A look at the History of BBC Outside Broadcast Vans

Brian Summers G8GQS

At the recent CAT20, a meeting by Zoom - what strange times we live in, I gave a short presentation about BBC Outside Broadcast vans and the place of our project MCR21 in that history. This is an expansion of that short presentation.

MCR21 was made in 1963 by Pye. This was the third of a fleet of ten state of the art vans, MCR19 to MCR28. Pye knew them as "main fleet scanners". These became the mainstay of the BBC's OB operations in London, Bristol, Cardiff, Manchester, Belfast and Glasgow.

The allocation of a particular vehicle was not absolutely fixed, and often started its career in one base and then would be moved to another BBC area. However MCR21 stayed in the London base at Kendal Avenue with the local title of Unit 1 - then later LO21, when it was converted to colour in 1969.

It is useful to look back at the history of the BBC's OB units, and to place those units in a timeline. A good reference point is the start of the BBC 405 line "High Definition Service" on November 2nd 1936.

This recent picture of Alexandria Palace shows the BBC transmitter mast now repurposed as a communications and cell-phone tower. Apart from the transmitter mast, virtually nothing remains of the original station - a ghost in the æther.

But even before this there was a significant event in 1931 when John Logie Baird took his 30 line scanner (camera) and installed it in a caravan to televise the Darby.
This is arguably the worlds very first outside broadcast.

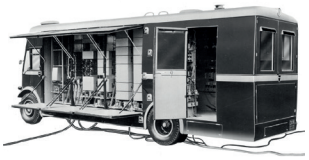
A word or two on the origin of the term Scanner as applied to OB vans. When the BBC high definition service started in 1936, the BBC employed a number of Baird staff who had used the term Scanner for the Darby event and they continued to use "the Scanner" to describe the BBC OB van and the term stuck. Mainly, I think, because it is easier to say than "outside broadcast van".

▶ *Baird's caravan by the winning post, note the mirror on the door, used to "pan" the scanner?*

A second lesser reason may have been that the Line & Field scan generators for the Emitron cameras were inside the MCR and not in the camera. Tony Bridgewater, who worked for Baird from 1928 and was with Baird at the Derby race, confirmed this as the origin of the term "the Scanner". He later joined the BBC Television Service as a Senior Maintenance Engineer under Douglas Birkenshaw, the first EIC (Engineer in Charge) at Alexandra Palace.

Once the BBC Television service was established at Alexandria Palace, the advantages of being able to take cameras to a remote event were clear and the BBC commissioned their first Mobile Control Room, MCR1. This was just in time to cover the Coronation of King George VI and Queen Elizabeth on the 12th of May 1937. It had three Emitron cameras the same as the studio ones. These were installed in a coach built body on an AEC Regal Greenline bus chassis. MCR1 travelled as one of a circus with support vehicles - the generator van, and a transmitter van. In 1938 a second OB van was added to the fleet, MCR2 along with a Merryweather fire escape ladder unit that was used to extend the outgoing circuit aerial to 80ft. There were now four vehicles in the circus! The RF link back to AP was usually on a band 1 frequency above the broadcast AP transmitter output.

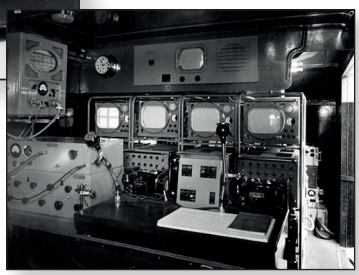
▶ *1936 "short neck" Emitron camera as used on MCR1*



▶ *MCR1 with the maintenance doors open*

This is MCR1. It had up/down doors on both sides to access the rear of the equipment racks. The idea of these doors was rediscovered in the 2000s for the Super Outside Broadcast Artics.
A story for another day.

The BBC re-established the television service after the war and ordered two more OB units MCR3 and MCR4. MCR 4 arrived first just in time to cover the 1948 Olympic Games. MCR4 was built by EMI and had three of the new CPS Emitron cameras installed. These cameras had a 3-lens turret. They were built into a semi-trailer with a Transverse Layout which made good use of the space by using the same picture monitors for engineering, sound and production.



▶ *Picture of EMI MCR4 (above)*

▶ *The inside of MCR4 looking towards the rear.*

MCR3 was made by Pye and had the same transverse layout as MCR4. The transverse layout became the standard BBC OB van plan for the next 20 years. MCR3 had three Pye cameras with a 4-lens turret and they used the Photicon tube made by Cathodion, a Pye subsidiary.

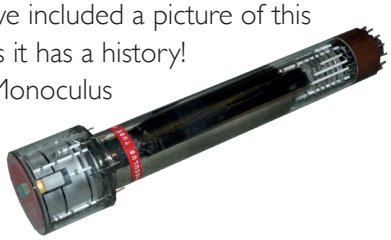
During this early period the camera tube technology, and the patents relating to them, determined what and how particular manufacturers made their cameras and what were installed in the OB vans they made.

- Early classes of tubes in the UK:-
- EMI Emitron was a front scanned tube.
- EMI Super Emitron, front scanned tube plus Image section.
- EMI CPS Emitron, a rear scanned tube.
- Pye Photicon & PES Photicon, a front scanned midget image Iconoscope.

A brief list, a whole book could be written about tubes.

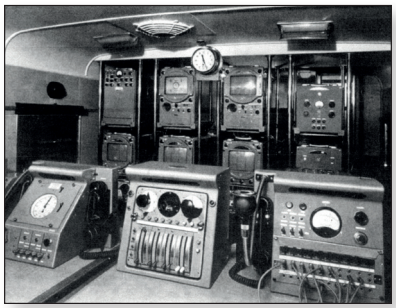
Vidicon tubes were available but the performance was not considered good enough for full broadcast work.

