



Directorate of Telecommunications

A GUIDE TO THE WORK OF THE DIRECTORATE 1984

LEGAL Statement

Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland

All material contained in this document was scanned from an original printed copy of Link magazine produced by the DTELS. The licence granted by HMSO to re-publish this document does not extend to using the material for the principal purpose of advertising or promoting a particular product or service, or in a way, which could imply endorsement by a Department, or generally in a manner, which is likely to mislead others. No rights are conferred under the terms of the HMSO Licence to anyone else wishing to publish this material, without first having sought a licence to use such material from HMSO in the first instance. Signed: Steven R. Cole, 14th April 2005



Site Survey Data Analysis Computer.



Mobile Automatic Site Survey Equipment.

LEGAL Statement

Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland

All material contained in this document was scanned from an original printed copy of Link magazine produced by the DTELS. The licence granted by HMSO to re-publish this document does not extend to using the material for the principal purpose of advertising or promoting a particular product or service, or in a way, which could imply endorsement by a Department, or generally in a manner, which is likely to mislead others. No rights are conferred under the terms of the HMSO Licence to anyone else wishing to publish this material, without first having sought a licence to use such material from HMSO in the first instance. Signed: Steven R. Cole, 14th April 2005

THE Directorate of Telecommunications HOME OFFICE

INTRODUCTION

The Directorate of Telecommunications is a professional engineering division of the Home Office. In providing telecommunications services for police and fire brigades in England and Wales it supplies and maintains a wide range of telecommunications systems and equipment, carries out research and development work, and provides a consultancy service.

The Directorate has fulfilled this role for over forty years, since its establishment as the Communications Branch of the Home Office during the Second World War. At this time, only a handful of police forces and fire brigades were using radio for communication with their mobile units. Currently forty police forces and forty-six fire brigades use the Directorate's services. Others are supplied with selected facilities. The Directorate also supports the Prison and Immigration Services and provides telecommunications for Civil Defence.

To undertake these tasks the Directorate has a staff of 1,250, of whom about 1,075 are chartered engineers, incorporated or technician engineers, telecommunications engineering technicians, aerial riggers or mechanics. The remainder comprise executive, clerical, secretarial and stores staff.

The Headquarters of the Directorate is located in Horseferry House which is situated near Lambeth Bridge in Central London. The tasks of consultancy, research and development, engineering design, planning and equipment procurement are carried out at Headquarters. Installation and maintenance of equipment is undertaken through a regional organisation of 11 depots, 2 sub-depots, 60 detachments and 3 maintenance units (see back cover).

For management purposes the Directorate comprises four sections - Mobile Radio (MR), Static Systems (SS), Administration and Field Services - each under the control of a Deputy Director. Within these sections there are a number of work groups organised on a functional basis.

LEGAL Statement

Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland

All material contained in this document was scanned from an original printed copy of Link magazine produced by the DTELS. The licence granted by HMSO to re-publish this document does not extend to using the material for the principal purpose of advertising or promoting a particular product or service, or in a way, which could imply endorsement by a Department, or generally in a manner, which is likely to mislead others. No rights are conferred under the terms of the HMSO Licence to anyone else wishing to publish this material, without first having sought a licence to use such material from HMSO in the first instance. Signed: Steven R. Cole, 14th April 2005

MOBILE RADIO EQUIPMENT

The emergency services subscribing to the Home Office Wireless Rental Scheme need mobile radio equipment which is compatible with the rigorous environment in which it is to be used, and the operational procedures employed. These two factors mean that readily available radio equipment built to commercial standards has to be carefully tested at the Directorate's Central Communications Establishment to ensure it can reliably match the demands which will be placed upon it. The Mobile Radio Technical Procurement Group (MR3) is responsible for producing specifications to enable the purchase of suitable mobile radio equipment through tendering procedures aimed at getting the best value for money. This task involves close liaison with manufacturing industry in respect of technological advances and equipment design, and user services regarding the operational needs.

