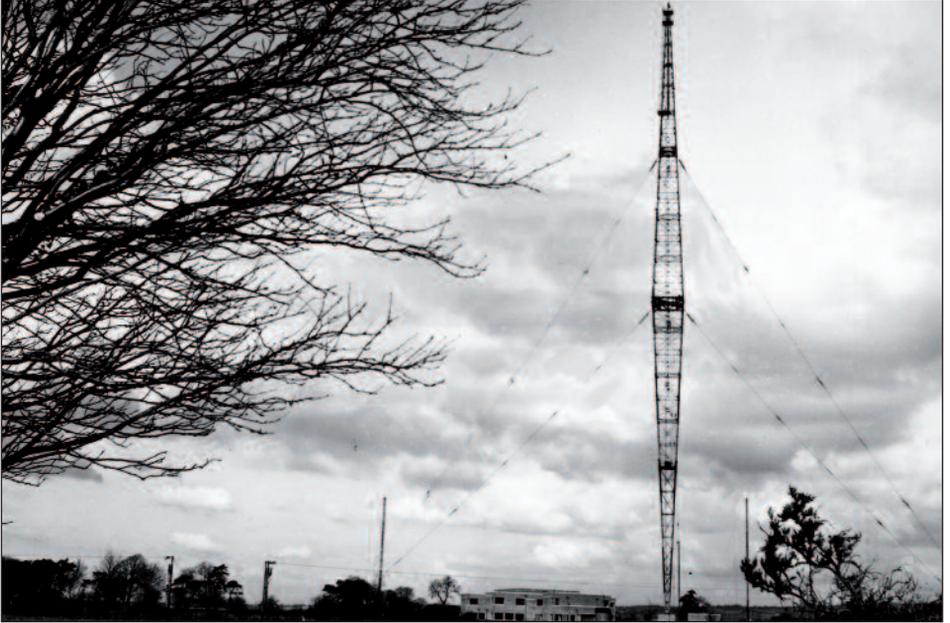


UK MW & LW Broadcasting: the first 95 years

Former BBC Senior Transmitter Engineer **Dave Porter, G4OYX**, outlines the history and current use of MW & LW broadcasting in the UK



Lisnagarvey in 1949 showing the impressive Blaw-Knox mast (Picture courtesy of Norman Marsden, G4BQN)

Experimental sound broadcasting was begun in the British Isles by the Marconi Company and other large electrical engineering manufacturers as far back as 1919. The British Broadcasting Company came into being in 1922, formed from Marconi and other commercial companies, and took over three 1.5 kilowatt transmitters: 2LO in London, 5IT in Birmingham and 2ZY in Manchester. Regular daily broadcasting on MW started from these stations during November 1922. A period of expansion followed and by 1925 over 20 MW stations were in operation. These were all low-power local services; situated in large towns and cities.

In July 1924 the first LW transmitter, 5XX, opened at Chelmsford. It was transferred to Daventry a year later to carry a nascent national service. Coverage initially extended to 150 miles or so on crystal set receivers from this 25kW service, but 5XX later provided a national service – programmed from London and available to the majority of the population – which was the forerunner of the National Programme.

On 1 January 1927 the British Broadcasting Company was dissolved and the British

Broadcasting Corporation was constituted under Royal Charter. It was decided to combine the local stations in each area into one regional station, with an underlying programme support from London. This was known as The Regional Scheme. The Scheme was executed with low-power stations being replaced by new studio centres and high-power transmitters, initially serving five regions of the British Isles. In 1927 the prototype of these regional transmitters, Daventry 5GB with a 50kW MW transmitter, was established in the Midlands.

THE REGIONAL SCHEME

Brookman's Park, 25 miles north of London, opened in 1929 as the first true regional centre. Operating two 50kW MW services from the same site was uncharted territory. The Regional Service ran from the north side of the building, with the National Service from the south side, and there was no direct connection between the two as there were concerns about the possibilities of cross-modulation. In the event this was not a problem and a common earth system could be used at all future stations.

