

## More Marconi tropo channels for North Sea



*Cormorant oil production platform showing Marconi tropo antennas*

Two of the most northerly oil production platforms in the British North Sea area are to have their 72 channel Marconi tropospheric scatter communications systems uprated by Marconi Communication Systems.

The links, between the British Telecom land station at Scousburgh in the Shetlands and BNOC's Thistle platform, established in 1977, and between Scousburgh and Shell's Cormorant platform, established in 1979, are now to be uprated to 132 channels.

Thistle and Cormorant are linked by a line-of-sight microwave system and this is interfaced with the tropospheric scatter systems linking the

two platforms with Scousburgh in a triangulated system. In the normal course of events, one of the tropospheric scatter links carries the communications circuits for both platforms, whilst the second tropospheric link is held in reserve. Not only does this represent considerable savings in operational costs but it also provides the inherent reliability demanded by British Telecom and the oil industry for the trunk communications with the mainland.

Further orders for tropospheric scatter equipment, placed by British Telecom and Phillips Petroleum, are to link the Phillips Petroleum Maureen platform in the North Sea with the

British Telecom land station at Mormond Hill, Aberdeenshire.

These orders maintain Marconi's unbroken record as the only supplier of tropospheric scatter equipment in the North Sea oil production area where 17 such Marconi links already operate. The Maureen orders will provide 72 channel capacity, each way, linking the platform with British Telecom's national and international telecommunications network. The link is scheduled to be in operation early in the second half of 1981.

## More firsts for Marconi Radiophones

The Mobile Radio Division of Marconi Communication Systems recently announced the introduction of two new additions to its range of portable radiophones.

Later this year British Telecom, part of the British Post Office Corporation, is to introduce the London Automatic Radiophone Service. Initially this will comprise some 2000 subscribers drawn from those presently subscribing to the current operator-controlled system. Should insufficient numbers wish to transfer to the automatic system, the balance will be taken from the present waiting list for the operator-controlled system. The vacancies thus created will be filled from the waiting list, and new subscribers will require a new, narrow-band, 12.5kHz equipment which meets British Telecom technical requirements designed to provide enough frequency channels for the two systems to operate side by side in London.

Marconi Mobile Radio was the first to announce the introduction of equipments designed to meet these new requirements. The new Marconi SV1383A 55 channel radiophone has received approval from British Telecom and will be used on the 12.5kHz narrow-band operator-controlled radiophone service. It matches in all respects the earlier, and highly acclaimed, Marconi SV1380A 55 channel equipment with which many current subscribers to the operator-controlled radiophone service are equipped.

The Marconi M4710 Automatic Radiophone has been engineered specifically to meet the requirements of the new London Automatic Radiophone Service. The control box of the M4710 was first shown at Birmingham, in April 1980 and the equipment incorporates a consid-

erable number of the latest advances in radiophone technology, including microprocessor control, 'on hook' or 'hands free' dialling, and an 80 address memory.

Marconi Mobile Radio is able to offer its range

of radiophones for both the Automatic and the 55 channel operator-controlled systems, on leasing or outright purchase terms backed up by service in each of its eight UK Radiophone Area service centres.



*The Marconi M4710 radiophone*

## Major Post Office order for Marconi modems

British Telecom has placed another major digital equipment order with Marconi Communication Systems. Worth about nine million pounds (twenty million dollars), the order is for a new generation data modulator/demodulator (modem) for use in the Datel 600 service. It is one of the largest orders for modems ever placed by British Telecom.

Modems were first introduced in 1965 for the British Telecom Datel 600 service by which binary data is transmitted over the analogue telephone network at speeds up to 600 or 1200 bit/s. The Datel Modem 1 designed for this service was later superseded by Modem 20 which required less rack space.

The new Datel Modem 22, designed by Marconi specifically for British Telecom, is a 600/1200 bit/s full facility modem on one card using the latest advances in component technology with attendant space and power savings. Furthermore, the modularity of the design provides a considerable degree of flexibility for a variety of user options.

The Marconi Datel Modems also include the Modem 21, a 300 bit/s full facility modem in use with the British Telecom Datel 200 service. All modems developed, designed and produced by

Marconi Communication Systems for British Telecom, comply with the relevant CCITT

recommendations for data transmission equipment on domestic and international circuits.



*Modem 21 manufactured by Marconi*

## A new satellite earth station for Nepal

Nepal's first satellite earth station is to be provided, as a 'turnkey' project, by Marconi Communication Systems. Worth about £2.3 million, the order was placed with Marconi by the Nepal Telecommunications Corporation through the Crown Agents. Apart from the complete earth station, Marconi is to provide generators for the power supply, a microwave link and a gateway exchange to link with the Nepalese trunk communications network.

