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ADMIRALTY FLEET ORDER

("S" SERIES)

S.5.—

Naval Line Telecommunications Organisation

This Order is to be brought into force on receipt and supersedes A.F.O. S.5/54. Page 16 onwards of A.F.O. S.5/52 is to be retained pending further instructions.

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ADMIRALTY FLEET ORDER

("S" SERIES)

ADMIRALTY, S.W.1
19th November, 1954.

The following Order having been approved by My Lords Commissioners of the Admiralty is hereby promulgated for information and guidance and necessary action.

Copies of this Order are supplied to Commonwealth Navies but only for official use by these Navies and such of their contractors, under seal of secrecy, as may be engaged on a defence project. Disclosure to any other authority or release to the Press or in any other way is forbidden. The information should be safeguarded under rules designed to give the same standard of security as maintained by Her Majesty's Government in the United Kingdom.

By Command of their Lordships,

D. B. Lang

To Commanders-in-Chief, Flag Officers, Senior Naval Officers, Captains and Commanding Officers of H.M. Ships and Vessels.

NOTE :—A note on the Fleet Order System and the scale of distribution of issues is given in "Admiralty Fleet Orders—Instructions and Quarterly Index."

CORRECTION SHEET

Correction No.	Authority.	Date.	Initials.

S.5.—Naval Line Telecommunications Organisation

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CHAPTER 1

GENERAL ORGANISATION

0101. Conduct

Communication over LT systems is to be conducted in accordance with current communication orders and instructions. Publications and orders which concern LT in particular are listed below.

0102. Operation

A.C.P. 122	Communication Instructions—Security.
A.C.P. 176	Allied Naval Communications Instructions.
A.C.P. 127	Tape Relay Procedure.
A.C.P. 126	Teletypewriter (TP) Procedure.
A.C.P. 134	Telephone Switchboard Operating Procedure.
B.J.C.P.40	TP Fault Reporting and Routine Testing Procedure.
B.J.C.P.41	Telephone Exchange Organisation and Management.
B.R. 1021	Naval Teleprinter Directory.
B.R. 1272	Naval Telephone Routeing Schedule.
A.F.O. 1110/54 ..	Orders of Precedence on Telephone Circuits.

0103. Material

A.F.O. 1485/53 ..	General LT Regulations and current A.F.Os. listed therein.
ELLA/53/MEMO/2 ..	Procedure for the requesting of circuits by NATO forces in peacetime.
Chart Folios ..	Fleet Telegraph Charts.
C.B. 3207	Line Telecommunications 1939–1945.
B.R. 694	List of Cables in the World's Submarine Cable Network. (By the International Telecommunications Union—Geneva.)
B.R. 316	Memorandum on the Protection of British Submarine Cables and on the Destruction of an Enemy's Cables.
C.B. 03190 (5/52), Part 5. ..	Manual of Naval Seaward Defence—S.D.H.Q. Communications.

CHAPTER 2

TELEPRINTER ORGANISATION—U.K.

0201. The U.K. naval teleprinter network, which is part of the defence services telecommunications network (DTN) backed up by some point to point circuits and subsidiary networks for special purposes, is described below.

0202. DTN—Teleprinter Network

(*a*) Inter-service switchboards (Inter-service switching centres).

North West Central
South West Central
Cheltenham
Central
Pitreavie
Trafalgar
Dundonald
} All interconnected—directly or indirectly

(*b*) Naval Switchboards.

Plymouth connected to Trafalgar, South West Central and Central.

Lee-on-Solent connected to Portsmouth and Pitreavie.

Portsmouth connected to Trafalgar, Cheltenham, Central, Chatham, South West Central and Lee-on-Solent.

Chatham connected to Trafalgar and Portsmouth.

(*c*) TP Tails

The principal naval establishments and authorities in the U.K. are provided with teleprinter tails off one or more of the above switchboards. Details are given in B.R. 1021 (Teleprinter directory).

0203. Principal Point to Point Teleprinters

From	To
Admiralty	Admiralty, Bath.
	Cable and Wireless.
	Central Telegraph Office.
	C.-in-C., Plymouth.
	C.-in-C., Portsmouth.
	C.-in-C., Nore.
	F.O., Scotland.
	R.N.B., Devonport.
	R.N.B., Portsmouth.
	U.S. Navy, London.

