

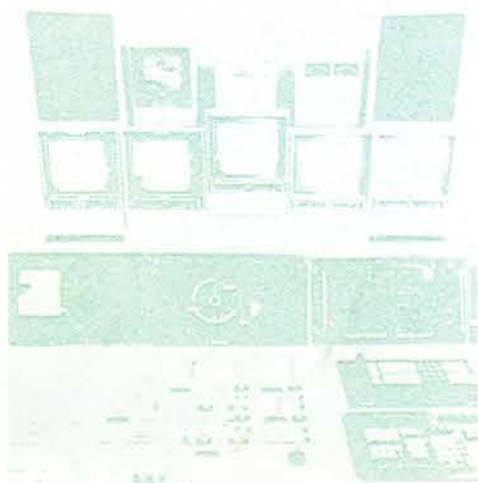


Inside Engineering

DEPARTMENT PROFILE

NEW TECHNOLOGY & FUTURE PROJECTS

AUGUST '87



In the beginning there was Howard Steele – Chief Engineer of ABC TV from 1959-66. Under Bernard Greenhead he established an Engineering Department at Teddington of style and quality. The present department tries to continue these traditions; it is a little larger and has staff at Euston and Hanworth, as well as Teddington, and serves all Thames' Engineering needs.

Spending some £7 million of the Company's money per year on capital projects is hard work. Each project requires planning, consultation with the user, assessing equipment, considering budgets, detailing, manufacturing, specifying, installing, commissioning, all within the constraints of a reasonable timescale.

The work is made harder but more interesting because it is essential to look to the future. Technology is changing fast and in an organisation like Thames it is not easy to change traditional ways of operating as fast as in a smaller company. To help in this the Engineering Research and Development group is constantly looking at tomorrow's technology to see where it may fit into or alter our plans.

Our own new technology hasn't been neglected either. The Drawing Office changed to Computer-Aided Design three years ago and with the

addition of a compatible CNC press in the Hanworth Workshop most "metal bashing" is fully automated. Computer-aids have also been introduced into the Research and Development groups and will shortly be introduced into Projects.

The groups within the Engineering Department – Projects, Production, Research and Development, and Services – work together to provide a service in all matters to do with engineering. High on the priority list is to ensure the high technical quality of our output. The IBA lays down technical standards by means of its Code of Practice; not only do we have to comply with it, but also have to take a major role in negotiating the specification.

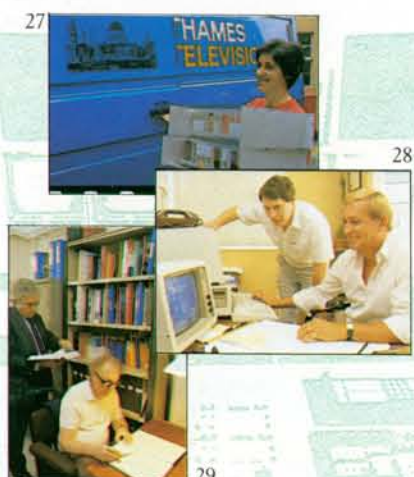
The Chief Engineer's responsibilities encompass these technical standards and also involve representing the Company on all engineering matters with the IBA, the other ITV Companies and ensuring that Thames' views are put forward in the wider world, with standards setting bodies such as the EBU, CCIR, SMPTE and others. As the major ITV contractor a leading role is expected and, hopefully, achieved.

Engineers tend to be introverts. In a company full of extroverts they may be at a disadvantage particularly in terms of publicising what they do. Their work is available for all to see, good and bad, it's not like a studio set, here today and gone tomorrow, it has to last for years. Needless to say a job done well is as expected, a job done badly is liable for continuous criticism. We try to give people the right equipment set in the right environment, to enable them to do their job well; we are simply a service section providing Thames with the means to produce and transmit its programmes. Above all, we are a department which must think years ahead. That is part of the job we are expected to do, because if we do not, technology will pass us by.

These pages are intended to show some of the Engineering achievements

of the last year or so. They also give a brief glimpse of the future; stereo and digital audio, component recording, new MCR and Presentation area, the possibility of a new OB base and others. There can be no slowdown in the work of re-equipping and modernising Thames. The world of television is changing and we must change and adapt to meet the challenges.

