

EN INF

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Resources, Engineering and Services

Bill Dennay gives us a personal view of the new Resources, Engineering and Services Directorate.

Writing this introductory article on the new Directorate is not the easiest of tasks. This is primarily because the facts, and the reasons for the changes which accompanied its setting up, have already been well publicised and I would not wish to go over the ground again. However, there are many issues raised by the changes which are worth covering in *Eng Inf* since they will have a potential impact on the way we carry out our activities in the future. It is also inevitable that I write this with a tinge of sadness that the Director of Engineering post and the Engineering Directorate will no longer exist after 1st April.

Since the Director-General's statement on 11th January, we have been working through the setting-up phase of the new Directorate, identifying the range of ac-

tivities it will handle, the financial implications and the staffing implications. Most of this preparatory work is complete, the senior management team is in place and, like all others involved in Producer Choice and this activity, we all now wait for the 1st of April.

The change brings into the new Directorate not only all the expertise of Engineering Directorate but also all the technical, operational and service elements of all other areas of the Corporation. This must represent a positive and welcome step forward. For several years we have talked about potential changes in the broadcasting environment; those changes are now with us. Satellite services exist; the ITV franchises have been reconstructed; there is one national

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MIKE MEYER E.L.D.

Bill Dennay (left) and David Hatch (then MDNR) at the January EsIC Conference

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As *Eng Inf* is an internal BBC magazine, it would be appreciated if no reference was made to it in articles, magazines, etc, published outside the BBC.

Stories for the Summer edition should be forwarded to the editor by Friday 14th May, 1993.

TRANSMITTER NEWS

The following services have opened, changed or closed since our last issue:

New TV relays

Acharacle	Highland
Darley Dale	Derbyshire
Keilder	Northumberland
Perry Beeches	Birmingham

Addition of Nicam Stereo

Rowridge	Isle of Wight
Waltham	Leicestershire

TV coverage improvements

Canongate	Edinburgh
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Radio 1 on FM

Ridge Hill	Herefordshire
Sheffield	S Yorkshire

Radios 1 and 4 on FM

Aberdare	Mid Glamorgan
Blaenavon	Gwent
Carmel	Dyfed
Combe Martin	Devon
Innerleithen	Borders
Kilvey Hill	West Glamorgan
Peebles	Borders
Pontypool	Gwent
Thn Pentre	Mid Glamorgan

New LR fillers on FM

Newhaven	Radio Sussex
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Further information from EID on White City (07) 25040.

BBC and BT demonstrate Digital Coding for HDTV

BBC and BT engineers have successfully demonstrated a "two-layer" digital coding method for standard and high-definition television.

A video coding scheme - combining both standard and high-definition digital television - was successfully demonstrated at the recent London meeting of ISOIMPEG (the Moving Pictures Expert Group of the International Standards Organisation).

The demonstration - using pictures derived from software simulations provided by the latest MPEG test model - showed standard-definition television (SDTV) compressed to 6 Mbit/s and HDTV compressed to only 14 Mbit/s. The picture quality achieved was remarkably good, especially considering the relatively low bit-rates involved.

The SDTV and HDTV pictures were shown in two modes - *simulcast* and *compatible*. In the simulcast mode, the SDTV and HDTV images are coded independently. In the compatible mode, the SDTV signal is used as one prediction option for the HDTV encoder, and is therefore part of the overall data making up the high-definition picture.

This approach offers the potential for improved coding quality and efficiency. Importantly, it also allows for

the HDTV picture to degrade gracefully to standard definition in non-ideal reception conditions, rather than suffering the total loss more generally associated with digital systems. One possibility offered by this approach would be to use the same signal to provide HDTV to an appropriate receiver using a fixed external aerial, whilst enabling standard-definition pictures to be received on portable receivers using simple set-top aerials.

The simulation work was carried out jointly by staff at Research Department and BT Laboratories, as part of the European collaborative project *VADIS* (Eureka 625).