At present Nepal, nestling high in the Himalayan Mountains, relies entirely upon high frequency radio communications through neighbouring India for its contact with the outside world. H.F radio poses a number of problems in terms of interference and reliability in those conditions and the introduction of an external satellite link will immeasurably improve international telecommunications.

This Intelsat Standard B earth station to be built by Marconi incorporates all the technological and practical expertise gained by Marconi over more than 15 years as a major international supplier of Intelsat earth stations. The equipment to be installed includes the new generation ground communication equipment (as described in this issue) and power amplifiers.

Marconi is also to provide the link between the earth station site at Balambu and Kathmandu, some seven kilometres away. This is to be based on the Marconi H7200 microwave communications system and, because a range of high hills prevents line-of-sight between the two places, a passive repeater station will have to be installed. At Kathmandu the link is to be coupled to the Nepalese trunk telecommunications network by a 'gateway' exchange also to be provided by Marconi. The system is also to include a supervisory circuit designed to monitor all aspects of the link at all times.

Marconi Standard A earth stations are to be found in many parts of the world, from Hong Kong to the West Indies. The British Telecom earth station sites at Goonhilly and Madley,

which handle an estimated 20% of the world's satellite telecommunications traffic, both largely comprise Marconi installations.



*The entrance to the ancestral palace of the King of Nepal*



## Major earth station contract for Marconi

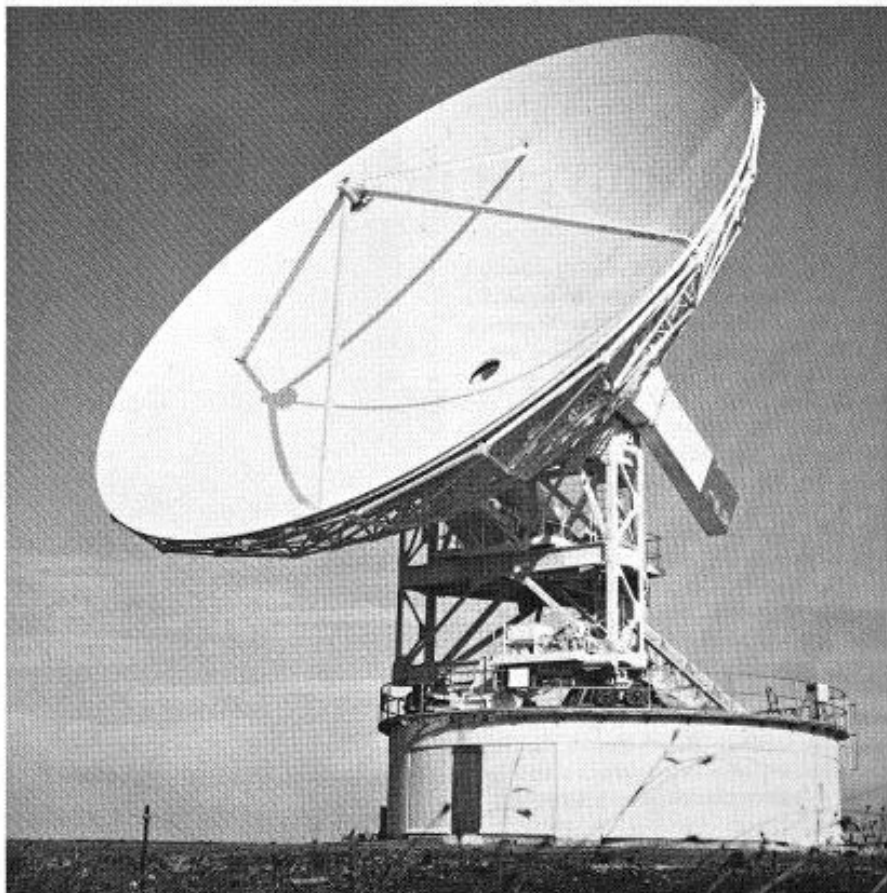
Marconi Communication Systems has been awarded a contract worth nearly five million pounds to convert the British Telecom satellite earth terminal, Goonhilly 4, for use as a Standard C terminal with INTELSAT V, the new generation of operational communications satellites.

Goonhilly 4 was originally built by Marconi in 1978 as an experimental station to be used by British Telecom to prove the technology involved in operating in the 14/11GHz frequency band, working to OTS. With INTELSAT V due to become operational on the Atlantic path shortly, British Telecom plans to open the new service during late 1982, connecting Great Britain with other Standard A and C earth stations in the United States, Central and South America, Africa and the Middle East.

