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(CONFIDENTIAL)

BRITISH TRANSPORT COMMISSION

(BRITISH RAILWAYS)

TELEPRINTER NETWORK

REPORT

of

SPECIAL COMMITTEE

APPOINTED BY THE

CHIEF REGIONAL MANAGERS

April 1954

Membership of Committee

Mr. C. A. BROWNE - Western Region - Chairman

Mr. E. A. Clayton	Eastem & North Eastern Regions
Mrs E. Lambert	London Midland Region
Mr. J. B. Stewart	Scottish Region
Mr. S. E. Medhurst	Southern Region

TERMS OF REFERENCE

To investigate and report to the Chief Regional Managers on the purport of the following letter dated 9th December, 1953, addressed by the Chief Secretary of the British Transport Commission to the Chief Regional Managers.

British Transport Commission,

222, Marylebone Road, N. W. 1.

9th December, 1953

Chief Regional Managers.

TELEPRINTER NETWORK

As you may be aware, a comprehensive teleprinter network was instituted by the former Road Haulage Executive largely by the use of telegraph lines rented from the G. P. 0. In view of the fact that a substantial proportion of the road haulage organisation of the B. T. C. may be disbanded, it is a matter for consideration whether or not a portion or the whole of this teleprinter system should be used by the B. T. C. and the Regions with a view to improving the speed and efficiency of internal communications.

It has already been established that the existing railway telegraph system (including teleprinter) possesses a margin of capacity which is not utilised by existing telegraph traffic and the problem is therefore one of some complexity. Considerable speeding up of internal correspondence would be obtained if much of the material which at present passes in letter form could be transmitted by telegraph, particularly communications in respect of quotation of rates, claims, tracing lost consignments, formulation of special train timings, etc.

The Commission therefore desire that the Chief Regional Managers should collaborate in the preparation of a report which should assess the potential scope which exists for the efficient use of the teleprinter system, how far that scope can be adequately covered by the existing railway network, and how far it necessitates the continued use for railway purposes of the network set up by the former Road Haulage Executive. The question of changing over from G. P. 0. lines to railway-owned circuits in the interests of economy would require examination at a later stage if it is recommended that G. P. 0. lines be used in the first instance.

It is considered that this enquiry, having relation as it does to a fundamental change in methods of conducting internal correspondence, is of importance and may result in economy in clerical staff cost as well as increased efficiency. In view of this and of the iminence of disposal operations the enquiry should be undertaken as a matter of urgency. Mr. Grand is requested to take the initiative.

A memorandum setting out the nature of the road haulage teleprinter network will follow.

General Russell has agreed to nominate Officers on his staff to collaborate with the Chief Regional Managers, and perhaps Mr. Grand will communicate with General Russell in order that suitable contacts can be arranged.

(Sgd.) S. B. TAYLOR,
CHIEF SECRETARY.

T E L E P R I N T E R N E T W O R K R E P 0 R T

(A) HISTORICAL DATA.

The necessity for providing a teleprinter network to meet the requirements of British Road Services became apparent to the Road Haulage Executive early in 1949, although their organisation was still in its infancy, as long-distance telephone calls were already costing something like £200,000 a year and it was reasonable to suppose that the further development of coordination would increase this cost.

To understand why it was necessary for the Road Haulage Executive to set up an independent network with wires and equipment rented from the Post Office it is necessary to outline the background of Railway communications - the facilities which are available and their restrictions - the Rights under which they are provided - the extent to which they are at present used and the margins (if any) which are available for absorbing additional message traffic.

When the Telegraphs were taken over by the Postmaster General from the railways under the Telegraph Act of 1868 it was laid down in that Act that, inter alia:

(i) the railways retained the pole routes and wires on railway property used solely for railway purposes with the right to alter, add to, or extend as required on railway property

(ii) the Post Office should transmit free of charge to their respective destinations in the United Kingdom all bona fide messages relating to the business of the Railway Companies

Note - between 1892 and 1896 the Post Office entered into agreements with the Railways and fixed a maximum of 1,650,000 free telegrams per annum.

Arising out of (i), the Railways have built up an extensive telecommunications system of their own, comprising a network of telegraph, telephone and teleprinter facilities which can be adjusted and augmented to meet changing conditions.

The provision under (ii) enables Post Office telegrams on railway business to be sent without cost up to the limits of the agreed maximum.

These Rights, which applied to all services owned by the railways, were transferred to the Group Companies under the Railways Act of 1921 and were in turn vested in the British Transport Commission under the Transport Act of 1947.