RCA invented the 3 inch Image Orthicon, and it was also made by EMI, EEV and Cathodion in the UK. The 3 inch tube was used in the Pye Mk3 camera and the early Marconi cameras. I have included a picture of this particular 3 inch I.O. tube as it has a history! The red Dymo label says "Monoculus tube" and it a tube from one of the cameras in



Joe Rose's Pye Outside Broadcast van Monoculus. (see CQTV 75). This van has a lot to answer for, it appeared at many BATC events in the early 1970s and it is directly responsible for my long involvement in amateur television. This ultimately led me to join the BBC and get paid for what was my hobby. Readers may be interested to know the BATC has a long involvement with amateur OB vans going back to the first "Matilda" (see CQTV 31)

▶ *Interior or MCR12 by Pye (right) with 3 cameras, a 4 channel vision mixer and an 8 channel sound mixer, in 1952.*



▶ *MCR12 (below) in 1965 at the BBC Training school at Wood Norton, near the end of its service life.*

The BBC continued to expand the OB fleet. It was important then, as it is now, to encompass the events all over the UK. During the early 1950s, MCRs 5 to 12 arrived - these were of the same semi-trailer constriction. They were made by Pye & Marconi. MCR7 was the first one to be equipped with the Marconi MkIb camera which was built under a patent exchange with RCA. This camera used the 3" I.O. tube as developed by RCA and it was made in the UK by EEV. (the English Electric Valve company)

The next milestone in OB development was the new design for MCR13 to 16. They were the first BBC mobile control rooms of post-war design to mounted on a self-propelled Bedford 7 ton chassis. The standard camera compliment was three Marconi MkIII cameras which were designed to use the newly developed 4.5inch I.O. tube. However the cameras were initially fitted with 3 inch tubes, as the 4.5 inch ones were not fully developed in time. MCR13 was delivered to the BBC North Region

base in Manchester for its exclusive use**. This group of four OB vans were the inspiration for the Dinky toy model, now quite sought, after and the cutaway drawing published in the Eagle comic.

This brings us to MCR21 and its nine siblings. This design represented a major step forward in the technology and facilities that could be accommodated in a mobile control room. The basic design was still a transverse layout with the production team sitting behind and above the vision control engineers, looking forwards over them to the common monitor displays. There was extra seating available behind production and a drop down seat for the lighting director. The front section was an engineering equipment area, all of this fitted in just a 24½ ft length. These final ten black & white OB vans, known by Pye as "Main Fleet Scanners", represented the pinnacle of BBC monochrome OB van design.

▶ *The restoration of MCR21 is proceeding well*

The principle technical equipment installed:-

- 4 Pye Mk6 Image Orthicon cameras using the improved 4.5 inch tube and they were hybrid construction using transistors and valves. There was provision for a 5th camera.
- A ten channel solid-state vision mixer with wipes and caption keying type MX1/501
- A twenty channel solid state sound mixer with three groups and main faders.
- As well as the 4-camera preview monitors there were two switchable preview monitors.
- A seventeen inch transmission monitor.
- Seating for four vision control engineers - one for each camera with individual camera control panels which have set up controls and an Iris & Lift joystick. The Pye Mk6 was not the first camera to use an Iris & Lift control, but this could be the first time it was used in a BBC OB installation.
- A Musa jackfield was installed - possibly for the first time in a BBC OB van.
- A sophisticated talkback system with production TB, Programme Sound, Engineering talkback to cameras, Commentators talkback, a telephone exchange, a loudspeaking telephone to a "studio" set, producers secretary talkback and control lines back to a BBC studio.
- Main and reserve triple standard SPGs with genlock, crystal, or mains lock for 405, 525 or 625 lines. It was also possible to lock to a remote incoming 50Hz reference from a remote studio.
- Remote controlled ¼ inch twin channel tape recorder type EL3503 in a custom housing.
- BBC designed audio line identification unit type RP4/1
- Six BBC waveform monitors type - MN6/510 and two Tektronix 515 oscilloscopes.

The BBC started colour transmissions just 4 years later in 1967 and this was the end for most of the monochrome fleet, some lived on for a while in the regions, and some were converted to colour. MCR21 was one of the lucky ones. It had two PC60 cameras installed in July of 1969 in time for its first colour programme on the 1st July - the Investiture of HRH the Prince of Wales. Nothing like being thrown in at the deep end! But to be fair it was a minor role. Next time I will talk about the early colour scanners and on to recent times.

Restoration of MCR21

We are taking MCR21 back to it's original 1963 state, or as close as is feasible. It has been resprayed in the correct green with a grey stripe and the final work on the body and engine is being completed. As I write the engine has been started and MCR21 has moved under it's own power for the first time in 23 years. We will be able to start rebuilding the interior and re-fitting the equipment.

Further information can be found on our websites:-

- *www.mcr21.org.uk* — About MCR21
- *www.bttt.org.uk/our-trust/* — About the Trust
- *www.tvcameramuseum.org* — For camera details.
- Our YouTube channel. — Search "mcr21"
- *www.bbc.com/historyofthebbc/research/mcr21*
- *www.tvobhistory.co.uk*

MCR21 is owned by our Trust, the BTTT which is a Registered Charity. We are partly funded by the Heritage Lottery Fund and donations from Friends of MCR21.

I would like to thank my fellow trustees, our supporters and volunteers for their help in preparation of this article.

** A report for this was in Practical Television, July 1955.