ENG INF

Spring 1987 No. 28

BBC Engineering awarded fourth Queen's Award

BBC Engineering and the Electricity Council have been jointly awarded the Queen's Award for Technological Achievement for Radio Teleswitching. This, the fourth award to BBC Engineering, is for pioneering work with the BBC's low-frequency transmitters which send coded signals to electricity time-switches. By adding data signals to the BBC's low frequency broadcasts, without affecting the audible signals, load switches and meters on electricity consumers' premises can be remotely controlled. This enables off-peak storage systems to operate without the disadvantages of electro-mechanical time-switches and flexible tariff rates to be developed. Consumers benefit from the opportunity to take advantage of favourable tariffs, while savings of up to £80 million a year are expected in the cost of electricity generation.

Using low-frequency transmitters at Droitwich, Burghead and Westerglen, the system superimposes a data signal by phase-modulating the rf carrier. Because of the narrow-band nature of the data-signals, the Radio Teleswitching system can be used in the areas such as basements or steel framed buildings where the field strength from the transmitters is too low for normal reception. Thus the low-frequency transmitters are ideal for this type of service.

The data signals are received and decoded by Radio Teleswitching receivers installed in consumers' premises, where they initiate the switching of tariff controlled appliances such as storage or water heaters as required. This allows the Electricity Supply Industry more flexibility to smooth peak demands and hence helps avoid the need for excess generating capacity.

The data signals originate from a message assembler located at Broadcasting House in London. Information from the Central Electricity Generating Board (CEGB) is used to key data onto one channel of the message assembler, and the resultant waveform is sent to the transmitters. The data waveform is a 25 bits/s bi-phase signal that phase-modulates the 200 KHz transmitter carrier by +/- 22.5°. The absence of dc in the modulating waveform maintains the overall accuracy of the transmitter frequency, which is derived from a rubidium frequency-standard. The remaining data channels on the message assembler are currently not used.

The Radio Teleswitching system was developed by engineers from Research Department, in co-operation with the Electricity Council. It has been fully available to Area Electricity Boards since 1985. Earlier evaluation tests confirm that the system does not cause interference to the Radio 4 (UK) or World Service programmes normally carried by the low-frequency transmitters.

Edit Suite for TV News

PID Tel Recording Section have recently completed a three machine vt editing suite to provide the extra material for Daytime News summaries.

The ergonomic wrap-around desk which houses all the technical equipment was the result of much discussion. It was constructed by the Building Maintenance Workshop at Woodlands and the result was much praised by the users.

Two Sony U-Matic machines, one with slow motion ability, play into a third machine via a Grass Valley vision mixer and an Audio Developments 6-channel sound mixer. The operation is time-code controlled, with match-frame accuracy, by the new Sony 900 editor, a keyboard and VDU arrangement which can memorise up to 128 edits including wipes and mixes.

The suite also contains a time-code synchronised twin-track Studer audio recorder for lay offs and effects.

Although the project was done 'in-house' with one E.D wireman and one PID Tel Engineer - Rod Smith, no custom control panels were employed, the necessary loudspeaker selection being taken care of by the manufacturers upgrade to the audio mixer.

The capital cost for the project including acoustic treatment was under £12,000 and the suite was handed over 4½ months after approval.

Rod Smith in TV News edit suite

Licence Agreement

SVT Video Systems Ltd have been given a licence to manufacture the VHF Stereo Modulator MD1/7.

This modulator accepts left and right audio signals at standard level and produces a pre-tuned Band II frequency-modulated output suitable for feeding into wired distribution systems.

A multiplex output at standard level and a data input for the modulation of 'radio data' type signals is also available.

The unit is intended to be used with termination panel PA20/28.

* * * *

Transmitter News

The following transmitters have opened or changed since January.

UHF TELEVISION

Caergybi	Gwynedd
Chilfrome	Dorset
Clennon Valley	Devon
Eastbourne	E. Sussex
Halesowen	W. Midlands
South Brent	Devon
Wenvoe	S. Glamorgan

VHF RADIO

Campbeltown	Strathclyde
Ilchester Crescent	Bristol
Limavady	Ulster
Les Platons	Channel Islands

LOCAL RADIO

Bath	R. Bristol
Ilchester Crescent	R. Bristol
Woolmoor	R. York
North Hessary Tor	R. Devon
Okehampton	R. Devon
Exeter	R. Devon
Redruth	R. Cornwall
Isles of Scilly	R. Cornwall

* * * *

Electronic Graphics Area for TV News

TV News electronic graphics preparation and output area.