It is important to note that in consequence of this vesting, whereas the Rights passed to the Railway Executive and those portions of the Hotels and Docks & Inland Waterways Executives which were part of the former Group Companies' undertakings, the Road Haulage Executive was outside the ambit. The position therefore was that the only channels of communication available to the Road Haulage Executive for the conduct of its business were the telegraph, telephone and postal services provided by the Postmaster General, for the use of which the charges laid down by Statutory Regulations and payable by the general public obtain. The Road Haulage Executive was therefore at a disadvantage in regard to communications as compared with the Railways.

It was represented to the Postmaster General that, under the Tr nport Act, the British Transport Commission had been with the duty of taking over the country's transport systems and welding them into one integrated undertaking, and in inheriting the rights and privileges of the Railway Companies, the Commission should be permitted to distribute amongst the various Executives the free telegraph message facility up to the limit of the entitlement. The Postmaster General replied that, whereas there was no dispute about the use of the facility by the Railway Executive, the Post Office was under no legal obligation to provide free message facilities for use in connection with any business not previously handled by the railway companies, and furthermore was not prepared to make any such concession as an act of grace.

(B) OUTLINE OF RAILWAY TELECOMMUNICATIONS.

In the early stages of railway development telecommunications were confined to telegraph working, and although telegraphs are still in use, they have been substituted by teleprinters to an appreciable extent. Details of teleprinter facilities are set out in Appendix "A".

The development of the telephone has, however, resulted in this becoming the principal means of communication, and telephone exchanges are installed at strategic centres with extension lines to local offices, departments, depots, etc. Trunk circuits connect adjacent exchanges, and communication is provided with outlying stations, depots, signal boxes, etc., by means of omnibus circuits.

Facilities therefore already exist for communication between Headquarters and Divisions and/or Districts, and from Districts to most points under their jurisdiction. In addition each Control Office has direct contact with the stations, depots, signal boxes, etc., in its district, in most cases by independent circuits.

The railway telecommunications system provides a 24 hour service daily and is altered and augmented as the need arises. On telegraph/teleprinter channels there is at the present time an overall margin of unused capacity of approximately 250.

As regards the Post Office Free Pass Telegrams, although in the past the railways sometimes exceeded their annual allotment of telegrams, the development of telephone facilities in recent years has resulted in such a reduction that considerably less than 50% of the entitlement is now being used. This is confirmed in the evidence given in the Eleventh Report of the Parliamentary Select Committee on Estimates, Session 1952/53 (para. 1247) which specifically states that although the maximum annual number of Free Pass Telegrams available to British Railways is 1,650,000 the user now amounts to about 660,000 per annum.

(C) OUTLINE OF BRITISH ROAD SERVICES TELEPRINTER NETWORK.

The British Road Services teleprinter network, as at present constituted, covers their interests in all parts of the country except the extreme North and West of Scotland, the extreme West of Wales and South Western England beyond a line from Bridgwater to Weymouth; the intention being to cover South Western England in the near future from a teleprinter at Exeter. There are 141 stations at various locations in Great Britain - 33 of these are "Area" terminals, of which 27 are served by direct lines from the main London terminal where they can be inter-connected through a switchboard. In addition 15 of the principal "Area" terminals are connected by 18 tape relay circuits with provision for message exchange by automatic teleprinter equipment at London, Manchester and Glasgow. The remainder (secondary stations) are connected with the "Area" stations by "Secondary" or point-to-point teleprinter circuits, certain of these having the "Telex" facility for contact with Traders, etc. Voice Recorders and facsimile transmitter/ receivers are also in operation as between selected "Area" offices and the Depots which they control.

Facilities are available through London for a simultaneous broadcast transmission from any long-distance terminal to 27 "Area" terminals and this feature is in process of further expansion.

There are approximately 120 full-time trained operators with a reserve to act as sickness and holiday reliefs and to provide replacements. There is also a Training School at Head quarters with a capacity of 12 learner-operators.

The cost of operating the teleprinter service, including rental of equipment, stationery, operators' salaries, the Training School and depreciation of equipment purchased is approximately £112,600 a year. Messages totalling 740,000 per annum are dealt with, at a cost for transmission of approximately 3/- per message.

Comprehensive details of the System are set out in Appendix "B".

The following is a typical analysis of the subjects dealt with in teleprinter messages:

	Type of Message	Percentage
(i)	Vehicle movements	35.2
(ii	Load-discrepancy reports, proofs of delivery and claims matters	25.2
(iii	Rates enquiries and quotations	19.0
(iv)	Miscellaneous operational matters (breakdowns, non-arrivals, accidents, etc.)	2.1
(v)	Collection and delivery instructions	5.5
(vi)	Miscellaneous administrative matters	13.0

(D) INVESTIGATION WITH BRITISH ROAD SERVICES.