0204. Meteorological Teleprinter Network

(*a*) Common user network.

Dunstable to Preston thence North West Central.
Prestwick.
Aldergrove thence Londonderry.
Plymouth (Mountbatten and Mountwise).

0204. Meteorological Teleprinter Network—*continued*

(*a*) Common user network—*continued*

Gloucester thence South West Central.
Central.
Uxbridge.
Trafalgar.
Pitreavie.
Chatham.

(*b*) Naval regional centres.
Abbotsinch.
Culdrose.
Lee-on-Solent.

(*c*) Naval network.
Naval air stations are connected to one or more of the above centres.

0205. Air Traffic Control Teleprinter Network

(*a*) Common user network.
Prestwick ATCC.
Preston ATCC.
Watnall ATCC.
Gloucester ATCC.
Uxbridge ATCC.

(*b*) Naval networks.
Naval air stations are connected to the geographically appropriate air traffic control centre.

0206. Inter Wireless Station AT Network

A naval line AT network for distributing within U.K. signal traffic for transmission by the controlling stations of ship broadcasts and signal traffic received on ship-shore wireless. The following headquarters and stations are connected to a manual tape relay centre in Whitehall wireless station :

Portsmouth.	Burnham.
Plymouth.	Blockhouse.
Chatham.	Northwood (planned).
Rosyth.	Greenock (planned).
Londonderry.	Liverpool (planned).

0207. NATO TP Network (not in daily use, *see* Chapter 7)

A network connecting the European subordinate commands of Saclant, Saceur and CinChan. It consists of Navy, Army, Air, Navy/Air and common user circuits. Europe and Atlantic Command circuits are sponsored by NATO. Channel Command circuits are sponsored by national authorities.

0208. British, French, Netherlands and Belgian T.P. Network (not in use—not available for exercises).

A common user T.P. network.

(*a*) Switching Centres :—

London (Trafalgar Telex) with connections to Trafalgar ISSC.
Paris.
Brussels.
Amsterdam.

(*b*) U.K. Naval tails on London Telex Switchboard :—

Admiralty.	Chatham.
Portsmouth.	Rosyth.
Plymouth.	Northwood (planned).
	Trafalgar T.P. Guard.

CHAPTER 3

TELEPHONE ORGANISATION—U.K.

0301. The U.K. naval telephone network, which is part of the Defence Services Telecommunications Network (DTN), supplemented by some point to point circuits and subsidiary networks for special purposes, is described below.

0302. DTN—Telephone Network

(*a*) Inter-service Telephone Switchboards. (Inter-service Switching Centres).

North West Central connected to all other inter-service switchboards.

South West Central connected to Central, Cheltenham, North West Central and Pitreavie.

Dundonald connected to Central and North West Central.

Central connected to all other inter-service switchboards except Cheltenham.

Pitreavie connected to Central, North West Central and South West Central.

Cheltenham connected to North West Central and South West Central.

(*b*) Principal Naval Telephone Switchboards. (Terminal Trunk Centres).

Admiralty connected to Central, N.W. Central, S.W. Central and Pitreavie, also all T.T.C.s.

Bath (Foxhill) connected to S.W. Central, also Admiralty, Plymouth, Chatham, Portsmouth Dockyard and Portland.

Plymouth connected to Central, N.W. Central and S.W. Central and also Admiralty, Portsmouth C.-in-C., Bath (Foxhill) and Portland.

Portsmouth C.-in-C. connected to Admiralty, Plymouth, Lee-on-Solent, Portland, Portsmouth Dockyard and Chatham.

Portsmouth Dockyard connected to Admiralty, Bath (Foxhill), Lee-on-Solent, Portsmouth C.-in-C. and Chatham.

Lee-on-Solent connected to S.W. Central, N.W. Central and Pitreavie. Also Admiralty, Portsmouth C.-in-C., Portsmouth Dockyard and Yeovilton.

Chatham connected to Central. Also Admiralty, Bath (Foxhill), Portsmouth C.-in-C., Portsmouth Dockyard, and Shotley.

Londonderry connected to Dundonald and Pitreavie. Also Admiralty.

Faslane connected to Pitreavie. Also Admiralty.

Shotley connected to Admiralty and Chatham.

