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**THE INTERNATIONAL TELEGRAPH AND TELEPHONE  
CONSULTATIVE COMMITTEE  
(C.C.I.T.T.)**

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# **II<sup>nd</sup> PLENARY ASSEMBLY**

**NEW DELHI, 8-16 DECEMBER 1960**

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## **RED BOOK**

**VOLUME II<sup>bis</sup>**

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**Telephone Operation and Tariffs**

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**Telegraph Operation and Tariffs**

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**General Tariff Principles**

**Costing — Lease of Circuits**

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Published by the  
**INTERNATIONAL TELECOMMUNICATION UNION**  
SEPTEMBER 1961

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## CONTENTS OF THE C.C.I.T.T. RED BOOK

- Volume I bis** — Minutes and reports of the II<sup>nd</sup> Plenary Assembly of the C.C.I.T.T.  
— Resolutions and Opinions issued by the C.C.I.T.T.  
— List of Study Groups and Sub-Groups for the period 1961-1964.  
— Summary table of questions under study in 1961-1964.  
— Recommendations (Series A) relative to the organization of the Work of the C.C.I.T.T.  
— Recommendations (Series B) and Questions (Study Group VII) relative to means of expression.
- Volume II bis** — Recommendations (Series E) and Questions (Study Groups II and III) relative to telephone operation and tariffs.  
— Recommendations (Series F) and Questions (Study Groups I and III) relative to telegraph operation and tariffs.
- Volume III** — Recommendations (Series G, H, J) and Questions (Study Groups XV, XVI and C) relative to line transmission.  
— Recommendations (Series K) and Questions (Study Group V) relative to protection against disturbances.  
— Recommendations (Series L) and Questions (Study Group VI) relative to the protection of cable sheaths and poles.
- Volume IV** — Recommendations (Series M and N) and Questions (Study Group IV) relative to line maintenance and measurements on the general telecommunication network.
- Volume V** — Recommendations (Series P) and Questions (Study Group XII) relative to telephone transmission performance and apparatus.
- Volume VI** — Recommendations (Series Q) and Questions (Study Groups XI, XIII and B) relative to telephone signalling and switching.
- Volume VII** — Recommendations (Series R, S, T, U) and Questions (Study Groups VIII, IX, X, XIV) relative to telegraph technique.  
— Recommendations (Series V) and Questions (Study Group A) relative to data transmission.

Each volume contains extracts from contributions received in the 1957-1960 period dealing with the subject of the volume concerned and considered worth publishing owing to their interest.

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## ADDENDUM

Prière d'insérer à la page 64 du Tome II bis du *Livre Rouge*, sous le Tableau II, le paragraphe suivant qui a été omis:

### « Rémunération pour l'utilisation d'un centre international automatique de transit

Si tout le trafic échangé entre deux pays terminaux est acheminé via un pays de transit et passe en totalité ou en partie par un centre international automatique de transit, aucune rémunération n'est perçue pour l'utilisation de ce centre.

En revanche, si une partie seulement du trafic échangé entre deux pays terminaux est acheminée via un pays de transit, par l'intermédiaire d'un centre international automatique de transit, il convient de prévoir une rémunération de 0,45 franc-or lorsqu'on fixe la taxe hypothétique revenant au pays ayant le centre international de transit automatique. »

**Volume II bis of the C.C.I.T.T. “Red Book ” (New Delhi, 1960)**

**replaces**

**Volume II of the C.C.I.T.T. “Red Book ” (Geneva, 1958)**

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**PART I**

**TELEPHONE OPERATION  
AND TARIFFS**

**Recommendations relating to telephone  
operation and tariffs (Series E)**

**Telephone operation  
and tariff Questions entrusted to Study Group II**

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**of Series E Recommendations**

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- SECTION 2: Telephone operation — Operational characteristics —  
Operating methods  
(Recommendations E.21 to E.50)
- SECTION 3: Tariffs and charging in the international telephone service  
(Recommendations E.51 to E.80)
- SECTION 4: Statistics and publications for international telephony  
(Recommendations E.81 to E.90)
- SECTION 5: Determination of the number of circuits to be provided  
(Recommendations E.91 to E.99)
- Summary of negative decisions taken by the C.C.I.T.T. and of those  
taken previously by the C.C.I.F.
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## **SERIES E**

# **RECOMMENDATIONS RELATING TO INTERNATIONAL TELEPHONE OPERATION AND TARIFFS**

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### **NOTE CONCERNING THE WORDING OF SERIES E RECOMMENDATIONS**

The following principles were adopted for the wording of Series E Recommendations:

(a) As a general rule Recommendations in Series E have a direct form and a continuous text. The former method of wording with "Considering", "Unanimously recommends" and the use of subjunctive clauses has been abandoned. The new method of wording is being progressively introduced and there may therefore be in Series E some Recommendations which have the former arrangement and some with the new arrangement. This difference in the manner of presenting the Recommendations should not be considered to entail any difference in their effect or their authority.

(b) Recommendations in Series E which have the new wording are considered to be unanimous unless otherwise stated in the heading of the Recommendation.

(c) A Recommendation in Series E involving a negative decision will be given only once in C.C.I.T.T. publications so long as it affects only telecommunication services. A summary of the negative decisions taken up to 1960 and already included in C.C.I.T.T. or C.C.I.F. publications is given at the end of Series E.

(d) Series E Recommendations having a negative nature and affecting users of telecommunication services will be retained in each edition of the Recommendations.

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## SECTION 1

### TELEPHONE OPERATION GENERAL

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#### RECOMMENDATION E.1

#### DEFINITION OF TERMS USED IN INTERNATIONAL TELEPHONE OPERATION

##### 1. Telephone connection

The connection of two telephone stations.

##### 2. Booking of a call

In international manual or semi-automatic service, the booking of a call is the (first) request made by the caller for an international telephone call.

In automatic international service, the operation of the dial (or key-set) by the caller to obtain a call with his correspondent is comparable to the booking of a call.

##### 3. Telephone call

Effective use of the connection established between the calling and the called stations.

##### 4. Telephone circuit

All the means by which a direct connection between two exchanges is established (manual or automatic). Such a circuit is called an "international circuit" when it directly connects two exchanges in two different countries.

The term "trunk circuit" is reserved for the designation of purely national circuits.

*Note* — The above definitions relate solely to the use of the terms in operational procedures, no matter how the circuits are actually made up.

**5. International exchange**

An exchange at the end of an international telephone circuit.

**6. International transit exchange**

An international exchange which has been chosen to establish communications between two countries other than its own.

**7. Direct connection**

In international telephony a direct connection is a connection established by means of a single international circuit.

*Note* — A direct connection can be established:

- (a) between two telephone stations connected to two international exchanges,
- (b) or between two telephone stations connected to exchanges other than international exchanges. This means the use of one or more trunk circuits connected to the international circuit.

**8. Transit connection**

In the international service a transit connection is a telephone connection established by means of more than one international telephone circuit.

**9. International advance-preparation service**

In this service, after recording of the booking by a first operator in the outgoing international exchange, another operator in this exchange sets up the call. This second operator sees to it that the calling and called stations are connected without loss of time on the international circuit or circuits.

**10. International demand service**

In this service, after the call has been booked in the outgoing international exchange, an immediate attempt to set up the call is made by the operator at this exchange who records the booking.

A distinction is made between:

- A. the manual demand service,
- B. the semi-automatic demand service.

**A. MANUAL DEMAND SERVICE**

This service requires an operator at the incoming international exchange to establish the call with the operator of the outgoing international exchange.

There are two operating methods:

(a) **Indirect manual demand working**

In this method of working the operator at the incoming international exchange always acts as an interpreter between the operator in the outgoing international exchange and the called subscriber.

(b) **Direct manual demand working**

In this method of working the operator in the outgoing international exchange speaks with the called subscriber direct.

**B. SEMI-AUTOMATIC DEMAND SERVICE**

This, in general, involves automatic setting-up of the connection between the operator in the outgoing exchange and the called subscriber.

**11. Automatic international service**

In this service the calling subscriber himself dials (or operates the key-set) to obtain the number necessary for direct connection with the called subscriber.

**12. Routes**

The routes followed by international telephone traffic are defined by agreement between Administrations \*. A distinction is made between:

- normal routes,
- overflow routes,
- emergency routes.

**Normal route**

A normal route between two given international exchanges comprises all those circuits used without distinction as first choice circuits:

- *in the case of direct groups of circuits it consists of:*

circuits established via one or several paths through the same or different countries.

- *when an international transit exchange is involved, it consists of:*

the circuits fulfilling the above condition established between the international exchanges and the international transit exchange.

**Overflow route \*\***

An overflow route between two given international exchanges is the route used when the normal route is congested.

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\* or Recognized Private Operating Agencies.

\*\* Formerly called "auxiliary route".



It uses:

- *when the normal route is direct:*  
an international transit exchange;
- *when the normal route already passes through an international transit exchange:*  
a different transit exchange.

The overflow routes may pass through the same countries as the normal route or through different countries.

### **Emergency route**

An emergency route between two given international exchanges is a route to be used in case of complete interruption or major breakdown of the normal and overflow routes. The path may be through any country.

## **13. Conversation time (duration of a call)**

The interval between the instant the call is actually established between the calling and the called stations and the instant the calling station gives the clearing signal (or the instant when, although the caller has not replaced his receiver, the call is:

- in manual or semi-automatic service, officially cleared down by an operator,
- in fully automatic service, cleared down after some slight delay by the action of the called subscriber's clear-back signal).

## **14. Chargeable duration of a call**

The interval to be taken into consideration in determining the charge for the call.

*Note.* — The chargeable duration can differ from the conversation time, since:

- (a) charging is by indivisible periods;
- (b) in manual or semi-automatic working, incidents or difficulties that may have occurred during the call can be taken into account in determining the chargeable duration.

## **15. Holding time of an international circuit**

The time interval during which the international circuit is used, including conversation and operating times, exchange of service information, etc.

*Note.* — The term "operating time" is meant to cover the time taken both by operators and switching equipment.

**16. Answering time of operators (on an international circuit)**

At the *outgoing* international exchange, this is the interval between sending the calling signal and answering by the operator at the distant international exchange.

At the *incoming* international exchange, this is the interval between a calling signal appearing on a position or group of positions at that exchange and answering by an operator.

**17. Delays: setting-up time of an international connection**

It is possible to distinguish the following characteristic instants  $t$  in the successive phases of the setting-up of an international telephone connection by manual or semi-automatic means:

- $t_0$  the caller has finished booking,
- $t_1$  the operator in the outgoing international exchange has received all the details of the booking,
- $t_2$  the operator in the outgoing international exchange makes a first attempt to set up the connection,
- $t_3$  the called subscriber has replied or the caller has been informed why the connection cannot be set up.

The interval of time  $t_1 - t_0$  is the transmission time of the booking on the national network where the booking is made.

In operation with advance preparation, the time interval  $t_2 - t_1$  is the *delay* to which the call is subject at the outgoing international exchange. The caller is generally informed of this delay.

In demand service with manual or semi-automatic working, the time interval defined above is generally very small.

The time interval  $t_3 - t_1$  is the *setting-up time* of an international connection. This setting-up time includes any delay at the outgoing international exchange.

The time interval  $t_3 - t_0$  is the *total setting-up time* of an international connection. This total setting-up time includes any delay at the outgoing international exchange.

*Note.* — In fully automatic working it is in general difficult to define all the characteristic instants specified above, either because it is impossible to distinguish between them with accuracy or because of differences between the switching systems used. It is, however, possible to define the *total setting-up time*.

**18. Traffic carried (by a group of circuits or a group of switches)****18.1. Amount of traffic carried.**

The amount of traffic carried (by a group of circuits or a group of switches) during any period is the sum of the holding times expressed in hours.

(E.1)

### 18.2. *Traffic flow*

The traffic flow (on a group of circuits or a group of switches) equals the amount of traffic divided by the duration of the observation, provided that the period of observation and the holding times are expressed in the same time units. Traffic flow calculated in this way is expressed in *erlangs*.

## 19. Traffic offered (to a group of circuits or a group of switches)

It is necessary to distinguish between traffic offered and traffic carried. The traffic carried is only equal to the traffic offered if all calls are immediately handled (by the group of circuits or group of switches being measured) without any call being lost or delayed on account of congestion.

The amount and flow of traffic offered, and of traffic carried, can be expressed in erlang hours and erlangs.

## 20. Measurement of busy-hour traffic

### 20.1. *Busy hour (of a group of circuits, a group of switches, or an exchange, etc.)*

The busy hour is the uninterrupted period of 60 minutes for which the traffic is the maximum.

*Note.* — It is usual for the period of the busy hour and the amount of traffic in the busy hour to vary from day to day. In order to obtain a representative traffic estimate, it is recommended that an average value should be calculated from the measurement of a sample, as described later.

It is possible to calculate an average traffic flow which is the mean for the busy hours of the different days in the sample. An alternative method is to find the continuous 60-minute period when the average of the sample is the maximum and to obtain from this sample busy hour the representative traffic. The following recommendations relating to the determination of the sample period and of the mean busy hour apply particularly to the second method.

### 20.2. *Sample period for busy-hour traffic measurement*

The sample period comprises ten consecutive normal working days during the busiest season of the year.

The sample period should not include exceptionally busy or slack days which occur, for instance, adjacent to holidays.

If the busiest season of the year is not clearly defined, it is recommended that the measurements should be repeated with another sample. In the determination of the busiest season of the year it is necessary to bear in mind that a pronounced

annual growth may cause a busy season at the end of the year to appear to exceed the busiest season which occurred earlier in the year.

When automatic traffic recorders are available, traffic measurements can be extended over a longer period than 10 days, so that a 10-day sample can be selected from the busiest season. Otherwise the choice of the busiest season must be based on statistics collected for accounting purposes from congestion or overflow meters.

#### 20.3. *Mean busy hour (of a group of circuits, a group of switches, or an exchange, etc.)*

The mean busy hour is the uninterrupted period of 60 minutes for which the total traffic of the sample is the maximum.

*Note.* — If it is not known which 60-minute period constitutes the mean busy hour, the sample measurement should be sufficient to enable the position of the mean busy hour to be determined. As it is desirable to have a uniform method of analyzing the statistics thus obtained, the following method is recommended for adoption in the international service, the observations being made over quarter-hourly periods:

for a number of consecutive days the values observed for the same quarter of an hour each day are added together;

the mean busy hour is then determined as being the four consecutive quarters which together give the largest sum of observed values.

#### 20.4. *Notification of mean busy-hour traffic*

Measurements of the mean busy-hour traffic, expressed in erlangs and quoting the busy hour on a G.M.T. basis, also the date of measurement or the period for which the estimate is valid, should be communicated to other Administrations \* concerned in the handling of the traffic.

### 21. **Circuit usage for a group of international circuits (or an international circuit)**

The percentage ratio between the sum of the holding times during a specified period equal to 60 consecutive minutes at least and the total length of that specified period.

In the case of a group of circuits, the circuit usage corresponds to the average traffic density *per circuit* during the specified period.

*Note.* — Unless otherwise indicated, circuit usage is based on the busy hour.

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\* or Recognized Private Operating Agencies.

**22. Percentage of bookings met**

The expression as a percentage of the ratio  $\frac{n}{N}$ , where

$N$  is the total number of bookings (see Definition 2) in a specified time;

$n$  is the number of these bookings that are followed by calls (see Definition 3).

**RECOMMENDATION E.2****INSTRUCTIONS FOR OPERATING  
THE INTERNATIONAL TELEPHONE SERVICE**

The C.C.I.T.T.,

**CONSIDERING**

that the rapid and reliable establishment of international telephone connections demands perfect co-ordination of the operations effected by the operators involved;

that it is consequently highly desirable to unify the rules for the utilization of circuits;

that unity can be obtained only by respecting the same operating rules;

**UNANIMOUSLY RECOMMENDS**

that Administrations \* agreeing to apply the provisions of the Telephone Regulations should respect the "Instructions for the international telephone service";

that these Instructions be regarded as an integral part of the present Recommendation, although they are also contained in a separate publication.

**RECOMMENDATION E.3****ORGANIZATION OF THE INTERNATIONAL TELEPHONE NETWORK**

1. *When there is advance preparation*, international traffic should be decentralized whenever circumstances justify it, by the creation of international exchanges in adequate numbers in the centre of the areas to be covered by the service, to reduce waiting times and any lengthening of routes.
2. *In the direct or indirect manual demand service*, it would be well to concentrate international traffic in a few international exchanges where major groups of international

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\* or Recognized Private Operating Agencies.

circuits end, so that international circuits may be more efficiently used, and in view, too, of the linguistic knowledge demanded of international operators.

3. *With semi-automatic working*, it would also be well to concentrate international traffic in a few international exchanges, because of
  - (i) the high cost of the technical equipment required in incoming and outgoing international exchanges for this method of working,
  - (ii) the linguistic knowledge required of international operators, and
  - (iii) the need to provide automatic transit in certain exchanges (semi-automatic traffic routing plan).

#### RECOMMENDATION E.4

##### **OPERATION OF INTERCONTINENTAL TELEPHONE SERVICES**

The following directives should be followed, as far as possible, by the Administrations \* in the operation of intercontinental services.

##### **A. FACILITIES OFFERED TO THE USERS**

1. Distress calls  
Government calls  
Service calls  
Private calls  
are accepted in the intercontinental telephone services.
2. Subscription calls  
Conference calls  
Transferred charge calls  
are accepted in the intercontinental telephone services by agreement between the Administrations \* concerned.
3. For each of these categories there are two different classes:  
station-to-station calls, and  
person-to-person calls.
4. "Station-to-station" calls are those booked to a specified subscriber's number.
5. (a) "Person-to-person" calls are those booked to be exchanged between one specified person and another specified person, the required person being adequately designated. In some cases the search for this person may necessitate the despatch of a messenger if it has not been possible to obtain the person at

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\* or Recognized Private Operating Agencies.

any telephone station. The caller can also specify a substitute if the called person is not available.

- (b) On all "person-to-person" calls, of whatever category, the name of the person booking the call is passed to the called person unless the caller has specified that he does not wish this to be done.

#### B. CALL BOOKING

1. In principle, all call bookings should remain valid so long as they have not been connected, refused by the called person or cancelled by the caller.
2. The person booking an intercontinental call should be allowed to specify the time at which the call is to be established, it being understood that the call will be set up as near to that time as traffic and other conditions permit.
3. The person booking an intercontinental call may modify the booking provided he has not been advised that the call is about to take place.

#### C. ESTABLISHMENT OF CALLS

1. In each intercontinental telephone service, the Administrations \* concerned arrange by common agreement the "primary route" and, if possible, one or more "secondary routes", taking into account such factors as hours of service, charges, etc.
2. The "primary route", which may follow more than one itinerary, is that which should normally be used for the establishment of calls, except in the case of traffic congestion, or when transmission on this route is not of sufficiently good quality or when it is outside the normal hours of service on this route.
3. The "secondary routes" are used when the primary route cannot be used. They should be used in the order pre-arranged by the Administrations \* concerned. If a call has been prepared over a secondary route because the primary route was not available, the call should be completed over the secondary route and not transferred to the primary route when it becomes available, unless there are compelling reasons to the contrary.
4. The charge in a given service is the same, whether the primary or a secondary route is concerned.

#### D. CONTROLLING EXCHANGE

1. When a call uses several intercontinental circuits, the Administrations \* concerned agree among themselves to designate the "controlling exchange" responsible for placing call bookings in the order in which they should be dealt with.

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\* or Recognized Private Operating Agencies.

## E. TIMING OF INTERCONTINENTAL CALLS

1. The exchange on the originating side of the first intercontinental circuit in the chain of connections should be responsible for fixing the chargeable duration of the call. However, transferred charge (collect) calls may be timed at the incoming end by agreement between the Administrations \* concerned.
2. On calls extended over European circuits, timing should normally be carried out by the exchange at the outgoing end of the intercontinental circuit.

## F. CHARGING FOR INTERCONTINENTAL CALLS

1. *Calls over direct intercontinental circuits* (See Note 1)
  - (a) Charges for calls should be fixed by agreement between the Administrations \* concerned.
  - (b) Charges for person-to-person and station-to-station calls should be the same.
  - (c) Reduced charges can be applied for subscription calls or for calls made during specified hours each day or on specified days each week, by agreement between the Administrations \* concerned.
2. *Calls over a chain of intercontinental circuits* (See Note 2)

The charge for a call established over a chain of circuits should not exceed the sum of the charges for calls over each individual circuit. However, the Administrations \* concerned may agree to fix a total charge less than the sum of the charges.
3. *Calls extended over European landlines* (that is, using them as an intermediate section or as an extension of an intercontinental circuit)
  - (a) The principles for the determination of charges are the same as in 2, except that European countries operating a radio telephone circuit may agree to forgo any quota for the terminal section of their landline used to extend calls over intercontinental circuits.

Administrations \* concerned in the provision of the landline section should not ask for higher payment than that applying in the case of a call obtained entirely by landline.
  - (b) Where the application of the above principles would result in different charges for calls over routes in a given relation, the Administrations \* concerned with the operation of the most expensive route (or routes) should agree how the rate should be scaled down to the lower figure. Unless otherwise decided by agreement between the Administrations concerned, this should be done

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\* or Recognized Private Operating Agencies.



by a proportional reduction in the hypothetical quotas applicable to the most expensive route or routes.

4. *Charges for ineffective calls (report charges)*

- (a) The report charge, which is never collected in addition to the call charge in the intercontinental telephone services, is mainly used as a means of discouraging an intercontinental call booking from being made, for example, merely to find out the whereabouts of a particular person without any intention of exchanging conversation, or to obtain other information by using a code pre-arranged with this particular person.
- (b) No report charge is applicable to ineffective station-to-station calls, except in the case covered by point 4 (e) hereafter.
- (c) A report charge is applicable to ineffective person-to-person calls if either the caller or the called person is responsible for the failure to establish the call, provided that the telephone service has been able to reach the called station. In principle, therefore, a report charge would be applicable in the following circumstances:
  - (i) If, after the called station has been reached, the call is ineffective because the called person refuses the call or cannot be obtained despite several attempts.
  - (ii) If, after the called person has been obtained, the call is ineffective because the caller refuses the call or cannot be obtained. The charge may also be applicable if no reply can be received from the calling station after several attempts, the called station having been already advised to expect the call.
  - (iii) If, in the case of a deferred call, either the caller or the called person does not reply at the agreed time.
  - (iv) If, in the case of a call for a person who is not a telephone subscriber, he does not present himself at the telephone, although arrangements have been made to advise him.
- (d) The amount of the report charge should be fixed by agreement between the Administrations \* concerned. The amount should be uniform in any one service, whatever the route used. The report charge should constitute a fixed percentage, in principle 10% of the unit charge in the service considered.
- (e) When the charge is determined by an operator, if the call is booked to a wrong number and established with the station having that number, no charge shall be collected for the call if the incorrect booking is *immediately* replaced by another booking to the same country.

If the incorrect booking is not followed by another booking to the same country, the report charge is collected.

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\* or Recognized Private Operating Agencies.

### 5. *Reduced charges*

- (a) Administrations\* concerned may agree to apply reduced charges in respect of subscription calls, or in respect of calls made during mutually agreed periods.
- (b) Where it is agreed that subscription calls can be accepted, the following principles might apply:
  - (i) Service should be given by contract for a minimum period of one calendar month.
  - (ii) Calls should be contracted for daily or on six days per week, the same day each week being excluded.
  - (iii) Calls should be contracted for in indivisible periods of five minutes, subject to a minimum period of ten minutes.
  - (iv) The daily charge per call should be not less than two-thirds of the rate applied to ordinary calls in the charge period concerned; for a monthly contract, the monthly charge should be 30 times the daily rate if the calls are required on each day, or 26 times the daily rate if calls are required on six days a week.
  - (v) If traffic conditions permit, individual calls can be extended beyond the contract period at the rate applied to ordinary calls.
  - (vi) If a call is not established for service reasons within ..... minutes of the required time, a rebate of charge will be given, or the caller will be allowed to make the call at some other time in the same charge period.
- (c) If it is agreed that reduced rates shall be applied during specified hours daily or on specified days each week, the reduction in charge should be of the order of 25%.

### G. DIVISION OF CHARGES FOR INTERCONTINENTAL CALLS

(See Note 3)

1. Charges for calls over direct circuits should in principle be divided equally between the terminal Administrations \* unless other arrangements are agreed between them.
2. Charges for calls over a chain of intercontinental circuits should in principle be apportioned between the individual circuits in proportion to the charges for direct calls over each circuit. The amounts accruing to each circuit should then be divided equally between the terminal Administrations \* unless other arrangements are agreed between them.
3. Charges for intercontinental calls extended over European landline circuits should in principle be divided as follows:

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\* or Recognized Private Operating Agencies.

- (a) the section of the charge accruing to the intercontinental circuit (or circuits) should be divided as indicated in 1 and 2 above;
- (b) the section of the charge accruing to the European landline should be divided in proportion to the amounts required by each Administration \* concerned in the provision of the landline.

#### H. INTERCONTINENTAL PROGRAMME TRANSMISSIONS

(See Note 4)

1. If, in the case of a programme transmission over an intercontinental telephone circuit (or chain of such circuits), the facilities provided are broadly the same as those provided in respect of telephone calls, then the charge for a programme transmission should be the same as for a telephone call of the same duration. However, in order to take account of the circuit preparation and exchanges of telegrams or service communications necessitated by such transmissions, the minimum chargeable duration of a programme transmission using one or more intercontinental circuits should be ten minutes.
2. If facilities different from those provided for the ordinary telephone service are required, the Administrations \* concerned should agree between themselves the basis of charging.
3. If a programme transmission is provided by means of an intercontinental telephone circuit extended by means of European landlines (programme and telephone circuits) the charge should be assessed in principle as follows:
  - (a) Intercontinental circuit and European telephone circuit—at the same rates as for telephone service between the terminal countries concerned, subject to a minimum of ten minutes.
  - (b) Intercontinental circuit and European programme circuit:
    - (i) for the intercontinental circuit, at the same rate as for telephone service between the countries at the two ends of the intercontinental circuit, subject to a minimum of ten minutes;
    - (ii) for the European programme circuit, at the rate applicable to a programme transmission between the terminal points of the programme circuits in accordance with Recommendation E.57.
4. If, in the case mentioned in 3, special intercontinental facilities are provided, the charge shall in principle consist of the charges for a programme transmission between the terminals of the European circuits, assessed in accordance with Recommendation E.57, plus the charge for a programme transmission between the terminals of the intercontinental circuit, assessed as indicated in 2 above.
5. The chargeable period for an intercontinental programme transmission shall commence at the time when the circuit (or chain of circuits) is handed over to the broadcasting authority and shall cease when the circuit (or chain of circuits) is released by

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\* or Recognized Private Operating Agency(ies).

that authority. If, at the request of the broadcasting authority, any section of a chain of circuits is provided for use before and/or after the period of use of the whole circuit, the additional time thus made available should be charged for at the appropriate rates.

#### I. LEASING OF INTERCONTINENTAL CIRCUITS FOR PRIVATE SERVICE

1. If such leases can be permitted without detriment to the ordinary public service, there is no objection in principle to the leasing of intercontinental circuits for private service.
2. Charges for the lease of such circuits should be agreed between the Administrations \* concerned, the following considerations being borne in mind:
  - (a) In the European system the rental for leased international circuits for full-time private service corresponds to 6000 minutes of ordinary conversation during the period of heavy traffic, in the service concerned, per month.
  - (b) On radiotelephone circuits, variations in radiopropagation conditions usually prevent the full-time use of such circuits.
3. The conditions of lease should be similar to those specified in Recommendation E.60 in regard to leased international circuits in the European system. However, charges and the basis of allowance for interruption should be a matter, in particular, for agreement between the Administrations \* concerned.

#### J. LEASING OF TRANSMITTERS OR RECEIVERS

1. There are no objections in principle to the lease of transmitters or receivers to users interested only in sending or receiving spoken messages or pictures, provided of course that such arrangements are compatible with the responsibilities which Administrations \* have accepted by their adherence to the International Telecommunication Convention and associated Regulations.
2. Charges for the lease of such equipment should be determined by the Administration \* concerned and they would not appear in international accounts.
3. Conditions to be met by lessees of transmitters or receivers should in principle be as follows:
  - (a) The radio communications in question must not contain any advertisement or message of a private character.
  - (b) Names and addresses of senders and intended recipients must be made known to all Administrations \*, each one of which shall decide, in respect of recipients in its own territory, whether or not to permit participation. Any alterations should also be notified promptly.

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\* or Recognized Private Operating Agency(ies).

- (c) The Administrations \* concerned shall take all practicable steps to ensure that communications shall only be used by authorized recipients and that the provisions of Article 32 of the Convention as regards secrecy of telecommunications are observed.
  - (d) Transmissions shall be at fixed times and, in the case of spoken messages, in pre-arranged languages.
  - (e) Such other conditions as may be required by national law.
4. Where the lease of a transmitter in one country and a receiver in another country is required to provide a unidirectional circuit, or even where a multi-destination service is envisaged, Administrations \* concerned, although retaining the right to determine the charges for equipment leased in their own country, may, nevertheless, if they think it desirable, consult with each other in order to ensure that overall charges do not prejudice public service tariff scales.

#### K. ACCOUNTING

1. In principle, accounts should be prepared by the Administration \* at the originating end of the intercontinental circuit (or of the first circuit of a chain of such circuits). That Administration \* should pass on to the next Administration \* all credits due to the second and subsequent countries. The second Administration \* should take the necessary measures to credit the other Administrations \* concerned.
2. In respect of traffic extended over European landline circuits, the European terminal of the intercontinental circuit will distribute credits in respect of calls incoming to Europe. In respect of calls originating in Europe, unless there is special agreement between the Administrations \* concerned, the Administration \* of the European country of origin will distribute the credits due to the European transit countries, if any, and to the European terminal of the intercontinental link.
3. In principle, accounts should be prepared and distributed by the first Administration\* in the accounting chain (see above), if possible, by the end of the first month and certainly not later than the end of the second month following that to which the account relates.

#### NOTES

*Note 1 (cf. Section F.1)*

*Informatory note relating to the charges applied in the intercontinental telephone service by the American Telephone and Telegraph Company. — Standard of charges to be applied for terminal services when use is made of a single intercontinental telephone circuit.*

The charge is based on the direct distance between the "charge zones" which are defined approximately; the charge is independent of the routing of the call.

The world is divided into "charge zones" determined by the intersection of the lines of latitude and longitude spaced at ten degrees.

In general each country, state, province (or similar political sub-division) is attached to a single charge zone. Of course the majority of countries do not lie entirely within the interior of a single

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charge zone and in such cases the charge zone chosen is generally that in which the greater part of the country lies, or the larger proportion of the population, or the part of the country where the telephone service is most developed.

By an accepted mathematical formula, great circle distances between the centres of the charge zones have been calculated and these distances are taken as the basis of charge.

Using:

1. the table below giving the basic tariffs, and
2. the distances (for charging) calculated according to the principle indicated above, the charges applicable between any two charge zones placed respectively at each extremity of the intercontinental telephone circuit concerned can easily be determined.

<i>Distances in miles</i> (1 mile = 1609 m)	<i>Charge corresponding to the first three chargeable minutes (Unit of charge)</i>	
	<i>Weekdays (dollars)</i>	<i>Nights and Sundays (dollars)</i>
0 to 500 . . . . .	4.50	3.75
501—1000 . . . . .	6.00	4.50
1001—2000 . . . . .	7.50	6.00
2001—3000 . . . . .	9.00	7.50
more than 3000 . . . . .	12.00	9.00

However, in some cases, the use of the table of charges above would have resulted in an increase over those previously applied. In such a case, this table is not applied rigorously and the present rates have been maintained in order to avoid such increases. In several other cases it may be desirable to employ a level of charges higher or lower than the nearest, in order to maintain the charges in agreement with those which are applied to neighbouring countries having a large community of interest.

*Note 2 (cf. Section F.2)*

*Charges for calls rented over more than one intercontinental telephone circuit, applied by the American Telephone and Telegraph Company.*

In the United States of America, it is usual practice to adopt a maximum charge of 15 dollars in these circumstances:

If, for example, it was a question of the interconnection of two circuits for which the charge (terminal service) would be 12 dollars for one and 9 dollars for the other, by simple addition, a total charge of  $12+9 = 21$  dollars might be levied, but this charge would seem to be too high to attract users. A compromise has therefore been chosen of 15 dollars, it being understood that the 15 dollars should be divided at the pro-rata of the charges for terminal service, that is to say that the first circuit would receive  $\frac{12}{21}$  and the second circuit  $\frac{9}{21}$  of the 15 dollars.

*Note 3 (cf. Section G.1)*

Certain large countries claim token landline quotas in respect of calls extended to places more than about 500 miles from the intercontinental circuit terminal, before division of the balance of revenue on the lines indicated in 1 and 2.

*Note 4 (cf. Section H.2)*

In certain recently laid intercontinental submarine cables, programme circuits are provided having bandwidths equivalent to one or two telephone circuits and charges are respectively equal to or twice those applied to telephone calls in the full rate period. The provision of programme circuits having bandwidths equivalent to three telephone circuits, at charges three times those applied to telephone calls in the full rate period, is envisaged.

(E.4)

RECOMMENDATION E.5**EXTENSION OF INTERNATIONAL TELEPHONE SERVICES**

Application of that provision of the Telephone Regulations (Geneva Revision, 1958) which enjoins Administrations \* to extend international telephone services to the whole of their territories, might sometimes entail the establishment of calls leaving something to be desired from the point of view of transmission quality; it is therefore desirable:

1. to take no decision to create or extend a new relation unless such means are available as would provide satisfactory reception as regards volume and clarity;
2. to make the opening or extension of the relation dependent on the passing of satisfactory test calls.

RECOMMENDATION E.6**ARRANGEMENTS TO BE MADE FOR CONTROLLING THE TELEPHONE SERVICES BETWEEN TWO COUNTRIES**

In controlling the organization of the telephone service in a given relation, Administrations \* should forgo the conclusion of formal agreements signed by the heads of Administrations \* and reach agreement by correspondence on the following major points:

- *Date on which the relation is to be opened.*
- *Means used to provide the connection:*
  - Direct (transit) circuit,
  - Passage through a transit exchange,
  - Transit country or countries concerned.
- *Classes of call admitted* (List the classes of call and other media of communication, i.e., phototelegraph calls, programme transmissions and television transmissions).
- *Information:* Details of arrangements for exchanging lists of the main local networks with all information required for routing and charging calls.
- *Rates:*
  - Charging zones for calculation of terminal charges.
  - Unit quota for transit countries.
  - Total unit charges (might be indicated on the basis of the following table):

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\* or Recognized Private Operating Agencies.

## DIRECTORIES

**Table of tariffs**

NAMES of COUNTRIES	First terminal country	Transit countries			Other terminal country		
		First transit country	Second transit country	nth transit country	1st zone	2nd zone	3rd zone
QUOTA gold francs	†						
TOTAL CHARGES gold francs	1st zone .. 2nd zone . 3rd zone..	X					

† Distinguish, where appropriate, between charging zones.

## RECOMMENDATION E.7

## DIRECTORIES

The lay-out of directories is governed by considerations which may vary from country to country; however, it is desirable that such lists of subscribers should be capable of ready consultation by the Administrations \* of other countries.