"Cardboard" graphics and "cut and paste" are fast becoming a thing of the past in national News bulletins. A new electronics graphics area has just entered service at Television Centre which provides enhanced pictures for all News bulletins. Designed and built by Central Systems Section of P & ID Tel, to the requirements of Television News staff, the area offers, for the first time, a host of facilities that give the News a sharper image.

Previously News graphics were produced using Letraset, photographs, and coloured cardboard artwork transmitted from a 12" x 9" caption scanner, together with conventional photographic slides. Electronic graphics, including the opening sequences, first made a regular appearance on News broadcasts with the re-vamped 6 O'Clock News in 1984. This made use of a Quantel DPB7001 Paintbox, Quantel DLS6001 stills store, and Aston 3 character generator. Pictures were positioned 'behind' the newsreader using a Cintel Slidefile and key signals from a Designs Department DOG (Digitally Originated Graphic) key, an effect previously achieved using colour separation overlay (CSO) techniques. In those days the electronic graphics area was temporarily on the 6th floor of the Spur, but this was required to be moved because of Stage V building work. In September 1985 a second set of equipment was obtained and again installed in a temporary area, in order that the 9 O'Clock News could have the advantage of electronic graphics. To rationalise the situation a dedicated area for all News graphics activities was proposed on the corner of the 4th floor Spur close to the Stills Library and Video Tape.

The new area has been designed for 'on-line' and 'off-line' preparation. The 'on-line' unit comprises one long operations desk, split into three distinct parts. At either end are the two graphics preparation/output areas, called GR1 and GR2, each housing the controls for a Quantel 7001 paint box, and Quantel 6001 stills store, plus control of Rank Cintel Slidefile. Each area also has an Aston 3 character generator and Ikegami ITC730A copy camera. The camera is used in the vertical mode for photographs, logos and documents to provide basic material for the paintbox and stills stores. Pictures and graphics, once prepared, are transmitted from the two outputs of the Quantel 6001. The Cintel Slidefiles are used as additional stills stores during transmissions.

The central position (GCR) acts as a router, combiner and general output desk for the three News studios on the 6th floor. The desk provides access to a large Probel six-level component matrix which enables all of the various graphics devices to be routed to each other and to standard PAL coders to give a coded input to the studios. Various monitors are provided, including RGB, encoded, and monochrome, so that the graphics can be checked at each stage of production. Two D & ED and digital PAL decoders are used to provide high quality RGB pictures from outside sources such as OBs or VT. This area also includes a Thompson slide scanner, 'tarrif' colour correction units and a D & ED digital combiner (see Engineering Information no 20). This allows combining of any component sources within the area with minimum loss of quality.

Away from the main desk is a 'quiet' 'off-line' preparation area, located in the graphic design office. Here Graphic Designers can use the third Paintbox away from the pressures of the production and preparation areas. Despite being located away from the 'on-line' areas, this paintbox has all the input and output facilities available to the main area, and work can be transferred instantly to and

Continued on next page

News Graphics continued

from it. An Ampex Picture maker and Abekas A64 digital disc recorder will shortly be installed, which will permit the formation of 3D animated sequences known as 'Stings'

The stills stores and paintboxes have Winchester disc drives as an active storage medium, plus removeable cartridge drives on which are stored a library of basic graphics such as maps of the UK. A Quantel central lending library will soon be installed that connects all five devices together to facilitate the easy transfer of pictures digitally between different equipments.

Nigel Jackson from Central Systems Section of P & ID Tel, the Project Leader, said "The move to the new area was made gradually to give minimum out of service time, mainly at weekends and at night. However, we were under pressure to move the 6 O'Clock News because their old area was required for re-development work associated with the stage V building work". Most of the moves were carried out between mid November and early December 1986, with final tidying up made early in the new year. Additional pressure for the area to be brought into service came from the start of Daytime Television with its hourly bulletins. Credit must be given to Project Leader - Nigel Jackson, Engineer - Julian Stone, Installation Technican - Frances Hill, Wiremen - John Huckstable, Malcom Walsh and Keith Savage from Power Distribution Section of P & ID Tel, as well as many Television News resource staff for enabling the smooth transition from the old areas to the new one.