Portland connected to Admiralty, Portsmouth C.-in-C., Plymouth and Bath (Foxhill).

Yeovilton connected to S.W. Central. Also Admiralty and Lee-on-Solent.

(*c*) Telephone Extensions and Private Wires.

The principal naval authorities and establishments in the U.K. are provided with switchboards or telephone instruments connected to one or more of the above main switchboards. Details are given in B.R. 1272. (Telephone Routeing Schedule.)

0303. Air Traffic Control Telephone Network

(*a*) Common user network.

Prestwick A.T.C.C.

Preston A.T.C.C.

Watnall A.T.C.C.

Gloucester A.T.C.C.

Uxbridge A.T.C.C.

0303. Air Traffic Control Telephone Network—*continued*

(*b*) Naval network.

Naval air stations are connected to the geographically appropriate air traffic control centre.

0304. Operational Telephone Network. (Not in daily use. *See* Chapter 7.)

(*a*) Operational switchboards at M.H.Q.s and operational keyboards at local commander's headquarters with the following circuits.

(*b*) Admiralty to M.H.Q.s and certain P.H.Q.s.
M.H.Q.s to adjacent M.H.Q.s.
Each M.H.Q. to each P.H.Q. in its area.
P.H.Q.s to adjacent P.H.Q.s.
M.H.Q. and P.H.Q.s to appropriate sector operation centre/centres.
M.H.Q.s and P.H.Q.s to appropriate military command.
P.H.Q.s to senior officers ashore in its area, *e.g.*, coastal force base.

0305. Plotting Telephone Network. (Not in daily use. *See* Chapter 7.)

(*a*) Keyboards at M.H.Q.s with connections to—
Admiralty plot.
Adjacent M.H.Q.'s plot.
P.H.Q. plots in its area.
Radar stations.

(*b*) Keyboards at P.H.Q.s with connections to—
M.H.Q. plot.
Adjacent P.H.Q.'s plot.
Radar stations.
S.D.H.Q.
P.W.S.S.

0306. Seaward Defence Telephone Network. (Not in daily use. *See* Chapter 7.)

Details of communications for Seaward Defence are distributed to authorities concerned only. The scale of communication is as follows :—

(*a*) S.D.H.Q. Main P.B.X.	P.H.Q. A.A.O.R. Dockyard P.B.X. G.P.O. Exchange.
(*b*) S.D. Commander's Keyboard ..	P.H.Q. Booms. S.D. radar. A/S devices. Wireless waves. P.W.S.S.
(*c*) Fire Commander's Keyboard ..	Guns and searchlights.
(*d*) Operation Room Officer's Keyboard	P.H.Q. Radar stations. A/S devices. Wireless waves.
(*e*) Plot Keyboard	P.H.Q. plot. Radar stations. A/S devices.
(*f*) Fire Control Radar Keyboard ..	FC radar stations.

0307. NATO Telephone Network (not in use, *see* Chapter 7)

A telephone network connecting the European subordinate commands of Saclant, Saceur and CinChan. It consists of Navy, Army, Air, Navy/Air and common user circuits. Europe and Atlantic Command circuits are sponsored by NATO. Channel Command circuits are sponsored by national authorities.

0308. British, French, Netherlands and Belgian Telephone Network (not in use—not available for exercises).

A common user telephone network.

(*a*) Switching Centres :—

London (Faraday).	Metz.
Paris.	Eindhoven.
Brussels.	Maastricht.
The Hague.	

(*b*) U.K. Naval Exchanges connected to London Switching centre :—

Admiralty.	Plymouth.
Chatham.	Dover.
Portsmouth.	Northwood (planned).
	Rosyth (planned).

CHAPTER 4

REMOTE CONTROL ORGANISATION—U.K.

0401. Naval Remote Control Network

The network provides Admiralty with remote reception of wireless receivers and Admiralty and other naval authorities with remote control of wireless transmitters via a patching jackfield and broadcast control exchange in Whitehall wireless station :—

Control	*Wireless Transmitting Stations*
Admiralty.	Bodmin.
Blockhouse.	New Waltham.
Londonderry.	Criggion.
Nore.	Horsea.
Plymouth.	Londonderry.
Portland.	Nore.
Capt. S/M, Portland.	Portland.
Portsmouth.	Portsmouth.
Rosyth.	Rosyth.
Capt. S/M, Rothesay.	Rugby.
U.S. Navy, London.	
Lee-on-Solent.	
Flowerdown.	
Burnham.	