The following general arrangements for the preparation of directories should therefore be adopted:

- (a) subscribers and public stations should be classified in well-defined subdivisions (networks, administrative areas, geographical zones). Each volume of the lists of subscribers could usefully contain a recapitulatory list of the subdivisions mentioned in the volume, or an equivalent chart;
- (b) names of each district should always be in alphabetical order; when several subscribers have the same names, they should be classified by their first names, or by the initials thereof;
- (c) it would be desirable, from the point of view of the international telephone service, that directories (especially those supplied to other Administrations \*) should be composed in Roman characters, particularly those relating to the names and addresses of subscribers;

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- (d) the general information of the telephone service which is normally to be found at the beginning of the directories, should preferably include the following information:
- (i) instructions for making an international telephone call;
  - (ii) a list of the (main) international telephone services open to the public;
  - (iii) the relevant charges.

#### RECOMMENDATION E.10

##### **PROPOSED AMENDMENTS TO THE TELEPHONE REGULATIONS**

The text of number 201 in paragraph 8 of the Telephone Regulations should be amended as follows at the next Telephone and Telegraph Administrative Conference:

201, paragraph 8 ... "If the correct booking is replaced immediately by another booking of a call to the same country, however, only the cost of one minute's conversation exchanged during the charge period when the wrong number was requested shall be payable at maximum, taking account of C.C.I.T.T. Recommendation E.4".

*Reason:*

Calls booked to a wrong number are very rare in the intercontinental service. It could be accepted that any such cases be dealt with by special agreement between the Administrations \* concerned, but it is preferable, in the interest of universal application of the Telephone Regulations, to make an exception, in the case of the intercontinental service, to the general rule providing for a surcharge for one minute, and to refer to Recommendation E.4.

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\* or Recognized Private Operating Agencies.

## SECTION 2

### TELEPHONE OPERATION OPERATIONAL CHARACTERISTICS OPERATING METHODS

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#### RECOMMENDATION E.21 \*

##### ADVANTAGES OF SEMI-AUTOMATIC OPERATION IN THE INTERNATIONAL TELEPHONE SERVICE

The C.C.I.T.T.,

##### TAKING NOTE

of the essential conclusions drawn by the " Field Trial Committee for international telephone operation " (C.E.A.) in its final report, particularly:

- (a) the large economies in personnel which are secured by the introduction of semi-automatic operation not only at the incoming exchange but also at the outgoing exchange,
- (b) the very small number of faults due to the equipment used for the international semi-automatic service,
- (c) the improvement in the efficiency (ratio of chargeable time to total occupation time) of semi-automatic circuits compared to the efficiency of manual circuits operated on a demand basis,
- (d) the improvement in the quality of service given to subscribers due to the reduction in the time of setting up a call,
- (e) the fact that all types of calls can be set up without difficulty over semi-automatic circuits, viz:

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\* This Recommendation also appears as Recommendation Q.5 in series Q (Telephone Signalling and Switching) of the C.C.I.T.T. Recommendations.

- ordinary,
- preavis,
- requiring an incoming B operator or booking at incoming suspended-call positions,

and that it is, therefore, possible to use only semi-automatic circuits for international calls;

DRAWS THE ATTENTION of Administrations \*

to the advantages which semi-automatic operation affords from the point of view of the economies and the quality of service given to subscribers.

### RECOMMENDATION E.21 bis \*\*

#### ADVANTAGES OF INTERNATIONAL AUTOMATIC WORKING

The C.C.I.T.T.,

CONSIDERING

1. that the advantages of semi-automatic working, mentioned in Recommendation E.21, apply equally to automatic working in respect of reliability, circuit efficiency and the satisfaction given to subscribers;
2. that the advantages of automatic working are even greater as regards staff economy, since outgoing operators are dispensed with;
3. that the changeover from semi-automatic to automatic working may be done without any major modification to the international circuits or to the switching equipment at transit and incoming exchanges;
4. that by 1960 the above advantages had been widely confirmed by experience on a number of international relations which had been using automatic service up to that time;
5. that such experience has also shown that when a relation changes over from demand working (manual or semi-automatic) to automatic working, there is a considerable increase in traffic;
6. that the introduction of an international automatic service follows logically on the introduction of a national automatic service;

DRAWS THE ATTENTION of Administrations \*

to the additional advantages resulting from the introduction of an international automatic service.

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\* or Recognized Private Operating Agencies.

\*\* This Recommendation also appears as Recommendation Q.6 in Series Q (Telephone Signalling and Switching) of the C.C.I.T.T. Recommendations.

RECOMMENDATION E.22**DEMAND WORKING OF INTERNATIONAL CIRCUITS**

In general it is desirable to employ demand working whenever possible.

Administrations \* concerned should make every effort (by ensuring that there are sufficient circuits, installations, personnel) to use demand working.

In relations permanently operated with advance preparation of calls, the Administrations \* concerned should make every effort to reduce delay as much as possible.

RECOMMENDATION E.23**DIVISION OF CIRCUITS INTO OUTGOING  
AND INCOMING CIRCUITS**

From the operating point of view the assignment of the circuits of a relation into incoming and outgoing groups is such as to make operating easier.

RECOMMENDATION E.24**INSTRUCTION OF STAFF  
OPERATING INTERNATIONAL POSITIONS**

The professional instruction of operating and supervising staff is of the greatest importance in ensuring the efficient use of circuits in the international telephone service; to this end, it is exceedingly desirable to improve supervisors' and operators' knowledge of the language of other countries and to enable them to become informed about the customs of the subscribers, the organization of the service and the manipulation of equipment at the other end of the circuit.

The C.C.I.T.T. accordingly RECOMMENDS

1. that, during the training of these operators, they should be provided with some information about methods and operating procedures used in the countries with which they might be connected;
2. that there should be frequent exchanges of supervisors and operators between the telephone exchanges of different countries.

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\* or Recognized Private Operating Agencies.

RECOMMENDATION E.25**TIME-TO-ANSWER OF OPERATORS**

The C.C.I.T.T.,

CONSIDERING

that a rapid answer to signals by the operators at an incoming international terminal exchange is essential to ensure a rapid service, and is also very important from the point of view of the efficient use of costly international circuits,

UNANIMOUSLY RECOMMENDS

that every endeavour should be made to provide a sufficient number of operators, with team working between them, at the incoming positions in international terminal exchanges, so that the time-to-answer an incoming calling signal should not exceed 5 seconds for 80% of calls throughout the day.

NOTE

This Recommendation applies not only to the manual service but also to the semi-automatic service.

The time-to-answer of incoming operators in the semi-automatic service, that is:

- Code 11 operators,
- Code 12 operators (operators at the incoming exchange called by the outgoing exchange to record particulars of calls which have been found difficult to set up),

should, accordingly, be the time-to-answer shown in this Recommendation.

Regular Code 12 operators at the outgoing exchange (regular operators recalled by the incoming exchange operators, when the latter have been successful in obtaining the called subscriber) cannot, of course, be obtained until they are free.

The times-to-answer, in semi-automatic service, of *assistance operators* should be less than those of other operators. *In the busy hours* 80% of the calls should be answered in a time of about 5 seconds. This might be arranged, for example, by instructing operators who have the dual role of assistance operators and transfer operators, to give priority to assistance calls.

RECOMMENDATION E.26**ASSESSMENT OF THE BEGINNING AND END OF CALLS**

1. International operators should allow no tolerance in their assessment of the chargeable duration.
2. Mechanical metering devices controlled by operators should be rapid in action and have the utmost accuracy.
3. In fully automatic international operation, the chargeable duration should begin from the reception of the answer signal from the called station, since the existence

(E.26)

of an unchargeable call period, however short, might lead to misuse of the service for the transmission of short messages without payment. The chargeable duration ends when the caller gives the clear-forward signal \*.

#### RECOMMENDATION E.27

##### **INDICATION OF THE CHARGEABLE DURATION OF A CALL, GIVEN TO THE SUBSCRIBER WHILE THE CALL IS IN PROGRESS**

1. It is unnecessary to inform the person making an international call of the exact moment at which the charge begins.
2. An Administration \*\* should not give its operators instructions to advise subscribers of successive charging periods unless a prior agreement to this effect has been reached with the other Administrations \*\*.
3. Nevertheless, if some Administrations \*\* consider it desirable to advise callers of the expiry of each charging period, an automatic device, or one controlled by the operator at the originating international exchange can be used for this purpose, on condition that this signal is regarded merely as an advice which is not binding on the Administration \*\* as regards charging.

#### RECOMMENDATION E.28

##### **DAILY COMPARISON OF THE NUMBER OF MINUTES OF CALL EXCHANGED BETWEEN INTERNATIONAL EXCHANGES**

The C.C.I.T.T.,

##### **CONSIDERING**

that it is the operator responsible for charging in the international exchange who determines the chargeable duration of calls, after each call;

that in demand working there is no agreement on the chargeable duration of calls;

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\* When an exchange clears the call, the chargeable duration ends after a delay period following the clear-back signal, the called subscriber, in this case, having cleared before the calling subscriber.

\*\* or Recognized Private Operating Agency(ies).

that in the advance preparation service, there is an understanding between the operators on the chargeable duration only as the result of a special agreement between the Administrations \* concerned;

that even when there is an understanding between the operators, the operator responsible for charging has the final word;

CONSIDERING, FURTHER,

that the monthly accounts are established by the Administration \* of the country of origin, in accordance with Article 40 of the Telephone Regulations (Geneva Revision, 1958);

CONSIDERING, FINALLY,

that a daily comparison of minutes of call exchanged burdens the service without any real profit;

UNANIMOUSLY RECOMMENDS

that it is desirable not to make a daily comparison of minutes of call exchanged between international exchanges unless this should prove essential in a particular relation.

#### RECOMMENDATION E.29 \*\*

### NUMBERING OF SUBSCRIBERS' LINES IN AUTOMATIC AND SEMI-AUTOMATIC INTERNATIONAL WORKING

#### 1. National numbering scheme

1.1. Each telephone Administration \* should give the most careful consideration to the preparation of a national numbering scheme for its own network. This scheme should be designed so that a subscriber is always called by the same number in the trunk service. It should be applicable without exception to all incoming international calls, but may be modified as required in the national service, for instance, for traffic between neighbouring towns or areas.

1.2. Wherever possible, the national numbering scheme of a country should be such that the first, or at most the first two digits following the "trunk prefix" \*\*\*,

(a) give the most economical routing of incoming international traffic from various other countries;

(b) indicate the charging area in those countries where there are several.

(The first or the first two digits in question are those of the "significant number") \*\*\*.

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\* or Recognized Private Operating Agency(ies).

\*\* This Recommendation also appears as Recommendation Q.11 in Series Q (Telephone signaling and switching). of the C.C.I.T.T. Recommendations.

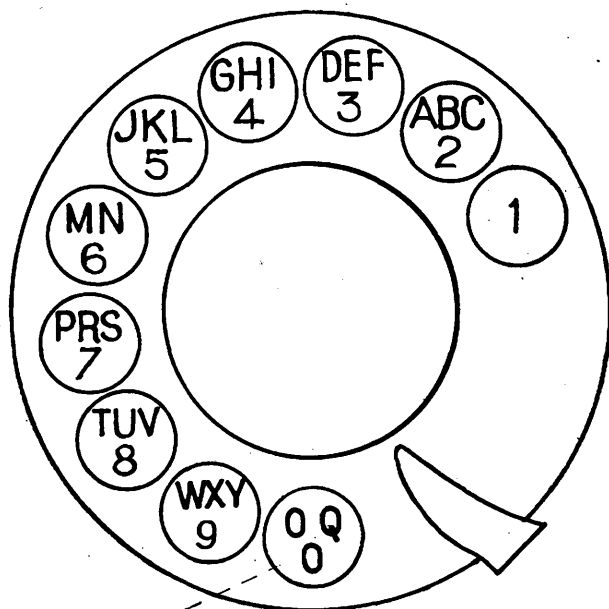
\*\*\* See the definitions of these expressions in Recommendation Q.10 (Volume VI of the *Red Book*).

## 2. Use of figures and letters on dials

2.1. For countries which have not yet adopted any specific type of dial, the figures on the dial should be arranged in the following order: 1, 2, 3 ... 0.

2.2. For fully automatic international service, it is preferable that the national numbering scheme should not involve the use of letters (associated with figures on dials), because in many countries, dials do not bear letters. The use of letters in national numbering schemes may, however, be necessary for national reasons. For example, countries using letters in their local numbers will naturally use them in their national numbering.

2.3. The dial shown below uses the arrangement of letters and figures employed by the French and United Kingdom Administrations (the latter, however, has only the letter O, associated with the figure 0 (zero)). The dials or key-sets *used by international operators for semi-automatic working in Europe* should have this arrangement of letters and figures.



### Remark

On most subscribers' dials used by the British Administration, only the letter "O" is associated with the figure "0". However, since October, 1959, new dials also include the letter Q associated with the figure "0" with a view to automatic international service.



2.4. For fully automatic international service to countries using dials with letters, it would be helpful, in a country where the dials bear figures only:

- (a) to include in the directory a table for converting into figures the letter codes of exchanges in countries with which a fully automatic service is available;
- (b) to supply, at the time of opening this fully automatic service, a booklet of instructions containing the conversion table, to the main subscribers to the international service;
- (c) if necessary and on request, to replace dials without letters by dials with letters.

2.5. It would also be desirable, in countries with letter dials, that subscribers with considerable international traffic should be requested to show on their letter-heads, below their usual telephone number, the number with the letters converted into figures (i.e. a number with figures only).

2.6. Some examples are annexed *for information purposes* to show the association of letters and numbers used on dials in the United States, the U.S.S.R., etc. The inclusion of these examples should not, however, be taken as a C.C.I.T.T. recommendation that such dials are for general use.

### 3. Access prefixes and codes

#### 3.1. *International prefix* \*

International standardization of a code for access to the international network for fully automatic international operation has not been possible since it came up against national numbering schemes that were already in existence. (Such standardization of a code for access to the international automatic network, incidentally, would be of interest only to the few users who, during a journey to a foreign country, desire to dial an international number without the assistance or the explanations of a national of the foreign country).

#### 3.2. *International code* \*

3.2. (1) A list of 2-digit international codes has been prepared by the C.C.I.T.T. for the countries of Europe and the Mediterranean Basin. These international codes will be used:

- in semi-automatic working, to route calls to the required country, when the calls are transit calls or when, on the outgoing positions, there is common dialling access to all the outgoing routes;
- in automatic working.

The list of international codes is given at the end of this Recommendation.

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\* See definitions in Recommendation Q.10 (Volume VI of the *Red Book*).

3.2. (2) Twenty special codes have been reserved in this list. They may be used in semi-automatic service for routing outgoing calls from an international exchange when there is no analysis of the first digits of the called subscriber's national number (method explained in 1.2) between adjacent countries, to give the most economical routing when operators have dialling access to the international circuits and when the required country has more than one international exchange. They should be used solely for routing traffic over direct routes between two countries.

### 3.3. *Trunk prefix \* and trunk codes \**

3.3. (1) The C.C.I.T.T. has considered past and future ways of showing "national numbers" in telephone directories and on letter-heads. Two distinct cases were noted:

- countries where access to the automatic national trunk network is obtained without the subscriber having to receive a second dialling tone;
- cases where a second dialling tone is given after the trunk prefix has been dialled.

In the first case, directories and letter-heads usually show the trunk prefix preceding the "trunk code" representing the numbering area of the called subscriber.

In the second case, however, the trunk prefix does not appear in directories and on letter-heads.

3.3. (2) The C.C.I.T.T. recommends that Administrations \*\*:

- print their directories so as to show, for example, at the top of the page or in brackets after the name of the local network, those digits that precede the local number in order to form the national number, and that have to be dialled in order to reach a subscriber when the call is made from a telephone in a different numbering area from that of the called subscriber;
- invite subscribers who already have a number in the national numbering scheme allocated to them to show that number in a similar fashion on their letter-heads (with brackets enclosing the figures to be dialled to reach a subscriber in a different numbering area).

Examples of this are as follows:

#### *Case 1:*

The "trunk code" for Geneva is 22 and the prefix for access to the automatic trunk network in Switzerland is 0. A Geneva subscriber's number would therefore be shown as:

(022) 12 34 56

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\* See definitions in Recommendation Q.10 (Volume VI of the *Red Book*).

\*\* or Recognized Private Operating Agencies.

*Case 2:*

For a French subscriber, the "trunk code" for Nice (Alpes-Maritimes) is 92, and the prefix for access to the automatic trunk network in France is 16, but the latter does not have to be printed since there is a second dialling tone. A Nice subscriber's number would therefore be shown as:

(92) 12 34 56

3.3. (3) It is recommended by the C.C.I.T.T. that the Administrations\* of countries that have not yet adopted the "trunk prefix" for access to their national automatic trunk network, and which do not propose to introduce a second dialling tone after the trunk prefix, should adopt a prefix composed of a single digit, preferably 0.

The reasons for this recommendation are:

- (a) to ensure that registers will not have to store more than 11 digits for the national number (trunk prefix plus ten digits for the significant number);
- (b) to provide the maximum degree of standardization of the trunk prefixes used in different countries, so that dialling is made as easy as possible for a person travelling in different countries.

In countries where a second dialling tone is given after the trunk prefix has been dialled, there is a free choice for the trunk prefix.

3.3. (4) In the automatic international service, following the international prefix and the international code of the country called, the caller should dial the national number of the called subscriber, that is to say, the called subscriber's directory number or the number given on his letter-head.

In accordance with Recommendation 3.3 (2) above, the trunk code for the numbering area to which the called subscriber belongs:

- will normally be preceded by the trunk prefix (0 in most European countries),
- will not be preceded by the trunk prefix when, in the national service of the country called, a second dialling tone is given between the sending of the trunk prefix and the trunk code.

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\* or Recognized Private Operating Agencies.

## NUMBERING SCHEME

LIST OF CODES FOR AUTOMATIC AND SEMI-AUTOMATIC INTERNATIONAL TRAFFIC  
IN EUROPE AND THE MEDITERRANEAN BASIN

(International and special codes)

## 1. Numerical list

A. *Special codes*

00 to 19

B. *International codes*

20	Poland	47	Rumania
21	Algeria (France)	48	Morocco
22	Belgium	49	Germany
23	Austria	50	Spain
24	—	51	—
25	Finland	52	Ireland
26	Arabia	53	—
27	Cyprus	54	Syria (United Arab Republic)
28	Bulgaria	55	Netherlands
29	Gibraltar	56	—
30	Greece	57	Czechoslovakia
31	Egypt (United Arab Republic)	58	—
32	—	59	Albania
33	France	60	Luxemburg
34	Israel	61	Denmark
35	Hungary	62	Tunisia
36	Turkey	63	Yugoslavia
37	Lebanon	64	Iceland
38	Norway	65	—
39	Italy	66	Switzerland
40	Libya	67	—
41	Jordan	68 and 69	{ U.S.S.R.
42	Portugal	70 to 79	{ (European Republics)
43	Malta		{ <i>Spare codes</i>
44	Great Britain	80 to 89	{ (in addition to codes 24, 32,
45	—		{ 45, 51, 53, 56, 58, 65, 67)
46	Sweden	90 to 99	<i>Intercontinental traffic</i>

## 2. List of international codes on a geographical basis

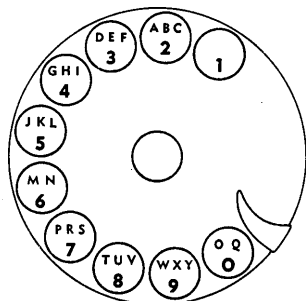
I. <i>Western Europe</i>		III. <i>Northern Europe</i>	
Belgium	22	Denmark	61
Luxemburg	60	Finland	25
France	33	Norway	38
Great Britain	44	Netherlands	55
Ireland	52	Sweden	46
Spain	50	Iceland	64
Portugal	42		
Gibraltar	29		
II. <i>Central Europe</i>		IV. <i>Eastern Europe, the Balkans and Asia Minor</i>	
Austria	23	Albania	59
Hungary	35	Bulgaria	28
Italy	39	Greece	30
Germany	49	Rumania	47
Switzerland	66	Yugoslavia	63
Czechoslovakia	57	Turkey	36
Poland	20	U.S.S.R.	{ 68 and 69 70 to 79
		(European Republics)	
V. <i>Mediterranean Basin</i>			
Algeria	21	Lebanon	37
Arabia	26	Libya	40
Cyprus	27	Malta	43
Egypt (United Arab Republic)	31	Morocco	48
Israel	34	Syria (United Arab Republic)	54
Jordan	41	Tunisia	62
VI. <i>Spare codes</i>		VII. <i>Intercontinental traffic</i>	
24, 32, 45, 51, 53, 56, 58, 65, 67 and 80 to 89.		Codes in the series 90 to 99.	

ANNEX

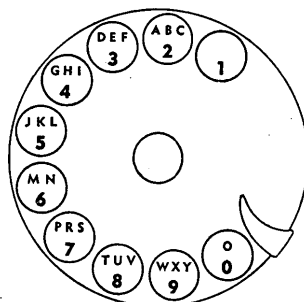
(to Recommendation E.29)

Dials bearing letters and figures as used in various countries

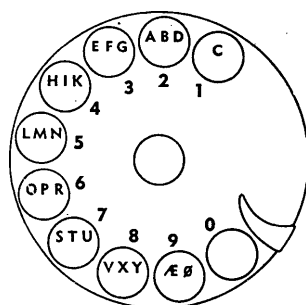
The dials shown below are included for information only. Inclusion of these figures should not be considered as a C.C.I.T.T. Recommendation that such dials should be put into general use.



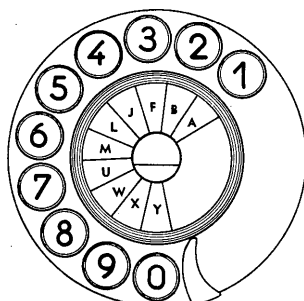
FRANCE  
and UNITED KINGDOM (new type)



UNITED KINGDOM  
(old type)

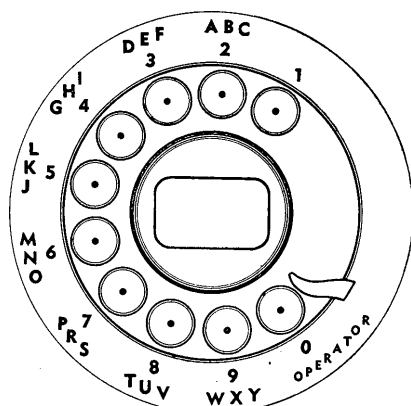


DENMARK

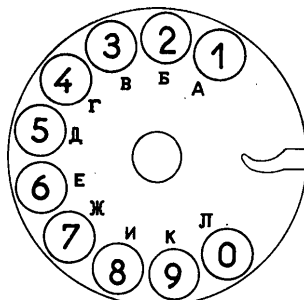


AUSTRALIA

Subscribers numbers are being progressively changed to numbers having figures only. When this conversion is complete, the central card giving the correspondence between letters and figures will no longer be included.



U.S.A.



U.S.S.R.

RECOMMENDATION E.30**MANUALLY-OPERATED INTERNATIONAL TRANSIT TRAFFIC**

Because of the difficulties inherent in the use of an intermediate exchange for transit calls, with manual operation:

1. direct circuits should be provided across transit countries whenever traffic justifies such a course;
2. in the absence of permanent direct routes, it is helpful to provide temporary direct circuits whenever a temporary traffic flow so justifies. As far as possible, such temporary direct circuits should not be set up via the operator's positions;
3. whenever permanent or temporary direct circuits cannot be set up, the greatest possible degree of standardization in *the operating methods used in transit exchanges* is desirable.

The following instructions will then be applied:

- 3.1. if the two international circuits use manual demand working, all the international transit exchange has to do is to make arrangements to set up the transit calls, in accordance with the requests made by the outward international exchange, which means the controlling exchange;
- 3.2. when, on the other hand, advance preparation operation is in force on either of the two international circuits, the international transit exchange becomes the controlling exchange, and
  - 3.2.1. the controlling operator at the international transit exchange is the operator serving the most congested route. If there is no delay on the circuits to be interconnected, or if this delay is equal in both directions, the controlling operator shall be designated by the international transit exchange;
  - 3.2.2. the controlling operator shall determine the time when a transit call is set up according to its category and the time when the booking is received by the international transit exchange;
  - 3.2.3. the controlling operator shall warn her two counterparts in the international exchanges of the time when it is expected to set up the transit call or calls in question, so that the operators in these exchanges may prepare the requisite circuits;
- 3.3. in the exceptional case when the call requires more than two international circuits, the Administrations \* concerned shall agree among themselves on the controlling exchange.
4. The transit operator should not have to deal with the determination of the chargeable duration of calls.
  - 4.1. In demand working the question does not arise, since there is no agreement on chargeable duration.

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\* or Recognized Private Operating Agencies.

- 4.2. With advance preparation, the controlling operator in the international transit exchange should take no part in determining the chargeable duration of transit calls, even if the terminal countries have reached an agreement as to the chargeable duration of calls after each call.

## RECOMMENDATION E.31

### SEMI-AUTOMATIC TRANSIT TRAFFIC

The C.C.I.T.T.,

#### CONSIDERING

Recommendation E.92, specifying the loss probabilities for calculating the number of circuits in semi-automatic or automatic operation (5% for terminal traffic and 3% for transit traffic),

#### CONSIDERING

the net cost factors which have been determined for setting up a call by semi-automatic or automatic switching (net cost for an outgoing semi-automatic exchange, an incoming semi-automatic exchange and an automatic transit centre), which are contained in Recommendation E.51,

#### UNANIMOUSLY RECOMMENDS

that it is desirable to draw the attention of Administrations \* to the advantage, from the general economic point of view, of the transit routing of traffic in the two following cases:

#### *Case 1*

Where there is a light traffic load between two countries, it would appear to be advantageous, from a general economic point of view, to route this traffic through an automatic transit exchange, rather than to provide a small group of direct lines.

These considerations normally apply to the case where the introduction of semi-automatic operation is considered, but they should be equally valid for traffic which terminates on a manual international trunk exchange, reached throughout automatic transit exchange.

*Note.* — The purely economic point of view from which these conclusions are drawn excludes all other considerations, particularly the following:

- (a) It is necessary that the transit exchanges through which it is desired to route the traffic should be prepared to accept the transit traffic which would be offered to them, and interested Administrations \* must accept the fact that the group of circuits

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\* or Recognized Private Operating Agencies.



taken up for this purpose should be calculated with a loss probability corresponding to transit operation (i.e. 3%) and not the loss probability estimated for terminal traffic (5%).

- (b) The provision of direct circuits may be preferred to a routing entirely via a transit centre for other reasons, e.g. the provision of broadcast programme circuits, control circuits for these transmissions, voice-frequency telegraph circuits, etc.

#### *Case 2*

In certain cases, particularly where the traffic between two countries is heavy, and when, for instance, it may lead to the postponement of installing a new carrier group (12 circuits, perhaps 6 in either direction), it may be advantageous to route a certain proportion of the additional traffic (peak traffic) by way of a transit centre (subject to special agreement between the Administrations\* concerned for accounting purposes).

### RECOMMENDATION E.32

#### **RULES FOR PHOTOTELEGRAPH COMMUNICATIONS ESTABLISHED OVER CIRCUITS NORMALLY USED FOR TELEPHONE TRAFFIC \*\***

The C.C.I.T.T.,

#### **CONSIDERING**

- (a) that, in international phototelegraph communications, the time of occupation of international telephone circuits often greatly exceeds the duration of the actual phototelegraph call;
- (b) that this drawback results *in part* from the inadequacy of existing rules on the setting-up, supervising and clearing of phototelegraph calls over circuits normally used for telephone traffic, even if these circuits have been designated in advance as capable of carrying phototelegraph communications;
- (c) that phototelegraph communications between public stations on the one hand, and public and private stations on the other, require close collaboration between the telegraph and telephone services of the various Administrations\*;

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\* or Recognized Private Operating Agencies.

\*\* This text is published also as Recommendation 82 in series F (Telegraph operation) of the C.C.I.T.T. Recommendations.

- (d) that, on the other hand, phototelegraph communications between private stations do not concern the telegraph services, although it is desirable for all phototelegraph communications between public stations, between public and private stations, and between private stations to be established in the same way;

#### UNANIMOUSLY DECLARES THE VIEW

that the Annex below should be taken as a set of provisional rules for phototelegraph communications;

that further study should be devoted to conditions of acceptance, operational procedures and technical means likely to lead to the rapid and economic development of the phototelegraph service;

that such study should pay particular attention to the fact that phototelegraph traffic is nearly always concentrated in very short periods when special events take place, and that it is difficult to establish communication with phototelegraph stations, because the latter are often unable to accept the communication immediately.

### ANNEX

#### RULES FOR PHOTOTELEGRAPH COMMUNICATIONS

##### A. APPLICATION

- § 1. The Rules below define the procedure to be followed for operating and charging in the international phototelegraph service of the European system.

(The Telegraph and Telephone Regulations shall apply to the phototelegraph service, subject to these Rules.)

- § 2. These Rules govern international phototelegraph communications:

- between public stations,
- between a public and a private station,
- between private stations.

(A phototelegraphy installation, operated by an Administration \* shall be called a "public phototelegraph station". A phototelegraphy installation, operated by a private organization, shall be called a "private phototelegraph station".)

##### B. CONDITIONS OF ACCEPTANCE

- § 3. Conditions of acceptance of phototelegrams:

- between public stations, and
  - between a public station and a private station,
- are defined in Section B of Recommendation F.80 on phototelegrams.

- § 4. Private phototelegraph stations may be authorized by Administrations \* to exchange phototelegraph calls with other private phototelegraph stations.

Phototelegraph calls between private stations are allowed without any limit of duration. However, when telephone traffic is subjected to restrictions, the exchange of

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\* or Recognized Private Operating Agency(ies).

phototelegraph calls between private stations may be delayed or limited by agreement between the terminal centres concerned.

- § 5. If the telephone service is operated with advance preparation, bookings of phototelegraph calls rank in the order in which they are accepted among bookings of telephone calls of the same category.

#### C. GENERAL PROVISIONS

- § 6. In relations where telephone circuits are used for both the phototelegraph service and the telephone service, the Administrations \* concerned shall assign by mutual agreement a certain number of circuits for phototelegraph transmissions, taking into account the usual requirements of both phototelegraphy and the telephone service. These circuits shall be specially marked at terminal exchanges and repeater stations with a view to the protection of the phototelegraph transmissions.

- § 7. The telephone circuits used for international phototelegraph transmissions shall, as far as practicable, be 4-wire circuits (see Recommendation T.11 in Volume VII of the *Red Book*).

For phototelegraph transmissions, they shall normally be disconnected from the switching equipment used for telephone calls.

Interconnection of circuits for setting up phototelegraph calls should be 4 wire-4 wire, as far as possible, both on the international and the national side.

- § 8. Administrations \* shall designate in each "international phototelegraph terminal centre" an authority responsible for the international phototelegraph communications. This authority is in a position to carry out, or cause to be carried out, all the operations necessary for the establishment of international phototelegraph communications. This authority shall henceforth be called the "International Phototelegraph Position" (IPP).

Administrations \* are recommended to centralize, as far as possible, in one place all the technical, operational and charging procedure necessary in an international centre when telephone circuits are used for phototelegraph communications.

- § 9. A booking for a phototelegraph call, emanating from a public or private phototelegraph station, is routed to (or arrives directly at) the IPP of the country of origin responsible for setting up the international phototelegraph call which has been booked. This IPP then becomes the control IPP for establishing the call.

#### D. ESTABLISHMENT, SUPERVISION AND CLEARING OF INTERNATIONAL PHOTOTELEGRAPH COMMUNICATIONS

- § 10. If the telephone service on the international circuits needed for a phototelegraph circuit is by advance preparation, the control IPP shall advise the telephone office responsible for these circuits that a phototelegraph transmission is to take place. The control IPP agrees with the telephone service on the probable time at which the phototelegraph transmission will be taking place.

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\* or Recognized Private Operating Agencies.

The IPPs shall proceed as follows when establishing an international communication:

- (a) The control IPP transmits the following information as quickly as possible to the IPP of destination:
  - designation of the transmitting station,
  - designation of the station of destination, and in addition:
    - (aa) for communications between public stations:
      - category of phototelegram to be transmitted,
      - date and time when the phototelegram is handed in,
      - probable time at which the phototelegraph call will take place;
    - (ab) for communications between a public station and a private station:
      - category of phototelegram to be transmitted, or
      - category of call booked,
      - date and time when the phototelegram is handed in (or date and time of the booking, if the call is booked from a private station),
      - if necessary, indication of the subscriber responsible for the charges,
      - probable time at which the phototelegraph call will take place;
    - (ac) for communications between private stations:
      - category of call booked,
      - date and time of booking,
      - if necessary, indication of the subscriber responsible for paying the charges,
      - probable time at which the phototelegraph call will take place.
- (b) The IPP of destination shall take the necessary steps immediately to advise the phototelegraph station of destination by telephone that a phototelegraph transmission is about to take place.
- (c) If the called phototelegraph station is in a position to receive the phototelegram call immediately, the IPP of destination informs the control IPP. The latter designates the circuit to be used for the proposed transmission and then the two IPPs take the necessary steps, in agreement with the telephone service, to establish the communication. Care must be taken to avoid interrupting telephone calls in progress.
- (d) If the called phototelegraph station is not in a position to receive the call immediately, the IPP of destination fixes the time when the transmission is to take place, taking into account the information received from the receiving phototelegraph station. It then communicates the time fixed to the control IPP which informs the calling station.
- (e) The control IPP then takes the necessary measures, in agreement with the telephone service, to establish the phototelegraph communication between the stations concerned at the agreed time.

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\* or Recognized Private Operating Agencies.

§ 11. If the telephone service involved is demand service, the outgoing IPP shall take an available circuit for the phototelegraph call, after ensuring that telephone calls in progress are not interrupted; it shall use this circuit to call the incoming IPP.\*

- (a) To establish a phototelegraph call, it shall transmit the data mentioned under § 10 (a) above, to the incoming IPP, except for the probable time of the phototelegraph call.
- (b) The incoming IPP shall take the necessary steps immediately to advise the called phototelegraph station by telephone that a phototelegraph transmission is about to take place.
- (c) If the called phototelegraph station is in a position to receive the phototelegraph call immediately, the two IPPs shall immediately establish the necessary communication.
- (d) If the called phototelegraph station is not in a position to receive the call immediately, the IPP of destination fixes the time when the transmission is to take place, taking into account the information received from the receiving phototelegraph station. It then communicates the time fixed to the control IPP which informs the calling station.  
The two IPPs immediately clear the international telephone circuit.
- (e) At the time agreed upon, the outgoing IPP shall take the necessary steps to establish the phototelegraph communication.

§ 12. The control IPP shall note the time when the phototelegraph communication starts.

§ 13. The control IPP supervises the transmission in progress:

- (a) on the transmission (go) path by means of a device enabling it to check, without risk of interference, that transmission is taking place,
- (b) on the return path by means of a device enabling it to listen to service conversation from the phototelegraph receiving station.

