

# ENGINEERING

WINTER 1989/90

No. 39

## CWR ON TARGET FOR JANUARY 17

As we went to press, Coventry and Warwickshire Radio - the BBC's thirty-sixth local radio station - was set to open officially on the 17th January. To be known as *BBC CWR*, it is based on a main studio complex in Coventry and supplementary studios in Leamington Spa, Atherstone, Nuneaton, Rugby, Stratford-on-Avon and Warwick, among other places.

Two FM transmitters have been provided - at Lark Stoke and Meriden - bringing around one million people within range of the station's output. However this is the first new BBC local station to open without any

MF transmitters - in line with current Home Office policy.

CWR will offer Coventry and Warwickshire eighteen hours of new programmes each day and, according to Manager, Mike Marsh, it will be "a station more local, more in tune with the area than any other. BBC CWR cares for Coventry and works for Warwickshire."

The Coventry facilities include a general-purpose studio, two cubicles, a phone-in booth and a News & Current Affairs studio. There is also a comprehensively-equipped newsroom.

A special feature on CWR's technical facilities begins on page 3.



*CWR in full swing for Children in Need on 17th November. The station went on air for twenty-four hours and received £143,397 in donations and pledges. It's back to test transmissions now, until the official opening on 17th January.*

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# ENGINEERING

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Looking back over 1989, we received a good mixture of informative, educational and entertaining articles from across the Directorates. So very many thanks to all those who sent in material for publication last year.

If you wish to contribute to the next issue, please inform us of your intentions as soon as possible: each issue of Eng Inf has space for only a limited number of articles. Your completed text should reach us by 23 February, at the latest.

Very best wishes for 1990 to all our readers.

Mike Meyer

## TRANSMITTER NEWS

The following services opened between 17 September and 12 December:

### Television

Blackwaterfoot	Isle of Arran
Bovey Tracey	Devon
Cwm Twrch	West Glamorgan
Ebbw Vale	South Gwent
Gronant	Clwyd
Harborne	Birmingham
Kensal Town	London
Lindores	Fife
Muddiford	Devon

### Local Radio

On 29 September, a new FM transmitter for Radio Leicester opened at Copt Oak, 13 km north-west of Leicester city centre. And on 3 December, Radio Derby began broadcasting in stereo from its FM transmitters at Derby, Stanton Moor and Sutton Coldfield.

## 'ENGINEERING INFORMATION'

Following the re-launch of Ceefax in late November, EID's 'Engineering Information' page has now been transferred from 297 (BBC2) to Page 698 (both BBC1 and BBC2).

## LICENCE AGREEMENTS

The following licence agreements have been signed since the last edition of Eng Inf was published:

**RE Instruments Ltd** of Finchamstead has taken out a licence for the range of Mk 11 Nicam-3 digital audio transmission equipment. This comprises a Coder (CD2L/41) and Decoder (CD3L/58), each of which handles six channels of audio in a 2048 kbit/s digital bit stream, and rack-mounting systems to expand these to 12-channel systems (either Coder, Decoder or Codec). Also, the company has licensed the GE4P/9 Nicam Test Generator to support the transmission equipment. In addition, RE has signed an agreement for the OB Multiplex Transceiver, EP2P/9, which allows a number of telephony/control channels and/or music-quality signals to be transmitted down a single 15 kHz twisted-pair bearer.

Another licence agreement has been signed by **Eddystone Radio**, to expand the range of BBC-designed equipment they can produce. The items this time round are the RC1/12A Band 11 Receiver (which incorporates an integral stereo decoder), the AM7/12 and AM7/13&A Audio Amplifiers, and the PA9/29 Mains Distribution Panel.

A pair of low-cost Video Monitoring D-A Converters, C09M/513 and C09M/514, have been taken up by **Viewtronics Ltd** of Woking. These units (formerly coded C09M/513 A & B) take in a feed of CCIR Rec 656 parallel digital video, and provide an output of either monochrome or colour video respectively. It is anticipated that they will be used as part of a wired video distribution system, to save the expense of re-equipping vision areas with picture monitors that have dedicated digital video inputs.

Finally, an existing agreement with **Varian TVT Ltd** of Cambridge, dating from 1984 and concerning Two-Channel Sound-In-Syncs equipment, has been amended. This will allow them to extend their current range of 2C-SIS equipment to operate at 728 kbit/s, as well as the present data rate of 676 kbit/s. Thus, the use of this equipment as part of a Nicam-728 terrestrial stereo TV transmission chain will be simplified.

As usual, please contact the D&ED Liaison Engineer, Peter Jefferson, on Avenue House extension 375, for further details of these or other licence agreements.

