

## London to Birmingham at 140 Mbit/s



*Howard Jones (foreground), from Research Department, John Stark (centre) from Communications Department, and David Kitson from Designs Department, study the error rate on the 140 Mbit/s circuit*

Communications Department and British Telecom (BT) are using a digital transmission system to carry television, radio and other services over a high bit-rate link between London and Birmingham, during a six months pilot scheme which started in the Autumn.

After initial tests, the system will be used to carry BBC 1 and BBC 2 television signals, and associated sound, to Birmingham for distribution to the Midlands, North of England and Scotland. In the reverse direction it will carry tv contributions originating in these areas to London. The links will also be simultaneously carrying wideband music circuits for radio and television, and internal speech and telephony traffic.

The coding equipment in London and Birmingham was designed to a specification drawn up by Communications Department, and has

been developed and built as a joint Research and Designs Departments project.

BT has provided a 140 Mbit/s bearer circuit over three different forms of digital transmission media. From BH in London to the London Telecom Tower, it employs optical fibre, from London Telecom Tower to Birmingham Telecom Tower it uses an 11 GHz digital radio link, and then on conventional coaxial cable to Pebble Mill.

The pilot scheme will give Communications Department and BT experience in carrying high quality vision and sound signals through a digital network, and confirm that various types of signal can be successfully combined. It will also assess the technical performance and reliability of the BBC designed and constructed coding and multiplexing equipment in an operational environment.

It is expected that the use of digital circuits will result in improved performance, and reduced maintenance as BT's trunk network becomes fully converted to digital transmission. Combining a wide range of services into a single bit-stream allows the most effective use of standard bit rates.

A vision signal and two associated sound channels are combined with radio programmes, telephone speech, control and data service, into a single 68 Mbit/s package. Two such digital packages are added to give a 140 Mbit/s bit-stream that can be transmitted through bearer circuits being provided by BT as part of its modernisation programme of converting the national network to digital  
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