Intervention in the circuits should be avoided after communication has been established, unless such intervention has been requested by one of the IPPs or one of the phototelegraph stations connected.

§ 14. After consulting the receiving phototelegraph station, the calling phototelegraph station announces the end of the call either direct to its IPP, or, in the case of extension of an international circuit, to the national PP on which it depends.

The latter must inform its IPP as quickly as possible, giving the time at which it received notice of the end. The control IPP notes the end-of-transmission time and immediately communicates the notice announcing the end to the incoming IPP.

The two IPPs then take the necessary measures to restore the international circuit to the telephone service without delay.

It is recommended that the called station should likewise announce the end of communication so that the called station may be cleared more quickly.

§ 15. Unless the Administrations\*\* concerned decide to the contrary, the terminal IPPs do not come to an agreement on the chargeable duration, since this is determined by the control IPP.

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\* See Recommendation E.33.

\*\* or Recognized Private Operating Agencies.

**E. SPECIAL PROCEDURES FOR PHOTOTELEGRAPH STATIONS**

- § 16. For each phototelegram to be transmitted, the outgoing public station shall prepare a narrow tape comprising the preamble and address (and, if necessary, the signature and special service indications), unless these indications have been written on the phototelegram by the sender.

This tape is transmitted with the phototelegram.

- § 17. As soon as the communication is established, the interconnected phototelegraph stations proceed to adjust the apparatus and to transmit, in accordance with the instructions of the receiving station, adopting the following order of operations:

- (a) if necessary, agreement on the index of co-operation and speed of transmission, then synchronization adjustment by means of the synchronization frequency,
- (b) phasing of drums,
- (c) adjustment of the white level,
- (d) adjustment of the black level,
- (e) start,
- (f) transmission.

- § 18. If the phototelegram is being transmitted by a private station to a public station, the public station shall ask the private station, if necessary, for information regarding the establishment of the preamble and the conditions of delivery to the addressee.

**F. FAULTY TRANSMISSIONS**

- § 19. In the case of faulty conditions, the IPP shall immediately make arrangements to clear the fault or make another circuit available.

- § 20. When, after completion of the call, it is seen that the transmission was faulty, the receiving phototelegraph station shall inform its IPP. If it so desires, the receiving phototelegraph station can make a new booking with its IPP for a phototelegraph call, in the manner defined in § 9, and its IPP then takes the necessary steps immediately to establish a new phototelegraph communication with the sending station.

If the phototelegraph station which receives the faulty picture and books a new call is a private station, its attention should be drawn to the fact that both calls will be chargeable if the faults in the picture are not due to the telephone or telegraph service.

**G. CHARGING**

- § 21. Charges for phototelegrams and phototelegraph calls are governed by Recommendation F.83.

**H. REBATES**

- § 22. Rebates of charges for phototelegrams are governed by Recommendation F.80 (Section E).

- § 23. The provisions of the Telephone Regulations relative to withdrawal of a booking or refusal of telephone calls are applicable to phototelegraph calls between private stations.

- § 24. To obtain rebates when it is seen, after interruption of the call, that the transmission was faulty, the phototelegraph station having paid the charge for the queried call should apply to its Administration \*, accompanying its request for a rebate with the original of the picture and the faulty proof received at the other end.

#### I. ACCOUNTING

- § 25. The accounts of charges for phototelegraph calls between private stations are established in the same way as the accounts for telephone charges; they shall be shown in a special section of the telephone accounts.
- § 26. If the Administration \* agrees to grant a rebate after a call has been cleared (see § 24) the charge for the phototelegraph call shall be refunded and the note "charge not collected owing to faulty transmission" entered in the international accounts established by this Administration \*. This presupposes of course that the accounting services must be informed of the decision to grant the rebate, with all the necessary information to identify the call in question. In this way, each country concerned with the queried phototelegraph call defrays its share of the refund.

### RECOMMENDATION E.33

#### **SPEEDING UP THE ESTABLISHMENT AND CLEARING OF PHOTOTELEGRAPH CALLS**

When international phototelegraph calls are sent over telephone circuits, the total time of occupation of the circuit often greatly exceeds the duration of the phototelegraph call itself.

It is also important that telephone circuits should be held for as short a time as possible.

The C.C.I.T.T. therefore recommends to Administrations \* to bear the following directives in mind whenever it is technically practicable:

1. Telephone circuits intended for phototelegraph transmissions should, at terminal repeater stations, pass through panels at the International Phototelegraph Position (IPP) enabling these circuits to be disconnected from the telephone service equipment and interconnected or connected to phototelegraph stations. Before switching on this circuit, it must be ensured that no telephone calls are in progress \*\*. If there are calls, the circuit must be blocked as soon as the telephone call is over (preliminary blocking).
2. The calling phototelegraph position must be ready to call the corresponding phototelegraph position over the telephone circuit as soon as it notes that the chosen circuit has been cleared. The calling signal should automatically disconnect the

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\* or Recognized Private Operating Agency(ies).

\*\* At the time agreed upon with the telephone service, if such a previous agreement is considered to be necessary by the telephone operating services.

telephone equipment from the circuit at the called end. The circuit is thus immediately available for the establishment of a phototelegraph communication.

3. If the called phototelegraph position has to be obtained through a transit phototelegraph position, the procedure outlined above is applied successively to the two circuits which are to be interconnected.
4. The same signal (see paragraph 2) can also be used to invite the incoming, and possibly the transit, IPP to enter the line:
  - if there are difficulties, or
  - to signal the end of transmission.

*Note.* — The calling frequency  $f_2$  used for phototelegraphy should be different from that used for telephone signalling  $f_1$ . In the case of automatic or semi-automatic telephone circuits, frequency 500/20 c/s will be adopted as the signalling  $f_2$  frequency for phototelegraphy.

#### RECOMMENDATION E.34

##### **ACCESS TO A TELEPHONE INFORMATION OPERATOR IN THE INTERNATIONAL AUTOMATIC SERVICE**

In the automatic international service, technical arrangements should, so far as practicable, bar access by a subscriber in a foreign country to an operator of the telephone information service of another country.

On no account should the numbers or codes giving access to the telephone information services in other countries be included in published dialling code information.

#### RECOMMENDATION E.35

##### **SETTING UP OF CIRCUITS FOR SPECIAL PURPOSES IN THE INTERNATIONAL AUTOMATIC SERVICE**

1. Certain countries intend to retain a number of manual circuits along with the international automatic network \*. The manual network would be a reserve network but might serve also to constitute circuits occasionally required such as:

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\* In this text, as usual, automatic circuits comprise both semi-automatic and fully automatic circuits.



- reserve circuits for V.F. telegraphy,
- phototelegraph circuits,
- control circuits for programme transmissions,
- leased circuits (other than permanent full-time leases).

2. However, there may be certain cases when all the telephone traffic from one country to another is passed over automatic circuits only. The procedure for withdrawing an automatic circuit from operation and putting it at the disposal of another service must be fixed in advance. Circuits to be used for such purposes should be passed at the outgoing and incoming end through transfer panels placed under the supervision of the International Maintenance Centre, where the desired switching will be carried out manually.

The switching operations must take place under the control of the outgoing International Maintenance Centre. The arrangements to be followed are as follows:

- (a) the chosen circuit is marked busy so that it will not be re-engaged at the outgoing end. Interruption of an existing connection is forbidden. If a call is in progress, things are so arranged that, when the call is over, the circuit cannot be re-occupied by another call.
- (b) when the circuit is free the supervisor at the incoming end is asked to take the necessary steps to disconnect the telephone terminal equipment and reconnect the circuit to the special service required.
- (c) While awaiting notification from the incoming end of the completion of the transfer, the outgoing end will also take the necessary steps by disconnecting the telephone terminal equipment and reconnecting the circuit to the special service required.
- (d) When reconnection at the incoming end is complete the fact is notified to the outgoing end to enable the line to be tested for its new functions and thereafter brought into operation.

The routine for restoration to the telephone service will be the same.

3. Bookings of leased circuits or order lines for programme transmissions are arranged in advance and are not urgent. The delays required by the connection of two circuits in tandem when a connection is operated entirely in automatic transit give rise to no particular difficulties.
4. Where reserve circuits for telegraph systems are concerned, the primary requirement is rapid replacement of the faulty circuit. In view of the delay which would occur in employing two separate links to form a through circuit it appears that in relations in which automatic transit switching is the normal method of operation a direct circuit would have to be retained.

This direct circuit could be either manual or automatic. The automatic direct circuit will be normally used for carrying traffic. It should be noted that, if the direct circuit in use is automatic, it will be used as a first-choice route and will thus carry the heaviest load. The chance of finding this circuit engaged is thus at a maximum. In that case it would be preferable to have a direct manual circuit.

5. For phototelegraph transmissions, the delay in establishing calls via a transit centre is not so critical, but to avoid the risk of interference with signalling it may be necessary to disconnect all switching equipment normally used for connecting calls; in this case also, it would appear that the best solution is the retention of direct circuits; frequent manual switching at an intermediate control point also involves an undesirable amount of time.
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## SECTION 3

# TARIFFS AND CHARGING IN THE INTERNATIONAL TELEPHONE SERVICE

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### RECOMMENDATION E.51

#### INTERNATIONAL TELEPHONE CHARGES

(Circuits of European continental type)

The C.C.I.T.T.,

#### CONSIDERING

Article 27 (§ 1, 2 and 3) of the International Telephone Regulations which stipulates that the charges for international telephone calls are normally made up of terminal charges accruing to the Administrations \* of origin and of destination (terminal Administrations \*) and of transit charges accruing to intermediate Administrations \* if any (transit Administrations \*), the territory of the terminal Administrations \* being divisible into zones for charging purposes, and a uniform charge being adopted for a given zone,

#### UNANIMOUSLY RECOMMENDS

that the Administrations \* should take into account:

- the following directives (see Part I) for the determination of international telephone charges,
- the elements for basis of tariff charges for calls (see Part II) set up on international circuits,

when, in their full sovereignty, they negotiate between themselves agreements as to the telephone charges to be applied in their services.

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\* or Recognized Private Operating Agencies.

## PART I

**Directives for the calculation of international telephone charges with circuits of the European continental type**

1. The charges for international telephone calls are calculated according to the crowflight distance, taking as a basis the net cost.

2. *Charging zones.* — For calculating terminal charges, each country may be divided into charging zones. If need be, different charging zones may be fixed in a given country for traffic exchanged with different countries.

It is desirable that the number of charging zones for international traffic, in any one country, should be reduced to a minimum. As a general rule, in services between non-adjacent countries, each country should constitute one single zone, provided no difficulties or anomalies in the establishment of tariffs would ensue.

In fact, a reduction in the number of charging zones, by simplifying tariffs, facilitates the calculation, by the operation services, of the charges applicable to the various types of calls and the settlement, by the accounting services, of international accounts. It is even more desirable that each country should constitute but one single charging zone when fully automatic international operation is in use and charges are recorded on the same devices as are used for national charges (including devices which may be installed in subscribers' premises to indicate charges).

All the international terminal exchanges should have detailed and up to date records showing, for the different countries with which telephone service is available, the charging zones to which the different localities, with which telephone service is open to the public, belong. With the aid of such records a large number of requests for information between operators, which occupy circuits unnecessarily, are avoided and the number of queries at the time of settlement of the international accounts is reduced.

3. *Terminal charge.* — The terminal charge for a charging zone in any country is calculated as a function of the distance between:

- (a) a point chosen as the "mean charging point of that zone". This mean point is left to be fixed by each Administration \* on its own evaluation. In doing so the Administration \* may take into account:
- the distribution of traffic,
  - the lay-out of its national network,
  - the routing of the international circuits which serve the charging zone under consideration, and
- (b) the point where the international circuits cross the frontier of the country, or, in the case where several frontier crossing points exist, a mean point representative of the various crossing points.

(Where the frontier is crossed by microwave radio relay link, in order to take account of the division of net costs, a point midway between the two radio relay stations situated on either side of the frontier may be chosen instead of the exact point where the radio relay system crosses the frontier.)

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\* or Recognized Private Operating Agency.

4. *Transit charges* — The transit charges applied by the Administrations \* of the intermediate countries through which the circuits pass, are calculated, for each transit country, according to the average crowflight distance between the points of entry and exit of the international circuits.

5. *Notes about terminal and transit charges.* — In the case of mountainous countries, or countries with a peculiar geographical configuration, in which the actual route followed by the circuits is inevitably very circuitous, the distance on which the terminal charge is calculated may be appreciably greater than the straight-line distance between the frontier and the point in the zone in question which is the most distant measured on a crow-flight basis; in the same way, in a mountainous country or one having an exceptional configuration, the crowflight distance between the points of entry and exit on which the transit charge is based, may be increased.

If there is a submarine section, the quota relative to the section should be agreed between the Administrations \* concerned, taking into account the annual charges (including interest, depreciation and maintenance).

## PART II

### Elements for basis of tariff charges for calls set up on international circuits of the European continental type

The C.C.I.F.\*\* and the C.C.I.T.T. have made various studies of the net costs of calls set up on international circuits:

- in 1935, study of the net cost of telephone calls established over the European circuits then used (symmetric, coil-loaded pairs equipped with repeaters and operated at voice frequencies only);
- in 1949, study of the net cost of telephone calls established over carrier current systems on symmetric pairs in cables or on bare wire overhead lines, giving at least twelve telephone circuits;
- in 1954, study of the net cost of telephone calls established over carrier current systems on coaxial pairs;
- in 1956, study of the net cost of telephone calls established by means of microwave radio relay links and study of the net cost of calls with semi-automatic operation;
- in 1960, study of the net cost of switching equipment used to establish automatic telephone calls.

The bases of the various studies were as follows:

#### 1935 Study (voice frequency circuits):

- average traffic carried per circuit: 200 minutes at the full tariff per working day and 300 working days per year, i.e. 60 000 chargeable minutes per year;
- proportion of reserve circuits in underground cables: an average of 40% (that is, 60 working circuits and 40 spare circuits for 100 circuits);
- interest on capital invested: 6%;

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\* or. Recognized Private Operating Agencies.

\*\* Succeeded by the C.C.I.T.T. in 1957.

- average life of an underground cable: 35 years;
- average percentage difference between the actual length of international telephone circuits and the crowflight distance: 30%.

*1949 Study* (carrier current systems on symmetric pairs or on bare wire overhead lines):

- average traffic carried per circuit: 180 chargeable minutes at the full tariff per working day and 300 working days per year; i.e. 54 000 chargeable minutes per year \*;
- proportion of spare capacity:
  - an average of 40 % of the conductors in underground cables (that is, 60 working conductors and 40 spare conductors per 100 conductors);
  - an average of 20 % of terminal equipments (that is, 80 working equipments and 20 spare equipments per 100 equipments);
- interest on invested capital: 5 %;
- average life of an underground cable: 30 years;
- average life of terminal equipment: 15 years;
- percentage difference between the actual length of international telephone circuits and the crowflight distance: 30 %.

*1956 Study* (carrier current systems on coaxial cable pairs or on microwave radio relay links):

(circuits operated on a semi-automatic basis):

- average traffic per circuit: 135 chargeable minutes at the full tariff per working day and 300 working days per year, i.e. 40 000 chargeable minutes per year;
- proportion of spare capacity:
  - an average of 20 % of terminal and automatic equipments (that is, 80 working equipments and 20 spare equipments per 100 equipments);
- interest on invested capital: 5 %;
- average life:
  - of a coaxial cable: 30 years;
  - of aerials and radio equipment: 10 years;
  - of terminal equipment: 15 years;
  - of automatic equipment: 15 years;
- percentage difference between the actual length of international telephone lines and the crowflight distance: 30 %.

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\* At the time the 1956 studies were made, the net costs for carrier current systems on symmetric pairs were re-calculated, taking into account the same use of circuits as for the studies on coaxial cable pairs or on microwave radio relay links, i.e. 40 000 chargeable minutes per year.

*1960 Study* (switching equipment used to establish automatic telephone calls):

- average traffic per circuit: 113  $\frac{1}{3}$  minutes of *actual call duration* at the full tariff per working day and 300 working days per year, i.e. 34 000 minutes *actual call duration* per year;
- proportion of spare capacity: an average of 20% of automatic equipments (that is, 80 working equipments and 20 spare equipments per 100 equipments);
- interest on invested capital: 5%;
- average life of switching equipment: 10 years.

As a result of these various studies, the C.C.I.T.T. has fixed the following elements as a basis for the calculation of charges for calls set up on international telephone circuits. All values given in the following text are given again in a tabular summary at the bottom of page 64.

These elements for basis of tariff charges take account of general overhead costs (accounting costs, administrative costs, research costs, etc.) but not of the extension of international calls on the national (local or trunk) network beyond the international exchange.

#### A. FRONTIER RELATIONS

*Maximum frontier charge per 3-minute call:*

- 0.60 gold franc for crowflight distances less than 25 kilometres,
- 1 gold franc for crowflight distances between 25 and 50 kilometres.

The distance is measured between exchanges covering a specified geographical area on each side of the frontier; these exchanges are defined by agreement between Administrations \* in the light of the structure of their national networks.

*Note.* — If Administrations \* have their own reasons for preferring either a single charging rate or more than two charging rates for frontier relations, it is for them to make special arrangements to this effect.

#### B. OTHER RELATIONS

The C.C.I.T.T. considers that a distinction should be made between three conditions in the development of existing communication channels:

(a) **Old conditions.** — In certain relations no carrier current telephone systems are in use; calls are still set up over old type circuits, coil-loaded and equipped with repeaters, or over bare wire overhead lines worked at voice frequencies. In these relations, the values determined in the 1935 study can still be applied.

*Costs of depreciation, interest on capital involved and maintenance of the international circuit* (excluding any inland trunk circuit required to connect the international terminal exchange with the trunk exchange serving the subscriber):

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\* or Recognized Private Operating Agencies.

0.60 gold franc per 3-minute call and per 100 kilometres of crowflight distance (each fraction less than 50 kilometres being rounded up to a maximum of 50 kilometres and each fraction between 50 and 100 kilometres being rounded up to a maximum of 100 kilometres).

*Note.* — The studies carried out in 1935 had shown that in short-distance services (up to about 300 kilometres) and in which traffic is routed over direct circuits, the portion of the net cost of the call proper to the international circuits is appreciably less than 0.60 gold franc per 100 kilometres.

*Operating costs of an international terminal exchange:* 0.60 gold franc per 3-minute call (whether for a terminal exchange or a transit exchange).

(b) **Modern conditions.** — On the other hand, in certain relations, the high-speed transmission lines envisaged in the General Interconnection Plan have already been constructed, to the extent that the great majority of calls are set up over modern type carrier current routes (metallic lines or microwave radio relay links) for which the studies of the net cost carried out in 1949 and 1956 are valid.

As a result of these studies, the elements for basis of tariff charges to be taken into account for the calculation of international telephone charges should be as follows:

*Cost of depreciation, interest on capital involved, and maintenance of the international circuit* (excluding any inland trunk circuit required for connecting the international terminal exchange with the trunk exchange serving the subscriber):

0.25 gold franc per 3-minute call and 100 kilometres of crowflight distance (any fraction less than 50 kilometres to be rounded up to a maximum of 50 kilometres and any fraction between 50 and 100 kilometres to be rounded up to a maximum of 100 kilometres).

*Operating expenses of an international terminal exchange, including terminal equipments of the carrier current system*

1. Manual and semi-automatic operation: per 3-minute call (3 minutes + 1 minute method of charging):

- per international manual exchange (whether an international terminal exchange or a transit centre) . . . . . 0.80 gold franc
- per outgoing international semi-automatic exchange . . . . . 0.80 gold franc
- per incoming international automatic exchange . . . . . 0.30 gold franc
- per transit international automatic exchange . . . . . 0.45 gold franc

2. Automatic operation per 3 minutes of *actual call duration*:

- per outgoing international automatic exchange . . . . . 0.50 gold franc
- per incoming international automatic exchange . . . . . 0.30 gold franc
- per transit international automatic exchange . . . . . 0.45 gold franc



c) **Conditions intermédiaires.** — Dans certaines relations internationales, on se trouve dans des conditions intermédiaires où la réalisation du Programme général d'interconnexion téléphonique a commencé, mais n'est pas achevée. Dans ce cas, pour tenir compte de la coexistence de lignes du type ancien et de type moderne dans des proportions semblables, la somme de 0,25 franc-or pour trois minutes de conversation et par 100 km de distance à vol d'oiseau, destinée à couvrir les frais d'amortissement, d'intérêts du capital engagé et d'entretien de la voie de communication intéressée, devrait être portée à 0,40 franc-or à titre provisoire et jusqu'à ce que la partie considérée du Plan général d'interconnexion téléphonique ait été complètement réalisée. Les valeurs indiquées ci-dessus en b) pour les frais d'exploitation d'un centre international sont également valables pour ces conditions transitoires.

**TABLEAUX RÉCAPITULATIFS DONNANT LES ÉLÉMENTS DE PRIX  
DE REVIENT A PRENDRE EN CONSIDÉRATION SUIVANT  
LES CONDITIONS ENVISAGÉES**

TABLEAU I

**Exploitation manuelle et semi-automatique: pour 3 minutes de conversation**  
(méthode de taxation: 3 minutes plus une minute)

TABLEAU RÉCAPITULATIF DONNANT LES ÉLÉMENTS DE BASE, POUVANT SERVIR A L'ÉTABLISSEMENT  
DES TARIFS A PRENDRE EN CONSIDÉRATION, SUIVANT LES CONDITIONS ENVISAGÉES

	Conditions anciennes (cas a)	Conditions modernes (cas b)	Conditions intermédiaires (cas c)
par 100 km de circuit. . . . .	0,60	0,25	0,40
par centre international * . . . .			
— manuel . . . . .	0,60	0,80	0,80
— semi-automatique de départ . .	—	0,80	0,80
— automatique d'arrivée . . . .	—	0,30	0,30
— automatique de transit . . . .	—	0,45	0,45

TABLEAU II

**Exploitation automatique: pour 3 minutes de durée réelle de conversation**

	Conditions modernes (cas b)	Conditions intermédiaires (cas c)
par 100 km de circuit . . . . .	0,25	0,40
par centre international automatique de départ * .	0,50	0,50
par centre international automatique d'arrivée * .	0,30	0,30
par centre international automatique de transit . .	0,45	0,45

\* Il est précisé que les éléments de calcul se rapportant aux centres internationaux de départ et d'arrivée ne tiennent compte d'aucun circuit ou centre national utilisé éventuellement pour raccorder le centre international considéré à l'abonné demandeur ou demandé.

## NOTE

When Administrations \*, in their full sovereignty, negotiate between themselves agreements with a view to reduction in the charges (in gold francs) in force, they should take into consideration the suggestions below:

1. When envisaging a reduction of the charge applied in a telephone service, it is necessary to make sure that a sufficient number of circuits will be available to deal with additional traffic which may result from this reduction in charge.

2. In order to change from the old conditions (case *a*) to the transitional conditions (case *c*), it is sufficient if, in the international service concerned (case of a service between adjacent countries, that is to say without transit), about 50% of the circuits are of the modern type.

If in the service concerned, one or several transit countries are involved, it will be desirable to initiate discussions with a view to reducing the charges when all the Administrations \* concerned have put into service on this route about 50% of the modern type international circuits.

3. If it happens that, in the case of an international route to be set up between neighbouring countries, one of the countries has completed the section on its territory before the other country has done the same, the first country has the right to maintain its quota at the amount determined under the old conditions in the table until the second country has completed its part of the project. If, on the other hand, in order to increase traffic, the second country agrees to reduce its quota, reduction in charges could be envisaged, because each country will have made its share of the sacrifice towards the reduction.

4. The Administrations \* should agree between themselves as to the principles to be adopted when:

- a particular service is operated on a different basis (manual, semi-automatic or automatic) in one direction and in the other;
- in a particular service and in a given direction of operation, circuits operated manually, semi-automatically or automatically are used at the same time.

*Note 1.* — The Administrations \* concerned should enter into direct correspondence with one another for the application of the above suggestions.

*Note 2.* — The standards in the table above do not apply to countries in which the telephone system is less highly developed.

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\* or Recognized Private Operating Agencies.

RECOMMENDATION E.52**CHARGING IN A FULLY AUTOMATIC INTERNATIONAL TELEPHONE SERVICE****I. PRINCIPLES FOR CHARGING**

The C.C.I.T.T.,

**CONSIDERING**

1. that, in accordance with the provisions of Article 31\*, § 179 and 180 of the International Telephone Regulations (Paris, 1949), international calls should be charged for on the basis of a minimum indivisible period of 3 minutes, and then by whole minutes;
2. that these provisions were made at a time when fully automatic international operation was not envisaged;
3. that many Administrations\*\* have adopted methods of charging for use with their national fully automatic service, in which the charges are recorded on subscribers' meters, but based on two different principles:
  - (a) some countries have for many years used a system based on trains of meter-pulses issued at the start of each period of 3 minutes, the number of pulses in the train depending on distance;
  - (b) other countries use, or intend to use, a system based on single meter-pulses issued at short intervals of time, the length of the interval depending on the distance;
4. that certain countries which have adopted the system of charging by periodic pulses in their national services have made it known that it will not be possible for them to use a different system of charging for fully automatic international calls;
5. that the use, on the same international relation:
  - (a) at one end, of a 3 minute+3 minute method of charging (national type) or of a 3 minute+1 minute method of charging (the type prescribed in the International Regulations);
  - (b) at the other end, of a periodic pulse method of charging (national type);would lead to a grave dissymmetry in the charges made to users in the two countries concerned;
6. that this serious dissymmetry would be likely to provoke adverse reactions from the subscribers of one country, who would be less favourably treated than their correspondents in the other country;
7. that this serious dissymmetry would be likely to create certain financial difficulties for one of the countries:

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\* Text modified by the Telegraph and Telephone Conference, Geneva, 1958 (see §§ 3 and 4 of Article 26 of the International Telephone Regulations, Geneva Revision, 1958).

\*\* or Recognized Private Operating Agencies.

- (a) as a result of changes which may possibly take place in the balance of traffic;
- (b) as a result of the fact that the country which charged on the basis set out in 5 (a) above would receive, in respect of the use of its system for "incoming" traffic, substantially less than it would collect from its own subscribers;

## UNANIMOUSLY RECOMMENDS

that it is desirable, in order to avoid too great a dissymmetry in the charges collected, to recommend that either of the two following methods of charging may be used in the international fully automatic service:

- (a) charging minute by minute;
- (b) charging by periodic pulses, of the type used in the national automatic services.

## II. REDUCTION OF DISSYMMETRY IN THE CHARGES

## The C.C.I.T.T.

## CONSIDERING,

that the existence, in the same relation, of the two methods (a) and (b) above lead to a dissymmetry in the charges made,

that the existence, in the same relation, of periodic charging methods with different intervals in the two countries concerned results in a very small dissymmetry in the charges made,

## UNANIMOUSLY RECOMMENDS

that, in a given service between two countries A and B, the Administrations \* shall endeavour to see that the revenue obtained from users and the amounts entering in the international accounts correspond.

\* \* \*

Hence, for a given relation, each Administration \* fixes the unit-charge and the unit-interval according to the characteristics of its national charging system but endeavours to observe the following equalities:

$$\sum_n d_r u_r = \sum_n d_A u_A = \sum_n d_B u_B$$

which equalities apply to a group of  $n$  conversations chosen in such a way as to constitute a representative sample of the traffic on the relation in question.

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\* or Recognized Private Operating Agency(ies).

In this equality,

$d_r$  = actual call duration,

$d_A$  = chargeable duration in the charging system of country A,

$d_B$  = chargeable duration in the charging system of country B,

$u_r$  = unit-charge used in drawing up international accounts in the fully automatic international service,

$u_A$  = charge per unit-interval in the charging system of country A,

$u_B$  = charge per unit-interval in the charging system of country B.

*Remarks.* —  $d_r$  is expressed in minutes, with the appropriate decimals.

$d_A$  and  $d_B$  are expressed by the whole number of unit-intervals in the charging system of country A or country B (the interval between two periodic pulses in periodic-pulse systems, or one minute in a 1+1 system).

$u_r$  is a charge per (actual) call duration, is expressed in gold francs per minute of conversation and is the same for both directions in the relation in question. It is equal to one third of the charge in gold francs using the values shown in Table II of Recommendation E.51.

#### RECOMMENDATION E.52 bis \*

### ACCOUNTING SYSTEM IN THE INTERNATIONAL AUTOMATIC TELEPHONE SERVICE

In the international automatic service, the charge for calls will, in general, be automatically registered on subscribers' meters and Administrations \*\* will no longer have tickets available for working out the distribution of charges on the basis of the chargeable duration of calls.

Although technically possible, the recording, for international accounts, of the chargeable duration of each effective call would require the installation of new equipment which does not seem justified with the sole object of establishing international accounts. The various systems used for charging subscribers would also result in different chargeable durations for the same traffic.

In these circumstances:

1. The C.C.I.T.T. recommends that accounts between Administrations \*\* should be drawn up on the basis of the total duration (actual) of calls measured in the international outgoing exchanges on the appropriate meters. A charge in gold francs per minute of actual duration of call, valid in both directions of the relation and applicable solely for international accounts relating to automatic calls, will be fixed by agreement between Administrations \*\*.

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\* This Recommendation also appears as Recommendation Q.35 in the Series Q Recommendations (Volume VI of the *Red Book*).

\*\* or Recognized Private Operating Agencies.

Exceptions to this general rule may occur in the following cases:

- (a) When the Administrations \* concerned agree to dispense with accounts or to adopt lump-sum settlement.
  - (b) When one or both of the Administrations \* concerned already possess equipment capable of showing the chargeable durations incurred by the subscribers. The accounts prepared on these bases must give the same result as if the call durations had been measured.
  - (c) When simplified code signalling systems are used which make it impossible to assess the call durations without excessive complications, the Administrations \* shall measure the total occupation time of the outgoing circuits. In that case, a correction factor shall be applied to the traffic figures so as to assess, in total actual call duration, the traffic which is to serve as the basis for preparing the accounts. The corrections to be applied must be determined by agreement between the Administrations \* concerned.
2. International accounts for semi-automatic calls shall continue to be based, in accordance with the Telephone Regulations, on the tickets prepared by the outgoing operators. Hence, in the international outgoing exchange equipment, a distinction should be made, for international accounting purposes, between semi-automatic and automatic calls.
- In exceptional cases where, with simplified code signalling systems, this distinction is not possible, the Administration \* of the outgoing country should come to an agreement with the Administration \* of the incoming country (and, when necessary, with the transit countries) on the arrangements to be made.
3. To take account of the special charging in frontier systems (reduced rates between neighbouring frontier land areas), special arrangements will have to be made to distinguish between frontier automatic calls and other automatic calls. This distinction must be made whenever frontier traffic is routed, entirely or in part (overflow), by long-distance international circuits for which devices for measuring call duration exist.
- Contrary to paragraph 1.2 of Recommendation E.29, this distinction will generally entail the analysis of other digits than the first, or the first two, of the significant number of the called subscriber and determination of the source of the call, since frontier charges depend on the distance between the outgoing and the incoming frontier areas.
4. Measurement of the call duration on meters shall be made according to country of destination. When the country of destination comprises several charging areas, these measurements will ordinarily be made according to the charging area.
5. The measurement of call durations made by the international outgoing exchange to a given country of destination shall not distinguish between routes involving different transit countries, provided that the traffic is transmitted over direct circuits which constitute the normal route. For international accounting purposes, the total volume of traffic sent via each route is assumed to be proportional to the number of circuits in service on the 15th of each month.

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\* or Recognized Private Operating Agency(ies).

6. From the theoretical point of view, it might seem desirable for the outgoing country to measure the traffic according to route and destination when a transit exchange of another country is used. However, it is left to Administrations \* to decide whether:

- metering by route is much more complicated than metering by destination alone;
- metering by route is justified for obtaining the traffic data necessary, as well as for the drawing-up of international accounts;
- the complication of metering by route can be justified by the prospect of setting up automatic transit traffic.

When the Administration \* of the outgoing country is not in a position to assess the traffic by route and by destination, it should come to an agreement with the other Administrations \* concerned as to the way in which the traffic is assumed to be split up over the various routes.

7. The following special rule shall be permissible to avoid the need for an analysis of routes actually taken by a call beyond a transit exchange when several routes passing through different countries to the destination in question are possible from the transit exchange. The distribution of transit traffic over these different routes shall be taken to be the same as the distribution of traffic originating at the transit exchange for the destination concerned. The distribution between the routes shall be assessed every 6 months by the Administration \* of the transit exchange and communicated to the Administration \* of the outgoing country.

8. In international accounts the traffic expressed in minutes relating to test calls, service calls and calls terminating at wrong numbers should not be deducted, since the overall duration of these various types of call is very small in relation to the total traffic.

Nevertheless, when the percentage of wrong numbers due to faults in the incoming country's equipment is greatly in excess of what is regarded as a reasonable percentage in a service of good quality, the outgoing country will be entitled to make certain deductions, in agreement with the incoming country.

When free calls are allowed (for example during international telecommunication conferences), deductions may be made in the international accounts by the Administration \* of the country on whose territory the conferences are held.

9. The arrangements concerning the acceptance of international accounts as defined in the Telephone Regulations (Chapter XIV - Accounting) shall apply to automatic traffic.

Accounts shall be drawn up monthly but, to avoid errors (which might be serious in the event of the meters being faulty), the call-duration meters shall be read every day.

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\* or Recognized Private Operating Agency(ies).

The degree of accuracy of the call-duration measuring apparatus shall be  $\pm 2\%$  with a confidence limit of 95%, on the understanding that this result is obtained for a set of measurements covering an adequate number of calls which, in light traffic relations, may lead to acceptance of the fact that  $\pm 2\%$  accuracy should be obtained on the overall measurements for a year, but not for each of the partial measurements made during that year (monthly measurements, for example, if the monthly interval is retained for the establishment of international accounts).

### RECOMMENDATION E.53

#### **CHARGING FOR CALLS TO SUBSCRIBER'S STATION TEMPORARILY CONNECTED TO THE ABSENT SUBSCRIBERS' SERVICE**

##### **1. Manual and semi-automatic services**

###### *(a) Calls without preavis*

If the called subscriber's line has been temporarily connected to the absent subscribers' service, the caller should always be informed before the call is set up.

If the caller agrees to enter into communication with the absent subscribers' service, the call is set up and is charged in accordance with its class and duration.

If the caller declines the communication with the absent subscribers' service, the booking is cancelled and no charge is collected.

###### *(b) Calls with preavis*

If the called subscriber's line has been temporarily connected to the absent subscribers' service, the caller must always be informed before the call is set up.

If the caller declines the communication, the preavis charge only is collected.

If the caller accepts the communication, the charge is collected for the duration of the call and the preavis surcharge is also collected.

##### **2. Automatic service**

The reply by an operator of the absent subscribers' service to a call reaching a subscriber's line temporarily connected to this service entails charging for the international call.

*Note.* — In the few countries which in 1957 had an absent subscribers' service for which no charge was collected from the caller, the reply by the operator of this service might exceptionally not entail charging for the calls.