## LICENSED EQUIPMENT CODES

Some problems have come to light regarding BBC licensed designs - the equipment has been modified by the manufacturer (electronically and/or mechanically), even though it still carries the original BBC unit code. A recent example was a piece of equipment which had been repackaged in a 3D rack, unknown to the BBC engineer concerned who rightly had expected it to occupy a height of 4U.

This can happen quite legitimately as, until recently, the BBC placed no restrictions on licensees in how they refer to the equipment. If the manufacturer decides to modify the equipment - which he is entitled to do within certain guidelines - and continues to call it by the BBC code, then a purchaser has no means of knowing implicitly of the modification.

D&ED has now added a new clause to all licence agreements struck since last October. It requires that, if a licensee wants to continue to use the BBC unit code on his equipment, he must add 'A'

immediately before the oblique stroke in the BBC code. Thus, if the equipment code is, for example, RC3/15, then the licensee would refer to it as RC3/ A/15.

Although this condition is now part of new agreements, it is not possible to impose such a condition, retrospectively, on older licences. The manufacturers concerned have been asked to conform to the new coding, wherever possible, but whether they do is entirely a matter for them.

A very small percentage of licensed equipment will not be affected by this change. These are units which will only ever be made precisely to the BBC specification, because of some feature of their design and/or performance. One typical example is loudspeakers, which will continue to be referred to as LS3/5A, LS5/9, etc.

Peter Jefferson  
Liaison Engineer, D&ED

# CWR

# special feature

CWR is our thirty-sixth local radio station, serving around one million listeners in Coventry and Warwickshire. In this special feature, Nick Sharwood-Smith describes the main studio centre in Coventry, which has been based on Mark IV equipment, while Ken Turner and Phil Osborne respectively describe CWR's communications and transmission facilities.

## The Studio Centre

Mark IV local radio equipment resulted from competitive tendering to industry, based on an operational specification produced by Radio Projects. A contract was subsequently placed with Audix Ltd for the production of three sets of Mk IV desks and the first of these was installed at BBC Hereford and Worcester, which opened early in 1989. The second was fitted as part of the refurbishment at BBC Radio Derby and the third has just been installed at CWR.

The complete tender for Mark IV also included an apparatus room, news studio (NPA) and general office facilities, such as ringmain and public address system. Unlike contracts for individual mixers or studios, the Mk IV installation aims to provide the basis of a complete radio station using a single technical contractor.

The operational areas at CWR have been built in the local radio 'in-line' format, as shown in the diagram below. This provides good sight-lines between the four main areas and allows flexibility in producing operator-driven or presenter-driven programmes using either:

- a single cubicle
- both cubicles
- a cubicle and studio
- a cubicle and phone-in booth.

At CWR this format is further enhanced by the extension of visual communication towards the reception area in one direction and towards the NCA studio in the other.

## The Cubicles

The two cubicles are the main operational areas, each having the ability to take executive control of the transmitter chain. They contain an Audix 27-channel control desk, reproduction machines for R-DAT (Sony DTC 1000), 1/2-inch tape (Studer A807), carts (Soni-fex), CDs, grams (both Technics), and cassettes (Denon).



Breakfast Show presenter, Neil Pringle, at the Studio 1 desk

The desks have access to permanent music lines from CWR's fifteen outside studios, together with temporary lines from OBs. The addition of phone-in lines, on telephone balance units, gives a total of thirty-three possible selections to any of six outside source (OS) channels. A pre-fade-listen (PFL) mix loudspeaker allows multiple incoming sources to be monitored simultaneously for sports and local election programmes; opening any mic fader automatically cuts this PFL loudspeaker.

Three Beyer M201 microphones are provided for the presenter(s) and guest(s), each with its own dedicated channel. There are also three channels for studio microphones, which take their feeds from three splitter transformers mounted in the studio wallbox. This arrangement has the

advantage that the microphones can be used for working to either cubicle, without the need for replugging.

The desks have no equalisation but there are independent voice-over chains, driven by the mic channels, which offer voice-over control of the repro and outside sources.

The control system for the radio cars is integral to the desk and provides for talkback to the mobiles, from vhf base stations in either Coventry or Leamington Spa. Broadcasts from the OB van or news cars will normally be via a wideband uhf link; provision exists however for the vhf talkback channel to be used, in emergency cases. In this instance, an interlock prevents local talk back from being routed out to the transmitters via the desk.

