

Handbook for Wireless Telegraph Operators



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HANDBOOK FOR WIRELESS TELEGRAPH OPERATORS

Purpose of this handbook

1. This book is intended as a manual for the guidance of wireless telegraph operators on board ship and at coast stations with regard to the acceptance and treatment of radio telegrams, the transmission and receipt of signals, and other details of actual working. It does not in any way deal with the scientific principles of wireless telegraphy, the details of apparatus, or the differences of the various systems. For the most part the instructions apply primarily to operators on board ship but for the sake of completeness certain instructions have been added which apply only to operators at coast stations.

License necessary for every wireless telegraph station.

2. Before a wireless telegraph station can be installed by any private person or company in the United Kingdom or on board a ship registered in the United Kingdom, a license must be obtained from the postmaster-general. Each license lays down certain restrictions in regard to

the electrical energy and wavelengths to be used, and similar matters. Operators should take care that, so far as in them lies, these instructions are duly observed.

Inspection of stations.

3. Stations will be inspected from time to time by officers appointed for that purpose by the postmaster-general in order to ascertain whether the conditions imposed by the licenses are being complied with. It will be the duty of operators to afford these officers, who will be furnished with the postmaster-general's written authorisation, every facility for such inspection.

Regulations as to power, wave-lengths, etc.

4. In the case of coast stations (stations established on land, or on board a ship permanently moored, which are used for the exchange of correspondence with ships at sea) certain restrictions as to wave-lengths are laid down by the international radiotelegraphic regulations (see section 5) . The wave-lengths and power are also subject to the conditions stated in the license. In the case of ship stations (by which term is meant all licensed stations on board ships which are not permanently moored), the international radiotelegraphic regulations provide as follows:

- a. The system used must be a syntonized or "tuned" system. Apparatus is deemed to be syntonized when the transmitting apparatus is so adjusted as to communicate with a receiver which has a corresponding adjustment, and so produce as little effect as possible on the receiver not having a corresponding adjustment.
- b. The speed of transmission and reception must, in normal circumstances, be not less than 12 words a minute, five letters being counted as one word.
- c. The power imparted to the apparatus must not, in normal circumstances, exceed one kilowatt. Larger power may be used, if the ship finds it necessary to transmit messages at a

distance of more than 200 kilometres (about 105 nautical miles) from the nearest coast station, or if by reason of intervening obstacles communication can only be effected by an increase of power.

d. The usual wave-length for ship stations is 300 metres (about 980 feet) and every ship station must be installed in such a way as to be capable of using this wave-length. Other wave-lengths may, however, be used in addition to the 300 metre wave, on condition that they do not exceed 600 metres (about 1970 feet). A special exception is made as regards ships of small tonnage, which it might be impossible to equip with plant producing a 300 metre wave. Such ships may be authorised to use a shorter wave-length.

Every British ship will carry a copy of her license showing the special restrictions (within these limits) which have been imposed in her particular case.

Wave-lengths for coast stations.

5. For purpose of general public correspondence between ships and coast stations, two wave-lengths only are to be used 300 and 600 metres. Every coast station open to general public correspondence will use one of these two wave-lengths, and will always be ready to receive calls on that wave-length. A coast station may be authorised by its license to use other wave-lengths, (not exceeding 600, or exceeding 1600 metres) for communication of a special character, such as long-distance communication or communication between the coast station and particular ships. Ships may also be licensed for receiving messages from coast stations authorised to carry on a long-distance service by means of wave-lengths exceeding 1600 metres. They are not allowed, however, to transit messages except by means of wave-lengths not exceeding 600 metres.

Obligation to communicate with all systems.

6. All coast stations (except those which are specially exempted from the obligation by the government on whose territory they are situated) are bound to interchange radio-telegrams with ships without regard to the particular system of radiotelegraphy employed. Similarly ship stations are bound to interchange radiotelegrams with coast stations without regard to system. British ships, however, are not at present bound to interchange messages with other ships, whether British or foreign, except in case of distress.

Signals of distress.

7. In case of distress the obligation to accept messages is absolute in the case of every ship and coast station without distinction, and such messages must be accepted with priority over all other messages. They must be answered with similar priority and the necessary steps must be taken at once to give effect to them. Further Instructions in this respect will be found in section 73.

Avoidance of interference.

8. Another general obligation which is imposed on all stations alike, and which is regarded as of the highest importance, is that they shall interfere as little as possible with the working of other stations. The rules of working are largely designed to prevent such interference.