RECOMMENDATION E.54**CHARGING FOR CALLS TO A DEVICE SUBSTITUTING  
A SUBSCRIBER IN HIS ABSENCE**

1. The connection to a subscriber's line of a device in substitution for the telephone instrument, for the purpose of answering on behalf of the subscriber in his absence and, possibly, of recording a message, is the equivalent of having a person to answer the telephone on the user's behalf and at his express request.

The C.C.I.T.T. therefore considers that all calls terminating on such a device should be subject to the charging rules applicable to calls which are answered in the normal way by a person.

2. All precautions will nevertheless have to be taken by the Administrations \* to warn callers of the presence of the device on the called subscriber's line:
  - (a) devices of this type should be indicated in the telephone directories by means of a special sign  $\odot$ ;
  - (b) Administrations \* should invite the owners or renters of such equipment to mention the fact on their letter-heads by means of a printed indication.
3. To facilitate the disposal of international traffic on a device of this type, the Administrations \* should, when consenting to this equipment, insist that it complies with the essential conditions set out in the following Annex.

**ANNEX**

(to Recommendation E.54)

**Basic specifications for recording apparatus substituting the called subscriber****A. OPERATING CONDITIONS**

1. *Delay in answering*

The ringing current from the telephone exchange should be permitted to operate the telephone bell for at least 3 seconds but for not more than 10 seconds before the call is answered by the apparatus. This will enable the call to be answered in the *normal way* in those countries which wish to provide for such a facility. The timing of this interval (3-10 seconds) should be independent of the periodicity or the duration of the ringing current.

2. *Normal conditions for metering and supervision*

In answering a call the apparatus should loop the subscriber's line and should also give the normal conditions for control of metering and for supervision as with a normal subscriber's installation. The disconnection of the apparatus shall break the loop on the subscriber's line.

3. *Announcement of the presence of the apparatus*

- (a) The presence of the apparatus should be indicated to the calling subscriber by means of a verbal announcement following, in principle, immediately on the closing of the loop on the subscriber's line.

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\* or Recognized Private Operating Agencies.

(b) This verbal announcement should include, in particular, the following:

- first, whether the apparatus permits the recording of a message,
- the subscriber's name or business style,
- the subscriber's number and particulars of the locality (e.g., Geneva, St. Moritz, etc.),
- clear instructions as to the functioning of the apparatus (whether a message may be recorded, and if so, the moment when the message may be recorded and the maximum duration of a recording).

#### B. SIGNALLING CONDITIONS

##### 1. *Avoidance of interference from signalling frequencies*

The correct functioning of the apparatus should not depend upon (nor be affected to any extent by) the sending or receiving of signalling frequencies used in the telephone system or specially generated in the apparatus.

##### 2. *Avoidance of interference with national signalling systems by the tones transmitted by the apparatus*

To avoid interference with the national signalling system of a country by the tones transmitted by the apparatus over the network of that country, it is recommended that, in the case of the transmission of tones by the equipment:

- the transmission of tones should be in short pulses and not a continuous transmission;
- the tones should not be composed of a single frequency, but should be a mixture of at least two frequencies, so that the guard circuit of the signal receiver of the corresponding country, where there would be a risk of interference, may operate (for this purpose, the choice of the following frequency-combinations should be avoided:

2040 and 2400 c/s	1200 and 1600 c/s	500 and 20 c/s
600 and 750 c/s		1000 and 20 c/s)

#### C. TRANSMISSION CONDITIONS

Any recording apparatus which takes the place of the called subscriber should give a level and quality of speech comparable with that given when the line is used by a person.

### RECOMMENDATION E.55

#### **CHARGING IN AUTOMATIC SERVICE FOR CALLS TERMINATING ON SPECIAL SERVICES FOR SUSPENDED, CEASED OR TRANSFERRED SUBSCRIBERS**

It is desirable for calls terminating on special services for suspended, ceased or transferred subscribers in the international automatic service to receive the same treatment in different countries.

The C.C.I.T.T. considers that no charge should be made for these calls and that no answer signal should normally be given when the interception operator of these services intervenes.

(E.55)

RECOMMENDATION E.55 bis

**AMENDMENTS TO THE INSTRUCTIONS FOR THE INTERNATIONAL  
TELEPHONE SERVICE - IDENTIFICATION OF THE  
CALLED SUBSCRIBER BY THE CALLER**

1. Identification of the called subscriber by the calling subscriber can be used for the direct manual demand service as well as for the semi-automatic service.

When the "Instructions for the international telephone service" were drafted in 1959, this conclusion had already been taken into account. Article 180 of the "Instructions" provides, in fact, for the possibility of identification of the called subscriber by the calling subscriber both in direct manual demand service and in semi-automatic service. The Article in question should however be re-drafted when the "Instructions" are next revised:

- (a) Administrations \* should have the possibility of using uniform procedure for all outgoing routes, without the need for a formal agreement with each incoming Administration \*. Instead of reading, as at present, that identification by the calling subscriber can be allowed only after agreement between the Administrations \*, Article 180 could simply read: "after the outgoing Administration \* has informed the incoming Administration \* of the adoption of this procedure".
  - (b) In the present wording of Article 180, identification by the calling subscriber is considered as an exception. The drafting might have to be reversed if this method became the most widespread.
2. Since the principle of identification by the caller is accepted, it is logical that metering of the chargeable duration should begin the moment the called subscriber takes up the receiver.

However, some Administrations \* consider that it is not desirable to assess the chargeable duration in this way so long as there is no need to do so for technical reasons, as is the case with the fully automatic service.

Finally,

- when the operator makes the identification, charging should begin the moment identification is completed;
- when the caller makes the identification, charging should begin when the called subscriber replies.

However, a reservation should be made in the second case for Administrations \* which leave the calling subscriber free to carry out identification but which at the same time continue to make the operator supervise this identification. If such Administrations \* so desire they could make charging begin only when the operator has noted that identification between the subscribers has been properly accomplished.

When the "Instructions" are next revised, it should be considered whether Article 86 should be revised to include these ideas or if the generally adequate text now valid can continue in force.

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\* or Recognized Private Operating Agency(ies).

RECOMMENDATION E.56**MULTIPLE CALLS**

Multiple calls should be accepted in the international service, by agreement between the Administrations \* concerned, subject to the following conditions:

1. *Conditions of acceptance*

In all cases the technical equipment should be such as to provide satisfactory transmission of multiple calls.

2. *Charging*

The charge for a multiple call should include the main charge and any subsidiary charges.

The main charge shall be calculated on the basis of the charge applicable to relations between the national exchange, chosen as controlling exchange for the call, and the various international exchanges intervening in the call, regardless of the number of correspondents.

The subsidiary charges shall be fixed by each country concerned, taking into account:

- (a) any internal circuits used beyond the international exchange;
- (b) equipment expenses in telephone exchanges for the setting-up of multiple calls.

The total charge for a multiple call, calculated by agreement between the countries concerned, shall be collected exclusively from the booker of the call.

The main charge shall be apportioned between the countries concerned in accordance with the rules applicable to ordinary calls. The subsidiary charges shall be attributed to each of the Administrations \* concerned.

RECOMMENDATION E.57**INTERNATIONAL PROGRAMME TRANSMISSIONS****SECTION I. — CONDITIONS OF ACCEPTANCE**

The C.C.I.T.T.,

**CONSIDERING**

that requests for the use of circuits for international programme transmissions should continue to necessitate the intervention of the central Administrations or of the "controlling services" to whom the Administrations \* have delegated their authority in this matter,

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\* or Recognized Private Operating Agencies.

## UNANIMOUSLY RECOMMENDS

that international programme transmissions should be accepted under the following conditions:

- 1.1. Requests for the use of circuits for programme transmissions should be addressed by the broadcasting organization (or organizations) which controls the broadcast receiving station (or stations) to the "controlling service" of its country (or their countries).

The list of controlling services in the different countries to which the broadcasting organizations should apply to obtain circuits (a list containing the names, exact postal addresses, telegraphic addresses and also telephone numbers of these various services) must be forwarded to the Administrations \* belonging to the C.C.I.T.T. by the Secretariat of the C.C.I.T.T., these Administrations \* undertaking to pass this list on to the broadcasting organizations of their respective countries.

Requests for the use of circuits for programme transmissions should always be made at the earliest possible moment and in any case with sufficient notice to allow the Telephone Administrations \* to take the necessary measures to arrange the programme transmission in question. These requests should be complied with if no inconvenience to the general telephone service is likely to result and if technical considerations permit. If a request has not been made sufficiently in advance, the broadcasting organization may not claim a reduction in charges for an interruption or any other incident arising on the broadcast transmission circuit during the preparatory period, or during actual transmission, when it has been impossible to adjust and test the circuit with the necessary care owing to insufficient time being available.

- 1.2. For each international broadcast relay affecting only receiving radio stations situated in one country, the broadcasting organization which controls the receiving radio station or stations, after preliminary agreement with the broadcasting organization controlling the transmitting microphone, should make a request to the controlling service of its country for the use of the necessary circuits, accompanied by an undertaking to pay the whole charge in respect of the use of these circuits.
- 1.3. For each international broadcast relay affecting broadcast receiving stations situated in several countries, the procedure is as follows:

The list of broadcasting stations which are to receive the transmission (showing the telephone exchange to which the transmitting microphone is connected) is sent to each of the broadcasting organizations concerned, by the broadcasting organization controlling the transmitting microphone; each broadcasting organization should send this list to the controlling service of its own country, after having brought in the additions or modifications which it considers necessary. This list should include the designation of all control circuits required and, where necessary, of all the reserve circuits requested.

Unless otherwise agreed upon, the controlling service of the country in which the programme originates shall be taken as the overall controlling service for the transmission concerned.

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\* or Recognized Private Operating Agencies.

The overall controlling service should inform each of the controlling services concerned, at the earliest possible moment, of the circuits to be used and the special repeater station or stations with which the broadcasting organizations may communicate if any unforeseen incident, which must be rectified urgently, arises in the course of the programme transmission.

As soon as it has received the necessary information concerning the circuits for the use of which it will have to pay, each broadcasting organization controlling one or more broadcast receiving stations should forward *without delay* to the controlling service of its country a request for the use of these circuits with an undertaking to pay the whole charge in respect of their use.

To facilitate this procedure it is desirable that the broadcasting organizations should study in advance the cases of multiple relays which are likely to occur frequently (see the following Annex).

## SECTION II. — CONTROL CIRCUITS

The C.C.I.T.T.,

### UNANIMOUSLY RECOMMENDS

that the following directives should be observed for the constitution of control circuits in connection with the use of programme circuits:

#### 2.1. *Definitions*

2.1.1. A *control circuit* (circuit de conversation) is a telephone circuit which provides a direct connection between the place where a transmitting microphone is installed and the point where the broadcast programme is used (recording apparatus or radio broadcasting station). This connection is used to supervise the transmission of the programme broadcast and it enables any necessary remedial measures to be taken quickly in case any difficulties or interruptions occur during the transmission; it also permits the programme transmission circuit to be released at the right moment and it provides, therefore, the appropriate means by which the chargeable duration of the programme transmission can be precisely determined.

2.1.2. For the setting-up of control circuits, the following distinctions should be drawn between “regular” and “occasional” programme transmissions:

- (a) *Regular transmissions* are those which are ordered once for all because they take place at regular intervals, at the same times, over the same routes, and always between the same points.
- (b) *Occasional transmissions* are all transmissions which do not fall within the above definition.

#### 2.2. *Constitution of control circuits*

It is desirable to distinguish between the following cases:

- simple programme transmissions;
- multiple programme transmissions.

### 2.2.1. *Simple programme transmissions*

In the case of regular transmissions, especially if the programme transmitted is of such a nature that the broadcasting organization is ready to tolerate any incident which might occur because of the absence of a control circuit during the transmission of the programme, the use of a control circuit should be obligatory only during the "preparatory period" \*.

For certain regular transmissions effected over a long period, the use of a control circuit might even be dispensed with during the preparatory period if the broadcasting organizations so request.

In the case of an occasional transmission, the use of a control circuit should in principle be obligatory during the preparatory period and should be earnestly recommended throughout the programme transmission; indeed, the broadcasting organizations are interested in reducing as much as possible the duration of any incidents which occur during the transmission of the broadcast programme and, on their part, the Administrations \*\* should see that too high a power is not employed in the course of the transmission, such as might cause interference on telephone circuits on the same route.

### 2.2.2. *Multiple programme transmissions (or multiple relays)*

#### 2.2.2.1. Multiple programme transmissions in which the sound is picked up at one point only:

(a) if the first distribution point of the programme transmission circuits serves a broadcast transmitting station in the same town and participating in the multiple transmission, it is strongly recommended that control circuits should be envisaged, at least:

- between the studio where the transmitting microphone is installed and the distribution point of the programme transmission circuits;
- between the first distribution point and the various broadcast transmitting stations;

(b) when the above conditions do not apply, it is recommended that, as far as possible, control circuits should be envisaged between the studio where the microphone is installed, on the one hand, and the various broadcast transmitting stations on the other hand.

In the two cases indicated above, control circuits should always be provided during the preparatory period and their use should be recommended throughout the transmission of the programme.

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\* The preparatory period is defined under 3.1.2.

\*\* or Recognized Private Operating Agencies.

### 2.2.2.2. Multiple programme transmission with several sound pick-up points:

A preliminary study should be carried out between the broadcasting organizations and the Administrations \* concerned in order to determine what control circuits should be insisted upon during the preparatory period \*\* and which control circuits should be recommended for use during the transmission of the programme.

Experience has shown that in the case of two-way multiple broadcast transmissions with several sound pick-up points, it is desirable to have control circuits between the studio directing the transmission and the various sound pick-up points in order that the programme concerned should proceed satisfactorily.

2.2.3. *General remarks.* — The broadcasting organizations should be informed that when they decide to dispense with the use of a control circuit during the transmission of a broadcast programme, they are not entitled to claim a reduction of the charge on account of some incident occurring during the course of the transmission, even if the incident is due to a breakdown in the programme circuit which could not be remedied quickly because of the absence of a "control circuit".

## SECTION III. — CHARGING

The C.C.I.T.T.,

### CONSIDERING

that, although ordinary telephone circuits might be used, if need be, for programme transmissions, it is necessary, in order to be able to transmit music, and even speech, perfectly, to arrange for the use of circuits in which crosstalk is reduced to the lowest possible level and which effectively transmit a frequency bandwidth wider than with ordinary telephone circuits;

that the types of circuits can be distinguished as indicated in the following table:

Type of circuit	Audio frequency bandwidth effectively transmitted
Ordinary telephone circuit . . . . .	300 to 3400 c/s
Old type programme circuit . . . . .	50 to 6400 c/s
Normal type programme circuits . . . . .	50 to 10 000 c/s

\* or Recognized Private Operating Agencies.

\*\* The preparatory period is defined under 3.1.2.



that the net costs of "programme circuits" are much higher than those for ordinary telephone circuits;

that the costs of supervision and maintenance of programme circuits are much higher than those of ordinary telephone circuits;

#### UNANIMOUSLY ISSUES THE RECOMMENDATION

that, when "programme circuits" are available, they should be used in all cases for programme transmissions instead of ordinary telephone circuits;

that it is appropriate to make higher charges for the use of such circuits for programme transmissions than are made for the use of ordinary telephone circuits;

that telecommunication Administrations \* should take the following directives as guidance when charging for programme transmissions.

### 3.1. Preliminary

3.1.1. A programme circuit is a uni-directional transmission channel. If a programme transmission takes place simultaneously in both directions, thus requiring the use of two special circuits, it should count as two distinct programme transmissions.

3.1.2. For each international programme transmission a distinction is made between:

(a) the *line-up period*, in which the telecommunication Administrations \* proceed to line up the international programme line before handing it over to the broadcasting organizations;

(b) the *preparatory period*, in which these broadcasting organizations effect their own line-ups, tests and various manœuvres before carrying out the actual programme transmission;

(c) the actual programme transmission.

The chargeable duration begins at the moment when the programme circuit transmission is handed over to the broadcasting organization, i.e. at the start of the preparatory period.

3.1.3. For charging purposes, no distinction is made between periods of light and heavy traffic in the use of "programme circuits".

3.1.4. The use of "control circuits" in programme transmissions is liable to the same charge as an ordinary telephone circuit, i.e. there is no surcharge, and periods of light and heavy traffic may be taken into account \*\*.

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\* or Recognized Private Operating Agencies.

\*\* In order to avoid variations in interpretation, which may have occurred in the past, the "tariff for ordinary telephone calls" should provisionally be understood to be as follows (pending further examination of the matter):

(a) For the part of the programme transmission in the period of heavy traffic, the charge to be collected is that appropriate to ordinary calls during the period of heavy traffic;

3.1.5. A *surcharge* is applied in respect of each programme transmission without regard to the type of circuit used, to cover the expenses incurred in:

- the technical preparation of international circuits by way of special equipment or lining-up,
- the exchange of telegraph and telephone messages for the preparation of a programme transmission,
- the setting-up and testing of the chain of circuits to be used for the transmission.

This surcharge is shared between the Administrations \* concerned on the same basis as the charge for the programme transmission itself. The surcharge is equal to the charge for *8 minutes of programme transmission* over the same circuit between the terminal points concerned. The surcharge is not payable if the programme transmission does not take place due to circumstances under the control of the telephone service.

It is to be understood that the surcharge covers the charges which would otherwise be made for the telegrams and telephone calls exchanged in the preparation of the programme transmission. The surcharge does not apply to the so-called "control" circuits.

3.1.6. When the transmitting microphone is not connected directly to the network of programme circuits, and a special junction circuit has to be provided between the location of the transmitting microphone and the point of junction with the network of programme circuits, the Administration \* responsible for the broadcast transmitting station should forward to the Administration \* responsible for the broadcast receiving station particulars of the special expenses incurred in the setting-up, alignment and recovery at the end of the transmission of the junction circuit in question. These expenses are debited by the latter Administration \* to the broadcasting organization controlling the broadcast receiving station.

### 3.2. *Charges in normal cases (use of "international programme circuits")*

In fixing the following tariff of charges for international programme transmissions in the *normal case* in which programme transmissions are effected by means of "*programme circuits*", account has been taken of the elements of net cost established by the C.C.I.F., as the result of several studies, the last as recently as 1955. These elements of net cost are given in the following Table.

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(b) for the part of the programme transmission in the period of light traffic:

- one half ( $\frac{1}{2}$ ) of the charge appropriate to ordinary calls during the period of heavy traffic, for a transmission the duration of which (during the period of light traffic) is at least one hour;
- three-fifths ( $\frac{3}{5}$ ) of the charge appropriate to ordinary calls during the period of heavy traffic, in other cases.

Legal time in the country receiving the programme transmission will be used in order to determine the period of heavy traffic or the period of light traffic.

\* or Recognized Private Operating Agency(ies).

## BASES FOR THE CALCULATION OF CHARGES APPLICABLE TO PROGRAMME CIRCUITS

		Old type circuit (effective bandwidth transmitted: at least 50 to 6400 c/s) (Note 1)	Normal type circuit (effective bandwidth transmitted: at least 50 to 10 000 c/s)
Charges for 3 minutes of programme transmission	per 100 km (crow-flight) of circuit (Notes 2 and 3)	0.75 gold fr.	0.75 gold fr.
	for each international terminal exchange (at the extremities of the connection)	0.75 gold fr.	2.40 gold fr.
Fixed surcharge, independent of the duration of the programme transmission.		Equal to the charge for 8 minutes of <i>programme transmission</i> , in the <i>relation</i> in question and by the <i>circuit</i> in question.	
If, for their own purposes, Administrations * wish to apply tariffs lower than those based on the above standards, this may be done by special agreement.			

Reserve circuits are not normally necessary, but if the broadcasting organizations deem it necessary to have at their disposal such circuits for a given international broadcast relay, they should be charged for at the same rates as would have been applied had they actually been used for the relay in question and for its full duration.

*Note 1.* — If a programme circuit includes even one section only of old type circuit, the transmission in question is charged for at the tariff applicable to old type circuits; but it is recommended that an international connection for a programme transmission should not be set up with one single section of old type circuit in an otherwise complete chain of normal type circuits, since the Administration \* which furnishes the section of old type circuit occasions a considerable loss to the other Administrations \* participating in the international connection.

*Note 2.* — The part of the charge relating to the line is calculated, by each country taking part in the international programme transmission, on the basis of crowflight distance:

- for the terminal countries, between the extremity of the circuit and the point of entry into (or exit from) national territory,
- for a transit country, between the points of entry into, and exit from, national territory.

*Note 3.* — In applying the above tariff, any residual distance of less than 50 km may be rounded up to a maximum of 50 km and any residual between 50 km and 100 km may be rounded up to a maximum of 100 km. Moreover, Administrations \* should examine the possibility of having

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\* or Recognized Private Operating Agency(ies).

the smallest possible number of charging zones for each country, so as to obviate difficulties and anomalies in fixing charges applicable to international programme transmissions.

*Note 4.* — The part of the charge relating to the international exchange does not take into account any trunk circuits which may be provided between:

- the international exchange, on the one hand, and
- the transmitting microphone at the receiving broadcasting station, on the other.

### 3.3. *Charge applicable when an ordinary international telephone circuit is used for a programme transmission*

In the exceptional case in which a programme transmission takes place over ordinary international telephone circuits, the “rates for ordinary calls” will apply, together with a surcharge corresponding to 8 minutes of ordinary telephone conversation in the charging period (period of heavy or light traffic) in which the programme transmission begins\*.

### 3.4. *Charge to be applied when the circuit for a programme transmission is of mixed setting-up*

When a programme transmission takes place over a circuit made up partly of an “international programme circuit” and partly of an “ordinary international telephone circuit”, the whole circuit is charged for on the basis of the *tariff for ordinary telephone calls in the period of heavy traffic* and the surcharge is equal to the charge applicable to 8 minutes of ordinary conversation during the period of heavy telephone traffic.

### 3.5. *Charge to be applied in the case of multiple broadcast transmissions*

If the transmission is intercepted, at intermediate centres, by other broadcasting stations, the programme transmission is, from the point of view of the charge, considered as several distinct calls: the one between the origin and the first intermediate broadcasting station; the others between the consecutive broadcasting stations or between a distribution point and an intermediate broadcasting station, or between the last intermediate broadcasting station (or the last distribution point) and the terminal broadcasting station.

### 3.6. *Charges in the case of programme transmissions over circuits with special itineraries*

3.6.1. Where a broadcasting organization considers the quality of transmission to be unsatisfactory on a direct programme circuit and requests the use of an indirect circuit made up of programme circuits passing through countries other than those through which the direct programme transmission circuit passes, the charge applicable is based on the sum of the programme transmission charges in respect of each of the circuits interconnected.

3.6.2. If two broadcasting organizations have not been able to modify their programme schedules by mutual agreement, and if both ask for the use of a

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\* See the note at the foot of pages 80 and 81.

direct programme circuit at the same time, the second organization to make its application will use a specially composed indirect link formed by interconnection of programme circuits and will pay a charge based on the sum of the programme transmission charges payable for each of the interconnected circuits.

- 3.6.3. If a complete breakdown or a serious interruption occurs on a direct programme transmission circuit at the time arranged for the transmission, and if an indirect circuit passing through countries other than those through which the direct circuit passes has been set up for handling this transmission, the broadcasting organization shall nevertheless pay the same total charge as if the direct circuit had been used; this total charge is divided among all the countries traversed by the indirect circuit in the manner indicated in Recommendation E.68.

*Note.* — The list of normal and emergency routes to be used for programme transmissions, in international relations between European countries and African and Asiatic countries bordering on the Mediterranean Sea was specified by the “ Study Group for the general switching plan in Europe and in the Mediterranean Basin ” at its meeting in Firenze, October 1951. When the list was prepared, the principle was adopted that normal and emergency routes for programme transmissions should follow the same routes as normal and emergency routes used for passing international telephone traffic in Europe and the Mediterranean Basin.

- 3.6.4. Where the broadcasting organizations request control circuits following the same route as the indirect programme transmission circuits mentioned above, the charge applied for the use of these control circuits is calculated on the same basis as the charge for indirect programme transmission circuits.

### 3.7. *Determination of the chargeable duration: beginning and end of a transmission*

- 3.7.1. Personnel responsible for the supervision of and charging for international programme transmissions in the European system should act in accordance with the “ Instructions for personnel responsible for the supervision of and charging for programme transmissions in the European system ” published by the C.C.I.F.

- 3.7.2. The supervision of an international programme transmission is generally effected by the terminal repeater stations of the programme circuit concerned.

It is possible that the equipment at the international telephone centres will permit the operating personnel, already responsible for fixing the chargeable duration of ordinary telephone calls, to be entrusted with the task of determining the chargeable duration of a programme transmission and in that case this chargeable duration should be fixed with the same precision as for a telephone call.

Where the equipment of the telephone centres in question does not permit this procedure, the technical officers of the terminal repeater stations should come to an arrangement between themselves for fixing accurately at the end of the programme transmission:

- (a) the time at which the circuit was placed at the disposal of the broadcasting organization (beginning of the chargeable duration);
- (b) the time at which the circuit was released by the broadcasting organization (end of chargeable duration);
- (c) when necessary, the time and duration of any interruption or incident which may have occurred (in order to determine the rebate).

3.7.3. The time at the beginning and end of the chargeable duration, as well as the time of occurrence and duration of any breakdowns which may occur, are entered on a daily report conforming to the specimen reproduced in the annex below. This daily report is sent on the same day to the office responsible for co-ordinating all the details necessary for the establishment of the international accounts. In addition, the details relative to interruptions are noted on the report sent periodically to the technical services concerned.

When the officials at the two terminals of a circuit have agreed on the chargeable duration of a programme transmission, the official at the terminal station nearest the broadcasting organization which has to pay for the use of the circuit concerned, should notify that organization of the number of chargeable minutes.

### 3.8. *Rebates in the case of faulty transmissions*

If a fault or interruption, even of short duration, occurs during the course of a programme transmission, it is necessary to consider whether this fault or interruption has, depending upon the nature of the programme relayed (play, talk, high-quality music, etc.), rendered the remainder of the broadcast difficult for the listeners to understand or has reduced considerably the pleasure given to the people listening to high-quality music. It is necessary therefore to make a special examination each time in order to determine the corresponding rebate, which should take account of the trouble actually caused (by any incidents which may occur) to the broadcasting organization which receives the transmissions. It is for the Administration \* of the country in which the controlling station is situated (this is generally the terminal station nearest the broadcasting organization which receives the transmission) to assess the reduction to be made, and the opinion of this Administration \* should prevail over the opinion of the other Administrations \* involved in the international programme transmission. It goes without saying that such a reduction should be applied only if the interruption or incident has been caused through service deficiencies or a case of force majeure (see, in particular, the remarks made above under 1.1. and 2.2.3.).

### 3.9. *Levying of charges*

The charges and surcharge for the use of a circuit are levied on the broadcasting organization (State or private) which undertook to pay for the use of the circuit in question; they are due for the full period during which the circuit has been put at the disposal of that broadcasting organization, before the transmission proper.

The charges and surcharge for the use of a circuit are always indivisible and should be paid in their entirety by one broadcasting organization.

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\* or Recognized Private Operating Agency(ies).

### 3.10. *Sharing of the total charge between Administrations \**

- 3.10.1. When an international programme connection is constituted entirely of circuits of one type (old type or normal type) the share due to each Administration \* furnishing a circuit is equal to the charge fixed for the use of that circuit.
- 3.10.2. Provisionally, a section of "normal type circuit" incorporated in a chain of mixed circuits is treated as an "old type circuit". When such a mixed chain is used, the total charge is divided as though all the circuits in question were of old type.
- 3.10.3. When an international connection includes programme transmission circuits and ordinary telephone circuits, "hypothetical charges" are calculated on the following basis, to determine the sharing of the total charge for the programme transmission, failing agreement to the contrary between the Administrations \* concerned:
  - on the basis of the charge for ordinary calls (during the charging period in question) for the countries which provide a section including one, or more, ordinary telephone circuits;
  - on the basis of the charge for old type programme circuits for the countries which provide programme circuits (old type or normal type) throughout the entire section within their territories.The total charge is divided in proportion to these hypothetical charges.

### 3.11. *Accounting*

- 3.11.1. The office responsible for co-ordinating all the details necessary for accounting for international programme transmissions should:
  - (a) assemble all the information in respect of the international programme transmissions supplied either by the co-ordination service of its own country, or by the repeater stations (daily reports) and check this information by comparing the various particulars;
  - (b) undertake the collection of the charge from the broadcasting organization of its own country;
  - (c) enter the international programme transmission in the monthly statement which will permit the subsequent sharing of the charge;
  - (d) send these statements every month to the accounting service responsible for actually dividing the charge between the different countries concerned.
- 3.11.2. The monthly telephone accounts exchanged between the telecommunication Administrations \* include a spécial column for international pro-

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\* or Recognized Private Operating Agencies.

# SPECIMEN OF DAILY REPORT

International Programme Transmissions completed on.....

## London Exchange

Subject of the programme transmission	Circuits or sections of circuits used for the transmission		Type of circuits used		Time at which circuit was		Duration not counted (faults, interruptions, etc.)	Number of		Unit charge	Amount of charge	Name of Broadcasting Organization which should pay the charge or the telephone Administration *** which should collect it
	from	to **			put at disposal of Broadcasting Organization	released by Broadcasting Organization		chargeable minutes	chargeable units			
Concert from London broadcast by Bruxelles, Berlin, København (see following diagram) *	London	Bruxelles										
* In the case of a multiple relay using a number of circuits simultaneously, it would be advantageous to attach to the daily sheet a diagram of the multiple relay. ** The receiving broadcast stations are underlined. *** or Recognized Private Operating Agency.												

PROGRAMME TRANSMISSIONS



gramme transmissions and in this special column distinction is made between programme transmissions:

- (a) over ordinary telephone circuits,
- (b) over programme circuits (old type),
- (c) over programme circuits (normal type).

The use of control should also be indicated.

#### SECTION IV. — LEASE TO BROADCASTING ORGANIZATIONS OF INTERNATIONAL CIRCUITS FOR PROGRAMME TRANSMISSIONS

The C.C.I.T.T.,

##### CONSIDERING

that the conditions of lease of circuits for programme transmissions ought to be identical with those already fixed for the lease of ordinary telephone circuits, and that to do so will also avoid any difficulty when the lease of a programme circuit is accompanied by the lease of a corresponding control circuit;

##### UNANIMOUSLY RECOMMENDS

that Administrations \* should be guided by the following principles when leasing international programme circuits.

##### 4.1. *Conditions of acceptance*

- 4.1.1. An international programme circuit will be leased only if spare ones exist in the relation in question.
- 4.1.2. Under no circumstances may the circuit be made available to third parties.
- 4.1.3. In principle, a lease should be for an initial period of one month; nevertheless, leases for periods shorter than one month may be arranged by agreement between the Administrations \* concerned. Leases continue, after the initial period, month by month, until terminated by one party or the other by at least two weeks notice expiring at the end of a monthly period of lease.
- 4.1.4. Administrations \* reserve in full the right to take back for their own use a leased international programme circuit, if the exigencies of the general service so demand.
- 4.1.5. Rental is payable monthly in advance.
- 4.1.6. If an interruption occurs for which the telephone service is responsible, the originating Administration \* makes a rebate if requested to do so by the lessee. The rebate is determined on the basis indicated in Part 4.2. (Charging) below.

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\* or Recognized Private Operating Agency(ies).

## 4.2. Charging

- 4.2.1. The charge for the lease of an international programme circuit should correspond to that for 6000 minutes of use of the programme circuit in question per month.
- 4.2.2. The charge for leases for periods of 10 days or less should be that corresponding to 240 minutes use for each day of lease of the programme circuit in question, together with a surcharge corresponding to 30 minutes of use of the programme circuit in question, no matter what the actual period of lease is.
- 4.2.3. The charge for leases exceeding 10 days but not exceeding 25 days should be that corresponding to 240 minutes of use of the programme circuit in question, per day of lease, without surcharge (thus for 11 days lease the charge is equal to that for  $240 \times 11 = 2640$  minutes).
- 4.2.4. If a lease is extended beyond the 25th day so as to last one month, the charge should be that for 6000 minutes of use of the programme circuit in question.
- 4.2.5. If a lease is for a period exceeding one month, the charge for the first month should be that indicated above, and the charge for each additional day should be that corresponding to 200 minutes of use of the programme circuit in question.
- 4.2.6. If an interruption occurs for which the telephone service is responsible, a rebate should be granted only if the international programme circuit has been completely interrupted for a continuous period of 3 hours or more. The maximum rebate allowable should not exceed one or other of the two following limits:
  - 40 minutes' use of the circuit for each continuous 3-hour period of interruption duration,
  - 200 minutes' use per day for a continuous interruption of 24 hours in the case of leases of over 25 days (240 minutes' use per day or per continuous 24-hour interruption in the case of leases of 25 days or less).
- 4.2.7. Several methods may be used in collecting and accounting for the total amounts due in respect of a lease. In particular one or other of the following two methods might be used:
  - (a) The Administration\* of the country in which the ordering broadcasting organization is situated collects the full rental and makes the appropriate entries in the international accounts.
  - (b) The Administration\* of one of the terminal countries collects from the broadcasting organization in its country, in national currency, the share of the rental for the circuit on its territory; the Administration\* of the other country collects the balance of rental due and, when appropriate, makes any necessary payments to transit countries.

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\* or Recognized Private Operating Agency.

## ANNEX

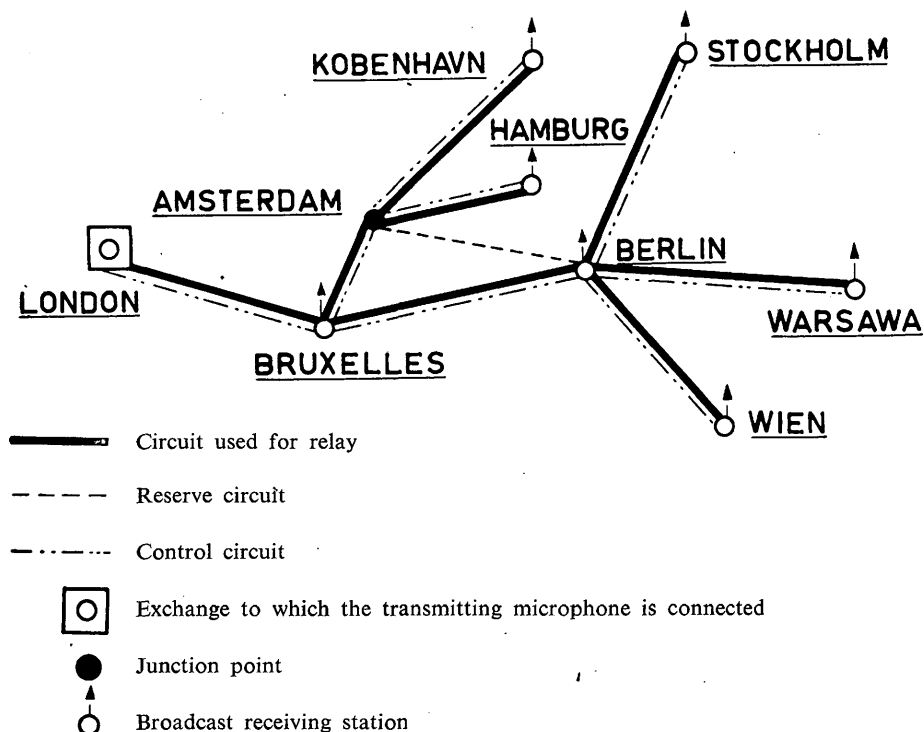
**Example of a multiple relay of a programme transmission**

In the following diagram, it is assumed that the broadcasting organization in Bruxelles which broadcasts the transmission coming from London, pays the charge for the Bruxelles-London circuit; that the broadcasting organization in Berlin pays the charge for the Berlin-Bruxelles circuit, while the broadcasting organizations in Stockholm, Warszawa and Wien pay for the Berlin-Stockholm, Berlin-Warszawa and Berlin-Wien circuits respectively.