NCA

18

Studio

1A

Phone-In

Reception



The in-line studio layout at CWR

# - SPECIAL FEATURE ON CWR

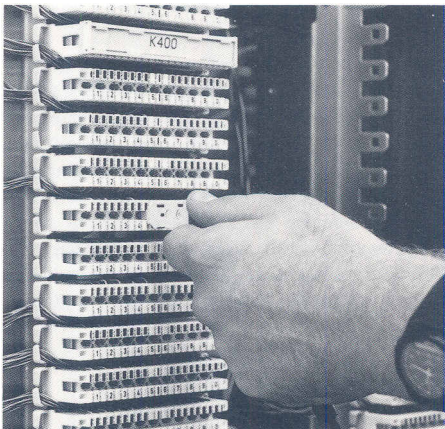
One channel on the desk is designated for RBS (rebroadcast) use and has vhf feeds of the four national networks, as well as regional sustaining services (incoming on lines LDS 1 and LDS2). Locally-selected repro sources can also be sent to the transmitters - independently of the desk - using the TAPE Direct-To-Transmitter selection. This allows an operator to feed a prerecorded programme to air, from any of six tape sources, whilst simultaneously carrying out dubbing or editing duties via the desk.

Separate monitoring is provided for the presenters and the guests, each having a push-button selector bank. Due to the nature of self-operate work, much of the aural monitoring is done on headphones but a pair of LS3/SAs is provided for quality checking. Four stereo PPMs monitor prefade, desk A&B, desk M&S and station output, respectively.

An intercom system, based on the Philips MIOO, gives communication between the cubicles and other production areas. Due to the slight delay inherent in establishing a call using the Philips unit, an alternative technical talkback system is also available, to give instant communication between the cubicles, studio and phone-in booth. Three miscellaneous destinations are included on this system to allow for expansion.

## The Phone-in Booth

This area is primarily for the control of phone-in programmes but it can also be used for the production of any items needing good internal and external communications. There are no audio sources in the booth but the following facilities have been provided: audio and video tielines; radio car talkback; talkback to the cubicles and studio; audio ring-main, and intercom.



A Krone Frame in CWR's apparatus room. These carry all the audio and signalling circuits, having replaced the older (hard-wired) tag-block type of system. Headphones and breakjacks can readily be inserted into (and removed from) a Krone Frame, using a special tool, making it extremely versatile.

An AUJix multi-purpose board at CWR. The common board design can be configured as a Mic, Line Send, Line Receive or Distribution Amp, simply by changing jumper leads.

The video tielines are routed to the apparatus room where video distribution amplifiers feed monitors in the cubicles and studio. This allows a BBC computer to be used to feed visual information on callers to the presenter (ie, visual talkback).

Two answering units for the Telecaster phone-in system can be used here. The Telecaster is a system for broadcast use developed by Austin Taylor from their Sprite key-and-lamp unit. The hardware is identical in each case, but with colour variations used on the keypads to simplify operational recognition. Software changes have been made to allow the nomination of different parts as either answering units or routeing units.

Answering units are used to pick up incoming calls, originate outgoing calls and to place calls on hold. Routeing units can put incoming calls directly to a telebalance unit, but more often take calls from 'hold' and send them to the desk following screening by a production assistant. A routeing unit is mounted at the top of the desk script space in each cubicle, allowing calls to be sent to any one of six telebalance units. Each cubicle is additionally equipped with an answering unit to enable outgoing calls to be made.

A hand-held programmer, plugged into the main processor, is used to carry out the initial configuration of the system and this makes local alterations simple to implement.

## The Studio

This area is primarily used for interviews and other discussion programmes which need to be operator-driven, or involve more people than can be comfortably accommodated in the cubicles. The studio can also be used as an

additional production area, having talkback, intercom, video and audio tielines and two Telecaster answering units.

The loudspeaker and head phone feeds to the studio can be switched between either cubicle as desired. An amber switch on the wallbox is used for this purpose, while repeater lamps have been fitted to the wall on either side of the studio to give a visual indication of the switch status.

## The News Studio and Newsroom

The news studio contains a small nine channel mixer with carts, tapes and microphone, designed to allow bulletins to be compiled and presented by the news staff. A second microphone allows interviews and reports to be recorded or inserted live into the news.

A single channel carries the same selection of outside sources as the larger desks in the cubicles, while an adjacent channel gives access to all vhf and uhf radio car sources. A talkback selector for communication to the mobiles is integral to the desk, as is an intercom unit.

In the newsroom, located on the first floor, a similar radio car talkback unit is provided for the use of the bulletin editor. Additionally, an OS selector enables monitoring of studios, OBs or other incoming line feeds. Audio ring-main is available at every desk in this area while the news secretary's desk has been provided with video tielines to the studio and cubicles. These allow news input direct to the presenter(s), via the visual talkback system without the need to generate hard copy.