Admiralty signalling.

9. After distress signals admiralty signalling has precedence over all other communication (see sections 49 and 74).

Official lists of stations.

10. The names of all licensed ship stations and of all coast stations which are open for public correspondence will be found in the official lists of stations which will be issued from time to time by the international radiotelegraphic bureau at Berne. These lists will give the following information:

a. Name, nationality, and geographical position of coast stations.

Name, nationality, distinguishing signal according to the international code and port of registry of ship stations.

b. Call-signal, consisting of a group of three letters differing for each station.

c. Normal range.

d. System of radiotelegraphic apparatus used.

e. Nature of receiving apparatus (recording, sound-reading, or other method).

f. Wave-lengths used, the normal wave-length being underlined.

g. Nature of the service performed by the station.

General public correspondence.

Restricted public correspondence.

Long-distance public correspondence.

Private correspondence of the owners of the station.

Special correspondence (correspondence of an exclusively official nature) etc.

h. Hours of service.

i. Coast or ship charge for radiotelegrams.

The lists will also comprise such particulars with regard to other radiotelegraph stations (for instance stations on ships of war) as are communicated to the international bureau by the administrations to whose authority these stations are subject.

Operator's certificate.

11. Every person operating a station on board a ship registered in the United Kingdom is required to hold a certificate of competency conferred by the postmaster-general after examination. The examination is designed to test the operator's practical knowledge of wireless telegraphy within the limits prescribed in appendix 6 and his knowledge of the regulations contained in this handbook. The certificate states also that the operator has been bound to preserve the secrecy of correspondence.

Breach of regulations.

12. In the case of a breach of regulations, if the operator is found to be in fault, the postmaster-general (in the case of the United Kingdom and of ships registered therein) will take the necessary steps and, if need be, withdraw his certificate. If the fault is found to arise from causes not within the control of the operator, or from the instructions given to the operator by his employer, similar steps will be taken with regard to the license in respect of the station.

Repeated breach by a foreign ship.

13. In the event of repeated breaches of the regulations by a foreign ship in communication with a coast station in the United Kingdom, if the representations made to the administration to whose authority the ship is subject remain without effect, the postmaster-general has power, after giving notice, to authorise coast stations in the United Kingdom to refuse communications (other than distress signals) from the ship in question. It is the duty of operators, whether at coast or at ship stations, to report to the postmaster-general, through their employers, any breach of the regulations which may come under their notice.

Duration of service.

14. The service at coast stations is as far as possible, continuous by day and night; but certain coast stations may provide a service of limited duration. The actual hours of service at each station will be found in the list of stations issued by the international radiotelegraphic bureau. Those stations at which the service is of limited duration must not close before they have transmitted all the radiotelegrams to such ships as are within range, and have received from these ships all messages of which notice has been given. This also applies when ships notify their presence before work has actually ceased.

Minimum power to be used.

15. All stations are bound to exchange messages with the minimum power required for obtaining effective communication. Operators must bear in mind the importance of this regulation as it is often only by careful observance of it, that interference with other stations can be avoided.

Ships to communicate with the nearest coast station.

16. When a station operator wishes to communicate with a coast station, he must select the nearest. If he has on hand a radiotelegram which the sender desires to be sent to some other station, he must wait until that station becomes the nearest before transmitting the messages. If, however, the course of the ship is such that this condition cannot be realised, the operator may comply with the sender's wishes, provided he can do so without interfering with the working of any other station; but not otherwise.

Note. Every ship licensed by the postmaster-general for wireless telegraphy, from which public radiotelegrams can be sent, must carry copies of the following documents:

Handbook for Wireless Telegraph Operators

1. Its wireless telegraph license.
2. This handbook.
3. The international list of telegraph offices.
4. The official list of wireless telegraph stations.
5. The latest issue of the post office guide.
6. An adequate supply of telegraph forms of three kinds, one for radiotelegrams sent from the ship, one for radiotelegrams received by the ship, and the third for service messages whether sent or received.
7. The telegraph tariffs of those countries with which it communicates most frequently.

Coast stations will be expected so be provided with copies of the documents numbered 1 to 5, together with an adequate supply of telegraph forms.

Dangerous parts of the apparatus at each station should be marked and, if necessary, screened.

Address.