The displayed HDTV sequences were replayed from an HDTV recorder at Kingswood Warren and were transmitted via satellite (Eutelsat-II F3) to the MPEG meeting at the BSI's conference centre in London. For transmission over the satellite, the HD signal was coded using 140 Mbit/s video coding equipment (developed within the *RACE HIVITS* project) which provided a transparent path for the HDTV signals.

New technology for *Eng Inf*

From this issue onwards, *Eng Infs* being typeset using Ventura 4.0 Publisher for Windows. So we will shortly be saying farewell to the old AM Varityper which has served us well over the last eight years or so.

Introducing this new technology has unfortunately caused the Winter edition to be rather late, but production of the magazine should speed up as we become more familiar with desktop publishing.

Contributors can now send in their stories on a 3V2-inch diskette. Our Compaq PC, running WordPerfect for Windows, can load most other word-processed text files from disc, including AmiPro, DisplayWrite, MS Word, Multimate, Office Writer, Word Star and XyWrite. It may also help if an ASCII text file is included.

Many thanks for your continuing support. Please keep sending in those stories!

...continued from page 1

commercial radio channel already in play and a second one follows shortly. These events do cause significant impact on how the Corporation should now conduct its business and over and above that the Charter Renewal exercise is the most significant challenge we have addressed in recent times.

It might seem strange that I describe this "bringing together" as beneficial when a few years ago Priorities for the Future, or "Black Spot" as it became known, was seen as beneficial in splitting the project areas in particular into the individual Directorates. I suspect the two are compatible; in fact what John Birt described on 11th January is probably the final outcome of the process set in train by "Black Spot".

There is, however, no question of merely returning to the past. There can for example be no recreating of SCPD as we knew it, or even returning to the earlier days when a central view always seemed to be the most important. There are several critical differences between then and now, the most crucial one being the source of funding. The new Directorate, a major trader in finance terms, has no funds of its own. Be it in engineering, facility management, provision of library services or studio resources, all the income must be earned. The discipline that this brings with it cannot be overstated. It will be a challenge to our professionalism but one we will accept and overcome.

I am frequently asked what is the need for the new arrangement? If all services and resources in the Corporation are provided to

the same highest degree of efficiency; if the best of market practices are used by all players; if all our practices when market tested are proved to be the most efficient; if all engineering services are absolutely needed and most efficiently provided; and if career prospects in all Resource Engineering and Service areas are optimised, then there may not be much need for the proposed change. However, the reality is of course a mixture.

We have an outstanding record of achievement and of improved efficiency. We are well prepared for the trading arrangements that follow Producer Choice but there is room for further corporate improvement. There are variations in practices, no one area has a monopoly of best practice. In terms of strengthening the programme-making base and freeing output Directorates from the challenge of handling Resources and Services - as well as programme commissioning, scheduling and making - it makes sense to create a single Directorate dedicated to the task of managing Resources.

However the new Directorate functions in the future, it is vital that the dialogue with our customers is maintained and further developed. Many people have spent much time working on these relationships and developing sound working practices. There can be no question of going back on these matters. This dialogue is crucial to the understanding we must have in the new Directorate so that we can build further on these foundations. Only by being aware of the requirements of the end users can we develop our own plans effectively; we will after all be in competition with other suppliers.

Engineering will continue to play a key role in the Corporation's future not only in the enlarged Directorate but also through Phil Laven's role in the Policy and Planning Directorate. We must continue to be a major player and contribute to the development of broadcast technology. Whether it is in the area of enhanced television or digital audio broadcasting the BBC's views must remain those sought by the industry at large. Now, at this time of technology enhancement, is not the time for the Corporation to retreat from its leadership role. This does not imply being always a pioneering spirit but it does involve the commitment to the engineering excellence so long a major hallmark of our programmes.