As Amsterdam is not broadcasting the transmission, the broadcasting organizations in Hamburg and København should arrange in advance which organization will pay the charge for the Bruxelles-Amsterdam circuit.

If, for example, the broadcasting organization in Hamburg agrees to pay the charge for the Bruxelles-Amsterdam section, because Amsterdam is not broadcasting the transmission, the charges to be collected in Hamburg and in København respectively should be based on a transmission from Bruxelles to Hamburg and a separate transmission from Amsterdam to København.

Similarly, prior agreement between the broadcasting organizations concerned is necessary as regards payment for the control circuits and, if necessary, for the reserve circuits.



Circuits	Circuit ordered by (i.e. broadcasting organization to pay for circuit used)	Special repeater station which should be notified if any fault occurs on the circuit
London-Bruxelles . . . . .	Bruxelles	
Bruxelles-Amsterdam . . . . .	The Broadcasting Organizations of Hamburg and København should arrange beforehand which is to pay for the Bruxelles- Amsterdam circuit.	
Amsterdam-København . . . . .	København	
Amsterdam-Hamburg . . . . .	Hamburg	
Bruxelles-Berlin . . . . .	Berlin	
Amsterdam-Berlin (reserve) . . .	The Broadcasting Organizations concerned should decide which one of them will pay for the re- serve circuit Amsterdam-Berlin.	
Berlin-Stockholm . . . . .	Stockholm	
Berlin-Warszawa . . . . .	Warszawa	
Berlin-Wien . . . . .	Wien	
London-Berlin (control) . . . . .	Berlin	

## RECOMMENDATION E.58

### INTERNATIONAL TELEVISION TRANSMISSIONS

The C.C.I.T.T.,

#### CONSIDERING

that, in the present state of development of the television network in Europe, the national circuits which are used for the transmission of international television programmes are owned in most cases by the Administrations \*, but in others by the national television organizations;

that the television circuits may also be used for both national and international transmissions;

that, on the contrary, the international programme circuits and telephone circuits associated with the television circuits, either for the transmission of the sound part of

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\* or Recognized Private Operating Agencies.

the programme or for control purposes, are owned by the Telecommunication Administrations \* and are more liberally used than the vision circuits, and that the number of such circuits used in connection with a given television transmission may be substantial;

that, moreover, the extension of a sufficient number of such circuits to the point of origin of a transmission, remote from the international telephone terminal in the country of origin of the programme, may require special construction to be undertaken, particularly when there is also national television transmission of the event or a simultaneous national or international sound broadcast transmission of the event;

that it is desirable in certain respects to distinguish between international television transmissions used by a single country only and those in which two or more countries participate;

that it is desirable to ensure that satisfactory arrangements are made for the preparation, setting-up, preliminary adjustment and operation of the complex network of television circuits, programme circuits and control circuits necessary for a given television transmission;

and hence that the closest co-operation is necessary between:

- the television organizations concerned in a television transmission, either as users or as owners of television links or both,
- and the Telecommunication Administration \* concerned;

CONSIDERING, MOREOVER,

that the television organizations may agree to appoint a co-ordinating centre for a given international television transmission \*\*,

UNANIMOUSLY RECOMMENDS

that the following conditions should be observed for international television transmissions:

## SECTION I. — GENERAL AND DEFINITIONS

### 1.1. *Constitution of an international television link*

1.1.1. In considering an international television transmission, it is necessary to distinguish between (see Figure 1):

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\* or Recognized Private Operating Agency(ies).

\*\* The purpose of this centre is to:

- co-ordinate the requirements of the television organizations participating in the transmission in question,
- make all necessary enquiries as to the availability of television circuits,
- draw up the plan of the network of telephone circuits, programme circuits and television circuits, required for the transmission in question,
- ensure that the programme transmission proceeds normally once the television circuits are handed over to the television organization for the relay in question.

- (a) the point to be regarded as that of the origin of the television transmission (Point A). This point is either the actual place of origin of the programme (a studio or an outside broadcast point) or a television modulation centre or the location of a standards' converter;
- (b) the outgoing local end which connects point A to the first repeater station (Point B);
- (c) the *international* (long-distance) *television line* (line BC) which, in principle, consists of a chain national and international television transmission circuits, in which the national circuits are of the same quality as international circuits;
- (d) the incoming local end which connects the last repeater station (Point C) to point D;
- (e) point D, the point of destination of the television transmission. This point may be a television centre, a television transmitting station, a television modulation centre, or the location of a standards' converter.

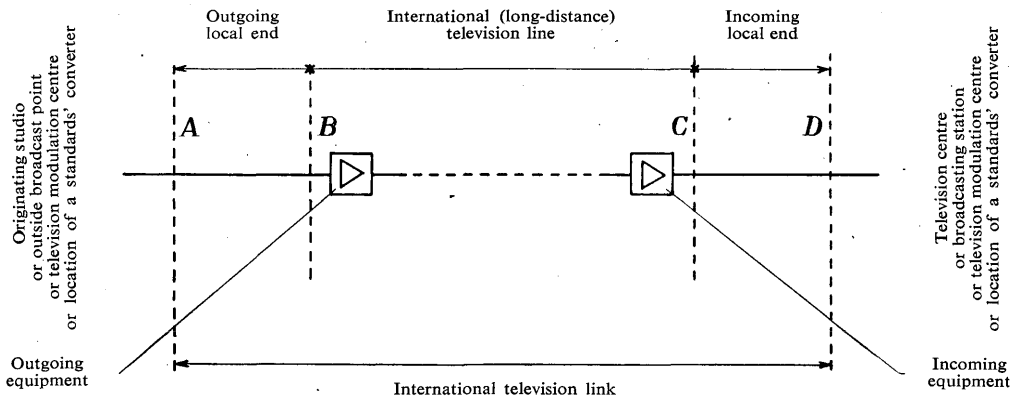


FIGURE 1. — *Diagram of an international television link*

1.1.2. The complete line between A and D, including the international (long-distance) television line BC and the local ends (AB and CD) is the *international television link*.

1.1.3. Points A and D are, as a general rule, under the control of the originating and receiving television organizations\*.

Points B and C are, in principle, under the control of the Telecommunication Administrations\*\* of the corresponding countries.

In certain cases the exact location of point B and C may not be clearly evident. In such cases the point to be regarded as the end of the long-distance line for a particular television transmission should be fixed by agreement

\* If a Telecommunication Administration takes responsibility for a standards' converter, or for a television modulation centre or for a television broadcasting station, it is to be treated as a television organization for the purpose of this Recommendation.

\*\* or Recognized Private Operating Agencies.

between the Telecommunication Administrations\* and the television organizations concerned.

The international (long-distance) television line BC is, in practically every case, under the control of the Administrations\*, but certain of its component parts (which may be national or international circuits) may be owned by television organizations.

The local ends may be under the control either of a Telecommunication Administration\* or of a television organization, or of both jointly, according to the actual arrangements in the countries concerned.

*Note.* — The term *long-distance line* is used here in a very general sense, applying equally to metallic lines (in cables or wave guides) and to radio relay links.

## 1.2. Categories into which television transmissions may fall

Distinction is made between the following categories of television transmissions:

- 1.2.1. Regular television transmissions (*transmissions télévisuelles périodiques*), which are ordered once for all because they take place at regular intervals, at fixed times, over the same routes and always between the same points.
- 1.2.2. Occasional television transmissions (*transmissions télévisuelles occasionnelles*), being all those which do not fall within the definition of regular transmissions.
- 1.2.3. Simple television transmissions, (*transmissions télévisuelles simples*), which are transmissions between points in two different countries, the programme being originated in one country and broadcast either in the other only, or in both.
- 1.2.4. Duplex simple television transmissions, being transmissions between points in two different countries, the programme being originated at the same time in both countries and broadcast in both. So far as this Recommendation is concerned, these transmissions are treated as two separate simple television transmissions.
- 1.2.5. Multiple television transmissions, with only one point of origin for the programme (*transmissions télévisuelles multiples, avec un seul point de captation d'images*), being transmissions in which a programme originates in one country and is transmitted simultaneously to two or more other countries (in addition, as may be, to being broadcast in the country of origin).
- 1.2.6. Multiple television transmissions with several points of programme origination, in which the programme originates from different points either in one country or in different countries and is broadcast in two or more other countries (in addition, as may be, to being broadcast in the country of origin).

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\* or Recognized Private Operating Agency(ies).

### 1.3. *Circuits used in a television transmission*

The following different classes of circuit are used in each international television transmission:

- (a) *Television circuit.* — A circuit, either in a cable or a radio relay link, which transmits the vision signal from one point to another.
- (b) *Programme circuit.* — A special circuit for the transmission of the sound component of the television programme as dealt with in C.C.I.T.T. Recommendation E.57.
- (c) *Control circuit.* — As defined in C.C.I.T.T. Recommendation E.57.

*Note.* — The Informatory Note at the end of this Recommendation indicates the different ways in which programme circuits and control circuits can be used by television organizations.

### 1.4. *Testing period and preparatory period*

Distinction is made, for each international television transmission, between:

- (a) the *testing period* during which the Telecommunication Administrations\* carry out the adjustment of the international television line before handing it over to the television organizations;
- (b) the *preparatory period* during which the television organizations carry out their own adjustments, tests and various operations before proceeding to the actual television transmission;
- (c) the *television transmission* itself.

## SECTION II. — CONDITIONS OF ACCEPTANCE

- 2.1. Requests for the use of circuits for television transmissions must be addressed by the television organization or organizations, to which the point or points for which the programme is destined belong (broadcasting station or studio of a television organization) to the controlling service of its (or their) country (or countries), this controlling service being the same as that designated for programme transmissions.

Requests for the use of circuits for television transmissions (television circuits, programme circuits, and control circuits) must be made as soon as possible, and in any case at least 4 working days before the transmission, in order to allow the Telecommunication Administrations\* concerned to take the necessary steps to organize the television transmission in question. Each request for circuits for a television transmission must be accompanied by an undertaking to pay the charges relating to the use of the circuits, as well as any special expenses which may be incurred. These requests will be met provided the general telephone service does not suffer and the prevailing conditions allow. If requests have not been made within the 4 working days mentioned, television organizations may not claim

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\* or Recognized Private Operating Agencies.



a reduction in charges for an interruption or any other incident arising on the broadcast or television transmission circuit during the preparatory period or during actual transmission when it has not been possible to adjust and test the circuit with the necessary care, owing to insufficient time being available.

## 2.2. *International transmissions with only one point of destination \**

For each international television transmission with only one point of destination the responsible organization should, after preliminary agreement with the television organization originating the programme, make a request to the controlling service of its country to place at its disposal the necessary:

- television circuits,
- programme circuits,
- control circuits.

However, subject to agreement between the Telecommunication Administrations \*\* concerned and to the receipt of a general notification to that effect by the television organizations concerned:

- in the case of a transmission between adjoining countries, each television organization may order the part of the television line in its own national territory from its own Administration \*\*;
- in the case of a transmission with transit, the same procedure may be followed, but one or other of the television organizations (by prior agreement amongst themselves) should also order from the controlling service of its own Administration \*\* the part of the television line in the transit country.

## 2.3. *Several points of destination of the programme*

### 2.3.1. *General procedure*

For international television transmissions serving programme destination points in several countries, the procedure is as follows:

The television organization which is to originate the programme sends to each of the television organizations concerned (participating organization), a list of the points of destination of the programme; each television organization forwards this list to the controlling service of its own country after having added to it any changes or additions it considers necessary. This list should include particulars of all the circuits required (television circuits, programme circuits and control circuits) and, as appropriate, of any reserve circuits which may be required.

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\* This heading will be considered as covering the case in which there are several effective points of destination for the programme, all depending on the same television authority in a given country (several transmitting stations) fed from one or more junction points in this country. The point of destination of the programme will in this case be the first junction point encountered.

\*\* or Recognized Private Operating Agency(ies).

Unless otherwise agreed upon, the controlling service of the country in which the programme originates is the overall controlling service for the transmission concerned.

This overall controlling service should inform each of the controlling services concerned, at the earliest possible moment, of the circuits to be used, together with particulars of the repeater stations (on cables or on radio relay links) with which the television organizations may communicate, if any unforeseen incident, which must be dealt with urgently, arises during transmission.

As soon as each television organization responsible for one or more points of destination of the programme receives the necessary information about the circuits for the use of which it will have to pay, it should send *without delay* to the controlling service of its own country a request for the use of these circuits.

To facilitate this procedure, it is desirable that the television organizations should study in advance the cases of multiple transmissions which are likely to occur frequently.

### 2.3.2. *Procedure to be followed when there is a co-ordinating centre*

When the television organizations agree to set up a co-ordinating centre for a given television transmission, the procedure should be as follows:

The co-ordinating centre, set up by the television organizations concerned, first finds out which television organizations intend to participate in the transmission. The centre then finds out, by enquiry of the Telecommunication Administrations \* and of the television organizations concerned whether the circuits required for the transmission are likely to be available on the date and at the time required. After having established all the details of the circuits to be ordered by each participating organization, the co-ordinating centre publishes and distributes, as early as possible, and at least 14 days before the date of the transmission, to all the television organizations and controlling services concerned, a complete schedule of circuit requirements for the transmission.

During this phase of exchange of information, the television organizations are not placed under any obligations to pay for any expenses incurred, but the Telecommunication Administrations \* are under no obligation to put in hand any of the special work which may be necessary when orders are received.

### 2.3.3. *Television circuits*

At least 4 working days before the date of the transmission, each participating television organization should forward to the controlling service of its country a request for the use of the television circuits for which it will have to pay.

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\* or Recognized Private Operating Agencies.

Any television transmission circuits required for use by one participating television organization only should be ordered by that organization from its national controlling service.

Television transmission circuits which are required for the use of more than one participating television organization are ordered as follows:

Each of the television organizations concerned orders from its own controlling service the section of the international line(s) between:

- the point on the international (long-distance) television line serving its participating broadcasting station which is furthest “downstream”, and
- the point “upstream” on the line serving the last participating station in the preceding participating country.

The participating country nearest to the country of origin orders the remaining section from the controlling service of the country of origin.

Where a bifurcation of the international television line occurs in a given transmission, the television organizations jointly served by the section of circuit prior to the point of bifurcation should agree amongst themselves which should order that section; in such a case, therefore, one television organization should order the section between its participating station and the nearest participating station “upstream” in the preceding participating country, and each of the other television organizations should order the section between its participating station and the point of bifurcation.

When, by prior general notice to the controlling service of its country, a television organization which owns an international television circuit has announced its intention to charge for the use of the circuit for international transmissions, the Telecommunication Administration \* receiving an order collects the appropriate charges and enters them in the international accounts. The creditor Administration \* makes an appropriate settlement with the television organization which owns the circuit.

#### 2.3.4. *Programme circuits*

Requests for programme circuits should be made in accordance with the procedure set out in C.C.I.T.T. Recommendation E.57.

#### 2.3.5. *Control circuits*

Control circuits should be ordered according to the same principles as for the television circuits and programme circuits with which they are associated.

As regards the number and setting-up of the control circuits to be provided, the following directives should be observed :

##### 2.3.5.1. *Control circuits associated with television circuits*

- 2.3.5.1.1. *Simple television transmissions.* — At least one control circuit must be provided between points A and D of

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\* or Recognized Private Operating Agency.

Figure 1 for a simple television transmission, whether occasional or regular.

2.3.5.1.2. *Multiple television transmissions*

(a) Multiple television transmissions in which there is only one point of origin: if the first point of bifurcation of the television circuits feeds a television transmitting station (or a switching centre or a telerecording centre) in the same town and participating in the multiple transmission, it is recommended that control circuits should be provided at least:

- between the point of origin of the pictures and the first point of bifurcation of the television transmission circuits,
- between this first point of bifurcation and the various television transmitting stations (or switching centres or telerecording centres).

Where this is not the case, it is recommended that control circuits should be provided, as far as possible, between the point of origin of the picture on the one hand and the various television transmitting stations (or switching centres or telerecording centres) on the other.

In the two cases described above these control circuits should be prescribed not only during the preparatory period but also during the whole programme transmission.

(b) Multiple television transmissions with several points of origin: a preliminary study should be made between the television organizations and the Telecommunication Administrations \* concerned in order to determine what control lines are necessary.

2.3.5.2. *Control circuits associated with programme circuits*

The rules given in C.C.I.T.T. Recommendation E.57 are applicable.

2.3.5.3. *Note 1.* — In cases where a co-ordinating centre exists for the international exchange of television programmes, this centre having been set up by agreement between the various television organizations concerned, the requirements for control circuits terminating at this centre are determined by agreement between the television organizations and the Telecommunication Administrations \*.

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\* or Recognized Private Operating Agencies.

2.3.5.4. *Note 2.* — If the television organizations elect to dispense with:

- the control circuits, which normally must be associated with programme circuits,
- or with the control circuits which normally must be associated with television circuits,

these organizations shall not be entitled to claim any reduction of charge on account of any fault or interruption occurring on the programme or television circuits either during the preparatory period or during the transmission of the programme proper, if such fault or interruption could not be quickly remedied because of the absence of the control circuits.

### SECTION III. — CHARGING

#### 3.1. The C.C.I.T.T.,

##### CONSIDERING

that the programme circuits and telephone circuits, used in connection with international transmissions of television programmes, are circuits which can also be used by users other than the television organizations;

##### UNANIMOUSLY RECOMMENDS

that the use of such circuits in connection with the transmission of television programmes should be charged for as follows:

1. Programme circuits:
  - in accordance with the rules set out in C.C.I.T.T. Recommendation E.57, subject to what follows herein as to rebates for faults and interruptions.
2. Control circuits:
  - as for the use of ordinary telephone circuits, that is, without surcharge.

\* \* \*

#### 3.2. The C.C.I.T.T.,

##### CONSIDERING

that the provision of television circuits for international television transmissions involves the Telecommunication Administrations \* in the construction of special and costly plant set aside for the purpose;

that the studies of net costs of international television circuits carried out in 1955/1956, took into account the costs of lines and of terminal stations;

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\* or Recognized Private Operating Agencies.

that the costs of television lines on radio relay links and in coaxial cables are sufficiently close to enable one amount to be used for either type of circuit;

that the amounts of net cost resulting from the studies in 1955/1956 were based on the hypothesis of an average use of international television circuits corresponding to an exchange of programmes (in both directions of transmission) between the two centres served by a circuit, of 500 hours per annum;

that this hypothetical duration of use is very much greater than the use actually made of television circuits in 1956 (almost double);

that, nevertheless, it is desired to give the maximum encouragement to the development of international television exchanges by keeping the charges for them as low as possible;

#### UNANIMOUSLY RECOMMENDS

that the use of international television circuits should be subject to the charging rules which follow;

that the charge for 3 minutes' use of an international television circuit, given below (being a charge somewhat less than the net cost on the basis of 500 hours' use per annum), could be revised when the use of television circuits increases substantially above an average of 600 hours' use per annum for programme exchanges in both directions of transmission between two centres.

#### CHARGING RULES

The use of international television circuits is subject to a charge and a surcharge.

- 3.2.1. The *charge* for each 3 minutes of use of such a circuit is 20 gold francs per 100 km of television line (crowflight) \*. For each minute, or fraction of a minute, after the first 3 minutes of use, the charge is one third of the above charge.

In determining the distances, the *international television circuit itself* only should be taken into account, any extension of the circuit which may be necessary in setting up an international television link being excluded. The distances should be taken as:

- in the case of the *terminal charge*, the crowflight distance between the point of origin fixed for the circuit \*\* and the point where the circuit crosses the frontier. (In order to take better account of the cost actually incurred with a radio relay link, the point *midway* between the two stations on either side of the frontier may be used, instead of the actual point of crossing of the section of the link straddling the frontier);

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\* This figure takes into account the costs relating to two terminal stations.

\*\* The Administrations or Recognized Private Operating Agencies concerned should fix by mutual agreement the points at which each international television circuit begins and ends.

- in the case of the *transit charge*, the crowflight distance between the points of crossing the frontier by the international circuit. (As in the case of the terminal charge, the point of crossing the frontier by a radio relay link can be taken as the mid-point between the two stations situated on either side of the frontier.)

Crowflight distances should be rounded up as follows:

- each fraction less than 50 km is rounded up to 50 km maximum,
- each fraction between 50 and 100 km is rounded up to 100 km maximum.

When the actual route of an international circuit is very much greater than the crowflight distance as defined above, the country concerned may increase the charge (terminal or transit) which it makes, by an appropriate factor.

- 3.2.2. A *surcharge* is collected for each television transmission corresponding to 30 minutes' use of each television circuit actually used in the transmission in question. The surcharge is made to take account of the costs incurred in setting up, testing and regulating the international television link, as well as of the supplementary expenses for personnel and material arising from the exchange of telegraph and telephone orders for the preparation, setting up and testing of the link. This surcharge is shared between the Telecommunication Administrations \* concerned on the same basis as the charge for the television transmission itself.

The surcharge is due if, for reasons not within the responsibility of the Telecommunication Administrations \*, the television organization which ordered the circuit requests the controlling service from which it ordered the circuit to cancel the television transmission in question at less than 12 hours notice before the transmission is due to start.

The surcharge is not payable if the television transmission does not take place for reasons within the control of the Telecommunication Administrations \*.

- 3.2.3. In addition, any *special expenses* which may be incurred by a Telecommunication Administration \* in extending international television circuits from the international terminal, are also payable.

### 3.3. *Calculation of charges*

- 3.3.1. The charges (charge and surcharge) relative to the use of the television circuits in a transmission are debited to the television organizations according to their undertaking to pay for the circuits in question on ordering them. They are due for the whole period during which the international telephone line is placed at the disposal of the television organizations concerned; the period of preparation before the start of the transmission proper is included in the period.

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\* or Recognized Private Operating Agency(ies).

- 3.3.2. The supervision of an international television transmission is effected by a repeater station designated by the Telecommunication Administration \*. When a television circuit is owned by a television organization, this station is designated by that organization.

The technical officers of the designated repeater stations should come to an arrangement between themselves so as accurately to fix at the end of the television transmission:

- (a) the time of handing over the television line to the television organization (beginning of chargeable duration);
- (b) the time at which the television line is released by the television organization (end of chargeable duration);
- (c) where appropriate, the times and durations of every interruption or incident which may have occurred (in order to determine whether a rebate is due, and if so, its amount).

The times of the beginning and of the end of the chargeable duration, as well as the time of occurrence and duration of any breakdowns which may occur, are entered on a daily report.

This daily report is sent on the same day to the service responsible for co-ordinating all the details necessary for the establishment of the international accounts.

- 3.3.3. The amount of any special expenses incurred by the Telecommunication Administration \* in the country of origin of the programme should be notified by that Administration \* by telegram to the controlling service of the participating television organization which has ordered the long-distance line or the local ends. The controlling service concerned should inform the television organization of its country of the amount of special expenses payable and should pass the appropriate credits to the Telecommunication Administration \* of the country of origin of the programme through the international accounts.

3.3.4. *Interruptions. — Rebates*

If during the course of an international television transmission a fault or interruption, even of short duration, occurs:

- whether on the television link as a whole,
- or in a section of that link,
- or on one or more of the programme circuits associated with the television transmission circuits,

it is necessary to consider to what extent the value of the relay has been reduced for the television organization or organizations affected by the fault or interruption.

Telecommunication Administrations \* should adopt, provisionally, the following principles in dealing with faults or interruptions.

In general, if a television organization continues to broadcast or to record the transmission received either over the television line or over a programme circuit, the charges in respect of all circuits of which it makes

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\* or Recognized Private Operating Agency(ies).



use remain payable in full. If, however, as a result of a fault or interruption on the television circuit, broadcast of the relay is necessarily discontinued by one or more participating television organizations, a rebate in respect of any sections of the television and programme circuits which served that television organization (or those television organizations) exclusively may be allowed on request from the organization(s). Any sections of international television and programme lines used by any television station which continues to broadcast the received transmission remain payable in full. Similarly, if in such circumstances broadcasting of either the television or the sound programme (but not both) is necessarily discontinued by a participating television organization, a rebate in respect of the sections of either the international television lines, or of the programme circuits concerned (but not both) may be made on a request being received.

It will be for the Telecommunication Administration \* of the country of the receiving television organization to assess the validity of any claim for rebate, and to assess the rebate to be made, where necessary, in consultation with the other Telecommunication Administrations \* concerned. In the event of disagreement, the opinion of the former Administration \* should prevail over that of the other Administrations \* concerned. It goes without saying that such a reduction should be applied only if the interruption or incident has been caused through service deficiencies or a case of force majeure (see, in particular, the remarks under 2.1. and 2.3.5.4.).

## ANNEX

### INFORMATORY NOTE

**Extract from the list of terms adopted by the European Broadcasting Union (E.B.U.)  
for international television transmissions**

#### 1. *Vision circuit*

A cable or radio link which carries the vision signal from one point to another.

#### 2. *Sound circuit*

A circuit, preferably of music quality, which carries the programme sound, or a component part of this, from one point to another.

Special cases of such circuits are:

- 2.1 *Effects circuit* — a circuit carrying exclusively the ambient sounds of a programme;
- 2.2 *Commentary circuit* — a circuit carrying a commentary (without ambient sounds);
- 2.3 *Complete programme circuit* — a circuit carrying mixed effects and commentary.

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\* or Recognized Private Operating Agency(ies).

3. *Control circuit*

A point-to-point speech circuit associated with a vision circuit or with a sound circuit.

Special cases of such circuits are:

- 3.1 *Vision control circuit,*
- 3.2 *Effects control circuit,*
- 3.3 *Commentary control circuit,*
- 3.4 *Complete programme control circuit.*

4. *Guide circuit*

A speech circuit carrying information from the source of the programme for the benefit of commentators who cannot themselves be at the source.

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10. *Types of programmes*

- 10.1 *Unilateral programme* — a programme, not broadcast in the country of origin, which is fed to one or more other countries, for broadcasting or recording.
- 10.2 *Bilateral programme* — a programme, broadcast in the country of origin, which is at the same time fed to another country, for broadcasting or recording.
- 10.3 *Multilateral programme* — a programme, broadcast in the country of origin, which is at the same time fed to two or more countries for broadcasting or recording.

*Note.* — Any programme may consist of contributions taken successively from a number of different countries.

**RECOMMENDATION E.59**

**RATES FOR PHOTOTELEGRAMS AND PRIVATE  
PHOTOTELEGRAPH CALLS \***

- 1. A costing study of phototelegraph calls and phototelegram transmissions was carried out by the C.C.I.T.T. Sub-Group 2/3 in 1958. The results are published in Volume II of the *Red Book* on page 369.
- 2. These results have been taken as a basis for the establishment of rates close to the cost price, assuming that subsequent development of the phototelegraph service would result in better operational conditions and, hence, in reductions in the duration of occupation of telephone circuits.

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\* This text is published also as Recommendation F.83 in series F (Telegraph operation) of the C.C.I.T.T. Recommendations.

3. As phototelegraph apparatus in service may have different cylinder diameters, the dimensions of the phototelegram received may not be the same as the original; they may be reduced or increased in the same ratio. The surface area of the original phototelegram can therefore no longer be taken as a basis for phototelegram charges. It is the duration of the phototelegram transmission which really matters for calculating the duration of occupation of phototelegraph apparatus. This duration depends simply on one of the dimensions, namely the one in the same sense as the axis of the cylinder (so long as the other dimension is not greater than the operational length of the circumference of the cylinder). It is this dimension along the axis of the cylinder which is the *chargeable length*; its influence on charging depends on its relation to the diameter of the cylinder of the outgoing apparatus.
4. By considering normal size to be a picture with a chargeable length twice the diameter of the transmitting drum and whose other dimension would correspond to the circumference of the drum under consideration (e.g. a picture of 13 cm  $\times$  18 cm for a drum of  $D=66$  mm), the variable part of the charge corresponding to the duration of the call (including preparation and handing back of the circuit to the telephone service) would be based on 5  $y$ ,  $y$  being the unit telephone call in the relation under consideration.

In the case of phototelegrams of a chargeable length less or more than twice the diameter  $D$  of the transmitting drum, the variable part of the charge would vary as follows:

for a chargeable length of	charge corresponding to
1.5 $D$	4 $y$
2.5 $D$	6 $y$
3 $D$	7 $y$

5. For the fixed part, 56 gold francs correspond to the cost price. This fixed share should be equally divided between the two terminal Administrations \* in the case of an exchange of phototelegrams between public stations.
6. For phototelegram transmission between a public station and a private station, one half of the fixed part would be collected by the public station as a surcharge for its intervention.
7. With regard to the service between private stations, a surcharge of 4 minutes for the preparation of the call and the handing back of the circuit to the telephone service is justified.
8. The same charging procedure would be applied to service between a private station and a public station; the fixed surcharge for the part played by the public station would be collected on behalf of the public station.
9. Summing up, the rates for phototelegrams and phototelegraph transmissions between private stations, *if based on mean costs*, could be established as follows:

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\* or Recognized Private Operating Agencies.

I. *Phototelegrams exchanged between public stations*

Scale of rates	Chargeable length of phototelegram	Total charge (in gold francs)	
1st step	1.5 D or less	$56+4y$	<i>Note:</i> increased by 1y per step for each extra $\frac{1}{2}$ D
2nd step	over 1.5 D up to 2 D	$56+5y$	
3rd step	over 2 D up to 2.5 D	$56+6y$	
4th step	over 2.5 D up to 3 D	$56+7y$	

II. *Phototelegrams transmitted from a public station to a private station*

Scale of rates	Chargeable length of phototelegram	Total charge (in gold francs)	
1st step	1.5 D or less	$28+4y$	(same remarks as in I above)
2nd step	over 1.5 D up to 2 D	$28+5y$	
3rd step	over 2 D up to 2.5 D	$28+6y$	
4th step	over 2.5 D up to 3 D	$28+7y$	

III. *Phototelegrams transmitted from private station to public station*

$(C + 4) \frac{y}{3} + 28$  gold francs per phototelegram,

(C being the duration in minutes of a connection between the two stations).

IV. *Phototelegraph transmission between private stations*

$$(C + 4) \frac{y}{3}$$

10. However, the C.C.I.T.T. observed that application of these rates would lead to higher charges than at present, such that there would be a sharp reduction in phototelegrams. It feels able to recommend only a reasonable increase.

In view of the foregoing, the C.C.I.T.T.

## UNANIMOUSLY DECLARES THE VIEW

- (a) that phototelegrams transmitted by a public station, either to another public station or to a private station, should be charged for according to the same principle, i.e. a fixed tariff, with various charging steps;
- (b) that phototelegrams transmitted by a private station to a public station should be charged for in the same way as phototelegraph calls between private stations, i.e. the charge varying according to the use of telephone circuits for phototelegraph transmissions, and to the charging period (period of heavy or light traffic).

However, in the service between public station and private station, the

Administration \* responsible for the public station receives a surcharge for intervention by the public station.

*Phototelegraph calls booked by a public station*

- (c) The rates for phototelegrams between public stations, with the exception of charges for special services and the shares of charges accruing to Administrations \*, should be calculated in accordance with the following table:

Scale of rates	Dimensions of phototelegram			Total charge in gold francs (to be levied at outgoing end)	Share accruing to			
	1st side for the following drum diameters				2nd side (chargeable length)	outgoing Admn.*	transit Admn.*	incoming Admn.*
	66 mm	70 mm	88 mm					
1st step				1.5 D or less	20+4y	10+4a	4b	10+4a
2nd step	≤ 18 cm	≤ 20 cm	≤ 24 cm	over 1.5 D up to 2 D	20+5y	10+5a	5b	10+5a
3rd step				over 2 D up to 2.5 D	20+6y	10+6a	6b	10+6a

increased by y per step for each extra 0.5 D  
(D = diameter of the drum of the sending phototelegraph apparatus)

- (d) The rates for phototelegrams transmitted by a public station to a private station, and the shares of charges accruing to Administrations \* should be calculated in accordance with the following table:

Scale of rates	Dimensions of phototelegram				Total charge in gold francs (to be levied at outgoing end)	Share accruing to		
	1st side for the following drum diameters			2nd side (chargeable length)		outgoing Admn.*	transit Admn.*	incoming Admn.*
	66 mm	70 mm	88 mm					
1st step				1.5 D or less	10+4y	10+4a	4b	4a
2nd step	≤ 18 cm	≤ 20 cm	≤ 24 cm	over 1.5 D up to 2 D	10+5y	10+5a	5b	5a
3rd step				over 2 D up to 2.5 D	10+6y	10+6a	6b	6a

increased by y per step for each extra 0.5 D  
(D = diameter of the drum of the sending phototelegraph apparatus)

\* or Recognized Private Operating Agency(ies)

- (e) The lengths of phototelegrams are measured in centimetres, a fraction of a centimetre being reckoned as a full centimetre;
- (f) For divided phototelegrams, the charge is calculated separately for each part.
- (g) For an = Urgent = phototelegram, the charge shall be doubled.

*Phototelegraph calls booked by a private station*

- (h) The charge for a phototelegram transmitted by a private station to a public station, or vice versa at the request of the private station, and the shares accruing to Administrations \* should be calculated as follows:

Charge	in gold francs	Share accruing to the		
		Admn.* of the country of the private station	transit Admn.*	Admn.* of the country of the public station
Total	$10 + (C+4)\frac{y}{3}$			
to be collected on behalf of the private station	$(C+4)\frac{y}{3}$	$(C+4)\frac{a}{3}$	$(C+4)\frac{b}{3}$	$10 + (C+4)\frac{a}{3}$
to be collected on behalf of the public station	10			

- (i) Charges for phototelegraph calls between private stations, and the shares accruing to Administrations \* are calculated in accordance with the following table:

Total charge (in gold francs) to be collected at the outgoing end	Share accruing to the		
	outgoing Admn.*	transit Admn.*	incoming Admn.*
$(C+4)\frac{y}{3}$	$(C+4)\frac{a}{3}$	$(C+4)\frac{b}{3}$	$(C+4)\frac{a}{3}$

- (j) If a private station books an = Urgent = or = Lightning = phototelegraph call, the rates for the corresponding unit telephone call should be applied.
- (k) In relations where reversed-charge phototelegraph calls are allowed, the rules governing such calls should be agreed upon by the Administrations \* concerned.

*Special services*

- (l) The surcharges for the special services allowed for phototelegrams exchanged between public stations and phototelegrams transmitted by private stations to public stations are governed by the provisions of Recommendation F.80.

\* or Recognized Private Operating Agency(ies).

- (m) For multiple phototelegrams transmitted by a private station to a public station, the surcharge for intervention by a public station (the table under section (h) above) should be divided equally between the addressees.