17. The senders are in all cases responsible for the sufficiency and correctness of the addresses of their radiotelegrams. In the case of radiotelegrams handed in on board a ship, however, it is the duty of the operator to see that the office of destination is written as shown in the first column of the international list of telegraph offices. Every ship licensed by the postmaster-general for the exchange of public radiotelegrams will be required to carry a copy of these lists. The name and permanent address of the sender should be written on the form in each case for purposes of record.

Route.

18. In cases where there are more ordinary telegraph routes than one by which a radiotelegram from a ship may be transmitted to its ultimate destination from the country to which it is sent by wireless telegraphy, the sender may specify the route which he wishes to be followed. When the rates vary for different routes, a route must be specified by the sender. The route specified should be signalled by the operator to the coast station as part of the preamble of the radiotelegram. The following abbreviations should be used in the case of telegrams transmitted from ships to coast stations in the United Kingdom:

For via Anglo-American Telegraph Company, via "Anglo".

For via Commercial Cable Company, via "Commercial".

For via Direct Spanish Telegraph Company, via "Spanish".

For via Direct United States Cable Company, via "Direct".

For via Eastern Telegraph Company, via "Eastern".

For via Great Northern Telegraph Company, via "Northern."

For via Indo-European Telegraph Company, via "Indo".

For via French Telegraph Cable Company, via "P. Q."

For via Western Union Telegraph Company, via "Western Union".

For via France, Teneriffe, Noronha and Brazilian land lines, via "Talisman".

Preamble.

19. The preamble should contain, in addition to the route (when specified), the other particulars set forth in section 63, the number of the radiotelegram (section 50), and the word "radio" (which appears in every message transmitted or intended to be transmitted, by wireless telegraphy).

Radiotelegrams to be called for.

20. Radiotelegrams from ships, when intended to be left until called for at telegraph offices or post offices, should bear the words “telegraph restant “ or “poste restant”, as the case may be, either in the address or before it; or the abbreviations “TR” and “GP” respectively may be used to represent these expressions. In that case they should be written just before the addressee’s name. These abbreviated forms count as one word each. The rate per word being the whole rate from the ship to destination (section 40).

Multiple addresses.

21. Radiotelegrams from ships (except those for transmission by the North Atlantic Cables) may also be addressed to several persons in the same town, on to the same person in different parts of the same town, in which case the indication TU.... (the number of addresses being inserted in place of the dots) must be inserted before the name of the first addressee. This indication counts as one word at the full rate per word (section 40), a copying fee of five pence for each additional copy beyond the first must be paid in addition, of course, to the ordinary charge for the radiotelegram. This charge of 5 pence is retained by the office of origin. Multiple address radiotelegrams may also be sent to ships under similar conditions.

Undelivered radiotelegrams from ships.

22. When for any reason a radiotelegram from a ship at sea cannot be delivered to the addressee, the coast station will be informed by the office of destination; and the information must be transmitted, if possible, to the ship of origin. It will then be the duty of the operator to compare the address on the original form with that given in the notice of non-delivery and, to send a correcting service advice if he finds any discrepancy. In the absence of any discrepancy

he should inform the sender of the non-delivery of the message and of the reason assigned for it.

[Here original pages 18 & 19 which contain sections 23 & 24 are missing]

B. Procedure when the ship cannot be reached.

25. The sender of a radiotelegram to a ship may indicate the maximum period for which he desires the message to be kept at the coast station. If the ship does not communicate with the coast station within that period, it will be the duty of the operator at that station to send a service advice to the office of origin accordingly. If the sender does not specify any period, the office of origin should be informed by service advice on the morning of the 29th day after the despatch of the radiotelegram, that it has not been possible to deliver the message to the office of destination. The sender, who will be informed by the office of origin, may then, if he chooses, request by means of a prepaid telegraphic or postal service message to the coast station (the prepayment being at the rate for a message to the coast station, without payment of the wireless rate either for the coast station or for the ship) that the radiotelegram may be retained for a further period of 30 days, and so on. If no such request is received, the radiotelegram should be treated as undeliverable at the end of the 30th day (not including the day of handing in). If the coast station knows that the ship has passed beyond its range of transmission, before the radiotelegram could be transmitted to it, the office of origin should be informed accordingly by service advice.

C. Non- delivery on board ship.

26. When a radiotelegram reaching a ship at sea cannot be delivered, the office of origin must be informed by service advice. This information should be sent, if possible, through the coast station from which the message was received; but, if circumstances require, it may be sent through the nearest coast station.

