



## BBC MCR21's Sound Mixer Desk and audio systems

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The sound desk installed in MCR21 was made by Pye Ltd. from modules in their new 'Broadcast Audio Equipment' range. The idea behind this was that simple or complex installations could be made up by combining a number of standard units selected from the module range.

A full sound system, programme and talkback, to the BBC's requirements was made up for MCR21 complete with amplifiers, PPM's, faders, power supplies, reserve battery supply, tone generators, a telephone system with ring generators.

This compact installation was built into two desk units that form part of the overall production desk fitted transversely across the vehicle.

These were notionally 'portable' in the sense that they could be removed and operated away from the vehicle if the programme required that.



► The 20 channel Pye sound mixer assembled to BBC requirements.

Part of the BBC's specification was that there were various levels of equipment 'de-rig' to increase the flexibility and accommodate different circumstances. Notable was the programme made of the ascent of the Old Man of Hoy where it was not possible to get the MCR near enough to the site so the complete contents were moved there and operated under canvas! Another situation was at Wimbledon where at least two MCRs were de-rigged into the void under the court seating.



► The amplifiers are neatly fitted under the desk

The Sound mixer had 20 input channels, each having its own plug in amplifier module with gain control and input level switching. These channels were divided into 3 groups, green, blue and red which could operate

independently, perhaps feeding a PA system or foldback, or they could be mixed again at the master faders for a combined output. Two independent PPM's could monitor different signals and there was a BBC designed 'Optical PPM' installed above the transmission video monitor. This was so the sound supervisor could see the PPM in the same eye line as the master monitor.

The mixer modules were easily accessible under the desks, on the left are the power supplies and the loudspeaker amplifiers and on the right the channel and mixer amplifiers. Top Right are the two PPM driver modules. The standard PO316 jackfield allowed limited patching and the mixer inputs connectors are on the rear of these units. Of note is the lack of equalisation, the mixer has a flat frequency response.

Communications to the cameras outside the MCR was built into the cameras as 'talkback' so the cameras could hear production talkback, programme sound and engineering talkback. There were spare jacks on the cameras so that others could plug in and listen. This was well before radio was used for talkback! Telephones were used, but if these were near the 'action' the bells would be turned off.

At the commentary position was a commentators telephone unit, known in the BBC as a Baron box. These have been restored as part of the project. It has two pairs of headphone sockets at the front, each headphone pair has its own volume control which is normally supplied with production talkback, the other choices are programme sound or 'off air', sound & vision from a TV receiver unit.

The telephone handset operates as a loudspeaking telephone in the OB Van for the Producer or Production secretary. Switches are provided to call the Producer or to cue the sound mixer. There is no bell with the telephone, a bell is the last thing you want ringing... There would have been one or two picture monitors displaying mixer out and off air. One or both of these would have the picture displayed selected in the MCR by the production secretary.



► A fully restored 'Baron Box' commentators communication unit.

To the left of the sound desk is the engineering managers position. His panel has talkback controls, a telephone and the telephone exchange. MCR21 has 15 principal audio circuits to the forward termination panel. At the panel they connect to an XLR and 3 terminals for wire connections and the other end connects to a jack and a 'Dolls Eye' at the EMs desk. On an 'OB' the sound and talkback to the studio could be complex. You might have one or two main programme outputs with spares in reserve.

On the talkback side a 4 wire speech circuit provided two way communication with the studio, or you might have 'Control Lines'. These were military style, copper all the way, magneto calling telephone lines. An incoming ring, 75 volts at 25Hz, would drop the dolls eye indicating which line was calling so it could be answered. The desk had a ringing generator module to call in the other direction. This rather primitive system, essentially the same as field telephones, had high reliability and would work even in a power fail situation. Control lines were still in use well into the late 1980s or even into the 1990s. It could be a challenge to get a long control line through several GPO exchanges. I rather think that in later years the 'copper all the way' disappeared and cunning GPO devices simulated the direct current circuit.

► A BBC "Main Fleet" MCR in original colours early in it's career.



► Engineering Managers Desk

Dolls Eyes! The origin of the name is plain, but these have a solenoid connected across the line and a incoming ring will drop the yellow flag, sounding a buzzer and opening the eye. Very similar to the 'indicator flags' on a PBX. When a jack is inserted into the socket below it resets the eye ready for the next call.

In the picture of the desk above the two rows of holes in front of the more upright jacks and dolls eye are meant to have the unused jacks parked in them. A bit like the conventional larger GPO exchange desks. However, the GPO desks have room underneath to accommodate a weighted retraction pulley device.

In MCR21 there is no room for such a device and we are puzzled as to how the cord retraction might have been achieved?? Some sort of spring wind-up gizmo? Has anyone seen such a device? The Jacks can be seen in this original picture; <http://mcr21.org.uk/gallery/none/>

**Useful links:**

- [www.mcr21.org.uk](http://www.mcr21.org.uk)
- [www.bttt.org.uk](http://www.bttt.org.uk)
- [www.tvobhistory.co.uk](http://www.tvobhistory.co.uk)
- [www.tvcameramuseum.org](http://www.tvcameramuseum.org)



► Close up of the Dolls Eyes