In some specialised areas of the work of the emergency services no commercially available equipment exists, and special equipment has to be developed. Examples range from radio designed for high penetration in underground locations in which the fire services may find themselves, to specialised equipment for police CID needs.

MOBILE RADIO SYSTEMS

To meet the operational needs of police forces and fire brigades for very extensive service areas covered by their individual radio networks, the Directorate has to plan very carefully within financial and environmental constraints. This work is undertaken by the Radio System Planning Group (MR4) through a blend of traditional and novel engineering planning techniques.

When an individual operational requirement has been agreed, a plan of potential hilltop sites to house the fixed transmitters and receivers is drawn up using traditional methods.

By reference to a computer database containing topographical and operational information, the suitability of every potential hilltop site as part of the final scheme is then established.

A suitable group of hilltop sites having been identified, physical surveys are carried out from these locations, using computer controlled automatic signal measuring apparatus. The data collected in this way is then processed and analysed, and is used to confirm or modify the original hilltop site plan. Making use of the processed data, the group's engineers can then proceed with the all-important aerial engineering work which is fundamental to meeting the required area coverage pattern. If the hilltop locations selected are already radio sites operated by

the emergency services then the next stage of the total operation can be dealt with. If, however, a privately operated site has been selected, or a 'green field' development needs to be pursued then this task is passed to the Frequency & Site Planning Group (MR5) for action.

Once the sites have been approved for use in the radio scheme, the Electronic Systems and Radio Relay Planning Group (SS4) is advised so that the fixed links between the hilltop sites and the user's operational control can be planned.

When all these tasks have been completed, the Directorate's Field Service Section is tasked to carry out the installation and commissioning of the new scheme.

STATIC SYSTEMS (RADIO)

The Directorate provides a range of static equipment and systems including closed-circuit television, integrated radio controls, headquarters-to-hilltop-site radio links and resource availability systems. These are designed in the Electronic Systems and Radio Relay Planning Group (SS4). Its task is to assist the emergency service client to formulate an operational requirement, which is then translated into a technical specification. This is used to procure suitable equipment to meet the combined demands of the operational requirement, the appropriate technical standards and radio regulations. These tasks involve close liaison with individual users and manufacturing industry.