D. Duplicate forms to be preserved.

27. A duplicate of each radiotelegram delivered to a person on board ship must be made out at the time of receipt. Such duplicates must be sent, so far as possible, in monthly batches to the comptroller and accountant-general, G. P. O. London, or disposed of as may be arranged between the postmaster-general and the licensee or the company operating the ship station (see section 45), and proper precautions must be taken to ensure their secrecy. The duplicate forms should show, in addition to the actual message and the usual service particulars, the name of the coast station from which the message was received (which should be entered in a prominent position), the date and time of its receipt, and the time at which it was delivered to the addressee.

Classes of telegrams not admitted in radiotelegraphic service.

28. Certain special classes of telegrams, which are admitted in international telegraph service, cannot be accepted in the radiotelegraphic service. They are as follows:

- a. Telegrams with prepaid replies.
- b. Telegraph money orders.
- c. Collated telegrams (telegrams with instruction to be repeated).
- d. Telegrams with acknowledgement of receipt.
- e. Telegrams "to follow addressee".
- f. Paid service telegrams, except as regards transmission over the ordinary telegraph system.
- g. Urgent telegrams.
- h. Telegrams to be delivered by express or by poste.

Language.

29. Radiotelegrams may be sent in plain language, code language, or cypher, except in the case of certain countries (shown in the table of telegraph tariffs in the post office guide), which do not admit code or cipher telegrams, or admit them under certain restrictions only.

A. Plain language.

Radiotelegrams in plain language are those composed of words, figures, and letters which offer an intelligible meaning, they may be expressed in any of the principal European languages and certain others. The words and letters must be written in roman characters.

B. Code language.

Code language is composed of real words not forming intelligible phrases, or of artificial words, consisting of pronounceable groups of letters. No code word, whether real or artificial, must exceed 10 letters in length. The real words may be drawn from any of the following languages: English, French, German, Italian, Spanish, Portuguese, Dutch, and Latin; the artificial words must be formed of syllables which are pronounceable according to the current usage of one of those languages. Combinations formed by running together two or more real words (whole or contracted), or a real word and some other expressions, are prohibited.

C. Cypher.

Cypher is composed of:

- a. Arabic figures or groups or series of arabic figures having a secret meaning, or letters or groups or series of letters having a secret meaning.
- b. Combinations of letters not fulfilling the conditions applicable to plain language or code.

Letter and figure cypher cannot be combined in one group.

Counting of words (see section 39 for examples).

30. The number of words counted for purposes of charge should include all that the sender writes on the telegraph form to be transmitted. No charge is to be made for the transmission of the particulars in the preamble.

31. In the address (which must consist of at least two words) of a radiotelegram from a ship, the name of the telegraph office of destination, including any indication of the country or district added in the first column of the international list of telegraph offices to distinguish it from other offices of the same name, is counted and charged for as one word, irrespective of its length. The operator should join up the words composing the name of the office of destination (if written as shown in the list), and signal it as one word. The name of the country or district, if added unnecessarily by the sender, is charged for as a single word, provided that it is written as it appears in the second column of the list, or in the alternative form shown in the preface. The rest of the address is counted in accordance with the rules for counting plain languages.

32. In plain languages, the maximum number of letters allowed to pass at the for a single word is 15, any excess being charged for at the rate of 15 letters to a word. In code language, the maximum number of letters allowed at the charge for a single word is 10. Words or expressions of more than 10 letters in length, when used in a code sense, are not accepted otherwise than as cypher at 5 letters per word, cypher groups are charged for at the rate of 5 letters or figures to the word, any excess being charged for at the rate of 5 letters or figures to a word. The signature when it is to be transmitted is counted in accordance with the rules for counting plain language. It should be noted that "ch" which counts as one letter in plain language and in code consisting of real words, counts as two letters in artificial code words and in cypher.

Signs of punctuation, etc.

33. Dashes which only serve to separate the different words or groups of a radiotelegram on the form should neither be transmitted nor counted. Signs of punctuation, apostrophes, and hyphens, except when used in the formation of numbers, commercial marks, etc. (see section 35) are only transmitted if the sender makes a special request for their transmission. If the sender makes no remark, it is assumed that he does not wish them to be transmitted. When they are to be transmitted, the sender must pay for them as isolated characters (see section 34). If a word or passage is underlined, an extra word should be counted for the underline. The two signs of a parenthesis are to be counted as one word; also the two signs of a quotation mark.

Isolated characters.