The international demand for satellite communications, ranging from personal and business telephone calls to data transmission, telex and television, is such that the present 6/4GHz frequency band is rapidly approaching saturation point. The growth in demand, particularly amongst countries which require cheaper and less sophisticated communications at this stage, is best met by the 6/4GHz frequency band. A typical example is the Standard B earth station which is shortly to be built by Marconi in Nepal, the first satellite link which that country will have with the outside world.

The new 14/11GHz frequency band will take over a large proportion of the existing 6/4GHz traffic which emanates from Europe and America, releasing a considerable number of circuits for allocation to other users.

The conversion to be carried out by Marconi at Goonhilly was planned in the original concept. Goonhilly 4 is now out of service at the end of its programme of tests and experiments. Installation of the full range of operational equipment will be complete by July 1982, when the earth station is to be handed over to British Telecom. An entirely new generation of equipment is to be provided,



19 metre antenna, Goonhilly 4

including the first high-power low-loss combiners for the high-power transmitter stages to be developed for use at 14GHz.

Goonhilly 4, the first Standard C operational satellite earth terminal to be built in Great Britain, will be one of the most comprehensive

earth station installations in the world. It will also greatly enhance British Telecom's ability to handle its share, estimated at some thirteen per cent of current world traffic, of the spate of international telecommunications which is likely to further increase within the next few years.

## Another major TRIFFID order for Marconi

Marconi Communication Systems has received a further order, worth over five million pounds, from the Ministry of Defence (Procurement Executive) for the supply of TRIFFID transportable u.h.f radio relay equipment for use by the British Army. This brings the total Ministry of Defence order for TRIFFID from Marconi to over thirty million pounds.

TRIFFID (TRC-471) will be used as the principal radio relay bearer for the British Army's new trunk field communication system, Parmigan. In the meantime it is progressively replacing the older generation of radio relay equipment now being used in the existing Bruin system. TRIFFID is a radio relay designed specifically for use in field digital networks and has already a proven record of success in the field.

Based on the Siemens FM 200 communications equipment, TRIFFID was developed by Marconi in conjunction with Siemens AG and AEG Telefunken and won the Ministry of Defence contract in open competition with a number of other manufacturers. It is able to operate in three bands between 225 and 1850MHz by use of three interchangeable r.f amplifier units providing a total of 8200 frequency channels.

(see also 'Triffid in BAOR' in this issue)



*The u.h.f tactical radio relay system in use*

## Another multi-million pound order for p.c.m equipment

An order, exceeding £4.5 million, recently placed by British Telecom, is the second of similar size within 12 months placed with Marconi Communication Systems Limited. Both orders, between them totalling nearly £10 million, are for 30-channel pulse code modulation systems. 30-channel p.c.m transmission systems provide an independent 64kbit/s signalling channel which will be used ultimately as a common signalling channel between Stored Programme Control exchanges, but in current use is sub-multiplexed on a per-channel basis by the p.c.m signalling system common equipment. Digital transmission equipment is essential to assist British Telecom in the

speedy establishment of a fully integrated digital transmission network in the UK which will provide the wide variety of communication services needed to meet the expected expansion of industrial activity.

This UK digital network will include several thousand Marconi p.c.m systems which, in conjunction with other new techniques to be introduced, will ensure that the UK has one of the most advanced networks in the world.

The experience gained by MCSL over the past 12 years or more in digital transmission techniques has enabled the Company to provide technical assistance and equipment to many

overseas telecommunications authorities and public undertakings.



*Assembling 30-channel p.c.m boards in the Chelmsford works*

## Marconi tropospheric link for new offshore oilfield

When Marathon Oil's South Brae offshore field comes on-stream in 1983, the platform-to-mainland link will be established using a tropospheric scatter system provided by Marconi Communication Systems.

Marconi is to install two sets of tropospheric scatter equipment aboard Brae platform. One will link with the British Telecom shore-station at Mormond Hill, Aberdeenshire whilst the other connects with Phillips Petroleum's Maureen platform some fifty miles to the south. Maureen, due to begin operating in late 1981, will also be linked to Mormond Hill by a Marconi tropospheric scatter system, and the two platforms will operate through each other to reduce operating costs and to provide the back-up trunk communications facility so important aboard offshore oil installations.