In 1931 the second regional centre was set up at Moorside Edge, covering Manchester, Leeds and the industrial parts of Northern England. As at Brookman's Park, this new site generated its own 220 VDC electricity supply by diesel engines, as at that time there was no public electricity supply to the site.

A service for Central Scotland was started in 1932 at Westerglen near Falkirk; followed in 1933 by its twin at Washford in Somerset to cover the West of England, and also Wales by direct sea path. The last of the main five regional centres was inaugurated at Wychbold near Droitwich in 1934. The 5XX 200kHz Daventry service was transferred to a 150kW transmitter with 700-foot masts, and the 5GB 50kW MW service acquired a newly-developed directional antenna aimed at Birmingham.

Lisnagarvey near Lisburn in Northern Ireland followed in 1936 with a Marconi 100kW transmitter, and a US-manufactured "Blaw-Knox" mast radiator of two pyramids each 250 feet long joined at their bases. This site was the first to have mains electricity at the start, with diesel alternators as back-up.

Expansion continued with Burghead 100kW (1936) on the Moray Firth then Penmon 8kW (1937) on Anglesey for North Wales. Later that year Stagshaw near Newcastle-upon-Tyne commenced with a 100kW STC transmitter. Redmoss 10kW (1938) near Aberdeen was followed by Start Point 100kW (1939) in Devon; Clevedon 20kW (1939) near Bristol was the twelfth and final station.

THE SECOND WORLD WAR

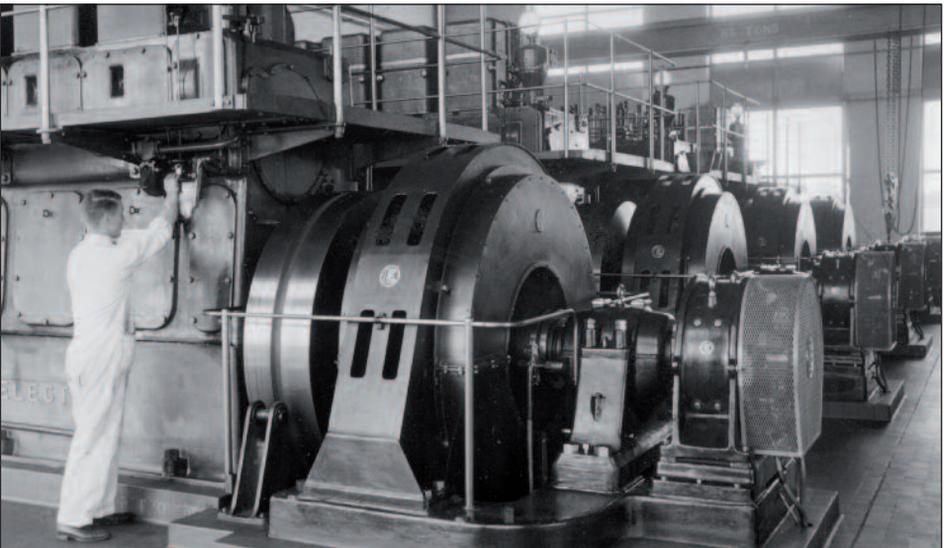
The Scheme was now complete but regrettably did not last long as from 3 September 1939 the

UK was at war with Nazi Germany and two national Home Service synchronised groups were set up on 767kHz (Northern transmitters) and 668kHz (Southern transmitters). Eight transmitters were on 877kHz for the Forces Programme. The groups were intended to prevent the enemy using solo stations for direction-finding. The BBC also used Redmoss, Clevedon and Penmon on 565kHz synchronised with the Radio Eireann service from Athlone; for the same purpose. 61 so-called 'H Group' sites were used for Civil Defence broadcasts, with transmitters from 50W to 1kW; all of these were on 1474kHz. LW was not in use.

The BBC had until now used LW and MW only for domestic services and were against the idea of using them for external services. But with the Nazis utilising their LW Deutschlandsender for propaganda purposes, permission was given for External Broadcasting on LW and MW in addition to the SW Overseas Service.