*Note.* — In the tables shown above:

- $y$  is the charge (in gold francs) for a unit telephone call for the circuit used for the phototelegraph transmission,
- $a$  and  $b$  are the shares of the charge  $y$  accruing to the terminal and transit Administrations \*,
- $C$  is the duration (in minutes) counted from the moment the two stations are connected together until the moment the calling station announces the end of the call.

## RECOMMENDATION E.60

### LEASE OF INTERNATIONAL COMMUNICATION CHANNELS FOR PRIVATE SERVICE

#### I. *Conditions of acceptance*

Administrations \* who permit the full-time leasing of international telephone communication channels should be guided by the following principles:

1. An international telephone communication channel in a given service will be leased only if the number of circuits in the service makes this feasible.
2. The leasing of an international telephone communication channel having been agreed, the connection will be established once for all in such a way that the telephone exchanges no longer have to intervene, but the technical arrangements should be such that the operating personnel are able (by means of appropriate switching made at their request) to effect control of the calls exchanged over the leased circuit.

The stations connected in this way should in no circumstances be stations normally available to the public.

The calls exchanged must be concerned exclusively with the personal affairs of the subscribers or those of their firms. The line may in no way be made available to third parties.

It is desirable that the leased circuits should terminate at the subscribers' premises at installations which prevent these circuits being used under conditions other than those authorized.

3. In principle, the lease should be for a minimum of one month; however, by agreement between the Administrations \* concerned, the lease may be for a period of less than one month. The lease is renewable month by month by implication, the

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\* or Recognized Private Operating Agencies.

notice of cancellation on either side to be given two weeks before the end of the current period of lease.

4. Administrations \* reserve the right to take back the leased communication channel if it is in the interest of the general service to do so, the appropriate notice being given as mentioned in paragraph 3.
5. The rental is payable monthly in advance.
6. In the case of interruption due to a fault of the telephone service, the Administration\* of origin grants a rebate at the request of the renter. The rebate is calculated in accordance with the provisions of Part II (Charging) below.

## *II. Charging*

Arrangements made for charging take into account that:

- (a) the leasing of an international telephone communication channel is a great advantage for the renters;
- (b) the operating personnel of the Administrations \* do not have to assist in the establishment of calls.

The arrangements are as follows:

1. The rental for an international telephone communication channel should correspond to 6000 minutes of ordinary conversation, during the period of heavy traffic, on the service concerned, per month.
2. For the collection and settlement of the amounts due in respect of rentals for leased circuits, several methods may be adopted, and in particular one or other of the following two methods:
  - (a) the Administration \* of the country of residence of the subscriber who ordered the leased circuit collects the rental due and enters the amount in the international accounts;
  - (b) the Administration \* of one of the terminal countries collects from the subscriber in its country the rental due for the section of the leased circuit in its own territory; the Administration \* of the other terminal country collects the balance of the rental and remunerates, when appropriate, the transit countries.
3. In the case of a lease for a period of 10 days or less, the rental should be 80 units per day, or 240 ordinary call minutes in the service concerned in the period of heavy traffic, per day of lease, plus a surcharge corresponding to 10 units or 30 ordinary call minutes in the period of heavy traffic, irrespective of the duration of the lease (thus, the charge for 3 days would be for  $3 \times 240 + 30 = 750$  minutes).
4. In the case of a lease for periods exceeding 10 days and up to 25 days, the charge should be 80 units per day, or 240 minutes of ordinary conversation in the service concerned in the period of heavy traffic, per day of lease, no surcharge being collected in this case (thus, for 11 days, the charge to be applied would be  $11 \times 240 = 2640$  minutes).

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\* or Recognized Private Operating Agency(ies).



5. For the calculation of the lease duration, one day is taken to be a period of *twenty-four consecutive hours* if the duration is of 25 days or less. The duration should be reckoned in *multiples of twenty-four hours*, the period starting from the time when the circuit is set up until the time it is cleared down; if the number thus obtained contains a fraction of twenty-four hours, it should be rounded up to the nearest whole number.

*Examples:*

Circuit set up on 1 June, 0900 hours, cleared on 5 June at 0900 hours:

$4 \times 24$  hours, or 4 chargeable days.

Circuit set up on 1 June, at 0900 hours, cleared on 5 June at 1100 hours:

(4  $\frac{2}{24}$  hours), or 5 chargeable days.

6. In the case where the lease is extended beyond the 25th day up to the end of the month, the charges will be fixed uniformly at 2000 units, or 6000 ordinary conversation minutes in the service concerned during the period of heavy traffic.
7. In the case of lease for a period exceeding one month, the charge for the first month should be that indicated above and the charge for each additional day should be 200 ordinary conversation minutes in the service concerned during the period of heavy traffic.
8. For the calculation of the lease duration one month is taken to mean one calendar month if the duration is more than 25 days. Moreover, the day on which the circuit is made available is not reckoned, whereas the day on which it is cleared down is reckoned as a full day. A long lease lasting for several months is calculated as follows:
- count the number of days, beginning on the day after the circuit was set up until the end of the month;
  - thereafter count the number of *full calendar months*;
  - count the number of days in the last month, including the day of clearing down.

*Examples :*

Length of lease, from the day the circuit was set up to the day it was cleared down	Chargeable period
<p>30 October -15 December</p> <p>30 October not counted</p> <p>31 October = 1 day</p> <p>November = 1 month</p> <p>1-15 December = 15 days</p>	1 month and 16 days
<p>30 November -15 January</p> <p>30 November not counted</p> <p>December = 1 month</p> <p>1-15 January = 15 days</p>	1 month and 15 days

9. If an interruption occurs for which the telephone service is responsible, a rebate should be granted only if the telephone service has been completely interrupted for

a continuous period of 3 hours or more. The maximum rebate allowable should not exceed one or other of the two following limits:

- 40 minutes of ordinary conversation for each continuous 3-hour period of interruption,
- 200 minutes of ordinary conversation per day for a continuous interruption of 24 hours in the case of leases over 25 days (240 minutes' use per day in the case of leases of 25 days or less).

10. Requests for reimbursement of the charges for the use of public telecommunication services — telephone or telegraph — incurred during the period of interruption should not, in any circumstances, be met.

#### RECOMMENDATION E.61

#### **SIMULTANEOUS USE OF LEASED TELEPHONE CIRCUITS FOR TELEGRAPHY AND TELEPHONY \***

The C.C.I.T.T.,

#### CONSIDERING

- (a) that Recommendation R.42 (Volume VII of the *Red Book*) refers only to the case where the leased telephone circuit is used for *alternate* telegraphy and telephony;
- (b) that the use of simultaneous telegraphy and telephony over a leased telephone circuit can give rise to significant disturbances if technical precautions, which are difficult to arrange, are not taken;
- (c) that the tariff for the lease of a telephone circuit used in this manner necessitates a more extensive study by the competent Study Groups of the C.C.I.T.T.,

#### UNANIMOUSLY RECOMMENDS

- 1. that it is not desirable in present circumstances to permit the use of leased telephone circuits for *simultaneous* telegraphy and telephony;
- 2. that it is not desirable to permit the user of a leased telephone circuit to employ this for the purpose of establishing several telegraph circuits for simultaneous use;

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\* This text is published also as Recommendation F.74 in series F (Telegraph operation) of the C.C.I.T.T. Recommendations.

3. that if, exceptionally, authorization were given for the uses envisaged in §§ 1 and 2 above, the rental should not be lower than the sum of the rentals for the various channels of communication considered separately;
4. that for such exceptional use, the technical arrangements should ensure that no disturbance is caused to the telegraph and telephone services.

#### RECOMMENDATION E.61 bis \*

### **TARIFFS AND CONDITIONS FOR THE EXPERIMENTAL LEASING OF CIRCUITS FOR DATA TRANSMISSION**

Pending the conclusion of the technical and tariff studies for data transmission in the international service, which may take some time, it would be desirable for the Administrations \*\* which may be asked to lease circuits for data transmission to meet such requests so that they may follow the establishment and operation of these transmissions on an experimental basis.

When normal telegraph and telephone circuits are used for data transmission, there is no reason, from the technical viewpoint, why normal rates should not be applied subject to any special fees which might be requested for the supply and maintenance of terminal equipment by the Administration \*\* concerned.

Any tariff fixed in these conditions would be only provisional and users should be warned that the rates in no way prejudice the final decision to be taken by the Administration \*\* concerning rules for data transmission.

The equipment to be connected to the circuit should be approved by the Administration \*\* and should meet the technical conditions laid down by the Administration \*\* to ensure that use of the circuit does not hamper the use of other telecommunication circuits.

The terminal equipments should permit the connection of standardized telephone or start-stop apparatus and the performance of all measurements and tests on the leased circuit in ordinary terminal conditions.

If, to ensure satisfactory transmission, the specified requirements are more severe than those ordinarily applicable to the circuit in question, an increased fee should be levied if they are met.

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\* This Recommendation also appears as Recommendation F.75 in series F (Telegraph operation and tariffs) of the C.C.I.T.T. Recommendations.

\*\* or Recognized Private Operating Agency(ies).

RECOMMENDATION E.62

**UTILIZATION, BY PUBLIC SERVICES,  
OF INTERNATIONAL TELEPHONE CONNECTIONS WHICH ARE  
THEIR PROPERTY**

(This Recommendation applies to international telephone connections set up by undertakings for the generation and distribution of electric power and to international telephone connections set up on railway property, provided that these telephone connections are constructed and operated by the public services concerned.)

The C.C.I.T.T.,

CONSIDERING

that private international telephone connections can be indispensable to certain public services (the term "public service" includes not only state services but also organizations providing services of general interest, such as those generating and distributing electric power, etc.);

that, nevertheless, these international telephone connections permit the exchange of conversations outside the general public telephone service, which constitutes a certain privilege;

that, in consequence, this justifies some control of the use made of these circuits and also requests for compensation for their use,

UNANIMOUSLY RECOMMENDS

that Administrations \* which authorize the establishment and use of private international telephone connections for a public service (connections set up and operated by the public service) should be guided by the following principles:

1. The use of private international telephone connections should be made the subject of an agreement between the proprietors of the different sections of the connections on the one hand, and between the Administrations \* of the countries over whose territories the sections are constructed, on the other hand.
2. The public services authorized to use these private international telephone connections should agree to exchange over them only messages relating exclusively to their business and never to permit their use by third parties.
3. Technical limitations (regulations relating to the installations, authorized types of apparatus) should be imposed in order to prevent such international telephone connections obtaining access (directly or indirectly) to the lines and circuits of the general telephone network.

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\* or Recognized Private Operating Agencies.

4. The Administrations \* concerned reserve the right to exercise, by any suitable means, all technical or other controls which they consider desirable.
5. The Administrations \* concerned always reserve the right to withdraw the authority to use such connections if abuses occur or if a superior interest justifies it.
6. In order to compensate Administrations \* to some extent for the loss of revenue resulting from the privilege granted to the users of such private international telephone connections, the Administrations \* concerned will charge a minimum annuity of 12 gold francs per kilometre of circuit used on their own territory, the payment of this annuity falling upon the proprietors of the circuits used. Each Administration \* will itself determine the length of the circuits to be taken into consideration, taking account of the point where the circuit crosses the frontier and the point or points from which the circuit(s) can be used.

*Note.* — In the event of a case occurring of a group of circuits constituting a veritable telephone network over an extensive territory, to meet the needs of a particular public service, it is desirable that this service should send to all the Administrations \* concerned a plan of the network showing the various centres of activity of this public service and the telephone switching centres.

#### RECOMMENDATION E.63

##### **DIMINISHING TARIFF**

The C.C.I.T.T.,

##### **CONSIDERING**

that a diminishing tariff would complicate the calculation of international charges and the establishment of international accounts;

that it would entail technical complications in the case of an automatic trunk service;

that such a tariff would benefit only a minority of users;

that, for the user, the service rendered after the first minutes has the same value as that rendered during these first minutes;

that, according to the calculation of net costs, the reduction in charge which could be considered after the first minutes could not, in any case, be very large;

##### **UNANIMOUSLY RECOMMENDS**

that, in the international telephone service it is not desirable to apply a diminishing tariff based on the duration of the telephone call.

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\* or Recognized Private Operating Agency(ies).

RECOMMENDATION E.64**DEFERRED TELEPHONE CALLS**

The C.C.I.T.T.,

**CONSIDERING**

that deferred calls would be prejudicial to the general evolution of the international telephone service in which the aim is constantly to reduce delays;

that deferred calls would be a source of disappointment to the subscriber due of the uncertainty of the time at which the call would be set up;

that these calls would be a source of difficulties for the operating services because of the increase in service conversations which would result therefrom;

that it is not desirable to create a new class of call and complicate the calculation of charges and the preparation of accounts;

**UNANIMOUSLY RECOMMENDS**

that it is not desirable to introduce a new class of call at a reduced rate, called "deferred calls", in the international telephone service.

RECOMMENDATION E.65**CHARGE FOR CALLS FROM OR TO A PUBLIC CALL OFFICE**

The C.C.I.T.T.,

**CONSIDERING**

that the "amount of the unit charge shall be fixed on the basis of the gold franc by agreement between the Administrations \* concerned" (RTf, Article 26, § 2);

that the establishment of an ordinary call from or to a public call office entails special expenses, but that these special expenses are negligible in comparison with the other costs involved in the establishment of an international call,

**UNANIMOUSLY RECOMMENDS**

that it is preferable not to collect a supplementary charge for the use of a public call office for an international call, but that, notwithstanding, the Administrations \*

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\* or Recognized Private Operating Agencies.

which collect a supplementary charge in their internal services, may apply such a supplementary charge to international calls, it being understood that this supplementary charge is not included in the international accounts.

#### RECOMMENDATION E.66

##### **CHARGES FOR PRESS CALLS**

The C.C.I.T.T.,

##### **CONSIDERING**

on the one hand, that international telephone charges are at present fixed in very close relation to net costs and that any reduction in favour of certain classes of users would lead Administrations \* to increase the general tariff;

on the other hand, that as telephonists are unable to follow the conversation exchanged by correspondents, Administrations \* are not in a position to establish charges varying according to the subject of the conversation and that, as regards conversations between newspaper correspondents and their newspapers, it would not be possible to know whether copy intended for publication or conversation of a different nature was concerned,

##### **UNANIMOUSLY RECOMMENDS**

that there is no reason for granting a reduction in international telephone charges in favour of Press calls.

#### RECOMMENDATION E.67

##### **STANDARDIZATION OF THE HOURS OF LIGHT TRAFFIC FOR THE PURPOSE OF APPLICATION OF CHARGES**

The C.C.I.T.T.,

##### **UNANIMOUSLY RECOMMENDS**

1. that the hours adopted by all Administrations \* as limits between periods of heavy traffic and periods of light traffic should be uniform;
2. that the times uniformly adopted for these limits should be 7 p.m. and 8 a.m. (legal time in the country of origin).

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\* or Recognized Private Operating Agencies.

RECOMMENDATION E.68**CHARGES FOR CALLS CARRIED BY EMERGENCY ROUTES**

1. The call charges for conversations exchanged over emergency routes are the same as for use of the normal route.
2. Calls exchanged over emergency routes always enter into the international accounts for their full chargeable duration.
3. When an emergency route is used, the total charge for the normal route (between first charging zones of the terminal countries) is divided equally between the various Administrations \* concerned in the emergency route under consideration; that is to say that all these Administrations \* receive an equal part, whatever the nature or the length of the conductors used. (When the network of destination is beyond the first charging zone, the outgoing country should carry into the account for the incoming country a portion of the charge equal to the difference between that appropriate to the situation of the network of destination and the charge for the first zone.) In order to permit the application of this procedure in the case of a call involving an international transit exchange, it is necessary for the operator at the transit exchange to indicate each time to the operator at the outgoing international exchange, the emergency route used.

*Examples:*

*Service Netherlands - France.* — Emergency route: Amsterdam - Zürich (passing through Belgium and France) and Zürich - Paris.

Total charge for the normal route (between first zones): 2.60 gold francs.

Division when the emergency route is used: Netherlands, Belgium, Switzerland, France:

$$\text{each } \frac{2.60}{4} = 0.65 \text{ gold franc.}$$

*Service Belgium - Great Britain.* — Emergency route: Bruxelles - Amsterdam - London.

Total charge for the normal route (between first zones): 3.00 gold francs.

Division when the emergency route is used: Belgium, Netherlands, Great Britain:

$$\text{each } \frac{3.00}{3} = 1.00 \text{ gold franc.}$$

4. When it is necessary to use a land emergency route, because of the interruption of the normal land (or submarine) route providing an extension of a radiotelephone service, the global charge relative to the land (or submarine) route between the radiotelephone station and the terminal exchange is divided in conformity with the rules outlined above in paragraph 3.

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\* or Recognized Private Operating Agencies.



RECOMMENDATION E.69**MINIMUM REMUNERATION FOR A TRANSIT COUNTRY**

Terminal Administrations \* should have a considerable measure of freedom to ask transit Administrations \* to put circuits at their disposal. The transit Administrations \* should be able to satisfy demands for direct circuits without being deterred by the fear that the traffic passed over these circuits would not provide them with sufficient revenue to meet the costs of setting up and maintaining the circuits. Accordingly:

1. It should be agreed that an Administration \* which is asked to provide a circuit for transit traffic should have the right to ask in return for the guarantee of a minimum revenue.
2. This method should be used in preference to that of the guaranteed rental without, however, excluding it.
3. The Administrations \* concerned should be left to fix this minimum by direct negotiations among themselves. A reduction should be made in the event of interruptions of the circuit in the transit country for any interruption lasting 24 consecutive hours.

The bases of calculation adopted in Recommendation E.51 for the establishment of costs for calls over carrier systems leave an adequate percentage reserve for telephone channels actually used.

There is thus no necessity for special remuneration of one or more transit countries when, during the period of progressive utilization of the circuits of a direct 12-channel group, some of the 12 channels in the group are not yet being used.

RECOMMENDATION E.70**MONTHLY TELEPHONE ACCOUNTS**

The C.C.I.T.T.

**RECOMMENDS**

the following arrangements for drawing-up, interchange and acceptance of monthly accounts between telephone Administrations \*:

1. The monthly accounts are drawn up in accordance with a form of the type shown on page 122.

This form is considered to be sufficiently detailed to allow the incoming country to make a comparison, if necessary, between its observations of incoming traffic,

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\* or Recognized Private Operating Agency(ies).

and data collected by the outgoing international exchange over a certain period. This form may be useful for drawing up statistics relating to international telephone traffic, as well as for the accounting services.

2. Monthly accounts relating to:

(a) telephone traffic proper,

(b) programme, television and phototelegraph transmissions,  
are drawn up on separate forms, namely:

— Form No. 1 for telephone traffic proper,

— Form No. 2 for programme, television and phototelegraph transmissions.

3. Monthly accounts can be accepted by the Administrations \* of the various countries concerned without formal notice of their acceptance being necessary. The Administrations \* concerned obviously have the right to question an account, which should be done within two months from the date of receipt. Their observations in this connection should be sent to the Administration \* which has sent the account, as soon as possible after receipt. Agreed adjustments are included in a subsequent monthly account.

Monthly accounts are sent by the Administration \* responsible for their preparation direct to each of the other Administrations \* concerned.

4. The limits given in No. 229 of the Telephone Regulations (Geneva, 1958) for discrepancies considered to be negligible in the adjustment of accounts will apply separately to accounts on Forms No. 1 and 2.

5. Data relating to Form No. 1 can be subjected to sampling checks if the incoming Administration \* considers it desirable.

These traffic samples will be taken as follows:

On a given day, the incoming Administration \* has observations made of a number of conversations chosen at random. For each of these is determined the route concerned, the time, the called subscriber's number, and on occasion the identity of the caller. (The first 3 factors can be obtained in semi-automatic service as well as in manual service.) Before noon on the following day, the incoming Administration \* then asks the outgoing Administration \* to indicate the chargeable time shown on the call tickets for each of these conversations.

An accounting check may also be made. In particular cases, where justified by the volume of traffic and by special agreement between Administrations \*, an official of the incoming country can visit another country to see how the accounts are drawn up and to verify that the details of these calculations are as accurate as possible.

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\* or Recognized Private Operating Agency(ies).

## Specimen form for drawing up monthly international accounts

## TELEPHONE ACCOUNT

Service .....

Month .....

Charge zones	Categories of calls	Number			Credits of Administration *		Credits of Administration *	
		of calls of each category	of minutes of chargeable conversation	of corresponding charge units	Quota	Total	Quota	Total

## Explanatory notes relating to the form for drawing up accounts

1. Each form concerns one telephone route between a country of origin and a country of destination.

2. In the 2nd column should be entered, in the following order: the traffic disposed of by normal, auxiliary and emergency routes.

*Form No. 1. — Telephone traffic proper*

- ordinary calls (distress, Government and private);
- urgent calls (Government, private);
- “lightning” calls (Government, private);
- subscription calls;
- supplementary charges for *préavis*;
- supplementary charges for *avis d'appel*;
- supplementary charges for occasional fixed-time calls;
- supplementary charges for collect calls;
- other supplementary charges (including, where necessary, requests for information);
- express charges.

*Form No. 2. — Programme, television and phototelegraph transmissions*

- programme transmissions:
  - (a) on ordinary telephone circuit;
  - (b) on old type circuit;
  - (c) on normal type circuit;
  - (d) the use of a control circuit;
- television transmissions;
- phototelegraph transmissions.

3. The figures to be included in the column “corresponding charge units” should, before being entered, be converted, when necessary, into ordinary charge units at the ordinary rate. They are then totalled for each charge zone, and this is the total which should be used for the completion (on the same line) of the columns relative to the “Credits of the various Administrations \*”.

It should be noted that for the calculation of the total surcharge applied to programme transmission circuits the fractions of minutes (or thirds of a “Unit”) are, when necessary, ignored.

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\* or Recognized Private Operating Agency(ies).

4. The form should have as many columns "Credit of Administration \*" (quotas and total amounts) as there are countries concerned for traffic passed over normal, auxiliary and emergency routes.

5. No distinction has been made above between periods of heavy and light traffic, because there is at present, in Europe, no distinction between these two periods. If this distinction should be resumed, it would be expedient that the account should show the number of calls and chargeable minutes for each period of charge separately.

6. The form does not however include charges in respect of frontier services, as it is the present practice not to enter these calls in the international accounts.

#### RECOMMENDATION E.71

#### DEFAULTING SUBSCRIBERS

The C.C.I.T.T.,

##### CONSIDERING

that it is in the interest of Administrations \* to know of telephone subscribers coming from a country where they have not settled their telephone accounts, and also to render each other assistance in the recovery of amounts due from such debtors,

##### CONSIDERING, ON THE OTHER HAND,

that, in view of the differences in the law in different countries, it would be very difficult to regulate this assistance,

##### UNANIMOUSLY RECOMMENDS

that when a telephone subscriber has left the country in which he was a subscriber without settling his telephone account, and has taken up residence in another country which is known, the Administration \* of the country of origin should advise the Administration \* in the other country and ask this latter, on a reciprocal basis, to take such steps or make such arrangements as it thinks fit to obtain payment of the accounts outstanding.

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\* or Recognized Private Operating Agency(ies).

## SECTION 4

### STATISTICS AND PUBLICATIONS ON INTERNATIONAL TELEPHONY

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#### RECOMMENDATION E.81

##### GENERAL TELEPHONE STATISTICS

(published by the I.T.U. General Secretariat)

The C.C.I.T.T.

##### RECOMMENDS

that the general telephone statistics should be published each year in the form indicated on the following page;

Administrations \* should furnish the information as quickly as possible at the beginning of each year, in order that the statistics for a given year may be published at the latest during the summer of the following year.

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\* or Recognized Private Operating Agencies.

## GENERAL TELEPHONE STATISTICS

- I. Population of the country (*Note 1*) . . . . .
- II. Number of main telephone stations (*Note 2*)
- (a) manual (without dial) . . . . .
- (b) automatic (with dial or key-set) . . . . .
- III. Number of telephone stations of all kinds (main, extension, public, service, etc.) having access to the general telephone network . . . . .
- IV. Telephone density: Number of stations of all kinds per 100 inhabitants . . . . .
- V. Recorded or estimated outgoing telephone traffic (*Note 3*)
- (a) Traffic recorded *on subscribers' meters*
- Total number of pulses:
- (i) national traffic . . . . .
- (ii) international traffic . . . . .
- (or)
- Estimate of number of conversations:
- (i) national traffic . . . . .
- (ii) international traffic . . . . .
- (b) Traffic recorded *automatically* on tickets, tapes, etc.
- Total number of conversations:
- (i) national traffic . . . . .
- (ii) international traffic . . . . .
- (c) Traffic recorded *manually* on tickets, cards, etc.
- Total number of conversations:
- (i) national traffic . . . . .
- (ii) international traffic . . . . .
- (d) Traffic covered by a *fixed-charge system*
- Total number of pulses . . . . .
- (or)
- Estimate of number of conversations . . . . .
- (e) Total traffic
- Total number of conversations:
- (i) national traffic . . . . .
- (ii) international traffic . . . . .

## EXPLANATORY NOTES

*Note 1* (§ I).

The figures appearing under this head will be taken from the United Nations Statistics. They will be sent each year to all countries along with the Telephone Statistics form.

*Note 2* (§ II).

A main station is defined in No. 13.21 of the List of Definitions of Essential Telecommunication Terms, as follows:

“ Main station: a subscriber's station which is used for originating calls and on which incoming calls from the exchange or from an extension station are answered ”,

the exchange line connecting the main station to the telephone exchange may of course be either an exclusive exchange line or a shared line.

*Note 3* (§ V).

Under this heading, Administrations or Recognized Private Operating Agencies should supply any data they possess; it is for them to decide whether to fill sub-headings (a)-(e) in full or in part. If necessary, they can bracket together results coming under several headings.

*European international telephone traffic statistics*

[illegible]

RECOMMENDATION E.82**EUROPEAN INTERNATIONAL TELEPHONE TRAFFIC STATISTICS**

(published by the C.C.I.T.T.)

Each year *during December* European Telephone Administrations \* send to the Secretariat of the C.C.I.T.T. the numerical information required for the "European International Telephone Traffic Statistics" in accordance with the table shown.

This table is completed as follows:

- (a) One line of the table is used for each distinct group of circuits in the relation concerned.
- (b) Information for columns 2 to 16 is collected during the month which is generally the busiest on the relation concerned.
- (c) Columns 6 and 7 will be filled in :
  - either by taking the average of traffic samples during the busy hour on four different working days, e.g. Tuesday of the first week, Wednesday of the second week, etc.;
  - or by using the traffic values (chargeable minutes and minutes of holding time) for the busiest month, referred to the busiest hour, taking account of the percentage concentration measured on the group.
- (d) The information in columns 10 to 16 will be obtained:
  - by analyzing the tickets for the above-mentioned busy hours;
  - by taking account of the distribution of the various categories of calls and the average of the waiting periods during the busiest month of the year.

(With automatic operation, it will not be possible to supply some of the data in columns 10 to 16.)
- (e) The efficiency (column 8) should be the chargeable minutes (column 6) divided by minutes of holding time (column 7).
- (f) As a matter of convenience, the percentage concentration of traffic [the percentage of the traffic in the busy hour in relation to the traffic in the 24 hours (column 9)] can be obtained by dividing the sum of the chargeable minutes in the four busy hours on the sampling days by the sum of the chargeable minutes during the 24 hours on the same days.

This factor can also be determined by means of a traffic recorder showing the actual holding time of the circuits.

Should it appear difficult, on a given relation, to distinguish between the traffic routed by the various groups of circuits, the percentage concentration can be indicated by a single figure for the whole of the relation.

- (g) Transferred charge calls (column 12) will be recorded only by the terminal exchange responsible for the accounts for these calls.

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\* or Recognized Private Operating Agencies.



RECOMMENDATION E.83**CHECKING THE INTERNATIONAL TELEPHONE SERVICE**

(Statistics to be exchanged among Administrations \*)

To provide an assessment of the correct operation of circuits and equipment, control of the work of the operators and an estimate of the efficiency and quality of the service offered to users, it is desirable that telephone Administrations \* should forward to one another direct, and as soon as they are prepared, performance statistics prepared in accordance with Tables I and II below.

It is of particular importance in semi-automatic and automatic working to make checks of service quality, especially checks of the percentage of “attempts to set up calls which are not successful on account of faults”, since this latter check is the only available means of assessing the technical quality of the service.

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\* or Recognized Private Operating Agencies.

TABLE I — Outgoing equipment check

Correctly operated attempts	Directly dialled calls, semi-automatic or automatic		Calls to incoming operators (in semi-automatic Code 11 calls)		Calls to suspended call operators (in semi-automatic Code 12 calls)		Total number	% of grand total
	No.	%	No.	%	No.	%		
1	2	3	4	5	6	7	8	9
1. Effective								
2. Engaged								
3. Ringing tone, no reply								
4. Changed number; out of service; special international tone or talking machine								
5. Total of items 2 to 4 above								
6. Special international tone (or talking machine) received in error								
7. No tone, no reply								
8. Wrong number								
9. Other failures								
10. Total if items 6 to 9								
11. Total correctly operated attempts observed		100		100		100		100
12. Percentage of attempts wrongly operated by operators or subscribers ..... % 13. Average time-to-answer of incoming (Code 11) operators ..... seconds 14. Average time-to-answer of suspended call (Code 12) operators ..... seconds 15. Average time-to-answer of assistance operators ..... seconds 16. Average operator engaged time per attempt, i.e. time between circuit seized and conversation begun, or on ineffective attempts, time between circuit seized and released ..... seconds 17. Percentage of preavis calls effective at first attempt (obtained from ticket analysis) ..... % 18. In semi-automatic service, percentage of calls to assistance operators ..... %								
<p style="text-align: center;"><i>Notes</i></p> <p>(a) This table summarizes the observations made on the outgoing equipment of circuits using:  — normal demand working,  — semi-automatic working, or  — automatic working.</p> <p>(b) It is recommended that these observations be made during hours of heavy traffic or, if this is not possible, of average traffic.</p> <p>(c) It is necessary, from the statistical point of view, that a minimum of 200 calls should be observed when checking traffic in a given direction.</p> <p>(d) It is recommended that these statistics be exchanged among the Administrations or Recognized Private Operating Agencies concerned <i>at least</i> once a year.</p>								

TABLE II — Circuit check

Outgoing international exchange: .....	Number of calls observed: .....	Remarks
1. Average chargeable duration 2. Average circuit holding time for ineffective calls (unsuccessful attempts) 3. Average overall duration of operations (from seizure of international circuit) 4. Average time-to-answer of the operators at the incoming international exchange or international transit exchange 5. Average time-to-answer of operators 6. % ineffective calls (unsuccessful attempts) 7. % interrupted calls 8. % unsatisfactory reception		
<p style="text-align: center;"><i>Notes</i></p> <p>(a) This table summarizes the observations made on circuits using:  — manual working (demand or advance preparation),  — semi-automatic working,  — automatic working.</p> <p>(b) It is recommended that these observations be made during the hours of heavy traffic or, if this is not possible, of average traffic during the busiest months of the year.</p> <p>(c) It is necessary, from the statistical point of view, that a minimum of 200 calls should be observed when checking traffic in a given direction.</p> <p>(d) It is recommended that these statistics be exchanged among the Administrations or Recognized Private Operating Agencies concerned <i>at least</i> once a year.</p> <p>(e) In the automatic service, some information will not be available.</p>		

(As a guide, Table II can be obtained from observations assembled on a form such as the following.)

*Form showing observations on international telephone circuits*

Name of outgoing international exchange  .....			Designation of circuit ..... Number ..... and categories ..... Date and time of observations ..... of circuits in group .....							
			Interval between end of preceding call or abandonment of an unsuccessful booking and:							
Time of beginning of operations for setting up each call	Calling exchange	Exchange and number of called subscriber	Call to the incoming international exchange	Reply from the incoming or transit international exchange	End of service conversation with the operator at the outgoing international exchange	Time when outgoing international exchange is connected to subscriber		beginning	end	Final abandonment of unsuccessful bookings (no reply, engaged, wrong number, etc.)
						of outgoing country	of incoming country	of call		
1	2	3	4	5	6	7	8	9	10	11

*Notes*

(a) The table should not include data on calls already in progress at the beginning of the checking period; on the other hand, it should include full data concerning the last call begun before the end of the checking period.

(b) The "Remarks" column should include any irregularities observed, e.g., wrong number, unnecessary interruption, late interruption, wrong charge, unsatisfactory reception, use of service expressions not in the C.C.I.T.T. list.

(c) The tickets for calls established (or attempts) on the international circuit during monitoring should be assembled and compared with the information given by the check. This will enable the operators to be identified, particularly in manual demand or semi-automatic operation.

(d) For automatic service, some columns in this table will have to be left blank.

*Remarks:*

RECOMMENDATION E.84

**PUBLICATION BY THE I.T.U. GENERAL SECRETARIAT  
OF THE “ LIST OF INTERNATIONAL TELEPHONE ROUTES ”**

1. The General Secretariat of the I.T.U. establishes and keeps up to date the “ List of international telephone routes ” showing, for the various services:
  - the normal routes,
  - the overflow routes,
  - the emergency routes.
2. The emergency route or routes are determined by common agreement among the Administrations \*.
3. By referring to the “ List of routes ”, the terminal country responsible for the presentation of the accounts can ascertain by what itinerary the call diverted to an emergency route has been established.

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\* or Recognized Private Operating Agencies.

## SECTION 5

### DETERMINATION OF THE NUMBER OF CIRCUITS TO BE PROVIDED

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#### RECOMMENDATION E.91

#### DETERMINATION OF THE NUMBER OF CIRCUITS NECESSARY TO CARRY A GIVEN AMOUNT OF TRAFFIC IN MANUAL OPERATION

1. The quality of an international manual demand service should be defined as the percentage of bookings which, during the average busy hour (as defined later under 3), cannot be satisfied immediately because no circuit is free in the relation considered.

By "bookings satisfied immediately" are meant those for which the call is established by the same operator who received the call, and within a period of two minutes from receipt of that call, whether the operator (when she does not immediately find a free circuit) continues observation of the group of circuits, or whether she makes several attempts in the course of this period.

Ultimately, it will be desirable to evolve a corresponding definition based on the "average speed" of establishing calls in the busy hour, that is to say the average time which elapses between the moment when the operator has completed the booking of the call and the moment when the called subscriber is on the line, or the caller receives the advice "subscriber engaged", "no reply", etc. But for the moment, in the absence of information about the operating time in the European international service, such a definition cannot be established.

2. The number of circuits it is necessary to allocate to an international relation, in order to obtain a given grade of service, should be determined as a function of the "total holding time" of the group in the busy hour.

The total holding time is the product of the number of calls in the busy hour and a factor which is the sum of the average call duration and the average operating time.

These durations will be obtained by means of a large number of observations made during the busy hours, by agreement between the Administrations \* concerned. If necessary, the particulars entered on the tickets could also serve to determine the average duration of the calls.

The average call duration will be obtained by dividing the total number of minutes of conversation recorded by the recorded number of effective calls.

The average operating time will be obtained by dividing the total number of minutes given to operating (including ineffective calls) by the number of effective calls recorded.

3. The number of calls in the busy hour will be determined from the average of returns taken during the busy hours on a certain number of busy days in the year.