New radio pager for west London TV premises

A replacement radiopaging system for Television Centre and surrounding buildings was commissioned in the New Year. Although more familiarly known as bleepers, the new receivers, manufactured by Cass Electronics Ltd., do considerably more than bleep. There is a five digit alpha-numeric Liquid Crystal Display which is used to give messages to the user. Normally this would be the telephone number which a caller wants the user to ring, but it can also be used to warn when the unit is carried out of range of a transmitter, or when the rechargeable batteries need charging .

Some of the units do not bleep at all. Because of the possible disruption caused by a receiver sounding in a studio or other sensitive area, there is the option of carrying a vibrating receiver. This is virtually silent, but nevertheless makes it presence felt very well provided it is worn close to the body.

In all, seven transmitters are able to make individual calls to any of 550 receivers in the areas of North Acton, Woodlands, Television Centre, and the Shepherd's Bush premises. Anyone using a TC PABX extension can make a telephone call to extension 8811 followed by the pager number required and the 4-digit message it is wished to display.

Unlike the old pagers, which were in use for 17 years, the receiver number is not set indelibly during manufacture, but can be re-programmed as often as necessary at one of four programming units situated at North Acton, Woodlands, TC and Lime Grove. This number is also shown on the display when not displaying a current message.

The Cass 2800 Teletracer system was chosen by Communications Department for TC so that it would be compatible with a similar system already in use at BH. When the BH system is moved to White City, the two systems will combine to provide the largest single radiopaging system in the country.

Martin Denyer (l) from Comms examines the new radio pager with Ron Renton (r), Head of Telecommunications Section, Clive Conway-Philips (seated) and Jim Fleming (behind), MD of Cass Electronics Ltd.

Transport moves to Park Western

BBC Transport HQ Park Western: The new premises

BBC Transport Group have recently been on the move from their headquarters at Weir Road, Balham, to a new, purpose-built base at Park Western, Acton. The building has been constructed next door to the Television O.B. base at Kendal Avenue and was originally conceived as a service base for only Television and Radio O.B.'s fleets of vehicles. However a study group led by Bert Gallon, Chief Engineer, Transmission, proposed the additional integration of the Weir Road H.Q..

The new Park Western base will run its 24-hour, all-year-round transport operation, servicing the London fleet of 700 vehicles and using a reduced workforce totalling about 180 people.

The vehicle workshop which has been designed to cater for a range of vehicles from the large specialised vehicles that comprise most of the Outside Broadcast fleet to the cars used for News and Current Affairs etc. The workshop has one 8 tonne and two 14 tonne vehicle hoists and a long pit. The pit is ventilated and includes lighting for under-vehicle inspection and a small hydraulic ramp jack. The whole vehicle workshop has been carefully designed to give good ambient lighting and has retractable exhaust extractors at periodic intervals to enable vehicle engines to be test run. To reduce hazardous oil spillage, engine oil dispensing is provided by retractable dispenser lines. Sound baffles mounted in the roof enhance the working environment by cutting down noise. To keep pace with the ever increasing level of electronics in vehicle engines, the latest Crypton Tuning diagnostic centre has been provided to supplement a simpler device which has been brought over from Weir Road. The usual peripheral facilities have also been installed which include welding facilities, wheel balancing and shot blasting. Attached to the vehicle workshop is a vehicle parts store, a battery charging room and a mechanical workshop equipped with lathes etc. Completing the workshop facilities, a vehicle wash for high-sided vehicles has been installed and a rolling road for brake testing. An electrical workshop nearby facilitates cable loom construction etc.

For the transport personnel, a drivers' rest room, a fitters' rest room, shower facilities and a locker room have been provided.

One of the last remaining items moved from Weir Road has been the nerve centre of transport operations, the computer. This schedules all regular duties, for example trunker runs, keeps track of which drivers are with which vehicles as well as information about the vehicles, such as when bought, what servicing required etc.

Finally, as the London base for BBC Transport, Park Western houses a suite of offices for senior staff including Transport Manager, John Rowlinson; Assistant Transport Manager, Ralph Lewis; Transport Operations Manager, Ray Brooks; Assistant Transport Manager, Bryan Middleton and Transport Accountant, Tim Mansfield.