The Committee inspected representative teleprinter centres cf the British Road Services accompanied by Messrs. A. F. Walton and C. Y. Hardie who had been nominated by General Russell tc collaborate. Detailed information was obtained as to the territorial coverage, organisation and operational procedure, the salient features of which are referred to in this report.

It was noted that the teleprinter network is used to a considerable extent in connection with the movement of vehicles

and their loads and other operating functions (see (i) and (iv) above), which on the railways are performed by the Traffic Control organisation.

Many of the towns embraced in the British Road Services Teleprinter Network are already served by Railway Teleprinter facilities; others do not justify teleprinter links, being already well served by the existing railway telecommunications network. In other e.g. Melksham, Leven, Maidstone, Denny, Selby, Beccles, althou h these may be important from the British Road Services viewpoint they have not the same significance from the railway aspect.

The British Road Services premises are generally not contiguous to Railway Centres, and any use of their teleprinter network for railway communications would necessitate additional line plant and equipment having to be provided, or a collection and delivery service introduced, at some cost, in order to establish the required link between the two systems.

The normal hours of attendance are 9.0 a.m. to 8.0 p.m. weekdays only. Outside these hours the Post Office telephone service is used for urgent matters.

It was noted that, in the main, the busy peri ods coincide with those in railway telegraph offices.

(E) INVESTIGATION WITH RAILWAY DEPARTMENTS.

Each member of the Committee discussed with representatives of their Departmental Officers the nature of internal communications, both Regional and inter-Regional, which are now passing as correspondence, to ascertain if any of this material might, with advantage, be sent by teleprinter transmission, or otherwise speeded up, and whether any economy in clerical staff costs could be achieved.

These discussions disclosed that the use of the teleprinter for internal correspondence would involve the subject matter being typed or written out, and then conveyed to the Teleprinter Operator either by telephone, tube, or messenger. The time saving would only be in transit, i.e. teleprinter as opposed to train service.

On the question of accelerating the despatch of correspondence etc., it was thought that delay is more frequently attributable to pressure of business upon the sender or addressee than to the method of transit.

The opportunity to scrutinise a letter before signature affords a check on any principle involved, and the appearance of a personal signature on a letter bears a significance which would not be apparent on a teleprinter message.

There are isolated instances where the volume of interoffice communications is such that teleprinter transmission could be adopted, but the need is limited to a point-to-point service, with the machines located in the respective offices. A disconcerting feature, however, is the noise created by a teleprinter working in an administrative office.

For the important items specified in the remit, i.e. rates quotations, etc., the existing telecommunications channels and the Post Office Free Pass Telegram facility already available are meeting requirements, so much so, that there is the afore mentioned margin of availability on Telegraph/Teleprinter channels and in Free Pass Telegrams.

In matters of an important nature requiring consultation and/or a "spot" answer, resort is made to the railway telephone service.

The remaining items which are now being dealt with through the medium of the letter despatch service are not regarded as of such urgency as to justify the expense involved in teleprinter transmission.

In general, the departments (with the exception of the Commercial Department of the London Midland Region which had not completed their investigations) were satisfied that it would not be possible to achieve economies sufficient to offset the increased costs which would arise from the use of the teleprinter service for internal correspondence, and that the transmission by teleprinter/ telegraph of material which at present passes in letter form would not result in an increase in efficiency.

On the Southern Region there is at present no form of telegraph or teleprinter (other than Post Office Free Pass Telegrams) and a thorough review is taking place, as a domestic matter, to ascertain whether any speed up, or other improvements in efficiency, could be achieved by introducing a teleprinter system. At this stage, however, no net economies in expenditure can be foreseen as any saving in typists' wages would be outweighed by the operating costs of a teleprinter network.

(F) SUMMARY

(a) The possible use of the British Road Services Teleprinter organisation for railway telecommunications.

(i) Every railway station, yard and depot already has access to telephone and/or telegraph/teleprinter facilities.

(ii) Railway telecommunications facilities generally meet all demands and are altered and augmented to cater for changing con ditions in relation to the economic justification.

(iii) Extensive use is already made of the Railway telecommunications facilities for the quotation of rates, claims, tracing lost consignments, special train timings, etc.

(iv) The existing railway telegraph/teleprinter network is not used to capacity, there being at present a margin of approximately 25% available to meet any extra demand.

(v) Of the 1;650,000 Post Office Free Pass Telegrams to which the railways are entitled annually, only 160,000 are being used,

leaving a surplus of approximately 1,000,000 telegrams per annum.