34. Every isolated character (letter or figure) is to be counted as one word.

Groups of characters.

35. Groups of letters forming commercial marks or expressions, groups of letters in current use, and groups of figures should be counted at the rate of five letters or five figures to a word, and at the same rate as for any excess. Full stops, hyphens, or dashes and bars of divisions used in the formation of fractional or other numbers, or in commercial marks and similar expressions, are each counted as a figure or letter in the group in which they occur. So also is each letter added to a group of figures in order to form an original number or to represent the number of a house (386th, 27 ten, 42me, 106a, 15 bis). Letters and figures may also be combined in one group in commercial marks. Otherwise letters must be counted separately from figures. Groups of letters must not be accepted in the address. All letters other than those forming names or words must, in the address, be separated, and paid for as one word each. They are then transmitted as separate words.

Combinations, etc.

36. Words incorrectly spelled, so as to reduce the number of letters below the maximum, or incorrectly joined together, contrary to the usage of the language, are inadmissible.

Compound words.

37. Ordinary compound words and compound names of towns, countries, provinces and places (when not already admissible, in the address only, as single words under section 31, whatever the number of words or letters employed to express them) and the names of ships, (or family names, are to be counted as single words, subject to the limits specified in sections 32 and 38, provided that they are written without break or hyphen. But if joined by hyphen, or separated by an apostrophe, such compound words or names must be counted as so many separate words, and the hyphen or apostrophe, if transmitted, will be chargeable as an additional word (see section 33). The name of a street, place, square, etc., if written without a break, is to be counted as one word, subject to the limit of 15 letters to a word, but the word "street", "place", "square", "rue", "boulevard", etc. is to be counted as a separate word for purposes of charge. In Dutch and German, however, the generic word straat, strasse, platz, etc. may be joined to the name of the street, place, square, etc. and is not then chargeable as a separate word. Compound numbers written in words and without break (ninetysix) should also be counted as single words, subject to the limits specified in sections 32 and 38.

Mixed radiotelegrams.

38. In radiotelegrams partly in plain language and partly in code, the plain language words in the text must be charged for at the rate of 10 letters to a word, any excess being charged for at the rate of 10 letters to a word. Cypher groups inserted in such message are to be counted at 5 signs (letters or figures) to a word. When a mixed radiotelegram consists of plain language and cypher groups only, the plain language should be counted at 15 and the cypher at 5 signs (letters or figures) to a word.

Examples.

Words, etc.	No. of characters	No. of words counted In the Address	No. of words counted In the Text	Section
New York	—	1.	2.	31,32,37.
Newyork	—	1.	1.	31,32,37.
Albury New South Wales	—	1.	4.	31,32,37.
Old Bond St.	—	3.	3.	31,32,37.
Oldbond St.	—	2.	2.	31,32,37.
Oldbondstreet	—	2.	2.	31,32,37.
Vande Brande	—	3.	3.	31,32,37.
Vandebrande	—	1.	1.	31,32,37.
Prince of Wales [ship]	—	3.	3.	31,32,37.
Princeofwales	—	1.	1.	32,32,37.
13 ½	5.	1.	1.	35.
133 ½	6.	2.	2.	35.
137 th	5.	1.	1.	35.
1374 th	6.	2.	2.	35.
100A [number of house]	4.	1.	1.	35.
Ck 23 [commercial mark]	4.	—	1.	35.
46.231.	6.	—	2.	35.
391.10	6.	—	2.	35.
29/31	5.	—	1.	35.
Incontrovertibility	19.	—	2.	32.
Sixtyzlarg[s cypher]	11.	—	3.	32.
Cromvld [cypher]	6.	—	2.	32.

398499 [cypher]	6.	—	2.	32.
(no doubt)	—	—	3.	33.
“no doubt”	—	—	3.	33.
‘no doubt’	—	—	3.	33.
<u>totally</u> [underlined]	—	—	2.	33.
<u>incontrovertibly</u> [underlined]	16.	—	3.	33.
form b	—	—	2.	34.
allright, alright	—	—	2.	36.
Eggspoon	—	—	1.	37.
chefdouvre	—	—	1.	37.

Charge for radiotelegrams.

40. The charge for a radiotelegram consists of:

- a. The coast station charge.
- b. The ship station charge.
- c. The charge for ordinary telegraph transmission.

Coast station and ship station charges.

41. The coast station charge and the ship station charge can be ascertained from the list of stations published by the international bureau at Berne.