These are inevitably exciting and challenging times and sometimes excitement and challenge can be unnerving. There is no reason to lose our nerve; there is much that is to be achieved and will be achieved. The Resource Engineering and Services Directorate has its own role to play in meeting this challenge. It will be judged by its achievements and I have no doubt that these will contribute to the general well-being of the Corporation in the coming years. Engineering has achieved much and in the new environment will achieve much more. I have every confidence that the strength of technical knowhow will continue to grow in the future and that BBC Engineering will continue to carry the hallmark of outstanding quality for which it is rightly renowned.

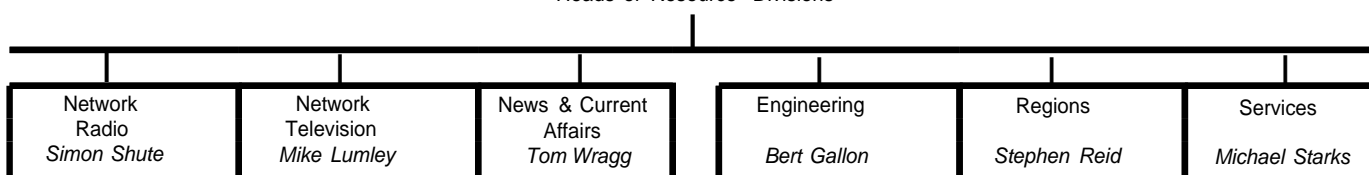
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Resources, Engineering and Services Directorate: 01/03/93

LOUDSPEAKERS

New amplifier for the LS5/8

Graham Whitehead reassures us that the LS5/8 has not been pensioned off; it is back with a brand new drive amplifier.

For many years the LS5/8 has been the mainstay of BBC Grade 1 monitoring. There are some eighteen hundred in service, representing a capital investment in excess of a million and a half pounds.

Recently, two factors had combined to give users and project engineers the impression that they were no longer available: (i) they had been withdrawn as a stock item from the Central Stores catalogue, and (ii) Quad had ceased to manufacture the domestic amplifier which provides the power. However, contrary to that impression, the LS5/8 is very much available, is even better than before, and is in a form which could bring a new lease of life to older or problematic monitoring areas.

Two years ago, demand for the LS5/8 had fallen to such a low level that it was uneconomical to keep them in stores as an off-the-shelf item; they were demoted to being available to order only. By this means, price and delivery could be made to reflect demand accurately, a situation which carried on right up to the recent closure of Central Stores and Supplylink. But at no stage were they "not available" or "no longer manufactured".

Then, in late 1991, Quad announced that they were ceasing new supply - with effect from January 1992 - of the 405 amplifier which provides the core of the AM8/16 used with the LS5/8. This meant that, unless a replacement could be found, future orders for the LS5/8 could not be met.

(Existing users should have little to worry about, owing to Quad's policy of maintaining discontinued products for up to 25 years after withdrawal. Indeed, if you find yourself with a faulty AM8/16 output card,

call Quad Service on 0480-52561 and they will be pleased to help.)

So came the difficult task of finding a worthy successor to the AM8/16 for future orders. Over the years, many new loudspeakers and amplifiers have been brought to the attention of the Loudspeaker Liaison Committee, and auditioned for possible use. Likewise, the Committee has been advised over the years of any shortcomings in our existing range of units. If available at the time, a commercial product has been substituted; otherwise, we have adapted our equipment to meet the customer's requirements.

One comment passed on to the Committee several times concerned the bass performance of the LS5/8 under some circumstances. These were most common from Radio Group 2 users who found the bass characteristics inadequate when dealing with bass drum and the like. Indeed Maida Vale engineers experimented in 1987 with modified Quad amplifiers, and later with Yamaha PC2002s, in an effort to address this. The results were promising but did not at the time provide the answer; partly because nobody had clearly defined the question!

Thus, a design brief for a revamped LS5/8 was drawn up by the Committee and included the following points:

D The sound balance from the new amplifier/loudspeaker combination should be the same as that of the existing LS5/8.

D Ideally the new amplifier should be more powerful than the Quad 405 (100 watts per channel), but not so much that the loudspeaker drive units became unreliable.