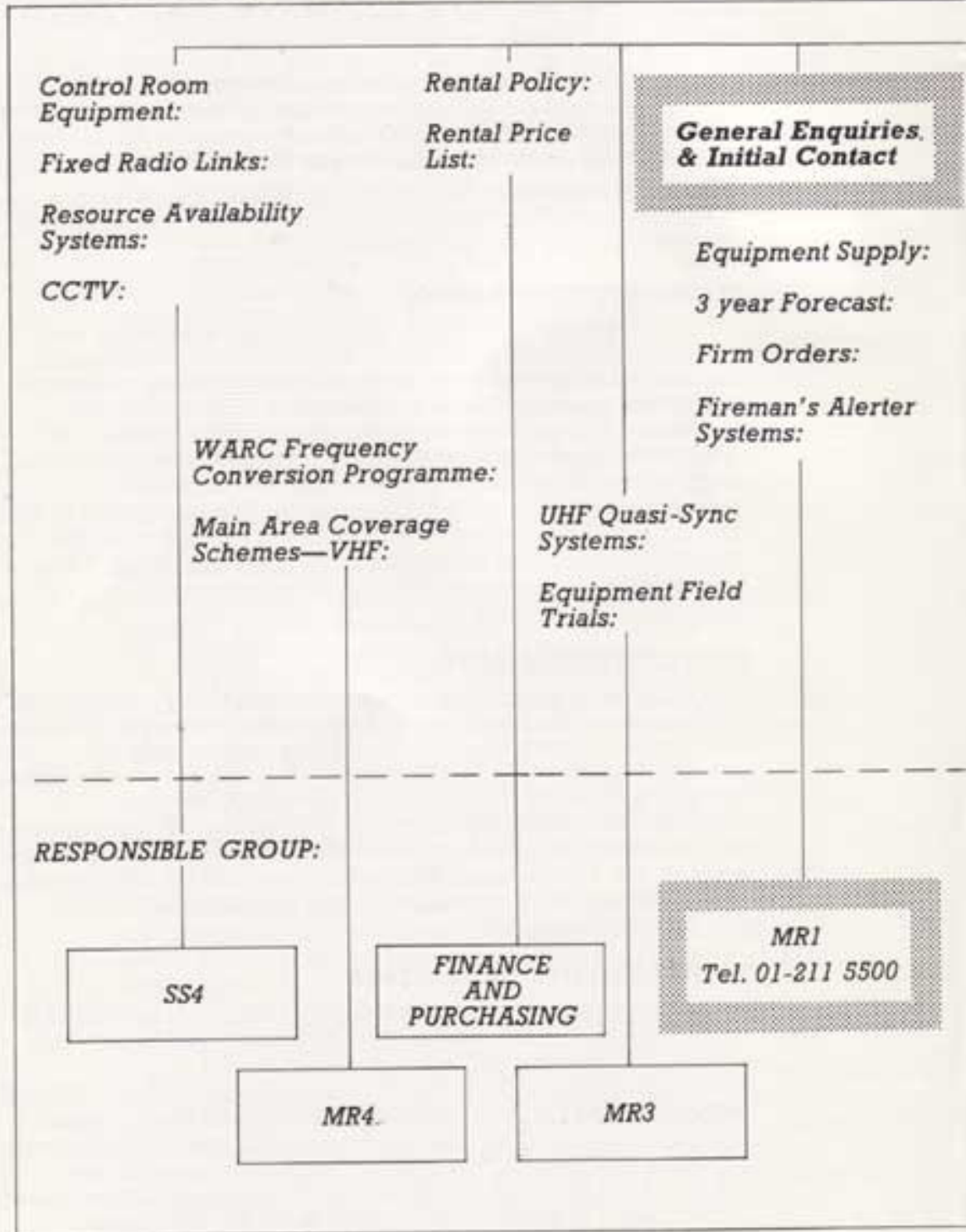
STATIC SYSTEMS (LINE)

In addition to its activities connected with radio transmission and reception, the Directorate is also concerned with line-based telecommunications systems. These line circuits may be provided either by British Telecom (BT) or by Mercury and the work of the Line Communication Operational Systems Development Group (SS1) is not only to advise the emergency services of the most appropriate and cost-effective facilities to employ, but to determine the specification and the engineering of attachments, such as message handling facilities, to form effective overall systems.

REQUIREMENTS AND LIAISON

The Requirement and Liaison Group (MR1) is responsible for technical liaison between the sponsored emergency services and the Directorate, and manages a number of telecommunications working parties dealing with major projects being pursued by individual police forces and fire brigades. It complements the close liaison which exists between forces and brigades and their local wireless depot. One aspect of this activity is the need for effective project management, and the Directorate's project control system is run by this group.