(vi) If the British Road Services network, as at present constituted, were used for railway telegrams, it would, in the majority of cases, reduce rather than accelerate the speed of transit from sender to addressee, as communications between any two railway centres would encounter an additional time lag in transit between the British Road Services and Railway centres at both the forwarding and receiving ends.

(vii) Whereas the British Road Services make extensive use of their Teleprinter network for vehicle movements, the regulating of railway traffic is undertaken by the Train Control organisation which has direct contact with all Signal Boxes, Stations, Depots or Yards in each Control area by means of a telephone system which in most cases is independent of the general telecommunications networks

(b) Use of Teleprinters for letter correspondence

(i) A well organised Railway Letter Despatch Service is in being which, with few exceptions, gives a next morning delivery throughout the system. The U. T. M. Letter service is available for speeding up despatch of correspondence if earlier delivery is required.

(ii) The despatch of a communication 'ay Teleprinter (or telegraph) involves initial writing out or typing of the subject matter before it can be dealt with by the operator. A further transcription has to be p rformed by the operator when forwarding or re-transmitting. No economy in clerical staff can therefore be envisaged.

(iii) The subject matter dealt with by correspondence is usually such that a personal signature on a letter has a significance which would not be apparent on a teleprinter message. There is a large percentage of correspondence which is of such a nature as to be unsuitable and/or undesirable for despatch by teleprinter.

(G) CONCLUSIONS

1. No advantage or economy would accrue in adopting for Regional or Inter-Regional use, the whole or any portion of the former Road Haulage Executive teleprinter network.

2. Matters of urgency are catered for by the existing railway tele communicatione facilities and the transfer to teleprinter transmission of material which at present passes in letter form would involve additional processes which would not be offset by economy in clerical staff costs.

The Committee take this opportunity to point out that notwithstanding sustained efforts to promote the use of the existing railway teleprinter/telegraph, Post Office Free Pass Telegram and U. T. M. services in order to relieve the telephone network and effect economy in Post Office telephone call fees, there is still much scope in this direction, and recommend that the support of all Departmental Officers be invoked to further this campaign.

In conclusion it is desired to express appreciation of the assistance afforded by Messrs. Walton and Hardie of the British Road Services during the investigation.

APPENDIX "A"

BRITISH RAILWAYS TELEPRINTER SYSTEM

The following Teleprinter Systems operate on British Railways:

EASTERN REGION (Eastern Operating Area)

The network Provides for automatic interconnection between the following principal centres:-

Station	No. of teleprinter lines
Bishopsgate Goods	1
Cambridge	2
Colchester	1
Doncaster	2
Grantham	1
Ipswich	1
Kings Cross	3
Kings Lynn	1
Knebworth	1
Leeds (City)	1
Leicester (Central	1
Lincoln (Central)	1
Liverpool Stree	6
Manchester (L. Rd.)	1
Marylebone	1
Norwich (Thorpe)	1
Nottingham (Vic.	1
Parkeston Quay	1
Peterborough (North	1
Retford	1
Sheffield (Vic.)	1
Shenfield (Div.O.S.O.)	1
Spalding (Town)	1
Stratford (D.O.S.O.)	1
York	2

In addition the following point-to-point circuits are operated:

Cambridge - Whitemoor
Doncaster - Sheffield (Vic.)
Doncaster - York
Ipswich - Norwich (Thorpe)
Sheffield (Vic.) - Manchester (L. Rd.)
Sheffield (Vic.) - York

NORTH EASTERN REGION

The network consists of the following point-to-point circuits

York – Newcastle (2 Circuits)
York – Darlington (3 Circuits)
York - Middlesbrough
York – Hull (3 Circuits)
York - Selby
York - Doncaster

York - Derby (L.A.)
York - Sheffield (Victoria)
York - Leeds (City)
York - Harrogate
Newcastle - Edinburgh
Newcastle - Sunderland
Darlington - Sunderland
Darlington - Stockton
Middlesbrough - Stockton
Stockton - West Hartlepool (2 Circuits)

LONDON MIDLAND REGION (L. M. Operating Area)

The network consists of the following point-to-point circuits:

Bolton - Manchester (Vic.) - Preston
Chester - Birmingham (snow Hill) (W.R.)
Chester - Birkenhead (Morpeth Dock)
*Chester - Shrewsbury
Crewe - Stoke
Crewe - Euston
Crewe - Birmingham (New St.)
Crewe - Chester
Euston - Birmingham (New St.)
Euston - Broad. St.
Derby - Crewe
Derby - Birmingham (New St.)
Derby - Gloucester (Rastgate)
Derby - Nottingham
Derby - Sheffield (Mid.)
Derby - Manchester (Vic.)
Derby - Euston
Derby - St. Pancras
Derby - Leicester
Derby - York (N.E.)
Derby - Leeds (City)
Gloucester (Eastgate) - Bristol
Leeds (City) - York (N.E.)
Manchester (Vic.) - Euston
Manchestor (Vic.) - Crewe

SCOTTISH REGION

Operate point-to-point circuits between:-

Edinburgh - Newcastle
Edinburgh - Glasgow

SOUTHERN REGION

N I L

WESTERN REGION (Western Operating Area)

The network consists of the following point-to-point circuits:

Birmingham (Snow Hill) - Chester
Bristol - Birminghamham (Snow Hill)
Bristol - Gloucester (Eastgate)
Bristol - Newport
Bristol - Swansea
Bristol - Cardiff
Bristol - Westbury
Bristol - Exeter
Bristol - Swindon
Bristol - Taunton
Cardiff (General - Cardiff (Queen St.)
Cardiff - Swansea
Exeter - Plymouth
Newport - Cardiff
Newport - Swansea
Paddington - Birmingham (Snow Hill)
Paddington - Oxford
Paddington - Worcester
Paddington - Gloucester (Central) - Newport
Paddington - Bristol
Paddington - Swindon
Paddington - Reading
Paddington - Cardiff
Paddington - Plymouth
*Shrewsbury - Chester
*Shrewsbury - Hereford
Swansea - Carmarthen

*Authorised.

NOTE - The teleprinter circuits led into Paddington and Bristol Telegraph Offices will shortly be connected to a manual switching system at each place which will provide intercommunication between each of the stations connected.

APPENDIX “B”

BRITISH ROAD SERVICES TELEPRINTER NETWORK

1. COVERAGE AND MAIN STRUCTURE.

The British Road Services teleprinter network covers all parts of the country except the extreme north and west of Scotland, the extreme west of Wales and south-western England beyond a line from Bridgewater to Weymouth. South-western England will be covered in t he near future from a teleprinter at Exeter. The network comprises 141 teleprinter stations. 33 of these, known as "long-distance terminals", are located as follows:

Aberdeen, Old Ford Road
Birmingham, Walter St., Nechells
Bournemouth, Melville Rd., Winton
Cardiff, Ferry Rd., Grangetown
Dundee, 54 East Dock St.
Edinburgh, Leith Central Station
Glasgow, 17 Anchor Lane, C.1
Gloucester, Clarence St.
Hull, Myton St.
Ipswich, London Rd.
Leeds, Whitehall Rd.
Leicester, 9/11 Belgrave Rd.
Liverpool, Lime St. Chambers, 1
London, 238 City Rd., E.C.1
London, 222 Marylebone Rd., N.W.1
London, Carlow St., N.W.1
Luton, Kingsway
Maidstone, London Rd., Larkfield
Manchester, White City, 16
Bristol, 2 Albert Rd., St. Phillips Manchester, 47 Corporation St., 4.
Middlesbrough, 32 Cleveland St.
Newcastle-on-Tyne, Northumberland Rd., 1
Norwich, 91/3 Hall Rd.
Nottingham, Triumph Rd., Lenton
Oxford, George St.
Peterborough, Fengate
Preston, 65 Water Lane
Sheffield, Penistone Rd.
Shrewsbury, Butcher Row
Southampton, Portswood Rd.
Stoke-on-Trent, Whieldon Rd.
Wellingborough, Compton Rd.

The function of the long-distance terminals which are staffed by full-time professional operators, is in general to canalise message traffic to and from local offices and depots through the main long-distance teleprinter channels. Two parallel methods of linking the long-distance terminals are employed:

(a) Tape Relay

Fifteen terminals are equipped with one or more long-distance point-to-point channels to message transfer centres in London and Glasgow. Messages transmitted by outstations on the tape relay system are reproduced on punched and printed tapes at the transfer centre where they are transferred manually from the receiving to the destination channel and retransmitted by automatic senders. This method obviates waiting for connections and ensures maximum employment of long-distance channels.

In addition to the 15 main terminals a subterminal at Corporation St., Manchester is linked by tape relay to the terminal at White City, Manchester.