Exceptionally busy days, such as those which occur around certain holidays etc., will be eliminated from these returns. The Administrations \* concerned should plan, whenever possible, to put additional circuits into service for these days.

In principle, these returns will be taken during the working days of two consecutive weeks, or during ten consecutive working days. If the monthly traffic curve shows only small variations, they will be repeated twice a year only. They will be taken three, or four times a year or more, if there are material seasonal variations, so that the average established is in accordance with all the characteristic periods of traffic flow.

4. The total occupied time thus determined should be increased by a certain amount determined by agreement between the Administrations \* concerned according to the statistics of traffic growth during earlier years, to take account of the probable growth in traffic and the fact that putting new circuits into service takes place some time after they are first found to be necessary.
5. The total holding time of the circuits thus obtained, in conjunction with a suitable table (see below), will enable the required number of circuits to be ascertained.
6. In the international telephone service, the following tables A and B should be used as a basis of minimum allocation:

Table A corresponds to about 30% of calls failing at the first attempt because of all circuits being engaged and to about 20% of the calls being deferred.

Table B, corresponding to about 7% of calls deferred, will be used whenever possible.

These tables do not take account of the fact that the possibility of using auxiliary routes permits, particularly for small groups, an increase in the permissible occupation time. In practice such routes are very rare in the international service.

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\* or Recognized Private Operating Agencies.

*Circuit capacity tables*

NUMBER of circuits	TABLE A		TABLE B	
	Percentage of circuit usage (definition in Recommendation E.1, § 20)	Minutes of circuit usage possible in the busy hour	Percentage of circuit usage (definition in Recommendation E.1, § 20)	Minutes of circuit usage possible in the busy hour
1	65.0	39	—	—
2	76.7	92	46.6	56
3	83.3	150	56.7	102
4	86.7	208	63.3	152
5	88.6	266	68.3	205
6	90.0	324	72.0	259
7	91.0	382	74.5	313
8	91.7	440	76.5	367
9	92.2	498	78.0	421
10	92.6	556	79.2	475
11	93.0	614	80.1	529
12	93.4	672	81.0	583
13	93.6	730	81.7	637
14	93.9	788	82.3	691
15	94.1	846	82.8	745
16	94.2	904	83.2	799
17	94.3	962	83.6	853
18	94.4	1020	83.9	907
19	94.5	1078	84.2	961
20	94.6	1136	84.6	1015

REMARK. — Tables A and B can be extended for groups comprising more than 20 circuits by using multiples of the values given for 20 circuits.

## RECOMMENDATION E.92

### DETERMINATION OF THE NUMBER OF CIRCUITS NECESSARY TO CARRY A GIVEN AMOUNT OF TRAFFIC IN SEMI-AUTOMATIC OPERATION

Tables A and B mentioned in Recommendation E.91 were established principally for the calculation of the number of manually operated circuits.

For reasons of uniformity and convenience, it is preferable, in order to determine the number of circuits required to carry a given traffic in semi-automatic operation, to refer to a formula which is widely used and for which there exist easily obtainable tables and curves.

(E.92)



In determining the number of circuits necessary in semi-automatic working, the C.C.I.T.T. therefore recommends that Administrations\*:

1. use, as a basis of calculation, the classical Erlang formula (see the following table and the two associated graphs giving, for the loss probabilities of 1 %, 3 % and 5 %, the number of circuits corresponding to a given traffic);
2. adopt for each of the three cases envisaged the loss probabilities defined below;
3. do not attach too rigorous a value, nevertheless, to these loss probabilities, because with semi-automatic operation, assisted by operators who smooth the traffic to a certain extent, it is not possible to determine precisely (by a simple mathematical formula) the number of circuits as a function of a loss probability. Moreover, the conditions in which calls which fail (because of lack of circuits) are later completed, are more or less beyond the hypotheses upon which the Erlang formula is based. These values, recommended for adoption for the "loss probability", should rather be considered as serving to determine the value of the parameter  $p$  indicating the column of the numerical table or the curve it is desirable to use.

*1st case. — Direct routes without the possibility of using secondary routes and used solely for terminal traffic*

The table or the graph corresponding to a value of the parameter  $p$  (loss probability) equal to 5 % will be used.

However, in the case where the operators have direct access to the international circuits, or access by means of automatic switches or by selectors which search continuously for a certain time, Table B (Recommendation E.91) can provisionally continue to be accepted for use in determining the number of circuits necessary to carry a given traffic; the numbers in this table approximate sufficiently closely to a loss probability of 5 %.

*2nd case. — Route on which it is necessary to pass through a transit exchange without the possibility of using secondary routes*

The table or the graph corresponding to a value of the parameter  $p$  (loss probability) equal to 3 % will be used for each of the groups of circuits constituting a link in the international route.

*3rd case. — Direct routes (without the possibility of using secondary routes) for which there exist concurrently:*

- a group of circuits used for terminal traffic, and
- a group of circuits used for transit traffic (with overflow from the first group to the second).

In this case it is not possible to define a perfect mathematical solution for calculating the number of circuits required. The problem can be considered as a special case such as the one in Recommendation E.93. Methods can be used which give quick though not very accurate answers. Such a method is described on pages 135 and 136 of Volume VI of the C.C.I.F. *Green Book* (Geneva, 1954).

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\* or Recognized Private Operating Agencies.

## ANNEX 1

Table from the Erlang No. 1 formula for loss probabilities of 1%, 3% and 5%

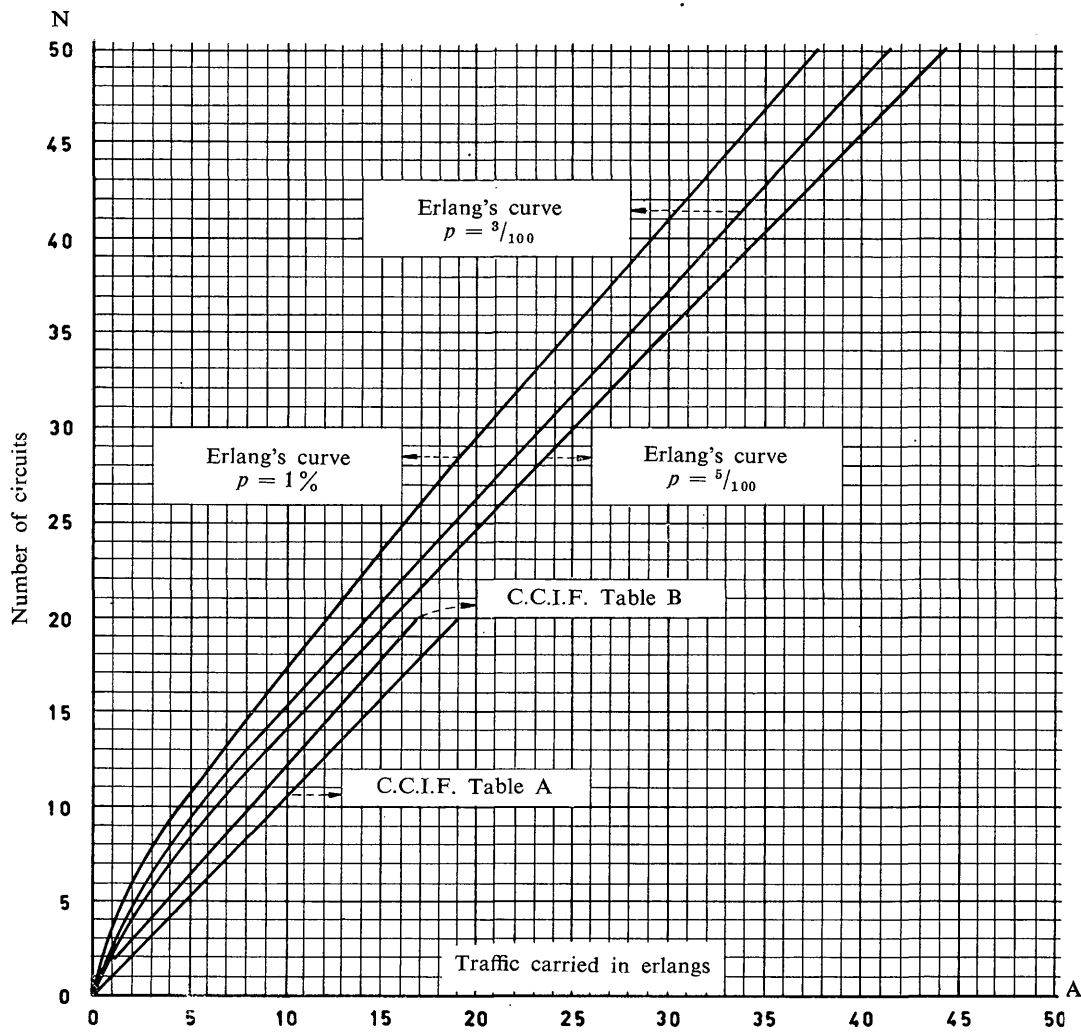
Formula:

let  $p$  = the loss probability $y$  = the traffic to be carried (in erlangs) $n$  = the number of circuits

$$E_{1,n}(y) = p = \frac{\frac{y^n}{n!}}{1 + \frac{y}{1} + \frac{y^2}{2!} + \dots + \frac{y^n}{n!}}$$

$n$	$p = 1\%$	$p = 3\%$	$p = 5\%$	$n$	$p = 1\%$	$p = 3\%$	$p = 5\%$
1	0.01	0.03	0.05	51	38.80	42.89	45.52
2	0.15	0.28	0.38	52	39.70	43.84	46.52
3	0.46	0.715	0.90	53	40.60	44.80	47.53
4	0.87	1.26	1.52	54	41.50	45.77	48.53
5	1.36	1.875	2.22	55	42.41	46.73	49.53
6	1.91	2.54	2.96	56	43.31	47.69	50.52
7	2.50	3.25	3.74	57	44.22	48.66	51.52
8	3.13	3.99	4.54	58	45.13	49.62	52.50
9	3.78	4.75	5.37	59	46.04	50.6	53.5
10	4.46	5.53	6.22	60	46.95	51.5	54.5
11	5.16	6.33	7.08	61	47.86	52.5	55.5
12	5.88	7.14	7.95	62	48.77	53.4	56.5
13	6.61	7.97	8.83	63	49.69	54.4	57.5
14	7.35	8.80	9.73	64	50.60	55.4	58.5
15	8.11	9.65	10.63	65	51.52	56.3	59.5
16	8.87	10.505	11.54	66	52.44	57.3	60.5
17	9.65	11.37	12.46	67	53.35	58.3	61.5
18	10.44	12.24	13.38	68	54.27	59.2	62.5
19	11.23	13.115	14.31	69	55.19	60.2	63.6
20	12.03	14.00	15.25	70	56.11	61.2	64.6
21	12.84	14.885	16.19	71	57.03	62.1	65.6
22	13.65	15.78	17.13	72	57.96	63.1	66.6
23	14.47	16.675	18.08	73	58.88	64.1	67.6
24	15.29	17.58	19.03	74	59.80	65.1	68.6
25	16.12	18.48	19.99	75	60.73	66.0	69.6
26	16.96	19.39	20.94	76	61.65	67.0	70.7
27	17.80	20.305	21.90	77	62.58	68.0	71.7
28	18.64	21.22	22.87	78	63.51	69.0	72.7
29	19.49	22.14	23.83	79	64.43	70.0	73.7
30	20.34	23.06	24.80	80	65.36	70.9	74.7
31	21.19	23.99	25.77	81	66.29	71.9	75.8
32	22.05	24.91	26.75	82	67.22	72.9	76.8
33	22.91	25.84	27.72	83	68.15	73.9	77.8
34	23.77	26.78	28.70	84	69.08	74.9	78.8
35	24.64	27.71	29.68	85	70.02	75.9	79.9
36	25.51	28.65	30.66	86	70.95	76.9	80.9
37	26.38	29.59	31.64	87	71.88	77.8	81.9
38	27.25	30.53	32.63	88	72.81	78.8	82.9
39	28.13	31.47	33.61	89	73.75	79.8	84.0
40	29.01	32.41	34.60	90	74.68	80.8	85.0
41	29.89	33.36	35.59	91	75.62	81.8	86.0
42	30.77	34.30	36.58	92	76.56	82.8	87.0
43	31.66	35.25	37.57	93	77.49	83.8	88.1
44	32.54	36.20	38.56	94	78.43	84.8	89.1
45	33.43	37.15	39.55	95	79.37	85.7	90.1
46	34.32	38.11	40.54	96	80.31	86.7	91.1
47	35.21	39.06	41.54	97	81.24	87.7	92.2
48	36.11	40.02	42.54	98	82.18	88.7	93.2
49	37.00	40.97	43.54	99	83.12	89.7	94.2
50	37.90	41.93	44.53	100	84.06	90.7	95.2

ANNEX 2

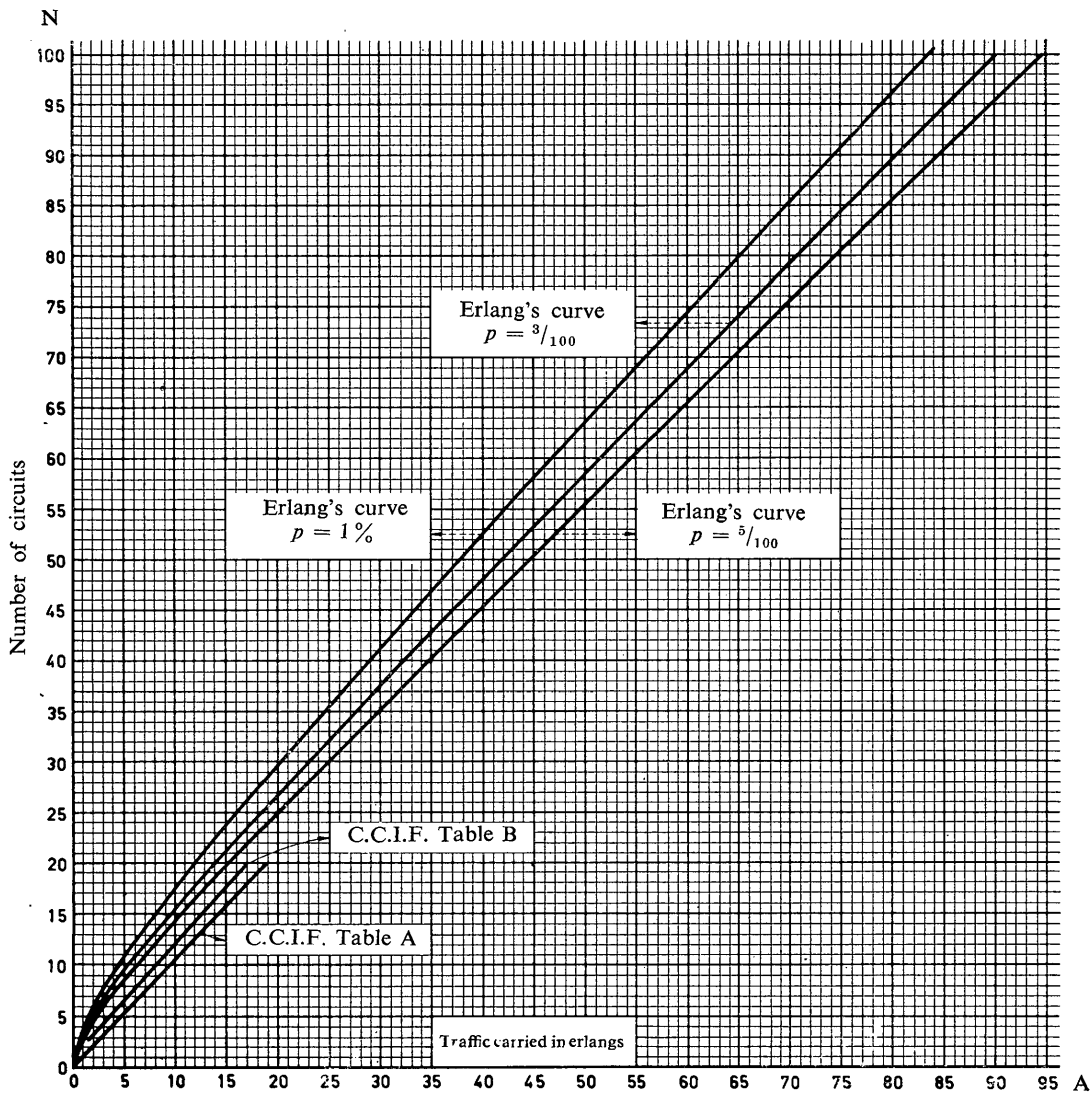


Relation between the number of circuits and the traffic in erlangs which can be carried by these circuits, in the case of:

- the Erlang formula ( $p = 1\%$ ,  $3\%$  and  $5\%$ )
- the C.C.I.F. Tables A and B

FIGURE 1. — *Number of circuits between 1 and 50*

ANNEX 2 (continued)



Relation between the number of circuits and the traffic in erlangs which can be carried by these circuits, in the case of :

- the Erlang formula ( $p = 1\%$ ,  $3\%$  and  $5\%$ )
- the C.C.I.F. Tables A and B

FIGURE 2. — Number of circuits between 1 and 100

RECOMMENDATION E.93**CALCULATION OF THE BEST ARRANGEMENT  
FOR ALTERNATIVE ROUTING**

The C.C.I.T.T.,

**CONSIDERING**

- the advantages offered by the use of alternative routing for the handling of traffic;
- the difficulties experienced in calculating the number of circuits necessary in the case of alternative routing;

**UNANIMOUSLY RECOMMENDS**

that for calculating the number of circuits in the case of alternative routing, reference should be made to one or the other of the two following methods which were selected by the C.C.I.T.T. because of their ease of application and the reasonable degree of accuracy obtained with the calculations.

The first of these methods is concerned with the equivalent pure chance traffic obtained by a weighted choice process. It enables the number of circuits on the alternative route to be calculated when the number of circuits on the direct route is fixed. To determine the most economical arrangement, it is necessary to calculate the annual charges of the whole of the network with the different arrangements. However, to reduce the number of tests, it is recommended in the first place, to proceed with an approximate determination of the most economic arrangement as is indicated in the example on page 149 hereafter.

The second method will be designated under the name of "Swedish method". It comprises two parts:

1. determination of the number of direct circuits for the most economic arrangement;
2. calculation of the number of circuits on the overflow group.

\* \* \*

The basis of these two methods is described in the following pages, together with an application of these two methods to a concrete case (routings between Stockholm, København, Amsterdam and Paris); also given in attached annexes are the detailed calculations for the two methods in this concrete case.

In these two methods it is assumed:

- that full availability groups are concerned,
- that in the case where there is a possibility of alternate routing, the circuits of the direct route are always tested first.

The two methods recommended by the C.C.I.T.T. require only standard tables and curves derived from the Erlang formula.

(E.93)

The diagrams used with these two methods are those giving, as a function of the traffic offered:

- the traffic overflowing from a circuit of the  $n$ th choice, i.e. the traffic offered to a circuit of  $(n+1)$ th choice,
- the traffic carried by a circuit of the  $n$ th choice.

These diagrams can be presented in different forms of which examples are given at the end of Volume I *bis* of the C.C.I.F. *Green Book* for values of traffic reaching 40 erlangs and for up to 75 circuits. These diagrams can be used indiscriminately for either of the two methods described. The use of one or other of these types of diagram depends on the practices generally followed in the countries concerned.

### *First method*

#### *Description of the method "equivalent pure chance traffic" obtained by a weighted choice process*

It is accepted that overflow traffic cannot be considered as pure chance traffic (*trafic aléatoire*) and if a group of overflow traffic is combined with a group of pure chance traffic, there is some difficulty in determining the number of circuits to be provided to ensure that a specified loss percentage will not be exceeded. Among the methods which have been proposed for determining the number of circuits necessary in these conditions, certain methods seek to define the combined traffic in such a way that the volume of traffic carried by each of these circuits tested in a fixed sequence can be read directly from standard curves derived from the Erlang formula.

\* \* \*

- (a) One method: "Equivalent Random (ER) theory" (in French *Théorie du trafic aléatoire équivalent*) has been described in detail in the Bell System Technical Journal by R. I. WILKINSON (B.S.T.J. March 1956, page 421). In this method, for a combined overflow group each sub-group is assigned both "mean volume" and "variance" values. The values of these two parameters for the different constituent traffic elements can be added and, with the aid of *special* curves, which have been prepared for the purpose, it is possible to determine an equivalent value of pure chance traffic (Equivalent Random traffic) which is offered to a circuit of  $n$ th choice; this hypothetical choice being determined, in principle, to approximately 1 decimal place. From these standard curves giving the overflow traffic can be read the number of circuits necessary to fulfil a specified loss requirement and from this figure it is necessary to deduct the hypothetical choice number mentioned above.

\* \* \*

- (b) An analogous process \*, which is designated under the name of "weighted choice method" is simpler to calculate and avoids the use of the special diagrams mentioned

---

\* See "Electrical Communication", article by E. P. G. WRIGHT, March 1947, page 42.

above and of delicate interpolations between two families of curves. A brief description of this method follows.

As in method (a), mentioned in the paragraph above, the traffic offered, resulting from the total sub-group overflow traffic, is defined as the overflow from a pure chance traffic offered to a circuit of the calculated hypothetical choice. These particulars, equivalent random traffic and hypothetical choice being obtained, the subsequent operation are then, for process (b), the same as in method (a):

- read on the standard curves giving the overflow traffic, the number of circuits necessary for a specified loss probability,
- from the value found deduct the number corresponding to the hypothetical choice.

The difference between process (b) and method (a) rests in:

- the determination of the equivalent random traffic,
- the determination of the hypothetical choice value of the circuit (*n*th choice circuit) to which this traffic is offered.

The hypothetical choice value is obtained in process (b) by a simple weighting. This is effected:

- by calculating the sum of the products of the “traffic volume” and choice of each sub-group overflowing,
- then dividing this total by the sum of the sub-group traffic.

In process (b) the equivalent random traffic is derived directly from the *standard* curves giving the overflow traffic from a circuit of the *n*th choice (see for example diagrams at the end of Volume I *bis* of the C.C.I.F. *Green Book*). The traffic to be considered as overflow traffic is the arithmetical sum of the sub-group traffic overflowing. From the curves can be read, with respect to the specified hypothetical choice, the random traffic which gives rise to this value of overflow traffic.

Process (b) has an empirical basis and does not present the mathematical justifications of method (a). Nevertheless, it leads to sufficiently accurate results as is shown by the results of a series of tests carried out with artificial traffic and it enables a simplification of the calculations to be made.

The simplicity of the calculations is illustrated by the following example:

#### *Example*

It is required to find how many circuits are needed to ensure a loss not exceeding 5% for a composite group collecting the following amounts of sub-group traffic:

- 1.41 E offered to a circuit of the 4th choice (i.e. overflowing from 3 circuits),
- 1.39 E offered to a circuit of the 7th choice (i.e. overflowing from 6 circuits),
- 0.45 E offered to a circuit of the 10th choice (i.e. overflowing from 9 circuits).

The weighting is calculated as follows:

$$1.41 \text{ E} \times 4 = 5.64$$

$$1.39 \text{ E} \times 7 = 9.73$$

$$0.45 \text{ E} \times 10 = 4.5$$

$$\begin{array}{r} 3.25 \text{ E} \qquad 19.87 \\ \hline 3.25 = 6.1 \text{ choice (i.e. traffic overflowing from 5.1 circuits).} \end{array}$$

$$\text{Permitted loss } 3.25 \times \frac{5}{100} = 0.16 \text{ E.}$$

From the overflow curves (see following figure) it can be read that the random traffic corresponding to 3.25 E and to a choice of 6.1 is 7.5 erlangs. It follows that a traffic of 0.16 E will overflow to the 14th choice. In deducting from this value of 14 the hypothetical choice value 6.1 it will be seen that 7.9 circuits are required.

If, on the other hand, it is required to know what traffic will overflow, say 5 common circuits, it can be read from the curves that, with a total traffic of 7.5 erlangs, the overflow from 5.1 circuits (traffic flowing to the 6.1 choice) is 3.25 erlangs and that the overflow from 10.1 circuits (5.1 + 5), which is the traffic flowing to the 11.1 (6.1 + 5) choice, is 0.72 erlangs.

The calculations for the first example can be written briefly as follows:

$$1.41 \times 4 = 5.64$$

$$1.39 \times 7 = 9.73$$

$$0.45 \times 10 = 4.5$$

$$\frac{3.25}{19.87} : 3.25 = 6.1$$

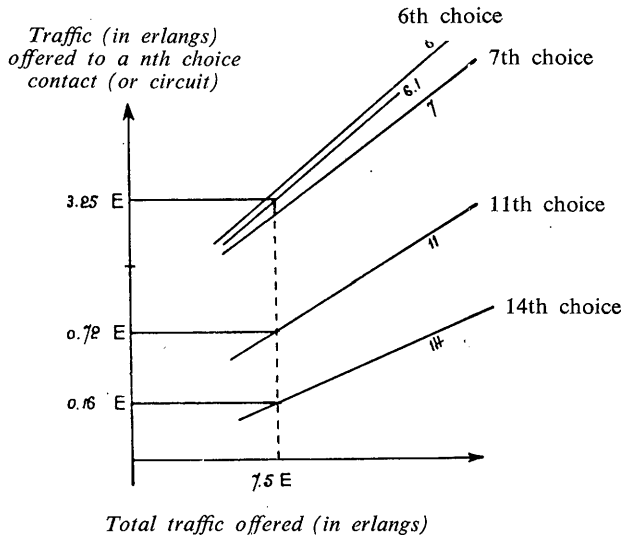
$$p = 3.25 \times \frac{5}{100} = 0.16$$

Number of circuits read: 14.0

Less: 6.1

Circuits needed: 7.9

The value 7.5 E does not need to be read and made to figure in the calculations as it is only necessary to determine on the diagrams the appropriate vertical line to find how many circuits are required for a specified loss.



### Second method

#### Description of the "Swedish method"

In the Swedish method account is not taken of the particular statistical characteristics of overflow traffic, but is based on a method of reasoning and then on a hypothesis for the calculation, which provides the desired guarantee of security for the flow of traffic.

In the first place an explanation is given of the method of reasoning adopted with the Swedish method followed by an explanation of the hypothesis which gives the desired margin of safety.



*Method of reasoning*

To determine the number of circuits of the alternate route, two reasonings are possible:

*Reasoning (a)*

It is assumed that the alternate route is intended initially to carry only its own traffic and that the overflow traffic from the direct route is added to this traffic. It is then necessary to *add* a number of circuits to the alternate route, according to the amount of overflow traffic. This is the assumption generally made with the different methods of calculation for alternative routing.

If account is not taken of the particular statistical characteristics of overflow traffic, the calculations for the alternate route give a number of circuits which is, in every case, slightly less than is actually needed. On the other hand, the methods which take account of the particular statistical characteristics of overflow traffic enable the number of circuits to be determined with sufficient accuracy. This is the case with the two methods (a) and (b) which are described in the first part.

*Reasoning (b)*

It is assumed that the alternate route is initially intended to carry all the traffic and that the part of the traffic to be passed over the direct route is deducted from this traffic. Consequently, the number of circuits on the alternate route can be *reduced* to an amount corresponding to the traffic deducted. This reasoning is the basis of the Swedish method.

To determine the number of circuits that can be subtracted from the alternate route as a function of the traffic to be carried on the direct route, it is necessary to know the traffic-carrying capacity of the circuits deducted from the alternate route, i.e. the rate of occupation of each of these circuits. This traffic-carrying capacity depends on the position of the circuits deducted (supposing that the circuits are tested in a specified order, a convention accepted for calculations with the Swedish method).

*Hypothesis giving the desired margin of safety*

To effect this deduction, three hypotheses can be made that the circuits deducted are taken amongst those:

A : of the last position (last choice),

B : of an intermediate position,

C : of the first position (first choice circuits having the highest occupation).

Proceeding according to hypothesis A (which seems at first sight the most natural) it is certain that too many circuits will be deducted from the alternate route. Hypothesis B could permit the optimum number of circuits to be found. However, the number of choice possibilities is very great and the choice should be made in the absence of any procedure with a mathematical basis. With hypothesis C it is certain that the number of circuits deducted from the alternate route will be very small. This is the hypothesis which is adopted in the Swedish method and which constitutes the guarantee that the circuits remaining on the alternate route will, in all cases, be sufficient. In other

words, the reduction in the traffic-carrying capacity of the circuits on the alternate route, when  $y$  circuits are deducted, will, by convention in the Swedish method, be equal to the traffic carried by the first  $y$  circuits of the group.

\* \* \*

After these explanations, which are intended to describe the spirit of the Swedish method, a brief description is given of the different phases of the calculations involved with this method. A more detailed description of the basis of this method is given in pages 442 to 453 of Volume I of the *Green Book*.

The notation employed in the following and the numbering of the formulae will be the same as in the text of Volume I of the *Green Book* and are followed for the three centres P, C and Q; C being the transit centre (see figures 1, 2 and 3).

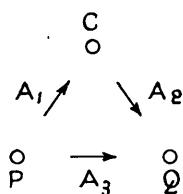


FIGURE 1. — Traffic offered

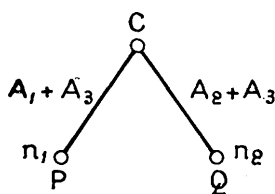


FIGURE 2. — All traffic passing in transit by the alternate route

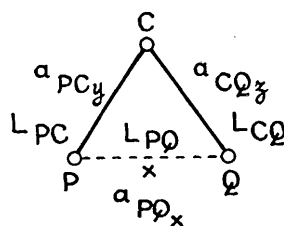


FIGURE 3. — Price of circuits and traffic handled on each route by a  $x$ th,  $y$ th, or  $z$ th circuit

- $A_1$  = Volume of traffic offered outgoing from P to C (in erlangs)
- $A_2$  = Volume of traffic offered outgoing from C to Q (in erlangs)
- $A_3$  = Volume of traffic offered outgoing from P to Q (in erlangs)
- $L_{PC}$  = Annual charges of a circuit on the route PC
- $L_{CQ}$  = Annual charges of a circuit on the route CQ
- $L_{PQ}$  = Annual charges of a circuit on the route PQ
- $n_1$  = the number of circuits necessary to carry the traffic  $A_1 + A_3$  outgoing from P (case where the direct route does not exist)
- $n_2$  = the number of circuits necessary to carry the traffic  $A_2 + A_3$  outgoing from C (case where the direct route does not exist)
- $x$  = the number of circuits on the direct route
- $y$  = the number of circuits of the alternate route which can be deducted from group  $n_1$  carrying  $A_1 + A_3$  traffic to take account of the constitution of  $x$  circuits on the direct route
- $z$  = the number of circuits of the alternate route which can be deducted from group  $n_2$  carrying  $A_2 + A_3$  traffic to take account of the constitution of  $x$  circuits on the direct route.

\* \* \*

With the hypothesis mentioned above that the  $y$  or  $z$  circuits deducted are the first circuits tested (circuits of which the occupation is very high) of group  $n_1$  (Group PC) and  $n_2$  (Group CQ) of the alternate route,  $y$  and  $z$  are determined, as a function of  $x$ , by the relation :

$$\left. \begin{array}{l} \text{Traffic carried by the } y(z) \text{ first circuits of group } n_1(n_2) \\ \text{to which is offered the traffic } A_1 + A_3(A_2 + A_3) \end{array} \right\} = \left\{ \begin{array}{l} \text{Traffic carried by the } x \text{ circuits} \\ \text{of the direct route to which is} \\ \text{offered the traffic } A_3 \end{array} \right.$$

(E.93)

that is to say by the two equations :

$$A_1 + A_3 - (A_1 + A_3) E_{1,y} (A_1 + A_3) = A_3 - A_3 E_{1,x} (A_3) \quad (4)$$

$$A_2 + A_3 - (A_2 + A_3) E_{1,z} (A_2 + A_3) = A_3 - A_3 E_{1,x} (A_3) \quad (5)$$

(See the note \* on the bottom of this page)

\* \* \*

To determine the optimum economic arrangement, the annual charges per erlang are compared :

- on the one hand, on the circuit last tested of the direct route PQ (xth circuit) and,
- on the other hand, on the circuit last tested *among those which are deducted* from the alternate route, yth circuit on the group PC, zth circuit on the group CQ.

It is then a matter of comparing :

$$\frac{L_{PQ}}{a_{PQx}} \text{ with } \frac{L_{PC}}{a_{PCy}} + \frac{L_{CQ}}{a_{CQz}}$$

the designation being :

$a_{PQx}$  = the traffic carried by the xth circuit of the group PQ

$a_{PCy}$  = the traffic carried by the yth circuit of the group PC

$a_{CQz}$  = the traffic carried by the zth circuit of the group CQ

The optimum economic arrangement is :

$$\frac{L_{PQ}}{a_{PQx}} = \frac{L_{PC}}{a_{PCy}} + \frac{L_{CQ}}{a_{CQz}} \quad (2)$$

For a quick answer, an approximation is made and instead of considering in equation (2) the traffic carried by circuits of y outlets and z outlets, this traffic is replaced by the traffic carried by a circuit of the first choice, that is to say,  $a_{PCy}$  and  $a_{CQz}$  are replaced by values a little *greater* =  $a_{PC1}$  and  $a_{CQ1}$ . The direct route is then submitted to conditions a little more severe. There is also :

$$a_{PQx} = \frac{L_{PQ}}{\frac{L_{PC}}{a_{PC1}} + \frac{L_{CQ}}{a_{CQ1}}} \quad (2')$$

This enables the value of traffic  $a_{PQx}$  to be determined assuming  $L_{PQ}$ ,  $L_{PC}$  and  $L_{CQ}$  are known. The value of x, number of circuits of the direct route, can be derived from  $a_{PQx}$ ; then from equations (4) and (5) [or from equations (4') and (5')], the values of y and z corresponding to the value of x thus found.

It is sufficient then to subtract from the number of circuits  $n_1$  or  $n_2$  (calculated for carrying  $A_1 + A_2$  and  $A_2 + A_3$ ) the numbers y and z to find the number of circuits of the groups PC and CQ.

*Note.* — If it is desired to have a greater accuracy in these calculations, it is possible to proceed by successive approximations, replacing y and z in equation (2) by the values obtained from x derived from (2'). As a general rule this accuracy does not lead to any change in the number of circuits and therefore this correction is not normally made.