Control	*Wireless Receiving Stations*
Admiralty.	Flowerdown.
	Scarborough.
	Burnham.

0402. Other Remote Control Circuits

In addition there are local remote control lines within commands in U.K. between local commanders and their wireless stations.

CHAPTER 5

LT ORGANISATION—ABROAD

0501. World-Wide Cable Network

(*a*) The world-wide submarine cable network is shown in Admiralty chart Number 3778 (Telegraph chart of the world). The chart also gives the ownership of the cables.

(*b*) The submarine cable network links up the inland telegraph networks of all countries.

(*c*) Naval traffic can be passed via these networks in accordance with the instructions in Admiralty signal publications, fleet orders and station orders. When using these networks preference is to be given to the use of Commonwealth cables.

(*d*) Technical details of cables are given in the "List of cables" (*see* Article 0103).

(*e*) Geographical details of cables are given in individual telegraph charts (*see* Article 0103).

0502. Naval Telephone and Telegraph Organisation Abroad

(*a*) See Naval communication orders issued by British and NATO Commanders-in-Chief.

(*b*) The principles of the organisation for the United Kingdom described in Chapters 2, 3 and 4 apply generally to British naval commands abroad.

CHAPTER 6

PLANNING PROCEDURE

0601. Procedure for LT Planning (U.K. Internal)

(*a*) Admiralty U.K. L.T. Schedules of Telegraphs and Telephones are the current lists which give the G.P.O. exact information of telephone circuits over 5 miles in length, all telegraph circuits and all telephone and telegraph terminal equipment required in war. They include existing facilities. Copies of these schedules kept up to date from current plans, are issued to C.s-in-C. at Home, F.O. Scotland and F.O. (Air).

(*b*) C.s-in-C. at Home, F.O. Scotland and F.O. (Air) are responsible for issuing a similar list to G.P.O. regional directors, giving information agreed with them about telephone circuits under 5 miles. Copies of these schedules should be sent to Admiralty (for Signal Division).

(*c*) The G.P.O. use the above information to plan new cables and order equipment. In an emergency the G.P.O. would bring facilities into operation in the priority shown in the schedules.

(*d*) The Admiralty U.K. Schedule of Coastal Cables is the current list which gives the G.P.O. information of Naval coastal submarine cables required in peace and war. Copies are issued to Home Commands and Dockyards.

(*e*) Proposals for additional national facilities for (*a*) above should be forwarded through the normal service channels (A.F.O. 1485/53 refers). Proposals for additional NATO facilities should be submitted separately to the appropriate NATO Commander.

0602. Procedure for LT Planning (U.K. External)

(*a*) The LT Schedules referred to in Article 0408 also include naval continental circuits which terminate in the U.K. Continental circuits are ordered through the European Long Lines Agency (ELLA) by the appropriate NATO Commander or National Authority (*i.e.* Admiralty). The procedure is laid down in a memo. issued by ELLA.

(*b*) The list of continental circuits is kept up to date in Admiralty from NATO plans.

0603. State of readiness relative to cost (U.K. Internal).

(*a*) As a general rule LT facilities required for war must be provided, and rental paid for them, in peace.

(*b*) It takes about two years to manufacture and install most switchboards, VF telegraph equipment and main cables. Once installed they incur rental charges.

(*c*) Telephone circuits between two points which are already well served by G.P.O. cables and spare line plant, can usually be provided as emergency circuits (E.C.) which means that the local ends (i.e., from the office to the nearest G.P.O. junction) are installed while the main part of the circuit can be switched into operation by taking a circuit from a public main route which has spare capacity. Thus at a small yearly rental for the local ends a long distance private wire between two places can usually be planned at any notice from immediate (48 hours) or longer. The disadvantage of E.C. arrangements is that the public circuits earmarked are nearly all routed through vulnerable cities and towns. The alternative is to provide and pay for a complete private wire in peace.

(*d*) Telegraph circuits required for use within seven days' notice must be installed completely and rental paid for them in peace. Beyond seven days' notice, telegraph circuits must still be installed and rental paid in peace unless spare line plant on the route in question happens to be available; generally speaking, there is now seldom spare line plant available.