Eighteen tape relay circuits are in use as follows:

Glasgow – Aberdeen	Nottingham
London	
Glasgow – Dundee	London - Hull
Glasgow – Edinburgh	London - Leeds
Manchester (White City) -	London - Liverpool
Manchester (Corporation St.)	
London - Manchester (2)	London - Birmingham (2)
London - Newcastle-on Tyne	London - Cardiff
London - Glasgow (2)	London - Norwich
	London - Preston

Certain terminals rely entirely on the tape relay method for sending and receiving their messages. For example, Aberdeen, Dundee and Edinburgh are linked

to Glasgow and in this way the high proportion of internal Scottish message traffic is kept within Scotland. Messages between Scotland and England are reprinted automatically at the Glasgow transfer centre. Similarly, the nature of message flows to and from Preston, Hull and the North Western Divisional office enables these terminals to exchange all their traffic by tape relay. With these exceptions, all other long-distance terminals are linked by the second method employed, namely

(b) The Switching Network

A single large 2-position teleprinter switchboard is used to control the switching network. It is located at the main London teleprinter terminal and is equipped with the following 28 channels:

London - Birmingham (2)	London - Luton
London - Bournemouth	London - Maidstone
London - Bristol (2)	London - Manchester
London - Cardiff	London - Middleebrough
London - Glasgow	London - Newcastle-on-Tyne
London - Gloucester	London - Norwich
London - Ipswich	London - Nottingham
London - Leeds	London - Oxford
London - Leicester	London - Peterborough
London - Liverpool	London - Sheffield
London - London (H.Q. 222 Marylebone Rd.)	London - Shrewsbury
London - London (S.E. Divl. Office, Carlow St.)	London - Southampton
London - Stoke-on-Trent	London - Wellingborough

Switching delays are minimised by concentrating all connections at one point and by diverting heavy message traffic flows between large terminals into tape relay channels.

The structure of the main network outlined above may be summarised as 46 long-distance circuits linking 33 terminals, 6 of which are connected by tape relay alone, 10 by a combination of tape relay and switching and the remaining 17 by switching alone.

2. SECONDARY NETWORKS.

The principal means of linking important offices and depots to long-distance terminals is by "secondary" teleprinters. These are operated part-time by normal office staff using a simplified procedure. For this reason, the secondary systems are kept electrically separate from the main network and messages are transferred between the two by reprinting at the terminal.

Two classes of secondary teleprinter are employed:

(a) Secondary Private Wire (S.P.W.)

Normally installed where the office or depot is more than 15 miles from the nearest long-distance terminal. Twenty-five secondary private wires are in service as listed below. (The terminal is shown on the left and the secondary station on the right.)

Aberdeen - Peterhead
Birmingham - Rugeley
Bristol - Melksham
Cardiff - Swansea
Dundee - Leven
Glasgow - Carlisle
Glasgow - Denny
Glasgow - Kilmarnrck
Leeds - Huddersfield
Leeds - Selby
Leeds - York (District)+
Lincoln (District)* - Lincoln (Group) #
London (City Rd.) - Bishops Stortford
Lcndon (City Rd. - Cheimsrord
London (City Rd. – London (Covent Garden)
Norwich - Beccles
Norwich - East Harling
Norwich - Kings Lynn
Nottingham - Bcstcn
Nottingham - Lincoln (District)#
Peterborough * - Cambridge *
Peterborough * - Wisbech *
Sheffield - Doncaster
Southampton - Eastleigh
York (District)+ - York (Group)+

Key:

+ linked by G. P. 0.
# T.G.3517 switching
* device

Two further secondary private wires as shown below are due to be brought into service in the near future:

Bristol - Exeter
Oxford – Reading

(b) Telex

Where the office or depot is within G. P. 0. local telephone fee of the terminal, extensive use is made of the G. P. 0. Telex system of teleprinting over public telephone lines. This system has the advantage of extreme flexibility, as it is no more difficult to transfer a Telex machine between premises than a telephone, and Telex machines at terminals permit the exchange of messages with traders or other organisations who are Telex subscribers.

The table which follows gives the places covered by the 83 Telex outstations in use. (The abbreviation D/P against terminal Telex machines refers to a dual-purpose teleprinter capable of transmitting to a Telex outstation or to a secondary private wire station.)