General view of the workshop

TC 5 re-furbished

The PID Tel team in TC5 gallery: (l to r) Peter Weitzel, Mike Endersby, Paul Chapman, John Mildred, Mike Winston, Bill Seymour, John Tiller, Ralph Harris, John Tyler and Andy Hughes

Studio 5 at Television Centre recently re-entered service following a two-year refurbishment. Apart from the studio walls, all of the old equipment has gone, and in its place are some of the most sophisticated systems ever to be installed in a BBC studio. New sound, vision and lighting control equipment complement new lighting and scenery winches, a new floor, and new electronic graphics area.

In parallel with the work in TC5, PID Tel were planning to refurbish the graphic design area in TC2, but it soon became obvious that the limited facilities in TC2 were inadequate for the increasing requirements of Sports productions. Since TC5 was then at an early stage it was decided to transfer these productions from TC2 to TC5 and to build a new electronic graphics area adjacent to this studio.

Studio Facilities

The decision to incorporate the Sports Graphic Design area into the TC5 complex, part way through the installation, caused a major problem for Project Leader John Tyler and his team. The specifications for the vision, sound and communications systems had to be re-written to enable the graphics output to be routeable outside TC5. The change of cameras caused by the demise of the Link 130 and the temporary installation of borrowed 125s caused additional work.

The vision system uses five Probel matrices containing almost 3000 crosspoints to route, under software control, forty sources from cameras, slidefiles, eighteen outside sources, six inside sources (which includes the four Graphics Area outputs) and ten other sources to the knob-a-channel premixer and the Video Effects Mixer (VEM). These forty sources, the outputs of the premixer and the individual "switches" of the VEM can be software selected to a modified Grass Valley 1600 vision mixer to appear as if they are channels. These sources, and the five outputs of the Grass Valley mixer, are available to a two channel Digital Video Effects unit and four reserve outputs of the studio. This programme system uses a network of four 68000 processors working in real-time, and the independant preview system employs nine matrices with 3600 crosspoints and an RGBS matrix with 1024 crosspoints.

All the matrices in the studio and Graphics area communicate giving optimum routeing and display accurate legends on eighty-four displays beneath monitors.

This novel vision system reduces by a factor of ten the delay and amplifier requirements, removing all the consequential problems of drift and equalisation. Even so, over 250 distribution amplifiers are used.

The vision team was lead by Peter Weitzel who, together with Graham Bentley, co-ordinated the matrix specification and contract. Steve Gapp with technicians John Mildred, Colin Boardman and chargehand wireman Shuja Fatih built the vision system. John Tiller and Peter Cresdee joined to sort out the camera problems. Andy Hughes specified and installed the video matrices in the Graphics Area assisted by Dave Blanchard.

The sound control room has had completely new acoustic treatment installed, and features a forty-channel eight-group Calrec desk. Thirty of the channels are mono and ten are stereo. In addition, two eleven-input submixers are fitted. The sound system is dominated by large monitor selectors on the desk, sound bays and the S.O.T.C.'s position. This, along with many lines to the outside world, should enable the sound crew to deal with sports programmes more effectively.

The sound team was lead by Wynne Griffiths, ably assisted by Martyn Smith.

The communications system, stretched to accommodate the Graphics area, was specified by Phil Griffin, manufactured by

Continued on next page

TC 5 continued

Philip Drake Electronics and installed by Mike Endersby and Paul Chapman.

The studio grid has been completely renewed, incorporating heavy duty lighting barrels, dedicated cyclorama lighting and a comprehensive scenery suspension system.

A 384 channel galaxy lighting control system with a programmable special effects panel is installed together with 240 dimmers. The dual source luminaires were refurbished, and new overhead cyclorama luminaires have been installed. The mechanical and lighting installation was managed by Keith Evans and John Hegerty.

Sports Electronic Graphic Design Area

The design objective for Project Leader Mike Winston and his team was to provide a full facilities electronic graphic design area tailored to the requirements of Sports productions while still allowing occasional general purpose use. To maintain picture quality, all routeing and processing had to be in component form.

This was an interesting challenge for system designer Bill Seymour. Although intricately linked with the main studio matrix and intended to support programmes from this studio, it had to be capable of operating independently. This required careful design and the use of a separate pulse chain which can be tied to the studio or timed to other destinations as required.