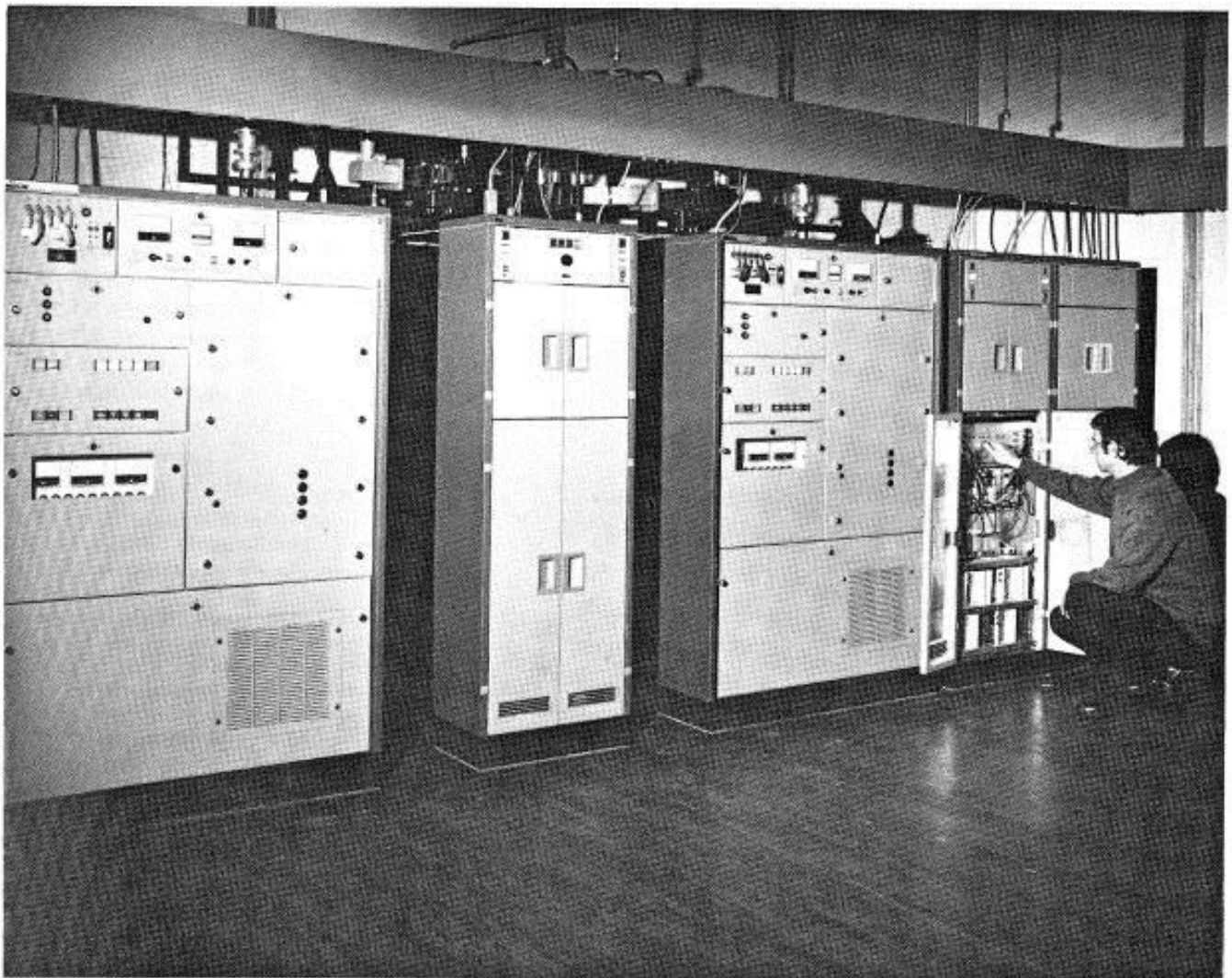
One of the most advanced oil production platforms yet planned, Brae will pass daily an estimated one hundred and twelve thousand barrels of oil directly from well-head to shore by undersea pipeline, unlike some other methods used in the North Sea whereby oil is stored offshore for subsequent trans-shipment. The oil will be routed through the Forties Field, joining BP's undersea pipeline. The result is an immensely complex communications requirement, which must be able to control and monitor every stage of the extraction-to-storage process, much of which will be a computerized operation.

In addition to the operational requirement for communications, the crew of Brae will also require telephone contact with onshore facilities.

The on-board accommodation block, six storeys high, will provide full housing, medical

and recreational facilities for some two hundred and forty people, and will include links, using the tropospheric scatter system, to the trunk telephone system on the mainland.

Few systems can meet the very stringent operating demands made in communications in the offshore oil industry, where circuit reliability of better than 99.9% and communications availability of better than 99.98% is the normal requirement. In practice this means that oil producers require the communications system to be off the air for not more than ten minutes in a thirty day month under all conditions and at all times of year. The Brae development will maintain the record that all the tropospheric scatter equipment for the North Sea complex has been supplied by Marconi Communication Systems.