Lines of Communication

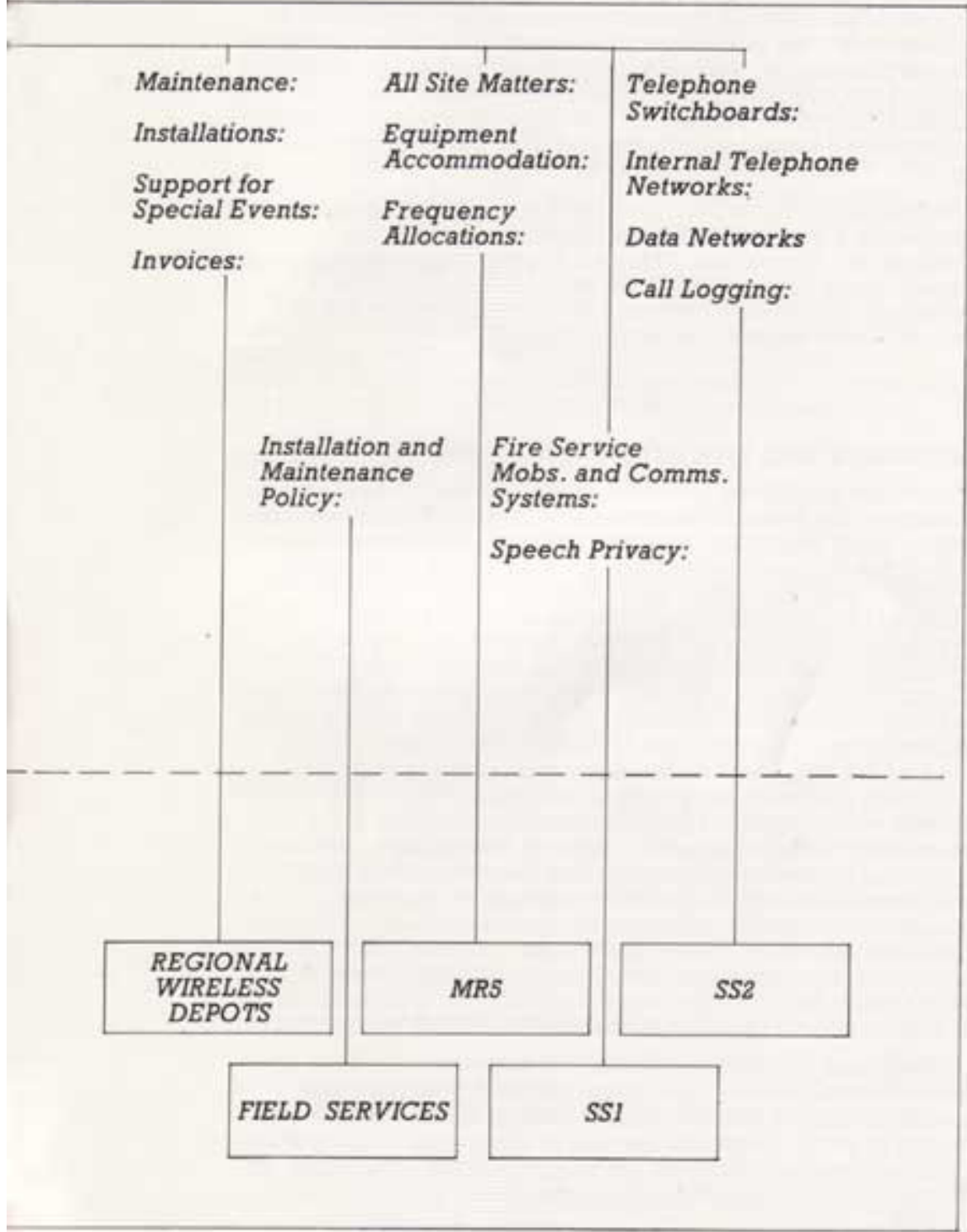


LEGAL Statement

Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland

All material contained in this document was scanned from an original printed copy of Link magazine produced by the DTELS. The licence granted by HMSO to re-publish this document does not extend to using the material for the principal purpose of advertising or promoting a particular product or service, or in a way, which could imply endorsement by a Department, or generally in a manner, which is likely to mislead others. No rights are conferred under the terms of the HMSO Licence to anyone else wishing to publish this material, without first having sought a licence to use such material from HMSO in the first instance. Signed: Steven R. Cole, 14th April 2005

with the Directorate



LEGAL Statement

Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland

All material contained in this document was scanned from an original printed copy of Link magazine produced by the DTELS. The licence granted by HMSO to re-publish this document does not extend to using the material for the principal purpose of advertising or promoting a particular product or service, or in a way, which could imply endorsement by a Department, or generally in a manner, which is likely to mislead others. No rights are conferred under the terms of the HMSO Licence to anyone else wishing to publish this material, without first having sought a licence to use such material from HMSO in the first instance. Signed: Steven R. Cole, 14th April 2005

Demands for standard items of equipment, such as mobile transmitter/receivers and personal radios are also handled by this group. The sponsored services indicate their long term plans through an annual forecast of telecommunications requirements. This guides the Directorate in its longer term financial planning, as well as triggering tendering action for items having a long lead time. Orders for specific items are placed by use of a 'Firm Orders' form, which when processed, results in the equipment being issued from the local wireless depot.