Graphics equipment installed comprises two Aston 4 character generators, two Rank Cintel Slide Files, a Quantel Paintbox, a Sony CCD camera and a D & ED digital combiner. Four separate video outputs are available from the area and these are fed via PAL coders to TC5 and CAR with their associated key signals.

Mike Winston explained the importance of working in component form. "Complete graphics pictures are often the result of a combination of text, photographic material and present backgrounds. For example, a graphic presenting a snooker match result could comprise a background picture of the table, photographs of the players, a picture of the trophy, and text. The Digital Combiner (the one shown at IBC 86) allows these montages to be assembled layer by layer with minimum quality loss". When complete, pictures are stored and transmitted from the Slide Files.

The two Aston 4 character generators are the first in the BBC to be used in an "on line" area. They are operationally very versatile and generate multi-level or "anti aliased" text. This allows the use of much more subtle type-fonts and logos without any of the stepped edge effects usually associated with electronic character generators.

The Sports Graphic Design Area

Another innovation in this area is the Sony DXC 3000 charge-coupled-device (CCD) copy camera. This is mounted vertically on a stand with lighting, and is used to provide pictures for the stills stores and Paintbox from original artwork or photographs. The CCD camera offers good picture quality with stable registration and geometry which is particularly important for graphics work - all at a relatively modest cost.

The Paintbox can be used either as a standard painting system or as a computer driven graphics device for the football results service. Results are input through terminals on the studio floor directly to the Computer Graphics Workshop via an Ethernet network. A Microvax 2 computer procsses all the data and drives the Paintbox directly to generate the league tables etc. The software for this was written by staff in the Computer Workshop, and a prototype version of the system first entered servie in August 1985.

Bill Seymour was assisted in the graphics area installation by technician Ralph Harris and wiremen Earl Grey and Carl Powell.

New Director of Engineering appointed

Bryce McCrirrick, Director of Engineering of the BBC since 1978, is to be succeeded on 1 June 1987 by Bill Dennay, who has been Assistant Director of Engineering since 1985.

Bryce joined the BBC as a Technical Assistant in Edinburgh in 1943, having been educated at Galashiels Academy and Heriot Watt College, Edinburgh. Soon afterwards he moved to London, where he became a Maintenance Engineer. After National Service in the RAF, he returned to the BBC in 1949. He joined the Television Service, and began a progression to senior posts, becoming in turn, a Technical Operations Manager, Engineer-in-Charge Television Studios, and Head of Engineering, Television Recording. In 1969 he left the Television Service to become Head of Studio Planning and Installation Department. A year later he was appointed Chief Engineer, Radio Broadcasting and soon afterwards became Assistant Director of Engineering. He became Deputy Director of Engineering in 1976, and Director of Engineering in September 1978.

Earlier this year it was announced that he is to be awarded an honorary D.Sc. from Heriot Watt University, in addition to being F.Eng., FIEE, FIERE. He became a fellow of the Royal Television Society in 1980, and elected fellow of the British Kinematograph, Sound and Television Society in 1982. He is to be President of the Institution of Electrical Engineers in 1988.

Bill Dennay, FIEE, MIERE, CEng, Dip.E.E., succeeds Bryce McCrirrick as Director of Engineering on a five year contract. Bill joined the BBC in 1956 and served at various transmitting stations before becoming a member of the lecturing staff at Engineering Training Department in 1961. He moved to Transmitter Department Headquarters in 1973, and became Assistant Chief Engineer, Transmitters in 1978. In 1979 he was appointed Chief Engineer, External Broadcasting, and in 1984 became Controller, Operations and Engineering, Radio. In July 1985 he was appointed Assistant Director of Engineering where, in addition to his normal duties, he was responsible for planning the BBC's new headquarters at White City.

Apologies

I have been asked by John McErlean and Colin McCall to set the record straight regarding the front page story of Eng- Inf No 27, about the new TRU recording vehicle This was, in fact, built by Radio Capital Projects and not OB Section of PID Tel. I am also grateful to Colin for supplying the excellent photograph for the story.

The Chairman of the Engineering Management Safety Committee, Peter Cleminson, has pointed out that there is a potential fire risk shown in the photographs of SCAR on Page 3, namely the pile of cardboard boxes. I will try to select better pictures in future!