Terminal	Terminal Machines	Outstation Machines	Area Covered
Birmingham	3 + 2 D /P	14	Birmingham, Coventry, Dudley, Walsall, West Bromwich, Wolverhampton.
Bournemouth	1	3	Bournemouth, Poole.
Bristol	1	3	Bristol.
Cardiff	1 D/P	2	Cardiff, Newport.
Edinburgh	1	2	Edinburgh, Linlithgow.
Glasgow	1+ 3 D/ P	6	Carlisle, Dumfries, Glasgow.
Ipswich	1	1	Stowmarket
Leeds	3 D/P	8	Batley, Bradford, Halifax, Leeds.
Liverpool	2	8	Bretton, Liverpool,St. Helens, Warrington
London	4 + 5 D/P	8	London.
Luton	1	1	Leighton Buzzard.
Manchester	4	7	Bolton, Manchester, Salford, Wigan.
Newcastle	2	5	Gateshead, Newcastle, Sunderland.
Norwich	3 D/P	3	Norwich
Nottingham	1 + 2 D/P	4	Derby, Mansfield Nottingham.
Sheffield	1 + 1 D/P	5	Barnsley, Chesterfield, Sheffield.
Southampton	1 D/P	3	Portsmouth, Southampton.
TOTALS	**23+21 D/P**	**83**	

Grand total of Telex installations, 127, of which 21 are dual-purpose,

3. AUTOMATIC TELEGRAPH EQUIPMENT

The London and Glasgow tape relay transfer centres and the White City, Manchester terminal employ automatic message reception and transmission n, Three main types of apparatus are in use.

(a) Printing Reperforators, arranged so that all incoming messages from distant terminals appear in printed and punched tape form for subsequent re-transmission over a telex connection or S.P.W. to the local addressee. By this means manual reprinting between main and secondary networks is obviated.

(b) Perforating teleprinters, for the prefabrication of messages in punched tape form prior to transmission over the main network.

(c) Automatic Transmitters, linked to main network send circuits and local secondary networks and used in conjunction with (a) and (b) above, They ensure fastest possible transmission and so improve the message handling capabilities of a teleprinter link.

4. NON-TELEPRINTER MESSAGE HANDLING METHODS.

The long-distance terminals and secondary private wire stations described above form the centres of "catchment areas". Less important offices and depots within these areas exchange messages with the teleprinter station by telephone under a system known as "phonogram working". messages transmitted and received in this way are confirmed by despatching the actual teleprinter machine copies.

Incoming "phonogram" traffic at long-distance terminals can be stored temporarily on Emidicta electronic recorders if the operators are too busy to take the message down direct. A special Imperial 58 typewriter fitted with a teleprinter keyboard is used. to take down incoming phonogram. messages either directly from the telephone or from the recorders, The Emidicta machines are also used at a number of terminals to reduce the cost of incoming messages delivered by toll telephone connections as they can record messages in about half the time required to type them direct.

A further method used to reprint messages between terminal and depot is by Deskfax facsimile machines. This apparatus transmits a picture of the message over a short distance private telephone line. As these machines are operated by simple "press-button" methods, the need to train a skilled teleprinter operator does not arise. A "printed" message is received, and no postal confirmation copy is therefore required.

5. FACILITIES AVAILABLE TO USERS.

(a) Broadcasting

Facilities are available on the present London teleprinter switchboard which enable any long-distance terminal to make a simultaneous transmission to the stations listed below:

Birmingham	London City Rd.)	Newcastle
Bournemouth	London (H.Q. 222	Norwich
Bristol	Marylebone Rd.)	Nottingham
Cardiff	London (S.E. Division, Carlow St.)	Oxford
Glasgow	Luton	Peterborough
Gloucester	Maidstone	Sheffield
Ipswich	Manchester	Shrewsbury
Leeds	Middlesbrough	Southampton
Leicester		Stoke
Liverpool		Wellingborough

In order to minimise interruption of message traffic between individual terminals, broadcast calls are normally set up on a fixed time basis, as for example, from Headquarters to all Divisions and Districts at 10.30 a,m. and 4.0 p.m. each day for reporting details of any important roads blocked by weather conditions etc., and to Divisions only, at noon and 2.0 p.m. for clearing messages of urgent general import to several or all Divisions. For matters of the greatest importance and urgency however, special broadcasts can be set up on demand. The broadcast facility was invaluable during the period following the East Coast floods and during the strike of fuel tanker drivers in the London area.

(b) Priorities

Messages are either "Priority One" or nonpriority. All messages are regarded as urgent, and "Priority One" is reserved for those of exceptional urgency. In general "Priority One" is confined to traffic operational matters but a non-operational message may be franked "Priority One" by a Group Manager or above.

All staff are encouraged to use the teleprinter service for all urgent communications unless a discussion calling for a conversation is absolutely essential; to warn the distant person by teleprinter in advance if a trunk call is unavoidable; and to take urgent action on receipt of teleprinter messages.

Users are supplied with a simple message form of a size convenient for permanent or temporary filing, giving the necessary components of the message arranged in the order in which the teleprinter operator must transmit them over the main network. Each message is serially numbered and documented in such a way that every stage of transmission from originator to addressee can be traced. Special checks of serial numbers at hourly intervals during the day and before the daily close down guard against delays due to mislaid or misdirected messages.