Drive receiving and amplifying equipment, Mormond Hill



## IBM uses Marconi mobile radios

The Office Products Division of IBM has recently taken over one of the most modern radiotelephone control systems in business use in Great Britain. Supplied by the Mobile Radio Division of Marconi Communication Systems, it provides radio coverage to IBM's Customer Engineers in South-East England.

The aim of the system is to enable IBM to be in constant contact with the customer engineers as they travel about thus providing a flexible, swift and efficient service to customers. To do this Marconi Mobile Radio has equipped a central control room at IBM Croydon, connected by land-lines to eight radio base-stations in the region. These, in their turn, are selected to contact the individual engineers in whose cars the new Marconi RC681 mobile radios are installed. IBM is Marconi's first customer for these new radios.

At the beginning of each day the engineer uses a status switch on the mobile radio to inform control that he is operational. This ten-position switch informs control of his current work-status, which may be 'at customer', 'awaiting instructions', 'travelling to customer' or other similar

options. Each status input is transmitted to control where it is displayed on the video display units, using the new Marconi MIRACOM system. This allows the radio controller to identify each engineer and his current status.

The eight base-stations, all operating on one common frequency, are divided into two antenna groups which do not interact with each other because of their geographical separation. This means, effectively, that two separate networks exist, operated by their own radio controllers, but enabling individual cars to travel from one antenna group to the other without loss of contact.

The system incorporates a number of innovative features including 'Revertive Calling' - automatic acknowledgement from mobile to base and base to mobile - and the Marconi RC1020 voting system. The latter analyses all incoming signals and automatically selects the best base-station from which to contact a particular engineer. Furthermore, the computer-controlled video display at each radio controller position in Croydon will show the latest status information received about each vehicle. The information

displayed is timed on arrival and includes vehicle identity, status and the antenna-group concerned.

Each mobile radio is linked to an in-car mini-cassette recorder which can be pre-set to receive calls whenever the engineer is away from his vehicle. The recorder is activated by the Selcall tone relevant to that particular vehicle, thus ensuring that the engineer only receives those messages intended for him. When an engineer wishes to speak to control he calls in using the appropriate status code. This activates a flashing indicator on the video display as well as storing the vehicle identity in a first-in-first-out queue, enabling the radio controller to action requests in the correct sequence.

Modern microprocessor-based technology, combined with the experience of Marconi Mobile Radio, has resulted in a system tailor-made to suit IBM's requirements. It is designed to provide rapid, efficient and reliable communications at all times between control at IBM Croydon and the individual customer engineer in his car.



Part of the control room at Croydon

(Photo courtesy IBM)

## Major satellite communications contract

Yet another contract for satellite telecommunications earth stations has been won by Marconi Communication Systems Limited.

As prime contractor Marconi is to supply two more satellite earth stations to Cable and Wireless Limited. These new stations will be located at Stanley Point, Hong Kong where two other Marconi-built earth stations are already providing a service for a major part of the Far East's commercial and private communication traffic. The new stations will enhance traffic capability and maintain Hong Kong as a leading satellite traffic handling centre. The first of the new stations will be in full operation in November 1982, the second in January 1983.

Marconi, already established as a world leader in satellite communications, has set up a joint-collaborative venture with Mitsubishi Japan which, based on the success of these stations, could lead to further overseas orders. Mitsubishi is designing and providing

an antenna system capable of staying on track in winds of up to 118 miles per hour. The two 29.6 metre antenna dishes will be designed to survive wind speeds of up to 210 miles per hour - wind speeds of this magnitude are occasionally recorded in Hong Kong in severe typhoons. The electronic equipment from a new range of ground communication equipment and transmit amplifiers developed during the past two years will be built at Marconi's factory in Chelmsford.

Satellite earth stations have been at the heart of Marconi's development programme, and impressive installations have been provided for British Telecom at Goonhilly in Cornwall and at Madley in Herefordshire, as well as 15 other major Standard 'A' earth stations world-wide.

In Nepal work is already well ahead for the first earth station in that country, where Marconi is supplying a Standard 'B' terminal as well as undertaking the complete station design and

provision of buildings.

Business terminals are another part of this wide development programme. Marconi is currently building another four 3-metre terminals of a type first used on the satellite data link between CERN, in Geneva, and Rutherford Laboratories, Oxford. The new terminals will be used in Project Universe to connect two different computer centres over a satellite communications link.



*The two Marconi-built antennas at Stanley Point*