Alan Lafferty
Editor

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The Queen's visit to China : Part 1

Barry Luckhurst, an Engineering Manager with Tel OBs was involved with the technical aspects of the Royal Visit to China in 1986, and has written a full account of his visits there. Part one of his story, in this edition of Eng Inf, tells of the reconnaissance trip, and part two, in the summer, will look at the visit itself.

Introduction

Early in 1986, following the agreement to return the Crown Colony of Hong Kong to the jurisdiction of the People's Republic of China when the present lease on the New Territories runs out in 1997, it was announced that HM Queen Elizabeth II and HRH The Duke of Edinburgh, would undertake a state visit to both places during October of that year.

It was decided in London a few months later that, in addition to the normal news coverage of the tour, the Television Service of the BBC, would look into the feasibility of covering some of the events live. The time difference between the two countries meant that it seemed probable that "Breakfast Time" would be able to take advantage of such live coverage. Initial enquiries established that the Chinese had colour mobile control rooms (reassuringly called "OB Vans" in Chinese), that they used the 625 line PAL system and that they would be prepared to hire them and their crew to the BBC.

On this basis, David Harrison of Current Affairs Department, the BBC's Executive Producer with responsibility for its coverage of China, and in charge of this project, asked that an OB Producer and Engineering Manager should join a planning visit there. So it was, that Tim Marshall, Producer Entertainment and Events Department, and I joined a small team of staff from News and Current Affairs departments and an interpreter from Bush House on a visit to China for a fortnight in August. Our brief was to make the initial contacts and arrangements for the television coverage of the first ever visit by a British Sovereign.

We flew into Beijing Airport on July 27th, and were met by David Blunt from the British Embassy, and later that evening met Mr Lin Qingyun from the Ministry of Foreign Affairs. He was to become our 'minder', travelling with us and setting up meetings with the television organisations, communications authorities and provincial Foreign Affairs offices. We also made contact with representatives of ITN, including Peter Heaps their senior engineer, and agreed to pool resources, an arrangement which worked very well. Mr Lin arranged for us to visit the places in Beijing that Her Majesty was to see, including Tian an Men Square and the Great Hall of the People, the Forbidden City, and the Temple of Heaven. We then travelled about fifty miles to the Ming Tombs and to the Great Wall at Badaling.

The Queen was to be officially welcomed to China at a ceremony in front of the Great Hall and then to visit the other places near the centre of the city. Her visit to Badaling was not to be until the next day. Because of this, we set our sights on being able to cover both the Welcoming Ceremony and the walk on the Great Wall. We therefore asked Mr Lin to arrange meetings with China Central Television (CCTV) and the Telecommunications Ministry.

At the meeting we were met by Mr Lu Chun Guang of CCTV's international relations department and by a representative of their transmission department. They agreed that they could, in principle, make a unit available to us to cover both events. We also ascertained that for the

Continued on next page

China continued

welcoming ceremony, they would provide a microwave link from Tian an Men Square to their headquarters and thence to the Beijing Satellite Earth Station (SES) for onward transmission to London via the Indian Ocean satellite. Unfortunately they were not able to provide a link from Badaling to the SES, and it was at this point that Peter Heaps first broached the possibility of using ITN's News Hawk portable satellite transmitter. We waited many weeks before permission was granted for its use. Because our fallback position was to record the output locally, transport the tapes by road to Beijing, and transmit them much later in the day, we continued to plan assuming permission would be granted.

Tim and I were shown over CCTV's "OB Vans". We were impressed and relieved, to find that whilst the facilities were limited and basic, the equipment that was there - Ikegami HL79 cameras, Ampex VPR2 1" recorders, the vision mixer and the dual on-board microwave transmitters - were all modern and in good order. Tim's eye alighted, on their Simon hoist which we were later to use at both sites.

The Telecommunications Ministry undertook to provide us with all the sound circuits we would need in Tian an Men Square and Badaling. Later we were told that the direct exchange lines, which we had ordered, would be given priority, and that we wouldn't have to wait the normal 30-45 minutes to get a call through to London. They installed an instrument which Bell and Edison would have recognised, but on which we were able to get calls to London, via an English speaking operator, in less that 5 minutes.

At a meeting set up with Shanghai Television, we were met by Mr Zhang Qingyan, the Deputy Chief Engineer. It is easy to imagine the warmth which flowed when, having laboriously explained that we needed a circuit by which Tim could both speak to London and hear the reply, Mr Zhang said, in near perfect English, "Oh, you need a four wire co-ordination circuit"!