0604. Procedure for LT Planning (Abroad)

Proposals for additional national facilities should be forwarded through the normal service channels (A.F.O. 1485/53 refers). Proposals for additional NATO facilities should be forwarded separately to the appropriate NATO Commander. (In Europe ELLA 53/Memo./2 refers.)

0605. Procedure for Submarine Cable Planning (U.K. and Abroad)

(*a*) National planning is carried out by the Admiralty in conjunction with the other services and the G.P.O.

(*b*) NATO planning is carried out by the appropriate Supreme Allied Commander.

(*c*) The basic data required for planning is referred to in Article 0501, 0601(*d*) and in NATO publications.

CHAPTER 7

EXERCISE ORGANISATION—U.K.

0701. Planning

Where existing facilities are insufficient for exercise requirements additional facilities can frequently be provided and should be considered in the following order of preference :—

(*a*) Telephone circuits shown as "Emergency circuits" and telegraph circuits shown as at less than 14 days notice in the Admiralty IT schedules.

(*b*) Other circuits included in the schedules.

(*c*) Circuits not included in the schedules.

0702. Provision (Inland Circuits)

(*a*) In order that financial approval may be obtained, and provisioning arranged, requests for long distance telephone and for all telegraph circuits must normally reach Admiralty—

(i) Where new circuits will have to be set up—2 months before they are required.

(ii) Where long distance telephone circuits or telegraph circuits earmarked but not actually in use are concerned—1 month before they are required.

(*b*) Requests for National and NATO facilities must be forwarded separately through the normal service or NATO channels.

0703. Requests for Inland Circuits

Requests should be submitted in the following form. Telephone and telegraph requirements should be kept separate. Example :—

Teleprinter from			To		
Place.	Location.	Termination.	Place.	Location.	Termination.
Plymouth	M.H.Q.	Machine	Chatham	M.H.Q.	Switchboard

0704. Provision (External Circuits)

Circuits to the continent should be proposed through Commanders-in-Chief Channel or Eastlant, who order the circuits through the European Long Lines Agency, Paris. Details should, however, be included in lists of U.K. circuits sent to Admiralty so that the G.P.O. can be given advance information. The procedure is laid down in a Memo. issued by ELLA.

CHAPTER 8

DEFINITIONS

Telegraph	Any form of automatic or manual transmission including remote control.
Recover	Cessation of a line and the recovery of apparatus or equipment connected thereto.
Provide	Provision of line apparatus or equipment.
Remove	Retermination of line and/or transfer of apparatus or equipment to a new position in the same building or at another address in the same locality.
Circuit	Any means of electrical communication between two points ; it may be a telephone, telegraph, or radio circuit.
VF channel ..	A telegraph channel of communication between two points used for teleprinter working on a simplex, simplex-duplex or duplex basis according to requirements.
Pair	Signifies two wires used as a circuit in any multicore cable.
Switchboard ..	Used for the termination and concentration of telephone or telegraph lines in order to provide flexibility, intercommunication and through switching.
Keyboard	Used for the termination and concentration of a small group of lines where through switching is seldom required.
Line Plant	A term used to describe collectively cables, overhead wires and all line equipment.
Cable	One or more insulated copper wires — inside a lead sheath, laid in the ground, erected in the air or laid in the sea to provide telephone or telegraph communications between any two points.
Emergency circuit (E.C.) ..	An emergency telephone circuit of not less than 15 miles in length, normally used for public service but so arranged that it can be switched into the naval network as a private wire.
Private wire ..	Any circuit, either telephone or telegraph, not normally connected to the G.P.O. public service.
Internal	In the same building.
External	Not in the same building.
Extension	An internal or external telephone line terminating on an instrument at one end and on a private branch exchange (PBX) at the other end from which connections can be made either to the public services or the private wire network.
Tail	A teleprinter circuit terminating on a machine at one end and on a switchboard at the other.
Exchange line ..	A telephone circuit which is connected directly to a G.P.O. public exchange and which terminates at the subscriber's end on either a telephone instrument or a private branch exchange.

(A.F.O.s S.5/54, S.89/54 and S.108/54 are cancelled.)

(C48528) 3,050 11/54