The transfer of items from Central Stores to the local depot is authorised by this group and the necessary records are produced and maintained. This enables the correct charges to be made to the user and the level of stock to be monitored, so that the groups who are responsible for procurement can be advised of the need for further purchases.

FREQUENCY AND SITE PLANNING

It is an axiom of management to make best use of its resources. This is easily understood in terms of manpower and finance. In the telecommunications field one of the most valued assets is the frequency spectrum; an area where, in the past, demand greatly exceeded the availability of suitable radio channels. The Directorate, in common with many other organisations has, over the past two decades, taken positive steps to engineer more operational channels out of the allocation of spectrum assigned to the emergency services. This has placed demands on industry for equipment to meet a higher standard of specification. One of the features of radio systems based on the VHF band is that individual channels can be re-used given adequate geographical separation. Carefully planned, a large number of operational channels can be obtained from a relatively small band of frequencies. This task is carried out by the Frequency and Site Planning Group (MRS) using computer techniques. Other aspects of frequency management are dealt with, such as international co-ordination in the use of spectrum (through the Department of Trade and Industry), the minimising of interference from other users, issuing call-signs and other regulatory matters administered by the Directorate on behalf of the emergency services.

All business concerning the site and building aspects of radio transmitting and receiving stations, including the provision of specialist technical advice to Local Authorities on matters relating to aerial masts, is a function of this group. It also advises police and fire authorities on the preparation of applications for site sharing and requests for planning approval for new radio facilities.

LEGAL Statement

Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland

All material contained in this document was scanned from an original printed copy of Link magazine produced by the DTELS. The licence granted by HMSO to re-publish this document does not extend to using the material for the principal purpose of advertising or promoting a particular product or service, or in a way, which could imply endorsement by a Department, or generally in a manner, which is likely to mislead others. No rights are conferred under the terms of the HMSO Licence to anyone else wishing to publish this material, without first having sought a licence to use such material from HMSO in the first instance. Signed: Steven R. Cole, 14th April 2005

BRITISH TELECOM SERVICES AND CIVIL DEFENCE COMMUNICATIONS

To assist the emergency services in planning their telephone, telex and data networks a number of British Telecom personnel are seconded to the Directorate and in conjunction with the in-house staff provide a comprehensive advisory service on these subjects. This activity together with the planning of civil defence communications and radio facilities for the United Kingdom Warning and Monitoring Organisation is undertaken by the British Telecom Services and Emergency Communication Network Planning Group (SS2).

PERSONNEL SERVICES

With any organisation there is an infra-structure to be maintained to enable the business of the organisation to be carried out. Activities such as the placement of staff, accommodation, transport, office supplies and storekeeping are the responsibility of the Personnel Management Group.

FINANCE AND PURCHASING

All matters concerning the forecasting, budgeting and spending of money are the responsibility of the Finance and Purchasing Group.

Estimating the expenditure on specific items and activities lies within the appropriate project group. It will advise the Finance and Purchasing Group which collates the individual returns and prepares the Directorate's financial forecasts. All tendering and contract work as well as authorising bills for payment and management of the Wireless Rental scheme for the sponsored services is a function of this group.

FIELD SERVICES

The work of the Field Services Section of the Directorate falls into two main categories. Firstly it is responsible for all the installation and maintenance work on equipment supplied by the Directorate under the Wireless Rental scheme. Secondly, it carries out a number of engineering tasks on behalf of groups in the Mobile Radio and Static Systems Sections and operates the Central Stores and its associated distribution system.