Charges for ordinary telegraph transmission.

42. In the case of a radiotelegram originating on board ship, the charge for transmission between the coast station and the office of the destination can be ascertained from the tariffs published by the various telegraph administrations. Every ship licensed by the postmaster-general, from which public radiotelegrams can be sent, is required to carry copies of the tariffs

of those countries with which it is most likely to communicate. In any case where the ship operator has not the means of calculating the charge, he should apply to the coast station for information. The tariffs of foreign countries may be turned into British money by the aid of the second of the tables in the post office guide annexed to the section showing the countries in which foreign and colonial money orders are issued and paid.

Charges to be prepaid.

43. The charge for a radiogram must in every case be prepaid in full by the sender.

Receipts.

44. A receipt for the charges prepaid may be given, and an additional fee, not exceeding 1 penny, may be charged for the receipt.

Accounts.

45. The mode of accounting for the charges will be arranged between the postmaster-general and the licensee or the company operating each coast station or ship station licensed by him.

Conditions under which reimbursement may be claimed.

46. The charges for radiotelegrams incorrectly transmitted, unduly delayed, or not delivered to the addressee, will be refunded, wholly or in part, under certain conditions. The following are the principle cases in which reimbursement may be claimed:

a. When a radiotelegram written in plain language has been rendered useless by inaccurate transmission, the whole amount paid will be refunded. Under no circumstances is the charge for a code or cypher radiotelegram returned on account of an error in transmission unless such error leads to non-delivery or delay beyond the limited mentioned in d.

b. When a radiotelegram has failed to reach its destination through some error on the part of the telegraphic or radiotelegraphic service, the whole of the amount paid will be refunded.

c. When one or more words have been omitted in transmission, the cost of such word or words will be refunded, provided that it is not less than 10 pence.

d. When a radiotelegram is delayed through the fault of the telegraph service, the charge will be refunded if the delay reaches a certain limit. The limit is 12 hours in the case of certain countries in Europe; 24 hours in the case of other countries in Europe, and Algeria, Tunis, the Caucasus and Turkey in Asia; and 72 hours in the case of other countries. The time occupied in wireless transmission, and the time during which the radiotelegram remains at the coast station or at the ship station, will not be reckoned towards the period of delay entitling the sender to reimbursement.

Application for reimbursement to be made in writing.

47. The above information is given in order that operators may be in a position to advise senders of radiotelegrams who make inquiries or complaints. But it is not intended that an operator should himself refund the amount prepaid on a radiotelegram, or any part of it, except in cases where no attempt has been made to transmit the radiotelegram. In all other cases applicants for the return of money should be told to apply in writing to the administration responsible for the ship station. They should also be informed that claims for reimbursement should always be accompanied by document evidence, viz:

In the case of non-delivery or delay, by a written statement from the office of destination or the addressee that the radiotelegram has not been received, or has been delayed.

In the case of error in a plain language radiotelegram, or in the case of the omission of one or more words, by the actual message form delivered to the addressee.

No claim for reimbursement will be entertained unless it is made within five months of the date of the original radiotelegram.

No reimbursement for consequential and correcting telegrams.

48. The amounts paid in respect of radiotelegrams or ordinary telegrams sent in consequence of the non-delivery, delay, or incorrect transmission of a radiotelegram will in no case be returned.

Priority of messages.

49. In the transmission of radiotelegrams, priority must be assigned, first of all, to messages of distress (see section 73); then to messages of the British admiralty, and other British government departments and to the messages of other governments (see section 74). While messages of these classes are being transmitted, all other stations within range must suspend communication. As between the two communication stations themselves, the following order should be maintained:

1. Messages relating to navigation.
2. Service messages relating to the conduct of the radiotelegraphic service, or to previous radiotelegrams transmitted by the station concerned.
3. Ordinary correspondence.

Radiotelegrams of the same rank must be transmitted (according to their time of handing in) between two stations, either singly in alternate order, or, if preferable, in series consisting of several messages, as may be determined by the coast station (see section 59), provided that the time occupied in the transmission of any one series does not exceed 20 minutes.

Local numbering of radiotelegrams.