As in Beijing, Mr Lin, in cooperation with Mr Fu Feng Hao, the Deputy Division Chief of the Foreign Affairs Office had arranged for us to see all the places which were to be visited by the Queen. We visited the old town with its famous teahouse, and then went into the Yu Yuan gardens. We went also to the Shanghai Arts and Crafts Research Institute and to the West Suburb Guest House where the Queen was to stay. We had a look too at the International Terminal where the Royal Yacht, Britannia, was to berth and the crew were to "Beat Retreat". As a result of this we decided to try to cover Her Majesty's walk through the old town.

The walk from the entrance of the old town to the gardens via the teahouse is 600 to 700 metres through very narrow streets and we identified eleven camera positions to fully cover the event. This meant using two units some distance apart linked together and moving some cameras during the programme. STV agreed that the signal could be fed to the television station and on to the SES in Shanghai for transmission to London via the Pacific Ocean satellite. At their request we planned to site the two commentators (BBC and TV-AM) at the television station.

As in Beijing, STV's CMCRs were basic but all the essential equipment was there and it was modern and well maintained. We requested the use of two radio microphones for the "Breakfast Time" presenter and an interviewee. In the event they produced about a dozen of them, all brand new, which I suspect they bought especially for us.

Tim and I then moved on to Xi'an, where Mr Zhu Jingqi of the Foreign Affairs Office had arranged for some of us to visit the famous Terracotta Warriors and for others to go to the local television station. We decided because of logistics problems not to attempt an OB from Xi'an. We then flew

CCTV's Headquarters, Beijing

China continued

to Chengdu, which was not on the Queen's itinerary, and from there took a train journey lasting 24 hours to Kumning.

Kunming is the capital of Yunnan province in the south east corner of the country. We were met there by Mr Wang Jiashou the Chief of the Protocol Division of the Foreign Affairs Office of the Government of Yunnan Province. As in most of the other cities we visited, we were taken to see the sights that would be shown to Her Majesty. The most spectacular was the Dragon Gate, the entrance to a temple high up the side of a mountain and overlooking the hugh Tien Chih Lake.

By now Mr Lin, our 'minder', was aware of the organisations that we wanted to talk to, and he and Mr Wang set up a meeting in our hotel which was attended by more that 25 people. We knew that there was not a Satellite Earth Station anywhere in the vicinity (the only ones in China, at present, are in Beijing and Shanghai). We established, too, that Kunming was on the end of large network of radio links which cover much of the country with more than 50 'hops' between there and Beijing. Because of this, a signal reaching the capital left much to be desired. ITN decided that, if they were given permission to use the News Hawk, they would have it air freighted to Kunming after the Badaling programme. We decided that there were no good OB opportunities and opted for news coverage only.

We travelled on by air from Kunming to Guangzhou (Canton) where we were met by Mr He Zhiquan, the Deputy Section Chief of the Office of Foreign Affairs. He took us to see the West Garden, The Childrens Palace and Huangpu Port where the Royal Yacht was to be moored and from where the Queen was eventually to leave China bound for Hong Kong. The Queen was to see a performance given by children between the ages of six and fifteen at The Childrens Palace and we decided that we should try to cover it because it coincided with children's programmes on Saturday morning.

Guangdong Television agreed to make their CMCR available to us complete with a crew. It was even more basic than the others we had seen, without an internal sound mixing desk. Their way of working was to put a portable desk into the theatre and send a mixed feed to the control vehicle.

The OB van by The Great Hall of the People

However, it was adequate for the job. We needed to move some cameras to alternate positions during the programme, a requirement which caused no anguish at all, and were left with the impression that they do it all the time! I also had preliminary discussion with Mr Zhang, their senior lighting man.

The local branch of the Telecommunications Ministry agreed to provide any lines that we needed, and GDTV said that they could provide a microwave link to transmit the signal to their station and that we could then book time on a permanent microwave link between there and Cable and Wireless in Hong Kong for onward tranmission to London.

We left Guangzhou by hydrofoil bound for Hong Kong on 9th August and flew home two days later.

