

CEEF

# ENG INF

The Quarterly For BBC Engineering Staff

## SSC OPENS 1,000th TV TRANSMITTER

On Friday 7th November, the one-thousandth uhf colour television transmitter came into operation at Hedleyhope, in County Durham.

The opening was performed by Mike Neville, famous as the presenter of the magazine programme, 'Look North', from our Newcastle studios. He was accompanied by George MacKenzie, Chief Engineer, Transmission.

The Hedleyhope relay station was built to provide uhf colour television services for about 1,000 residents of Waterhouses, Esh Winning and East Hedleyhope in the Deerness valley, County Durham.

The engineers in Transmitter Capital Projects Department have been building transmitting stations for the colour services of BBC 1 and BBC 2 television for thirteen years. The first station which opened the 625-line service of BBC 2' back in 1964 was Crystal Palace. Other transmitting stations were added in the following years, and the first colour transmissions started on 625-lines in 1967. In 1969



*Mike Neville connects the aerial to the transmitters at Hedleyhope, while George MacKenzie makes sure that it is not cross-threaded*

the BBC 1 service was duplicated on 625-lines and in colour.

During the '70's the pace of uhf television transmitter building increased. TCPD engineers adapted their techniques to build smaller and smaller stations to cover the small remaining areas not served by the original high-power stations. Many hundreds of stations were needed, and the engineers gradually moved from the individual construction of the big stations to the production-line techniques needed for the seventy relay stations which come on the air every year.

Cordon Bowhay, the engineer who installed the transmitters at the Hedleyhope station, says he is on the road for nearly 40 weeks in the year just installing transmitters. The other members of the teams are equally dedicated. Our rigging teams have built the steel towers and fitted the aerials at



*The Hedleyhope mast and transmitter cubicle being filmed as a possible TV news story*

## AWARD For CEEFAX PAPER

John Chambers, Head of Special Projects Section at Research Department, has won the American Institute of Electrical and Electronics Engineers (IEEE) "outstanding paper of 1980" award, for a paper entitled "ENHANCED UK TELETEXT MOVES TOWARDS STILL PICTURES".

John presented the paper at the IEEE Spring Conference held in Chicago earlier this year. The paper has been published as Research Report number 1980/4, and in "IEEE Transactions". The award from the IEEE comes in the form of a commemorative plaque and three hundred dollars cash.



stations throughout the length and breadth of the country. There are specialist aerial engineers, all keeping the relay programme going. To save time and expense at the sites of the new stations, much of the construction work is done at the TCPD base, at Brookmans Park in Hertfordshire. The transmitters are tested, the aerials assembled and the cubicles, which eventually house the equipment, are wired and fitted before being taken to site.

The total capital cost of a relay station to the broadcasters is about £50,500. This represents about £50 per person in the service area. The cost is shared between the BBC and the IBA. When the fourth channel transmitter has been installed by the IBA, the shares will be roughly 50-50.

Breakdown of costs (£000's):	
Steel Tower	6.0
Site (purchase & preparation)	4.8
Cubicle	1.9
Electricity supply	4.4
Aerial system	5.2
Transport	0.5
Wiring, ancillary etc.	1.1
BBC transmitters	7.4
IBA transmitter (estimated)	4.0
BBC staff effort	15.2
<b>Total</b>	<b>50.5</b>

The cost of the Hedleyhope station is typical for a straightforward relay where there were no particularly difficult problems. At stations serving fewer people or where long access tracks or expensive towers are needed the cost per person can rise to £100 or £150 or even more.

## ACE comes up trumps

The BBC and McMichael Ltd., have reached an agreement licensing McMichael Ltd. to manufacture the new digital four-field standards converter.

ACE was developed by engineers in Designs Department following fundamental work on the interpolation process carried out by engineers at Research Department. The Converter offers superb movement portrayal and provides a standard of performance not matched by any other commercially available equipment.

Standards Converters are used by the Television Service to convert television pictures from the 525-line, 60-field NTSC standard used in the USA and Japan, to the 625-line, 50-field PAL standard used in the United Kingdom and much of Europe. The Converter is equally good for conversion in either direction and is used extensively in the 625/525 mode to export BBC programmes to America.

McMichael Ltd. is a Company within the GEC group, which has concentrated on professional electronic engineering for the military market, and has developed considerable expertise in both analogue and digital electronics. In recent years, McMichael Ltd. has provided television signal coding equipment to British Telecom, Data Collection Platforms for various users of the Meteosat meteorological satellite, and is providing advanced VHF transmitters to the British Home Office for use by Police and Fire services.

Granville Cooper, Technical Director of McMichael Ltd. says: "McMichael Ltd. believe the agreement to manufacture ACE is an important step for the company, since it allows us to bring our background of high reliability engineering to the professional broadcast market".

*The Standards Converter licensed to McMichael Ltd. (L-R): Alan Wheldon McMichael; Tim Shelton, DD; Sid Casson, HES; Steve McGuinness, McMichael; Nigel Rolfe and Roger Robinson, DD; Mike Oevely, McMichael; Derek Simmons, DD; Peter Rainger, DDE; and Granville Cooper, McMichael*

## CAR FAX goes to COURT

The BBC sought an injunction against Talbot Cars Ltd., to prevent their intended use of the trademark "Carfax", and this was granted on the 19th December 1980. Talbot Cars Ltd., wished to use the name "Carfax" for their spare-parts operation, although "Carfax" has, since 1977, been used by the BBC as the registered name for their proposed broadcast traffic information service.

The Carfax traffic information service was developed by Research Department. The system allows motorists to listen to their favourite radio programmes or in-car entertainment, automatically interrupting when there is local traffic information which will affect them.

For a country-wide service, a grid of low-power transmitters would provide local traffic information throughout the country on a single frequency in the medium wave band.

The service could provide information on alternative routes after accidents or traffic jams, and particular groups of road users, such as lorry drivers or foreign visitors, could be specifically addressed by special coding.

Engineering trials, which have proved to be successful, have been run from five transmitting stations in Greater London for the past year or so. The trials are being conducted by the BBC in association with the Transport and Road Research Laboratory.

## Editorial

In this edition of "Eng Inf" we feature the work of Transmitter Department. Much of their work goes on behind the scenes, and to many the transmitters are often described as being only the "load on the end of the line".

We have visited three different areas of Transmitter Department to see how they operate. A Monitoring and Information Centre, a remote maintenance team, and an External Services high-power transmitting station. In each area the staff cheerfully carried out their duties often in the extremes of operational environments. Credit must be given to the high degree of engineering skill shown by engineers in Transmitter Department, that enables BBC programmes to be seen and heard throughout the UK and rest of the world.

Thanks are due to the many engineers too numerous to mention personally, who allowed us to question and photograph them for this series of articles, and to all of the others who keep the services going.

Have you got an interesting engineering story to tell? contact Alan Lafferty on BH 5432/3 or room 701 HWH.

## Transmitters opened

The following UHF TV relay stations have opened since November 1980:

Kenmore (Tayside)	7.11.80
Baltasound (Shet Is.)	3.12.80
Mallaig (Highland)	6.12.80
Ravenscraig (Strath.)	12.12.80
Lydbrook (Glos.)	7.11.80
Hedleyhope (Cty. Durham)	7.11.80
Forest Row (E. Sussex)	21.11.80
Alten (Hants.)	5.12.80
Brighstone (I.O.W.)	12.12.80
Bristol (Avon)	19.12.80