O It was desirable that only the amplifier be changed. Further-

more, it should be possible to retrofit the new amplifier to an existing LS5/8 system.

D It should have sufficient space within the box for the LS5/8 Active Crossover card to be fitted.

D The AM8/16 has a slight rolloff at the top end, due to the input transformer used. The replacement should not do this.

D The AM8/16 was considerably more expensive than the Quad 405, because of the extensive modifications required to the standard part. The replacement therefore should preferably be from a small British company which was willing to produce a modified version of a standard product, at little extra cost.

D No cooling fan should be fitted, as the amplifier is likely to be sited close to the loudspeakers.

D Build quality and safety should be to a suitably high standard.

D Any product should be available with the minimum of BBC development effort, as there was no specific budget line to support large investments of this type.

Needless to say, a replacement for the AM8/16 had to be available within a few weeks, as customer requests were already coming in.

Introducing The AM8/20

As already mentioned, many amplifiers have been auditioned over the years, both domestic and professional. The tendency for professional units is slanted towards the "sound reinforcement" industry, and hence fan cooling is

common. Large areas of the domestic market are dominated by products which are either not gutsy enough for long-term studio use, or very esoteric and hence too expensive for our purpose.

The LS5/8 uses an RD-designed active crossover card, built into the amplifier. Initially, amplifier candidates were auditioned using a pair of more conventional loudspeakers. These have 500W power handling, 4 ohm impedance, and a very inductive crossover; so any amplifier able to handle them should be able to take the LS5/8 in its stride!

While some amplifiers showed distress when trying to drive these beasts, most met the bill satisfactorily. But one met it better - displaying superb dynamics and generating Sound Pressure Level (SPL) peaks usually only encountered from very large and heavy sound reinforcement amplifiers. All from a unit little larger than the Quad 405, it was the **Chord SPM 800** amplifier which impressed us so much.

Chord Electronics is a small concern in Maidstone that makes a range of "high end" domestic amplifiers. The SPM 800 is the smallest of these, offering 160 watts per channel into an 8 ohm resistive load, but with a total dynamic reserve of almost 1kW for driving reactive and/or low impedance loads. This is due to an innovative switch-mode power supply design, and the amplifier configuration.

Two SPM 800s were each fitted with an LS5/8 active crossover for audition purposes. Outputs to the loudspeakers were via Neutrik Speakon, and similar connectors were added to the LS5/8. We expected a benefit in bass definition and overall transient response but gained a lot more, observing subtleties of definition, imaging, effortlessness, and greater control, while the balance remained the same.

The new amplifier was subsequently coded AM8/20 and licensed to Chord Electronics.

Field trials of these prototypes in TC7 and MV1 evoked a similar response to that observed at Avenue House. The revamped LS5/8 displayed a marked improvement in bass control and definition over its predecessor: kick drum was sharpened up, even in the presence of synth or double bass; dynamics were dramatically improved, and the extreme top was smoother, as was the middle. According to Mike Lucock from MV1; "*There has always been an edginess; a wiry quality to the upper strings and a lack of warmth to the sound. On loud, complex sounds, the speakers can sound very hard. Whilst some of the subjective effects can be attributed to the acoustics of the cubicle, these new amps have definitely made a difference. The upper strings sound*

smoother and there is more openness in the sound. The amps seem to handle the transient responses more cleanly. This benefits the lower strings as well. Please can they stay?" It rather looks as if the LS5/8 has suddenly come up to date!

This is not the forum to enter the "great amplifier sound debate". We could make comparative measurements of dynamic power, slew rate, TIM, output impedance, etc and find several perfectly good reasons *why* the new amp sounds better, but that investigation would not be cheap. That it *does* sound better is what is important.

Production versions of the AM8/20 have the hf channel current limited to around 2 Amps, to protect the tweeter, and power-up delay is ten seconds to

One of the LS5 /8s recently installed in Manchester