We have the best Engineering department in the U.K. due not only to the people within it but also to the support of those outside, our customers and colleagues upon whom we lean so heavily.



1. Brian Scott (Chief Engineer)
2. Richard Burrell
3. Brian Turner
4. Graham Lewis
5. Steve Mayland
6. Alan Callick
7. Dave Hoare
8. Bill Young
9. Peter Horton
10. Marion Scrivener
11. Adrian Sumption
12. L:R Bob Taylor, Bruce Stevens, Fred Smith and Rod Green
13. Richard Harding
14. Ron Coleman
15. Paul McBride
16. Dick Wilson

17. Alan Butcher
18. David Seal
19. Joe Dyer
20. Adele Carter
21. Pauline Chadwick
22. Ron Lambert
23. Eddie Spiteri
24. Alan Herbert
25. Hugh Griffith
26. Dick Rossley
27. Ann Stanton
28. L:R Alan Herbert and Gunter Karn
29. L:R Ken Pike and Bryan Lane
30. Joe McCarthy
31. Robin Stevens
32. Paul Evans

Department Profile

Euston Graphics Phase I

This project marked the first stage of the total introduction of electronic stills to Euston. The use of "paint box", an electronic rostrum camera and a stills store has brought enormous advantages to the Studio 7 news operation. Phase II of this project will extend this operation for Studio 5, Presentation, Edit Suites and PSC. This final phase will also incorporate a central electronic stills library, which will provide rapid access to all users of the system in addition to a "housekeeping" function.



Edit II

This is Thames' top Edit Suite and indeed, if one had to pick the best Edit Suite in the United Kingdom, Edit II would probably take the prize. From the very first day of operation, it became obvious that it was a success. The digital production effects package (Dual-Channel ADO plus Infinity) provides a formidable array of special effects. However, the most important factor in the operation of the complete system is the manner in which the ACE Editor, VPR-3 VT machines and ADO "talk to" one another in software terms. This results in a post-production operation that is uniquely rapid and precise.

33

Hanworth Mobile Edit Suite

The introduction of this "edit suite on wheels" has had a significant effect on Thames' post production facilities. To many people it is well known as the edit suite which is used for "The Bill". However it also plays a pivotal role in those outside broadcast operations which require a multi-VTR facility, combined with editing, slow motion and transmission facilities. The main components of the suite are 4 Sony 1" VT machines, Sony 5,000 editor and a Questech frame synchroniser for digital production effects.



34

Dubbing Suite – Teddington

This suite uses a multi-track system for post-production. After the video fine-cut has been produced in a VT edit suite, the sound track is usually in a rather incomplete state, especially at transition points. The "sweetening" of these transitions and the production of the final balanced sound track is performed in this suite. Effects, music, "trails", and "lead-ins" are laid on tracks of the multi-track audio machine and then down-mixed through an intermediate track before re-recording on to the original videotape. There is a fully isolated mini-studio adjacent to the control room with facilities for voice-over and synchronous



36

film dubbing techniques on those occasions when the fine-cut picture is on videotape. Finally, in addition to the changes in technology, the control room was completely refurbished with a significant improvement to listening acoustics.

Newsroom – Euston (Phase I)

Information technology has had a big impact on newspaper production and broadcast news operation. This project is the first phase of providing an electronic newsroom. By using the new technology, decision-making deadlines can be pushed closer to on-air time, thereby allowing more freedom and flexibility to improve the overall quality of the programme. The layout and general facilities of the newsroom have been re-arranged to reflect the changes in working relationships which have occurred over the years. Each desk has been connected to power and data cables from the newly built equipment room. All that remains to be done in Phase II of this project is to install the computer and UHF distribution system in this machine room.