(c) Standard Messages

Abbreviations of common terms and of place names are used to shorten the text of messages. Codes are not employed as it is felt that they are unnecessary and would probably discourage the use of the teleprinter if enforced. Instead, twelve standard messages have been introduced to reduce the length of messages conveying frequently required information and to assist in the quick composition of such messages. The subjects covered include rates enquiries and quotations, special delivery instructions, vehicle advices, etc. Each standard message has a distinctive identification prefix - such as RATEN for the rates enquiry - followed by standardised items of information in a given order. The prefix words do not clash with any code words used by British Railways for signal purposes.

(d) Scheduled Messages

A system of reserving timed paths through the main and secondary networks has been evolved for important traffic messages which are transmitted every day. The full schedule embraces 260 timed paths between 3 p.m. and 6 p.m. daily, and these are being used at the present time to notify operating details of vehicles running on regular trunk services. By this means, depots receive the information within a few minutes of a set time each day and are able to arrange shunt drivers and plan their work accordingly.

6. OPERATING STAFF.

Some 120 full-time professional operators are employed in the 33 long-distance terminals. This strength is maintained by calling on a reserve cf operators trained at the headquarters Telegraph School to act as sickness and holiday reliefs and to provide permanent replacements. Trainees are recruited from existing British. Road Services office staff in the neighbourhood of terminals, given 9 weeks training at the School followed by 3 weeks attachment to the local terminal. They then return to normal office duties and are available for relief as required. Reserve operators trained in this way are employed wherever possible as part-time operators of secondary teleprinters. They also work in the terminal at least half a day each fortnight. The normal capacity of the School is 12 learner operators but additional one week "Telex" courses are held from time to time for the benefit of part-time depot and office operators who do not wish to become fully trained reserve operators. The School is also used as a proving-ground for new equipment and operating techniques.

7. OPERATIONAL CONTROL.

Control of the main long-distance network is exercised for operational purposes by the Special Services Officer in the Traffic Department at Headquarters through Supervisors at London Glasgow, Manchester and Birmingham and Senior Operators at the remaining terminals. Purely administrative matters affecting the main network operators are dealt with by Divisional officers, who are also responsible for the secondary systems.

8. MESSAGE TRAFFIC.

(a)At the present time the teleprinter service is handling messages at the rate of 740,000 per annum. 53% of all messages are transmitted via the tape relay systems centred on London and Glasgow. The network is not yet working to full capacity.

The variety of subjects dealt with in the messages handled is indicated by the following statistics derived from a survey of messages originated through the Liverpool terminal:

Type of Message	Percentage
Vehicle Movements	35.2
Load-discrepancy reports, proofs of delivery and claims matters	25.2
Rates enquiries and quotations	19.0
Miscellaneous operational matters (breakdowns, non-arrivals, accidents, etc.)	2.1
Collection and delivery instructions	5.5
Miscellaneous administrative matters	13.0

(b) The number of long-distance channels now in. use between main terminals is conditioned by the following factors:-

(i) An average length per message of some 70 words or groups of 5 characters

(ii) Traffic flows between different parts of the country

(iii) A well defined "peak" of messages in the late afternoon.

Further message traffic can be handled by the network without increasing the number of main channels as follows:

(iv) To all parts of the country during mornings and evenings and, of course, outside the present operating hours (9 a.m. - 8 p.m.)

(v) To certain areas throughout the day where the main channels are not loaded to capacity at the present time

(vi) To busy terminals as soon as the G. P. 0. are able to supply multi-gang automatic transmitters for the L ondon tape relay centre.

9. OPERATING COSTS.

The cost of operating the British Road Services teleprinter service including rental of equipment, operators' salaries, the Headquarters Telegraph School, depreciation of equipment purchased and stationery, is approximately £112,600 a year.

In arriving at the cost per message, it should be noted that the introduction of standard message layouts and the use of "Scheduled Path" teleprinter messages while substantially increasing the use made of the network for the exchange of operating information, has at the same time reduced the number of single messages passing. For example, the daily report of fading details for all vehicles from Liverpool District to London which is now covered by a single message of some 420 words replaces at least a dozen separate messages that were previously sent. However, on the basis of the current number of messages handled (740,000 per annum), the cost per message is approximately 3/- irrespective of length. The cost per word, based on an average length of 70 groups is therefore approximately 2d. which compares very favourably with the 12d. a word charged by the G.P.O. for an ordinary telegram.