Pre-Planning

Tim Marshall and I then set about the detailed planning of the four OBs that we hoped to transmit.

a) The Welcoming Ceremony in Tian an Men Square, Beijing
b) The Walk on the Great Wall, Badaling
c) The Walk through the Old Town, Shanghai, and
d) The Childrens' Performance, Guangzhou.

Peter Heaps agreed to co-ordinate the lines and satellite bookings for everybody and so when we had worked out what we needed we passed the information onto him for processing. The remainder of the planning operation seemed to involve copious telexes to China, very few of which were either answered or acknowledged although most of them were received and

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China continued

acted upon.

I had to consider what Tel OBs staff I needed to take with me for the programmes. I needed somebody from Comms Department to oversee the transmission arrangements, and a Sound Supervisor to look after the commentary positions and to oversee the sound balancing in Guangzhou. Mark McConnell of Comms and Tony Crake were assigned to the project.

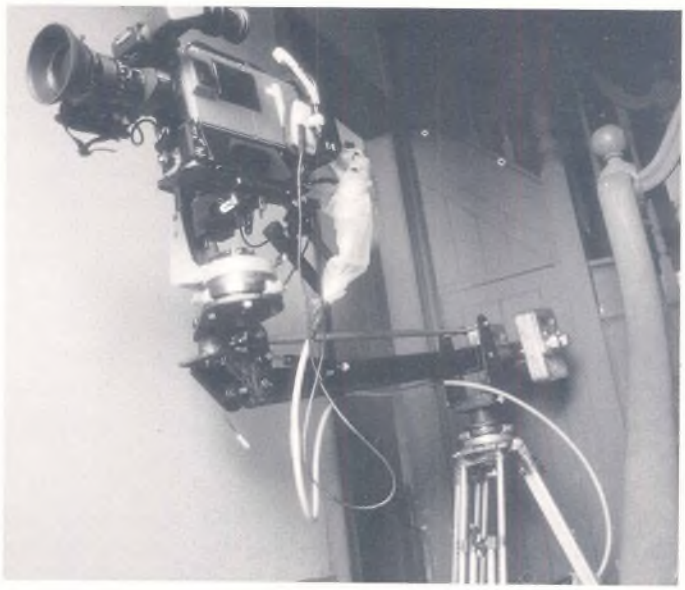
The Great Wall from the News Hawk position

Mark, in conjunction with ITN, ran tests on the News Hawk using stereo sound-in-sync equipment. Both tests were extremely promising, and it is interesting that the stereo SIS equipment proved to be more reliable than the Wegener system used by British Telecom.

Final Preparations

The enlarged OB team, which now included Mark, Tony, Jennie Birkett (Tim's Assistant) and Dave Pickthall (another Producer from Entertainment and Events Department) as well as Tim and myself, flew to China via Hong Kong at the beginning of October. We aimed to go, in the reverse order, to places where we had planned programmes, checking the arrangements and making final preparations. We stayed for a few days in Guangzhou where we were able to see a full dress rehearsal of the show, and I was able to draw up a crude lighting plot. The options were limited by the lamps that GDTV were able to supply. They consisted of a bulb and reflector only (rather like an oversized 'blonde'). I asked about lamps with Fresnel lenses but they did not seem to understand me, even though I had seen some in Shanghai.

Then we flew to Shanghai where it took rather less time to reassure ourselves that everything was under control. Mr Zhang, the Deputy Chief Engineer, produced the most comprehensive and beautifully drafted plans with copies for all of us. Finally we flew to Beijing where we arrived 3 days before the Queen. There was a misunderstanding when we met CCTV again and were discussing the requirements for the commentators on site. They queried our need to have the lines carrying the commentaries terminating in the "OB Van". It became clear that it is not their normal practice for the director and commentator to communicate with each other during the programme, and commentaries are fed direct to line. The confusion existed until we realised what the problem was; a salutary lesson in not taking anything for granted.



BBC Wales Mechanical Workshops have over the last year or so designed and manufactured two light weight O.B. crane arms for use with lightweight cameras, such as the Ikegami.

Shown in the photograph is the second of these arms being used in a typical situation during a shoot for "District Nurse".

Features include:- hydraulic tilt damping, multi-position positive tilt lock, friction pan damping, variable load capacity with internal trim weight, Vinten quick-fix mounting of both arm and camera.

For further details contact Bill Thornton on Cardiff 2248 or 2301.