Film Dubbing I – Euston

This project consisted of a major re-fit to Thames' premier film Dubbing Theatre. The replacement of the mixing desk was the most significant change to the facilities. At the sound dubbing stage in the production of current affairs programmes such as "This Week", time pressures can be considerable. The mixer which was chosen and installed, the computer-assisted Necam 96, with its ability to memorise and rapidly update dubbing mixes, provides the opportunity to minimise these time pressures. This project also provided the facility of using normal

35



38



Digitally – assigned Audio Mixer – Studio 2

The installation of this mixer in Studio 2 was an important step forward in Studio Sound Mixing techniques. The channel amplifiers are not in the desk itself, being remotely situated in CAR. This significantly increases the number of faders within "arms-reach" of the sound mixer. There are 88 faders in the new desk whereas conventional technology would provide only 48. This also significantly eases some of the problems of stereo mixing. Similar mixers will be installed in Studio 1 and Studio 3 – the one

- 33. Euston Graphics Phase I
- 34. Bob Warren in the Hanworth Mobile Edit Suite
- 35. Edit II
- 36. Brian Crony in the Dubbing Suite – Teddington Sound



39



in Studio 1 is scheduled for Spring '88. On completion of all three studios, the fact that all channel amplifiers will be available to all mixers means that channel assignment will be very flexible. Perhaps the most impressive of the many features gained from the use of digital technology is the operation of the "snapshot" memory system whereby the mixer configuration and audio balance associated with a particular show can be stored and recalled at will. This obviously speeds up the re-rigging of a frequently used music set up.

Teddington Mains Intake Room

This project consisted of a major replacement programme for the 11 KV incoming feeders and distribution switchgear. In addition, the arrangements linking the 1MVA standby generator were reconfigured and rationalised. The generator was fitted with automatic starting control gear which automatically comes into circuit during a power-cut after approximately 7 seconds. The great majority of this work necessitated overnight working and a total switch-off of site power.

Teddington Chiller Machines

These machines (manufactured by Dunham Bush) provide the chilled water for the air conditioning system of the technical block. Each machine has the capacity to supply the whole floor cooling load. The project design incorporates a main/standby operation in conjunction with roof-mounted cooling towers.

Podium Plant Room – Euston

This fascinating and complex mixture of old and new technology is situated on the first floor podium of the Euston building. It supplies cold air at the correct temperature from four air-handlers – one each for the first floor technical areas and reception, Electronic Graphics, and the VT/Film Transfer area on the third floor.



42

Film Transfer Suites – Euston

The termination of on-air telecine operations has been a significant element in the recent streamlining of the Euston transmission operation. These two transfer suites were specifically designed to optimise the film-to-tape transfer process. Because the operation occurs "off-line" the on-screen presentation of feature films has been much improved. By using digital storage of sound and picture

grading parameters it is possible for the operator to grade the film in a "Rock-and-Roll" mode throughout the entire film before performing a continuous transfer to 1" tape. The suites are fully stereo capable – this means that Thames has already started to accumulate a library of stereo films on 1" video tape. The main components of each suite are a Rank Cintel Mk III telecine and a Sony 1" VT machine controlled by Digigrade controllers.



40



41



43

- 37. Film Dubbing I – Euston
- 38. News Room – Euston (Phase I)
- 39. Eddie Spiteri at the Digitally-assigned Audio Mixer – Studio 2
- 40. Peter Thorpe in the Teddington Mains Intake Room

- 41. Hugh Griffith with the Teddington Chiller Machines
- 42. Peter Horton in the Podium Plant Room – Euston
- 43. Film Transfer Suites – Euston

New Technology



Rick Rickards – head of R&D.

The Engineering Laboratory at Teddington dates back to 1959 when, under the late Howard Steele, it was set up to support the new Planning Department and to provide equipment using the latest technologies. At that time its main role was to produce semi-conductor vision switchers and transistorised equipment, when no such equipment was commercially available, for the new Teddington complex which was then in the early stages of planning. As a result of this work it produced, in 1961/2, what was arguably the first semi-conductor vision mixer to be installed in a British television studio.