REGIONAL WIRELESS DEPOTS

A network of wireless depots has been established in England and Wales and from these the installation and maintenance work in connection with equipment supplied by the Directorate is organised.

Each wireless depot operates a number of detachments, usually located at a police headquarters, where technicians and mechanics are employed to carry out this work. Specialised

activities such as work on aerial installations at hilltop sites, is normally arranged from the appropriate depot.

In addition to the service available during the normal working day, an out-of-hours call-out arrangement is operated to deal with equipment failures. In addition to the routine work carried out on behalf of the user services, the depots provide support for special events and local and national emergencies.

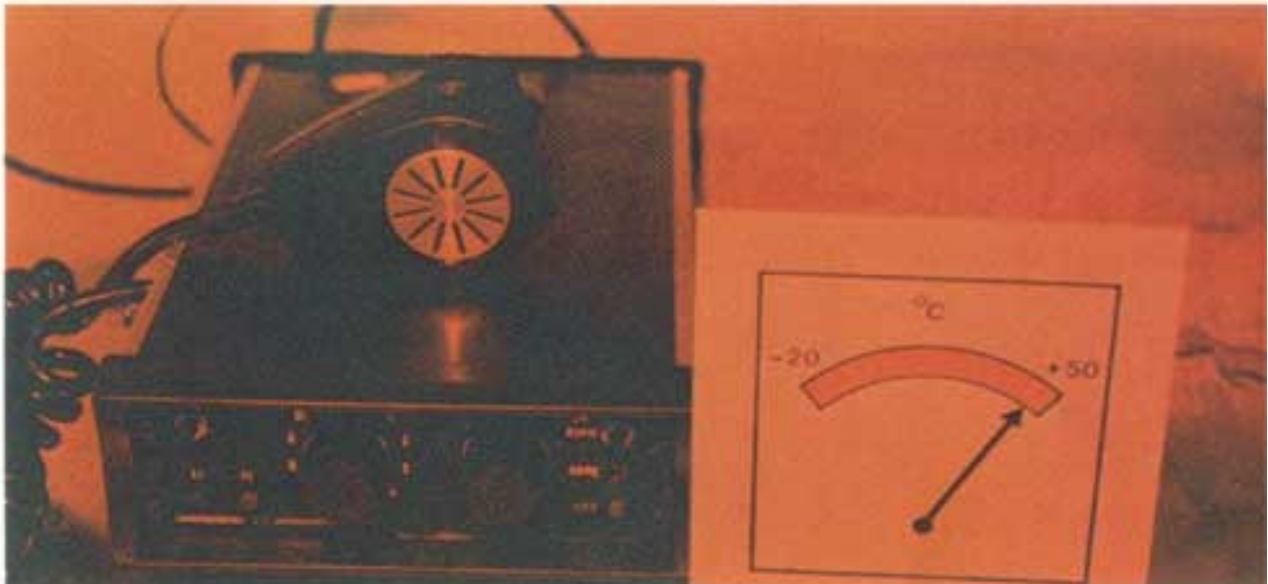
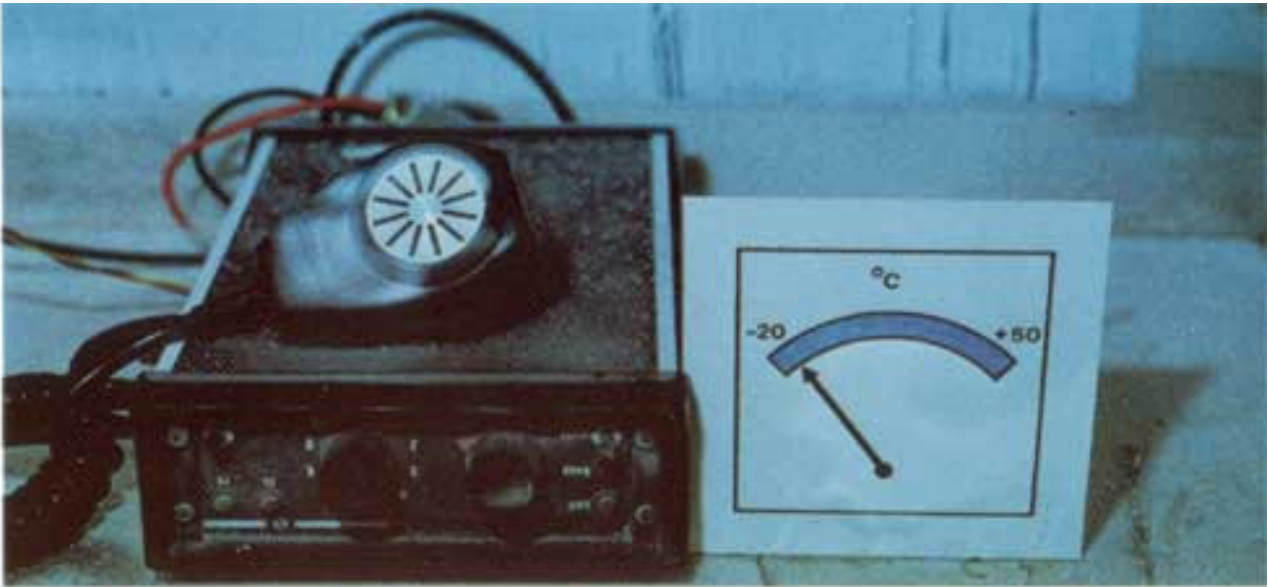
To support the depots and their work the Directorate operates three maintenance units to deal centrally with high volume and very specialised equipment, and a Central Stores.