50. A British coast station communicating with any ship, british or foreign, should give a local number to all the radiotelegrams that it has to transmit, whether government, service or ordinary, in sequence, beginning with 1. The order of the radiotelegrams will be determined by their priority in accordance with section 49. There will be a fresh sequence for each ship. Thus, if Bolt Head transmits 20 radiotelegrams to one ship and subsequently, 15 to another ship, the first series will be numbered 1-20, and the second 1-15. This arrangement facilitates the check on transmission provided for in section 70; and the numbers in the series will be used to designate the respective radiotelegrams in any subsequent service correspondence between the coast station and the ship. Similarly a british ship communicating with a british coast station will number all the radiotelegrams that it has to transmit in sequence, beginning from 1, in accordance with their priority as determined by section 49. The numbering will commence

afresh with each coast station. The procedure corresponds to that laid down for the coast station in the preceding paragraph. A british ship communicating with a foreign coast station should similarly number its radiotelegrams in sequence from 1 onwards. But radiotelegrams received by british ships from foreign coast stations will probably be numbered differently, each one bearing an international number, allotted to it on the ordinary telegraph system, and used as its distinguishing number in service correspondence between the telegraph offices through which it has passed. In such a case this international number will take the place of the local check number described above; it will be entered on the ship form, and will be quoted in any subsequent service message dealing with the radiotelegram so numbered. Certain foreign ships, when communicating with british coast stations, will probably allot international numbers to their radiotelegrams instead of numbering each batch afresh from 1 onwards. In such a case these numbers will be used for purposes of check on transmission and in service correspondence between the coast station and the ship. But they should not be sent on by the coast station over the ordinary telegraph system. A radiotelegram received from a ship with an international number will be treated exactly like one with a local check number, the number will be suppressed at the coast station. And the usual letter code indicating the time of handing in, will be substituted, before the radiotelegram is forwarded over the ordinary telegraph system.

International morse code to be used.

51. The signals used are those of the international morse code. Arrangements are in contemplation for the adoption of a number of abbreviations indicating phrases in common use in wireless working. A list of these abbreviations (with the relative phrases in english) is printed in appendix 3. Due notice will be given when they have been adopted for international use. In the meantime they should be used for communication between such coast stations and ships as are licensed by the postmaster-general; and the phrases themselves should be used in other cases.

Appendix III

Signal	Signification without interrogative sign	Signification when followed by interrogative sign
QRA	Here the ____ .	What ship or coast station is this?
QRB	My distance is ____ .	What is your distance?
QRC	My bearing is ____ .	What is your bearing?
QRD	I am bound for ____ .	Where are you bound for?
QRF	I am bound from ____ .	Where are you bound from?
QRG	I belong to the ____ line.	What line do you belong to?
QRH	My wave-length is ____ metres.	What is your wave-length in metres?
QRJ	I have ____ words to transmit.	How many words have you to transmit?
QRK	Signals are satisfactory.	How are signals?
QRL	I am receiving badly, please send 20 ..._ for adjustment.	Are you receiving badly? Shall I send 20 ..._ for adjustment?
QRM	I am being interfered with.	Are you being interfered with?
QRN	Atmospherics are very strong.	Are atmospherics strong?
QRO	Increase your power.	Shall I increase power?
QRP	Decrease your power.	Shall I decrease power?
QRQ	Transmit faster.	Shall I transmit faster?
QRS	Transmit slower?	Shall I transmit slower?
QRT	Stop transmitting.	Shall I stop transmitting?
QRU	I have nothing for you.	Have you anything for me?
QRV	Everything is in order.	Is everything in order?
QRW	Engaged. Please do not interfere.	Are you busy?
QRX	Stand by. I will call you when required.	Shall I stand by?
QRY	Your turn will be number ____ .	When will be my turn?

QRZ	Your signals are weak.	Are my signals weak?
QSA	Your signals are strong.	Are my signals strong?
QSB	Your spark is bad.	Is my spark bad?
QSC	Your spacing is bad.	Is my spacing bad?
QSD	My time is ____ .	What is your time?
QSF	Transmission will be in alternate order.	___ ___
QSG	Transmission will be in series of 5 messages.	___ ___
QSH	Transmission will be in series of 10 messages	___ ___
QSJ	Please give me your rate to ____ .	Do you want my rate to ____ ?

In addition to these signals, which, it will be observed, are uniform in construction, the following signals of international telegraph code may be used in these communications:

. . _ _ . . "Repeat" sign (as well as mark of interrogation).

. . . _ . Understood.

. _ . . . Wait.

Ship station to call coast station.

52. As a general rule, it is the ship station which calls the coast station. The call must only be made as a general rule, when the distance of the ship from the coast station is less than 75 percent of the normal range of the coast station or the ship whichever is smaller, as given in the official list (section 10).