Through the years the role of the Lab. has evolved and changed dramatically. The original terms of reference, to design and produce only equipment which was not economically available from outside sources, have not changed. Following the completion of Teddington, however, the Lab. was involved in the design of a complete range of equipment used to construct three major outside broadcast units, for ABC TV, the first of which was used during the 1966

World Cup. Paradoxically, the first football match covered by the first unit was transmitted only by the BBC. This was due to the programme sharing arrangements devised by the BBC and the Independent companies. The Lab. then became deeply involved in the assessment of colour television systems and, in conjunction with Thompson-CSF, developed the SECAM idea into a colour television system. The first SECAM studio equipment, including the Vision Mixer, was designed in the Lab. It is now history that the outcome of all those deliberations was the compromise solution, the adoption of the PAL system which is in current use. As more and more high-tech equipment became available from external manufacturers, the amount of equipment produced by the Lab. naturally decreased.

The role of the Lab. can be defined, in order of priority, as:-

1. Providing support to the Planning and Installation (Projects) Group in the design of interface equipment, special equipment not otherwise available and possible modification of proprietary equipment.
2. Assistance to programme makers either in the form of custom-built equipment or the evaluation and development of production techniques.
3. To be aware of new technologies and to advise the company in general, and the Engineering Department in particular, on their use.
4. To contribute to the science of television by the investigation of new technologies and procedures which may or may not lead to the development of specific equipment.

Projects undertaken under the first two categories may, of course, emanate from either of the others. The department has been particularly active in recent years in the areas of satellite reception, high-definition television, stereo digital audio and component video technologies, both analogue and digital.



Solid-state Thames symbol.



In the field of component television the Lab. contributed considerable research and expertise in the form of experiments leading up to the creation of the CCIR.601 recommendation which is now a world standard for digital component video. The Head of Research and Development has been actively involved with our American colleagues in the evolution of analogue video component techniques leading to the assessment and ultimate adoption by the company of the new Panasonic MII videotape format.



Back Left to Right: Favez Agladious, Dr John Emmett, Dave Hart, Gregory Bensberg and Naresh Kaushal. Front: George Davies, student.

In the area of satellite reception initial experiments concerned the reception of Gorizont, a Russian satellite carrying, among other services, the Russian Programme 1. A casual remark by the Lab. Supervisor, John Emmett, that Gorizont could be received on a dustbin lid was overheard by the producer of "CBTV" and eventually led to a foil-lined dustbin lid on the roof of the technical block actually receiving pictures.

In the field of stereo digital audio, John Emmett rejoices in the description of Principal UK Expert when he represents the British Standard Institute on the IEC (International Electrotechnical Commission) in various exotic parts of the world such as Australia and Japan (or even London). Partly as a result of these activities a range of relatively low cost digital audio interface equipment has been designed and is shortly to be manufactured under licence by Philip Drake Electronics Limited.

At present a number of exciting projects are under development in the Lab.. The

extension of the digital audio work is leading to the design of a full scale digital stereo distribution network which will probably be adopted at Euston. Now that the Thames symbol has been confirmed to be unchanged a solid-state design is in hand to provide production of the symbol from a small electronic unit rather than from film or videotape. To keep our feet firmly on the ground the highly successful 20 year old sound intercom system (IAC) is being re-developed to take advantage of modern techniques and to provide a more readily serviceable system.

In the area of computer technology, apart from supplying one of our best engineers to the Information Systems Department, a number of projects associated with programmes have been undertaken, the latest being the development of the computer system to drive the 30 monitors in the "Strike It Lucky" programme. A system under investigation will assist the Thames subsidiary, Cosgrove Hall, in the "bar sheeting" operation associated with such successful programmes as "Wind in the Willows" and "Dangermouse". It is hoped that this system will result in a 50% reduction in the time taken to carry out this operation."

Perhaps the most significant factor affecting the role of the Lab. today is the demise, in this country, of the traditional broadcast equipment industry and the consequent reduction in R&D investment. It is becoming clear that, in its own interests, the Broadcast Industry must assume the R&D mantle and Thames Television, as the only ITV company with its own discrete facility, has an important part to play.



Cosgrove Hall Project.

Future Projects



Derek Lennon outside mock up of Drama Location Vehicle at Hanworth.



The PSC area, 2nd floor, Euston.



The new Master Control and Presentation Suite on 1st floor, Euston.

Ron May with a scale model of proposed development for the Outside Broadcast garage, at Hanworth.