In 1939 an STC 140kW unit destined for Lithuania was commandeered for Brookmans Park, with two Marconi 150kW units for Moorside Edge. Westerglen and Moorside Edge each benefitted from the installation of RCA-50E 50kW units via the US Lend-Lease programme.

The Overseas Service Extension programme was started pre-war and OSE6 at Droitwich started broadcasting in February 1940 from a new building with a paralalled pair of Marconi 200kW transmitters on 1149kHz into a horizontally polarised antenna for maximum skywave during darkness. Start Point on 1050kHz was also used at 180kW during darkness for the European service and after the Allied invasion of occupied Europe the antenna pattern was altered for maximum radiation into France.



The four English Electric diesel generators at Droitwich in 1935 (Picture courtesy of John Phillips)



Three 50kW Marconi Doherty transmitters at Droitwich in 1978 for 693kHz (Picture courtesy of John Phillips)

Featuring heavily protected accommodation, OSE5 at Ottringham near Hull was on air by 1943 with four 200kW transmitters, three were combined for 600kW on LW and one at 200kW on 977kHz. It was on a direct sea path to the Third Reich. The Political Warfare Executive also had the 600kW MW “Aspidistra” station at King’s Standing which was used by the BBC when it was not required for black and grey broadcasting.

POST WAR DEVELOPMENTS

Peace time broadcasting restarted on 29 July 1945 with the continuation of the Home Service and the new Light Programme. By May 1946 the Third Programme had started from Droitwich with MW fill-in services from some of the wartime H Group sites. A 10kW service from Bartley near Southampton was added in 1946 to improve Home Service coverage. In 1948 new STC 100kW transmitters were installed at Washford and Westerglen. The Overseas Services continued from Ottringham and Aspidistra.

Implementation of the Copenhagen Plan, a new wavelength plan for Europe, confirmed Daventry as the home for the Third Programme with a new 150kW transmitter, and a 725-foot mast radiator at Dodford some 2.4 km away to ensure both an anti-fading service and one not affected by the antennas and masts on the HF site. Despite the new plan there was serious competition for channels in Europe and interference was evident, so the decision was taken to build a VHF/FM transmission system in Band 2. Wrotham in Kent was first on air in May 1955 followed by many other FM transmitters to achieve national coverage within ten years. Each site radiated the Home, Light and Third Programmes at high quality and free of interference.

This development of FM could have spelled the end for MW and LW operations, but the Cold War, the transistor portable and offshore pirate

stations ensured otherwise. The Cold War meant that many of the unused H Group stations and some new sites were established with pairs of BBC-modified RCA ET-4336 250W transmitters as ‘Deferred Facility’ sites for Civil Defence use in case of a nuclear attack. The early transistors used in portable radios could not function at VHF/FM so these receivers revolutionised listening at home and on the move, but only on LW and MW. The offshore pirate radio stations of the mid 1960s were extremely popular and, following their closure by the UK government, the BBC was asked to launch a similar MW service called Radio 1. This station began in September 1967, broadcast by 17 transmitters on the former Light Programme MW channel, and proved as popular as its pirate predecessors.

Apart from the installation of some in-house units at Burghead, Droitwich, Lisnagarvey, Stagshaw and Start Point in the early 1970s, no more money was spent on AM sites until the Geneva Plan was implemented in 1978 when many 50kW and 10kW Doherty transmitters were commissioned country-wide. But for the BBC and Independent Local Radio throughout the 1970s, a MW service was considered paramount; preference being given on air to the MW outlet over the parallel VHF/FM one.

Since the transfer of BBC local and regional services to FM and DAB many of the former BBC Regional Stations, with their three high-powered MW transmitters, have been taken over by commercial stations. Many countries in Europe have been closing their MW and LW services over the past decade but in the UK only Orfordness has been closed, and the BBC continues to use many sites for Radio 5, The Asian Network and Local Radio, and of course Droitwich on LW.

After 95 years it looks very likely that MW and LW services in the UK will be in fine shape to celebrate their 100th anniversary.