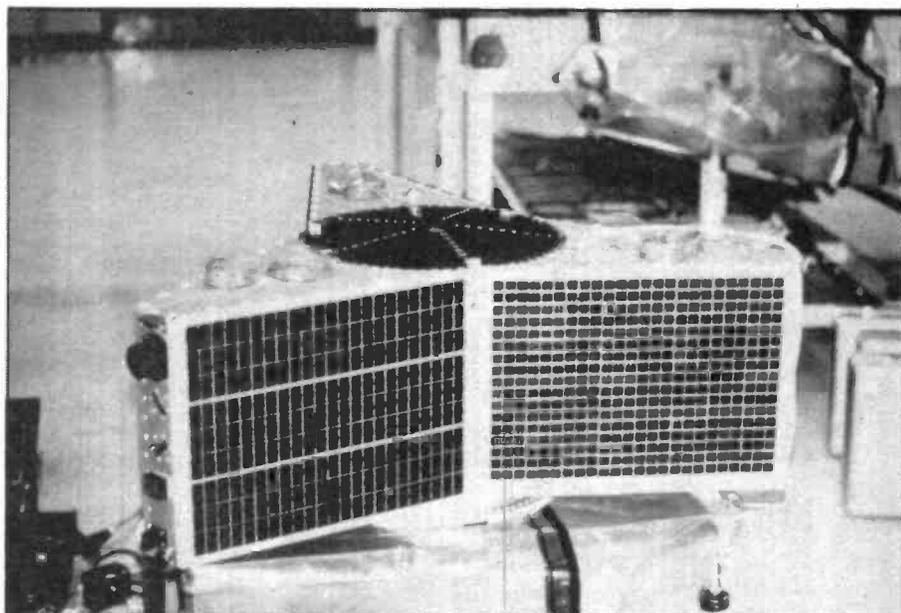
AMSAT LAUNCH

The Phase IIIB amateur satellite is (at the time of writing) due to be launched on June 4th or 5th. It will be put into a highly elliptical orbit by the European Space Agency's *Ariane 7*, from its launch site on Devil's Island, French Guiana.

Different parts of the satellite are being built in the USA, West Germany and the UK, at a cost of £270,000. It will be assembled in the AMSAT Space Laboratories in Washington.

If the satellite works satisfactorily it will be renamed *Oscar 10*. It will have an orbital period of 24 hours with its apogee (maximum height) above Greenland. As orbital speed varies in proportion to the inverse cube of height, the satellite will stay near its apogee point for a considerable time — long enough to keep it in range of the UK for about 12 hours a day. With an aerial pointing North North East from the UK, it should be possible to use the satellite throughout the evening without moving the beam.

This 24-hour elliptical orbit is not a new technique — it is, for example, used successfully by the Soviet Union for their *Molniya* communications satellites,



The AMSAT Phase-IIIB satellite will look like this (Phase-IIIA) when assembled