53. Before beginning to call, the ship station must adjust its receiving apparatus to the highest possible degree of sensitiveness, and make sure that the coast station which it wishes to call is not engaged in communication. If it finds that transmission is taking place, the ship station must wait for the first break before calling. Operators cannot be too careful in carrying out this regulation, as by calling up a station which is already engaged in transmission they are liable to

interfere with the communication that is taking place, and therefore eventually delaying their own messages.

Wave-length to be used when calling coast stations.

54. The ship station, for calling purposes, uses the normal wave-length of the coast station. In the case of the coast stations using more than one wave-length, the normal wave-length is underlined on the official list.

Calling to be discontinued on request from coast station.

55. If, in spite of these precautions, the exchange of public traffic is interfered with, the call must cease at the first request made by a coast station open for public service. This station must then indicate, approximately, how long it will be necessary to wait. See also section 60. In this connection operators should carefully note that the main principal governing all communications between a ship station and a coast station is essentially that the coast station is the controlling station.

Procedure for coast stations receiving more than one call.

56. When a coast station receives calls from several ship stations, the coast station decides the order in which the ship stations shall be allowed to transmit their correspondence. The sole consideration which must govern the coast station in setting this order is the necessity of allowing every station concerned to exchange the greatest possible number of messages. Preference should therefore be given to a ship whose position, course, and speed indicate that she will be the first to pass out of range.

Call and reply.

57. The call comprises the signal _ . _ . _ once; the call-signal of the station called repeated thrice; the word "de" once; and the call-signal of the calling station repeated thrice. The station called answers by giving the signal _ . _ . _ once; followed by the call signal of the calling station repeated thrice, by the word "de" once; by its own call-signal once, and by the signal _ . _ once.

Example of call.

Thus, suppose a ship whose call signal is abc, wishes to communicate with a coast station whose call-signal is xyz, after first having ascertained that the coast station is not communicating, the ship station will signal: _ . _ . _ xyz xyz xyz de abc abc abc and the coast station will reply thus

Example of reply.

_ . _ . _ abc abc abc de xyz _ . _

58. The ship station will then make known:

- a. The distance of the ship from the coast station in nautical miles.
- b. The true bearing of the ship from coast station, reckoned in degrees from 0 to 360.
- c. The true course of the ship in degrees reckoned from 0 to 360.
- d. The speed of the ship in nautical miles per hour.
- e. The number of words which the ship has to transmit.

[At this point the writer has included a hand-drawn compass]

59. The coast station will then indicate the number of words (say 50 words) which it has to transmit to the ship and will say whether it is ready to communicate at once or whether the ship is required to wait for the procedure, in the latter event, see section 60. If the coast station is ready to communicate at once, it will decide whether transmission is to take place in alternate order or in series (see section 49), and whether the ship or the coast station is to transmit first, and will give the necessary instructions to the ship. Thus the reply of the coast station (xyz) to the ship (abc) after receiving the particulars set forth in section 58 may take one of the following forms:

1. _ . _ . _ abc de xyz 50 series 5 . _ . _ .

("I have radiotelegrams containing 50 words for you. Transmission will take place in series of 5 messages each"). The ship will acknowledge the receipt of these instructions, and the coast

station will then transmit five messages, provided that their transmission does not occupy more than twenty minutes. (Section 49).

2. _ . _ . _ abc de xyz 50 series 5 _ . _

("I have radiotelegrams containing 50 words for you. Transmission will take place in series of five messages each. You begin." The ship will then transmit five messages subject as above to the limit to the limit of twenty minutes).

3. _ . _ . _ abc de xyz 50 alternate . _ . _ .

("I have radiotelegrams containing 50 words for you. Transmission will take place in alternate order." The ship will acknowledge the receipt of these instructions, and the coast station will then transmit its first message).

4. _ . _ . _ abc de xyz 50 alternate _ . _

("I have radiotelegrams containing 50 words for you. Transmission will take place in alternate order. You begin." The ship will then transmit its first message).

Procedure when the ship is required to wait.

60. If the coast station is not ready to communicate at once after receiving the particulars set forth in section 58, it will instruct the ship to wait (say) twenty minutes, thus:

_ . _ . _ abc de xyz 50 . _ . . . 20 . . . _ .

(" I have radiotelegrams containing 50 words

[The hand-written handbook ends here but there are references in the text to later sections]