RESEARCH AND DEVELOPMENT (R & D)

The task of meeting the growing requirements of the emergency services for telecommunication facilities and the need to employ cost-effective techniques is supported by a research and development programme. This programme is managed within the Mobile Radio and Static Systems Sections. The programme is wide ranging covering radio and line communications for both speech and data for mobile and fixed systems. Approved reports on particular R & D projects are issued from time to time and receive limited distribution within Government Departments, the emergency services and the appropriate manufacturing industry.

TECHNICAL CONSULTANCY

In addition to supplying equipment and systems, the Directorate operates a technical consultancy service. It provides advice and guidance on the whole range of subjects related to the provision and operation of telecommunication systems and equipment. This may take the form of general information and advice given to central bodies such as the Association of Chief Police Officers (ACPO) and the Fire Brigades' Joint Communications Committee (JCC) or assistance with technical specifications for individual police forces or fire brigades. Typical of such work is the assistance given to fire brigades in respect of mobilising systems, and to all users on telephone and data networks.



Environmental Testing of Mobile Radio Equipment



Computer System used for Frequency Planning

LEGAL Statement

Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland

All material contained in this document was scanned from an original printed copy of Link magazine produced by the DTELS. The licence granted by HMSO to re-publish this document does not extend to using the material for the principal purpose of advertising or promoting a particular product or service, or in a way, which could imply endorsement by a Department, or generally in a manner, which is likely to mislead others. No rights are conferred under the terms of the HMSO Licence to anyone else wishing to publish this material, without first having sought a licence to use such material from HMSO in the first instance. Signed: Steven R. Cole, 14th April 2005

Home Office Regional Wireless Depots:

Key	
▲	Depot
△	Sub-depot
●	Maintenance Unit



LEGAL Statement

Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland

All material contained in this document was scanned from an original printed copy of Link magazine produced by the DTELS. The licence granted by HMSO to re-publish this document does not extend to using the material for the principal purpose of advertising or promoting a particular product or service, or in a way, which could imply endorsement by a Department, or generally in a manner, which is likely to mislead others. No rights are conferred under the terms of the HMSO Licence to anyone else wishing to publish this material, without first having sought a licence to use such material from HMSO in the first instance. Signed: Steven R. Cole, 14th April 2005