\* *Note:*

Instead of considering the traffic carried, the overflow traffic which is the complement of this, can be considered resulting with equations (4') and (5'), which can be more practical to handle :

$$(A_1 + A_3) E_{1,y} (A_1 + A_3) = A_1 + A_3 E_{1,x} (A_3) \quad (4')$$

$$(A_2 + A_3) E_{1,z} (A_2 + A_3) = A_2 + A_3 E_{1,x} (A_3) \quad (5')$$

These equations (4') and (5') express, for example, in the case of group PC, that :

traffic overflowing from the first y circuits  
of PC when all the traffic  $A_1 + A_3$  passes  
over the alternate route

$$= \left\{ \begin{array}{l} \text{traffic proper to PC or } A_1 \\ + \\ \text{traffic overflowing from the direct route PQ.} \end{array} \right.$$

*Application of the methods of calculation to a concrete case*

I. *Particulars of the problem* (see figure below).

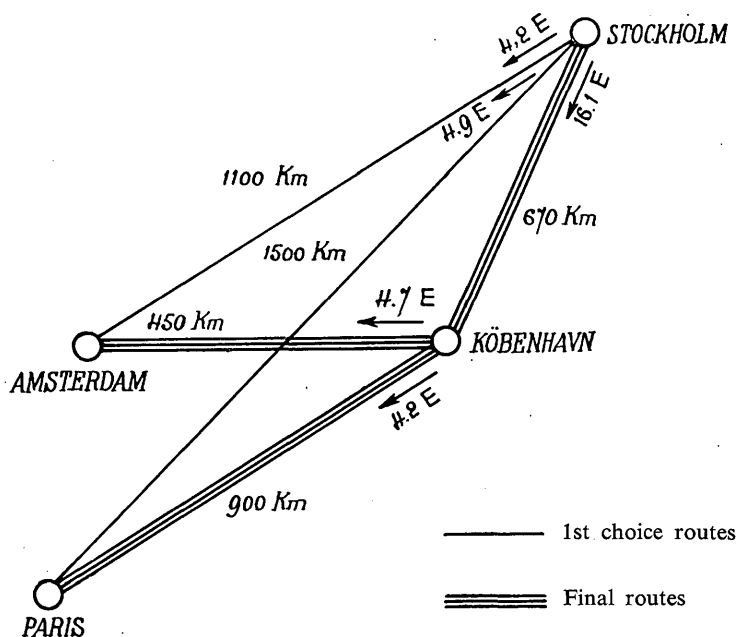
I.1. Centres: — Stockholm, København, Amsterdam and Paris.

I.2. Routes overflowing: — Stockholm to Amsterdam  
Stockholm to Paris

I.3. Traffic: — S-A (Stockholm-Amsterdam)	4.2 E
S-P (Stockholm-Paris)	4.9 E
S-K (Stockholm-København)	16.1 E
K-A (København-Amsterdam)	4.7 E
K-P (København-Paris)	4.2 E

I.4. Grade of service: — Permitted loss on direct circuits 5 %  
Permitted loss on transit circuits 3 %

I.5. Distances: — S-A 1100 km  
S-P 1500 km  
S-K 670 km  
K-A 450 km  
K-P 900 km



II. *Elements derived from the information*

II.1. *Total transit route traffic*

S-K (including S-A and S-P)	25.2 E
K-A (including S-A)	8.9 E
K-P (including S-P)	9.1 E

## II.2. Circuit annual charges

The following values are taken from the minutes of the Committee for the Revision of International Tariffs.

- Terminal carrier and switching equipment 0.22 gold franc per circuit, per 3 minutes of conversation.
- Circuit 0.25 gold franc per 100 km, per 3 minutes of conversation.
- 40 000 minutes of occupation per annum.

The following values are obtained :

$$\begin{aligned}
 L_{S-A} \text{ (direct)} &= (2 \times 0.22 + 11 \times 0.25) \times \frac{40\,000}{3} = 3.19 \times \frac{40\,000}{3} = 42\,530 \text{ gold fr.} \\
 L_{S-P} \text{ (direct)} &= (2 \times 0.22 + 15 \times 0.25) \times \frac{40\,000}{3} = 4.19 \times \frac{40\,000}{3} = 55\,860 \quad " \\
 L_{S-K} &= (2 \times 0.22 + 6.7 \times 0.25) \times \frac{40\,000}{3} = 2.115 \times \frac{40\,000}{3} = 28\,200 \quad " \\
 L_{K-A} &= (2 \times 0.22 + 4.5 \times 0.25) \times \frac{40\,000}{3} = 1.565 \times \frac{40\,000}{3} = 20\,870 \quad " \\
 L_{K-P} &= (2 \times 0.22 + 9 \times 0.25) \times \frac{40\,000}{3} = 2.69 \times \frac{40\,000}{3} = 35\,860 \quad "
 \end{aligned}$$

The prices have been rounded to about 10 gold francs.

*Note.* — For the calculation of the best arrangement with alternative routing, it is necessary to have an annual charge basis for international circuits and for their terminal carrier and switching equipment.

The basic values taken are those which are used to determine cost price elements for 3 minutes, telephone charges in C.C.I.F. Recommendation 41. The value for carrier and switching equipment (0.22 gold francs per 3 minutes) corresponds to the cost price elements for semi-automatic exchanges less operating expenses :

$$\begin{aligned}
 0.22 &= 0.80 - 0.58 \text{ for an outgoing centre,} \\
 &= 0.30 - 0.08 \text{ for an incoming centre.}
 \end{aligned}$$

The annual charge values per circuit are restored by multiplying the values indicated in Recommendation 41 by  $\frac{40\,000}{3}$ .

The actual number of minutes of conversation during the year will vary the cost per 3 minutes but not the annual charges.

## III. Results of the calculations

III.1. The calculations given in the following Annex and carried out

- by the "weighted choice" method,
- by the Swedish method,

leading respectively to the following values of numbers of circuits representing the optimum economic arrangement.

Group	"Weighed choice"	Swedish method
S-A	1	1
S-P	1	1
S-K	30.6	30.6
K-A	13.1	13.2
K-P	13.5	13.6

It will be seen that there is a perfect convergence of results.

III.2. In the calculations made by the "weighted choice" method, different arrangements are calculated to find the economic optimum. It is interesting to compare the annual charges of these different arrangements which are :

Arrangement . . .	S-A = 1 S-P = 1	S-A = 0 S-P = 0 (all passed in transit)	S-A = 0 S-P = 1
Cost . . . . .	1 718 820	1 721 520	1 722 540

S-A = 1 S-P = 2	S-A = 3 S-P = 3	S-A = 5 S-P = 5	S-A = 7.6 S-P = 8.4 } all the traffic passed direct
1 723 432	1 738 970	1 777 720	1 909 590

## ANNEX 1

### Calculations made by the "weighted choice" process

#### 1. Approximate determination of the most economical arrangement

##### 1.1. Occupancies for first choice circuits on direct routes:

$$\text{S-A (direct)} \frac{4.2}{5.2} = 0.81 \text{ E}$$

$$\text{S-P (direct)} \frac{4.9}{5.9} = 0.83 \text{ E}$$

The corresponding occupancies for the second choice circuits are approximately 0.75 E and 0.78 E respectively.

##### 1.2. Transit route traffic addition per circuit:

S-K + A + P at 3%	33 circuits carry 25.84 E
	32 circuits carry 24.91 E
	difference 0.93 E
K-A (incl. S-A) at 3%	14 circuits carry 8.8 E
	13 circuits carry 7.97 E
	difference 0.83 E
K-P (incl. S-P) at 3%	15 circuits carry 9.65 E
	14 circuits carry 8.8 E
	difference 0.85 E

1.3. *Economic comparison*

1.3.1. A.C. by direct route for first circuit of group :

$$\text{A.C. per erlang S-A} = \frac{42\,530}{0.81} = 52\,510 \text{ gold francs}$$

$$\text{A.C. per erlang S-P} = \frac{55\,860}{0.83} = 67\,310 \text{ gold francs}$$

1.3.2. A.C. by overflow route for last circuit of group :

$$\text{A.C. per erlang S-K-A} = \frac{28\,200}{0.93} + \frac{20\,870}{0.83} = 55\,470 \text{ gold francs}$$

$$\text{A.C. per erlang S-K-P} = \frac{28\,200}{0.93} + \frac{35\,860}{0.85} = 72\,510 \text{ gold francs}$$

*Note.* — A comparison between sections 2.1 and 2.2 shows an apparent economic advantage with one direct circuit on each of the routes S-A and S-P. However, the additional traffic per circuit in paragraph 1.2 is for random traffic, whereas the traffic in paragraph 1.1 is selected calls which are better distributed than random traffic. On this account, the occupancies in paragraph 1.2 are relatively low and the charges in paragraph 1.3.2 are relatively high.

In particular, the figures in paragraph 1.2 are a little lower than those used for the economic calculation in the Swedish method where the traffic carried by the first circuit of the alternate route is taken into consideration where all the traffic is offered to it (this, however, is also an approximation).

1.3.3. The occupancy values for the second choice circuits on the direct route S-A and S-P are not sufficiently high to provide an annual charge figure which will compare favourably with the charges via transit given in paragraph 1.3.2. For the first choice circuits, it is easier to calculate the number of circuits required and to evaluate the annual charges than to attempt to reach an accurate estimate of the optimum arrangement by comparing the route charges.

1.3.4. Existing plant or operational conditions may make it advantageous to adopt an overflow arrangement which is not the best theoretical solution. For information purposes, therefore, several possible combinations are worked out in section 2.

2. *Computation of number of overflow circuits*

2.1. Arrangements to be considered :

2.1.1. S-A 1 direct circuit

S-P 1 direct circuit

2.1.2. S-A 3 direct circuits

S-P 3 direct circuits

2.1.3. S-A 5 direct circuits

S-P 5 direct circuits

2.2. *Overflow traffic as read from curves*

Arrangement considered :	1 + 1	3 + 3	5 + 5
S-A (4.2 E offered)	3.4 E	1.98 E	0.92 E
S-P (4.9 E offered)	4.07 E	2.55 E	1.36 E

## 2.3. Calculation of overflow circuits S-K

Arrangement considered :

	1 + 1	3 + 3	5 + 5
S-K	$16.1 \times 1 = 16.1$	$16.1 \times 1 = 16.1$	$16.1 \times 1 = 16.1$
S-A	$3.4 \times 2 = 6.8$	$1.98 \times 4 = 7.9$	$0.92 \times 6 = 5.5$
S-P	$4.07 \times 2 = 8.2$	$2.55 \times 4 = 10.2$	$1.36 \times 6 = 8.2$
	<hr/> 23.57 E <hr/> 31.1	<hr/> 20.63 E <hr/> 34.2	<hr/> 18.38 E <hr/> 29.8
3% loss	0.71 E	0.62 E	0.55 E
Weighted choice	1.3	1.6	1.6
Hypothetical choice read from curve to give stated loss	} 31.9	29.1	26.4
less		1.6	1.6
Circuit quantity needed	<hr/> 30.6	<hr/> 27.5	<hr/> 24.8

## 2.4. Calculation of overflow circuits K-A

Arrangement considered :

	1 + 1	3 + 3	5 + 5
K-A	$4.7 \times 1 = 4.7$	$4.7 \times 1 = 4.7$	$4.7 \times 1 = 4.7$
S-K-A	$3.4 \times 2 = 6.8$	$1.98 \times 4 = 7.9$	$0.92 \times 6 = 5.5$
	<hr/> 8.1 E <hr/> 11.5	<hr/> 6.68 E <hr/> 12.6	<hr/> 5.62 E <hr/> 10.2
3% loss	0.24 E	0.2 E	0.17 E
Weighted choice	1.4	1.9	1.8
Hypothetical choice read from curve	} 14.5	13.5	12.2
Circuit quantity needed		11.6	10.4

## 2.5. Calculation of overflow circuit K-P

Arrangement considered :

	1 + 1	3 + 3	5 + 5
K-P	$4.2 \times 1 = 4.2$	$4.2 \times 1 = 4.2$	$4.2 \times 1 = 4.2$
S-K-P	$4.07 \times 2 = 8.1$	$2.55 \times 4 = 10.2$	$1.36 \times 6 = 8.2$
	<hr/> 8.27 E <hr/> 12.3	<hr/> 6.75 E <hr/> 14.4	<hr/> 5.56 E <hr/> 12.4
3% loss	0.25 E	0.2 E	0.17 E
Weighted choice	1.5	2.1	2.2
Hypothetical choice read from curve	} 15.0	13.9	12.5
Circuit quantity needed		11.8	10.3



## 3. Results

## 3.1. Summary of A.C. of different arrangements with overflow as calculated by taking the product of annual charges and the quantities of circuits found

Arrangement considered :	1 + 1	3 + 3	5 + 5
A.C. of route S-A	42 530	127 590	212 650
A.C. of route S-P	55 860	167 580	279 300
A.C. of route S-K	862 920	775 550	699 360
A.C. of route K-A	273 400	245 100	217 050
A.C. of route K-P	484 110	423 150	369 360
Total	1 718 820	1 738 970	1 777 720

## 3.2 All traffic via transit route

S-K = 25.2 E needing 32.3 circuits	A.C. = 910 860
K-A = 8.9 E needing 14.1 circuits	A.C. = 294 270
K-P = 9.1 E needing 14.4 circuits	A.C. = 516 390
	1 721 520

## 3.3 S-A and S-P traffic via direct route

S-A = 4.2 E needing 7.6 circuits (5% loss)	A.C. = 323 230
S-P = 4.9 E needing 8.4 circuits (5% loss)	A.C. = 469 220
S-K = 16.1 E needing 22.4 circuits	A.C. = 631 680
K-A = 4.7 E needing 9.0 circuits	A.C. = 187 830
K-P = 4.2 E needing 8.3 circuits	A.C. = 297 630
	1 909 590

From these results it is possible to determine that the annual charges for the traffic S-K, K-A and K-P, which is not subject to overflow, is 1 117 140 and the difference in charge between the first arrangement with alternative routing (1 718 820 — 1 117 140 = 601 680) and all direct traffic (1 909 590 — 1 117 140 = 792 450) represents approximately 24% on the traffic concerned (S-A, S-P). The difference between alternative routing and all traffic via transit is only 0.5%.

## 4. Analysis of results

## 4.1. Circuit occupancies

With S-A = 1 and S-P = 1, the traffic from S-K is 23.57 E requiring 30.6 circuits (see paragraph 2.3). When all traffic is via transit, the traffic from S-K is 25.2 E which needs 32.3 circuits. The difference 1.635 E needs only 1.7 circuits showing that the extra circuits are operating at a higher occupancy (0.96) than can be justified by the tables as mentioned in paragraph 1.2 above.

## 4.2. It is quite possible that a more economical arrangement might be produced with

or S-A = 0 and S-P = 1  
S-A = 1 and S-P = 2

These possibilities can be quickly established by calculating the quantities.

---

\* 1 117 140.

4.3 *Further computation*

Arrangement considered :	0 + 1	1 + 2
S-A (4.2 E offered)	4.2 E	3.4 E
S-P (4.9 E offered)	4.07 E	3.3 E
Computation for S-K		
S-K	$16.1 \times 1 = 16.1$	$16.1 \times 1 = 16.1$
S-A	$4.2 \times 1 = 4.2$	$3.4 \times 2 = 6.8$
S-P	$4.07 \times 2 = 8.2$	$3.3 \times 3 = 9.9$
	24.37 E      28.5	22.8 E      32.8
3% loss	0.73 E	0.68 E
Weighted choice	1.2	1.5
Hypothetical choice read from curve	32.7	31.3
Circuit quantity needed	31.5	29.8
Computation for K-A		
K-A	14.1 circuits as in section 3.2	13.1 circuits as in section 2.4
S-K-A		
Computation for K-P		
K-P	13.5 circuits as in section 2.5	$4.2 \times 1 = 4.2$
S-K-P		$3.3 \times 3 = 9.9$
		7.5 E      14.1
3% loss		0.23 E
Weighted choice		1.9
Hypothetical choice read from curve		14.6
Circuit quantity needed		12.7

4.4 *Further summary*

Arrangement considered :	0 + 1	1 + 2
A.C. of route S-A	—	42 530
A.C. of route S-P	55 860	111 720
A.C. of route S-K	888 300	840 360
A.C. of route K-A	294 270	273 400
A.C. of route K-P	484 110	455 422
	1 722 540	1 723 432

4.5 *General comments*

It should be observed that the effective grade of service is not similar in all examples taken. The 5 + 5 and 3 + 3 arrangements would be capable of taking a considerable overload with less serious upset than the other arrangements.

It has been assumed for this study that the loss on the transit routes should be not greater than 3% because certain other traffic from Stockholm uses København as a transit without overflow. As a general case, in which the only consideration is the loss on the routes S-A, S-P, S-K, K-A and K-P then the 3 + 3 and 5 + 5 arrangements have special merit because with circuits S-K at 5% loss there is a saving of 1.8 circuits and on the K-A and K-P routes there is also a saving of 1 circuit. The revised figures are then :

3 + 3	1 631 470
5 + 5	1 670 220

These totals are markedly less than the other combinations.

## ANNEX 2

*Calculations by the Swedish method*1. *All the traffic is passed over the alternative route (via K)*1.1. *Traffic offered.*

S-K (including S-A and S-P) : 25.2 E  
 K-A (including S-A) : 8.9 E  
 K-P (including S-P) : 9.1 E

1.2. *Number of circuits necessary.*  
(loss probability  $p = 3\%$ )

$n_1 = 32.3$   
 $n_2 = 14.1$   
 $n_3 = 14.4$

1.3. *Occupation of the first circuit at each group.*

$a_{SK1} = 0.96$  E  
 $a_{KA1} = 0.90$  E  
 $a_{KP1} = 0.90$  E

2. *Most economic arrangement — Number of direct circuits*

In the most economic arrangement, the occupation of the last circuit of the direct groups Stockholm-Amsterdam and Stockholm-Paris is

$$a_{SA} = \frac{L_{SA}}{\frac{L_{SK}}{a_{SK1}} + \frac{L_{KA}}{a_{KA1}}} = \frac{3.19}{\frac{2.115}{0.96} + \frac{1.565}{0.90}} = 0.82 \text{ E}$$

and

$$a_{SP} = \frac{L_{SP}}{\frac{L_{SK}}{a_{SK1}} + \frac{L_{KP}}{a_{KP1}}} = \frac{4.19}{\frac{2.115}{0.96} + \frac{2.69}{0.90}} = 0.81 \text{ E}$$

The last circuit of the direct group S-A should carry a minimum traffic of 0.82 E when the traffic offered to this group is 4.2 E.

One direct circuit is then required for the group S-A (occupation of the first circuit S-A for 4.2 E offered: 0.81 E, of the second circuit: 0.75 E).

The same for the group S-P :

— traffic offered : 4.9 E,

— minimum traffic carried by the last circuit : 0.81 E,

it must therefore have 1 direct circuit (occupation of the first circuit S-P for 4.9 E offered : 0.83 E, of the second circuit : 0.78 E).

3. *Number of circuits on the overflow groups*3.1. *Group S-K*

To carry the total traffic of 25.2 E, with a loss probability of 3% would require 32.3 circuits. This number of circuits should be reduced by the quantity  $r$  obtained from the relation :

$$25.2 E_{1,r} (25.2) = 25.2 - [4.9 - 4.9 E_{1,1} (4.9)] - [4.2 - 4.2 E_{1,1} (4.2)]$$

or;

$$25.2 E_{1,r} (25.2) = 25.2 - 0.9 - 0.8 = 23.5$$

where  $r = 1.7$

resulting in :  $32.3 - 1.7 = 30.6$  circuits.

(E.93)

## 3.2 Group K-A

The total traffic 8.9 E would require 14.1 circuits.

This number of circuits should be reduced by a quantity  $r$  obtained from the relation :

$$8.9 \cdot E_{I,r} (8.9) = 8.9 - [4.2 - 4.2 E_{I,I} (4.2)] = 8.1$$

where  $r = 0.9$

resulting in :  $14.1 - 0.9 = 13.2$  circuits

## 3.3 Group K-P

The total traffic 9.1 E requires 14.4 circuits.

This number of circuits should be reduced by a quantity  $r$  obtained from the relation :

$$9.1 E_{I,r} (9.1) = 9.1 - [4.9 - 4.9 E_{I,I} (4.9)] = 8.2$$

where  $r = 0.8$

resulting in :  $14.4 - 0.8 = 13.6$  circuits.

## 4. Conclusion

Finally the following arrangement is obtained :

Stockholm-Amsterdam	1 circuit
Stockholm-Paris	1 circuit
Stockholm-København	30.6 circuits
København-Amsterdam	13.2 circuits
København-Paris	13.6 circuits

RECOMMENDATION E.95**DETERMINATION OF THE NUMBER OF CIRCUITS NECESSARY FOR  
ROUTING A GIVEN VOLUME OF TRAFFIC WITH AUTOMATIC OPERATION**

The C.C.I.T.T. recommends that the number of circuits of a group worked by fully automatic operation should be calculated by referring to Erlang's classical formula (formula No. 1\*), and adopting a loss probability of 1%.

This loss probability should also be adopted for a group carrying both fully automatic and semi-automatic traffic.

---

\* See table on page 137 and graphs on pages 138 and 139, giving values of Erlang's classical formula for  $p = 1\%$ ,  $3\%$  and  $5\%$ .

## LIST OF NEGATIVE DECISIONS TAKEN BY THE C.C.I.T.T. (BY THE C.C.I.F.)

### *Decisions*

The publication of an "International List of Telephone Exchanges" by the I.T.U. General Secretariat can be dispensed with.

A code for access to the international automatic network should not be standardized (see also point 10 of Recommendation 26 *bis*).

There is no case for allowing a terminal Administration \*\* to receive a higher quota for outgoing calls than for incoming calls in order to take its publicity expenses (canvassing) into account.

There is no point in keeping statistics of circuit out-of-service times.

The principle of charging for ineffective international automatic calls should be rejected.

The queueing system in an international automatic transit exchange with seizing priority for automatic transit calls cannot be generally recommended.

There is no occasion to modify the arrangements in the Instructions for Operators so that in demand working, speedier treatment is given to ordinary calls with respect to other calls.

There is no occasion to modify the arrangements in the Instructions for Operators to make obligatory the insertion of the caller's name on the call ticket in the case of a preavis call.

### *Reference*

Recommendation 12 *ter*,  
*Green Book*\*, Vol. VI, p. 36.

Recommendation 26 *ter*,  
*Green Book*, Vol. VI, p. 73.

Recommendation 58,  
*Green Book*, Vol. VI, p. 118.

Recommendation 62 *bis*,  
*Green Book*, Vol. VI, p. 130.

Result of the study of  
Question 5 examined in  
1956-1958.

Result of the study of  
Question 19 examined in  
1956-1958.

Result of the study of  
Question 26 examined in  
1956-1958.

Result of the study of  
Question 27 examined in  
1956-1958.

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\* Volume VI of the *Green Book* is the outcome of the XVIIth Plenary Assembly of the C.C.I.F., Geneva, 1954.

\*\* or Recognized Private Operating Agency.

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## Telephone operation and tariff Questions

entrusted to  
**Study Group II**  
in 1961/1964

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### Question 1/II. — Difference between:

- “Avis d'appel” and “préavis” calls,
- person-to-person calls

*(New question)*

The Telephone Regulations (Geneva, 1958) mention « préavis » calls and « avis d'appel » calls as well as person-to-person calls. The charges for calls using these special facilities and the conditions for setting them up are defined by reference to C.C.I.T.T. Recommendations.

Person-to-person calls are only referred to in the C.C.I.T.T. Recommendations with respect to intercontinental services. Besides intercontinental services, person-to-person calls are also used in international services in continents other than Europe. Their method of charging is not in line with that at present provided for intercontinental services, in which they are charged like station-to-station calls without any surcharge.

It would be desirable for the C.C.I.T.T. to study.:

1. whether there are any significant differences from the point of view of the facilities offered to users between:
  - (a) person-to-person calls, and
  - (b) “préavis” calls or calls with “avis d'appel”;
2. how person-to-person calls are charged for in international services when it is not an intercontinental call and to what extent these charging conditions differ from those pertaining to calls with “avis d'appel” or “préavis”.

*Note.* — Person-to-person calls in the international (not intercontinental) services usually follow the conditions for person-to-person calls in the national service of the countries under consideration. The Administrations and Recognized Private Operating

(Question 1/II)



Agencies having person-to-person call arrangements in their national systems are requested to forward information about facilities offered and charges.

**Question 2/II. — Designation of the called subscriber's number**

*(New question)*

Amendments to Article 56 of the Instructions for the International Telephone Service, to take into account the gradual introduction of national numbering plans.

*Note.* — According to Article 56 of the Instructions, the called subscriber's station is designated by the exchange name *or* routing code for the incoming network and by the telephone number.

With the introduction of national numbering plans, the routing code generally corresponds to a group of figures and it may result that the designation of the called subscriber's station does not include a name. The fact that there is no name sometimes surprises the operator booking the call in the outgoing country and leads her to refuse it on the grounds that it is incomplete.

What steps should be recommended to avoid these difficulties?

**Question 3/II. — Credit cards**

*(New question)*

Credit card facilities are already available in certain national services and have recently been introduced by mutual agreement in a number of international relations. Would it not be desirable to include credit card calls among the special facilities accorded to users for the exchange of calls in the international telephone service; and if so, what operational and charging arrangements should be laid down?

*Note 1.* — The purpose of the credit card call facility is to permit the holder of a credit card issued by a national administration to make calls from a foreign country to his own country without paying the appropriate charges in the country where the call is booked. The facility is similar to the collect call facility insofar as the country of destination treats a credit card call as an outgoing call for subscriber's charging and international accounting purposes.

However, because the charges are always debited against the telephone number shown on the credit card, there is no need to approach the called party to obtain his acceptance to pay the charges as would be the case on a collect call.

*(Question 3/II)*

*Note 2.* — The Administrations are requested to say whether they have made credit card facilities available for the exchange of national calls, with as detailed an explanation as possible of the organization of the system adopted. They should indicate in particular how their national credit card system could be adopted on the international level.

**Question 4/II. — Simplification of monthly accounts**

**(Amendment to Recommendation E.70)**

*(New question)*

*Note.* — The distinctions made in Recommendation E.70 with a view to showing the various classes of traffic in Form 1, for monthly accounting purposes, were justified by the need to facilitate the work done by the I.T.U. in drawing up the annual statistics.

The statistics in question have now been modified by Recommendation E.81. Hence, there seems no call to go on making distinctions between the various kinds of surcharge. It might be well to make, in monthly accounts, a simplification parallel to that tried in the statistics.

Furthermore, accounts might be drawn up simply in minutes of call, instead of converting chargeable minutes into call units, one minute being charged for at one-third of the basic rate. This would permit accumulation of surcharges when not accompanied by calls. At the same time, this would eliminate the work involved in apportioning surcharges amongst the calls made, i.e., the total surcharge plus the minutes of call.

Would it not then be advisable that the matters to be mentioned in monthly accounts be reviewed, and that Recommendation E.70 might perhaps be amended, with a view to giving a single overall figure for chargeable minutes (calls plus surcharges) for each basic rate?

**Question 5/II. — Periods for establishing accounts**

*(New question)*

Can it be agreed that the monthly accounts for fully-automatic international telephone traffic need not relate strictly to calendar months?

*Note.* — Special staffing arrangements might be required if it were necessary to read, at midnight on the last day of each calendar month, the meters which record the duration of fully-automatic traffic. It would seem to be satisfactory to read the meters at a convenient time (not necessarily the same at the two ends of a route) on the last working day of the month.

(Question 5/II)

**Question 6/II. — Refunds***(New question)*

In the manual and semi-automatic service should not refunds, which it is not possible to deduct from the international accounts before the accounts are sent, be borne by the Administration (or Recognized Private Operating Agency) which levied the charge?

*Reasons.* — Present procedure in respect of telephone call charges is laid down in the Telephone Regulations, Article 137 (192) which reads:

“ If the call has already been included in the international accounts, the Administrations of Recognized Private Operating Agencies concerned shall forgo their shares of the refund to be granted unless there is agreement to the contrary: Any necessary corrections shall be carried into subsequent accounts. ”

In the new draft Recommendation F.60 (Regulations for the telex service) a simplified procedure has been adopted in Article 35 (3) which says:

“ ... Any refunds granted to a subscriber which it has not been possible to deduct from the international accounts before the accounts were sent shall be borne by the Administration (or Recognized Private Operating Agency) which levied the charge for which the refund has been made. ”

It would appear desirable for the practice on the telephone side to be brought into line with that now proposed for the telex service.

**Question 7/II. — Unanswered request for the use of circuits for programme transmissions***(New question)*

Is it considered that a charge should be made when a request for the use of circuits for programme transmissions is cancelled before the transmission takes place?

If so, what should the charge be and in what circumstances should it be imposed?

*Note.* — It would appear reasonable to make a charge when orders for programme circuits are cancelled before the transmissions take place in order to reduce the present large number of cancelled bookings and to compensate Administrations for any work which they may have already undertaken.

*(Question 7/II)*

## Supplementary Questions

proposed by

Special Study Group B

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### Supplementary Question A/II. — Person-to-person calls in the intercontinental service

(Question proposed by Special Study Group B in April 1961)

1. Person-to-person calls, as defined in Article 13, paragraph 6 of the Regulations, *in the intercontinental service* are in accordance with Recommendation E.4 of Volume II (or II *bis*) of the C.C.I.T.T. *Red Book*, as regards operation and tariffs.

It will be necessary to consider:

(a) whether there are important differences in the facilities offered to the user:

- i) with person-to-person calls, and
- ii) with the group of “*préavis*” and “*avis d’appel*” calls;

(b) whether person-to-person calls should be retained in the intercontinental service in conditions of Recommendation E.4;

(c) if not, what category of calls should replace them;

(d) whether such a change is likely to result in alterations in the charges.

2. If person-to-person calls are retained, it is desirable, in the intercontinental service, to introduce a special “automatic” system of operation as contemplated in some countries. The “automatic” service referred to here is a service of a mixed nature which does not come under any of the definitions appearing in the introduction to Volume VI of the *Red Book* (paragraph 2). For the subscriber it consists of dialling the correspondent’s full number, whereupon an operator in the country of origin temporarily breaks in and withdraws as soon as she is sure that the caller is put through to the desired correspondent. An access code would be used with this type of service.

(Supplementary question A/II)

**Supplementary Question B/II. — Intercontinental rapid service***(Question proposed by Special Study Group B in April 1961)*

Can the rapid service (also known as the "single ticket method") become general practice in the semi-automatic intercontinental service as it is in the international service? It should be noted that this method of handling calls is based on the assumption that the indications given by the outgoing centre are accepted as the basis for the preparation of international accounts.

**Supplementary Question C/II. — Lump-sum fee for intercontinental calls to a definite area***(Question proposed by Special Study Group B in April 1961)*

Should a charging procedure based on the following be introduced in intercontinental working:

By payment of a lump-sum fee, the subscriber can obtain a definite number of calls to subscribers within some particular geographical area.

**SUMMARY OF QUESTIONS ENTRUSTED TO STUDY GROUP II  
1961-1964**

No	Brief description	Comments
1/II	Difference between: — "avis d'appel and "préavis" calls, — person-to-person calls	Questions proposed by Special Study Group B
2/II	Designation of the called subscriber's number	
3/II	Credit cards	
4/II	Simplification of monthly accounts	
5/II	Periods for establishing accounts	
6/II	Refunds	
7/II	Unanswered request for the use of circuits for programme transmissions	
Sup. A/II	Person-to-person calls in the intercontinental service	
Sup. B/II	Intercontinental rapid service	
Sup. C/II	Lump-sum fee for intercontinental calls to a definite area	

*(Supplementary question C/II)*

**PART II**

**TELEGRAPH OPERATION AND TARIFFS**

**Recommendations relating to Telegraph Operation and Tariffs  
(Series F)**

**Questions of Telegraph Operation and Tariffs  
entrusted to Study Group I**

**Contributions considered worth publishing**

## **SERIES F**

### **RECOMMENDATIONS RELATING TO TELEGRAPH OPERATION AND TARIFFS**

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#### **SUMMARY**

Index of Series F Recommendations.

- SECTION 1: Operating methods for the international general telegraph service.  
(F.1 to F.19)
- SECTION 2: Switching network for the general public service — Gentex network.  
(F.20 to F.39)
- SECTION 3: Tariffs and accounting methods for the international general telegraph service.  
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- SECTION 4: Telex service.  
(F.60 to F.69)
- SECTION 5: Lease of telegraph circuits.  
(F.70 to F.79)
- SECTION 6: Operating methods for facsimile and phototelegraph service.  
(F.80 to F.89)
- SECTION 7: Statistics and publications on international telegraphy.  
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## SECTION 1

# OPERATING METHODS FOR THE INTERNATIONAL GENERAL TELEGRAPH SERVICE

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### RECOMMENDATION F.1

#### TRANSMISSION OF TELEGRAMS IN THE INTERNATIONAL SERVICE<sup>1</sup>

*(Geneva, 1958, amended at New Delhi, 1960)*

THE C.C.I.T.T.,

HAVING REGARD

to Articles 4, 16, 21, 27, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45 and 46 of the Telegraph Regulations (Geneva Revision, 1958),

UNANIMOUSLY RECOMMENDS

that the following rules serve as a guide for the staff in charge of the transmission of telegrams in the international service.

#### RULES FOR THE TRANSMISSION OF TELEGRAMS IN THE INTERNATIONAL SERVICE

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<sup>1</sup> References given in brackets in the left-hand margin of the text of this Recommendation refer to the Telegraph Regulations (Geneva Revision, 1958).

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## Section A. — General rules

### ARTICLE A.1. *Order of transmission of telegrams*

§ 1. The transmission of telegrams shall take place in the following order:

- a) SVH telegrams;
- b) Government telegrams Priorité Nations;
- c) Service advices relating to serious interruption to telecommunication routes;
- d) Government telegrams for which the sender has requested transmission priority;
- e) Meteorological telegrams;
- (Art. 36, § 1) f) Urgent service telegrams, urgent service advices and paid service advices;
- g) Urgent private telegrams, urgent RCT telegrams and urgent press telegrams;
- h) Non-urgent service telegrams, non-urgent service advices and acknowledgements of receipt;
- i) Government telegrams other than those indicated in b) and d), above; ordinary private telegrams, ordinary RCT telegrams and ordinary press telegrams;
- j) Letter telegrams (ELT, ELTF, LT and LTF).

(F.1)

(Art. 36, § 2) § 2. Every office which receives, through an international communication channel, a telegram presented as a SVH telegram, a Government telegram, a service telegram or a meteorological telegram, shall re-forward it as such.

(Art. 36, § 3) § 3. Except where technically impossible, telegrams having the same priority shall be transmitted by the sending office in the order of their time of handing-in, and by intermediate offices in the order of their time of receipt.

(Art. 36, § 4) § 4. At intermediate offices, originating telegrams and transit telegrams to be transmitted over the same routes shall, except where technically impossible, be placed together and transmitted according to the time of handing-in or receipt, subject to the order laid down in this Article.

#### ARTICLE A.2. *Beginning of transmission*

(Art. 37, § 1) § 1. All correspondence between two offices shall begin with the call signal.

§§ 1 and 2) § 2. A transmission, once begun, may not be interrupted to give place to a communication of higher priority except in a case of absolute urgency.

§ 3. The office called must reply immediately.

#### ARTICLE A.3. *Order of transmission of the parts of a telegram*

(Art. 42) § 1. The various parts of a telegram shall be transmitted as follows: preamble, paid service indications, the address, the text, the signature, and, if necessary, the verification of the signature. Expressions charged for as one word and joined up by the counter officer shall be transmitted as one word.

(Art. 37, § 3) § 2. Except where transmission and reception is between page printing \* systems, the double hyphen (— · · · — in Morse Code and = on printing equipment) shall be transmitted to separate the preamble from the paid service indications, the paid service indications from each other, the paid service indications from the address, the various addresses of a multiple telegram from each other, the address from the text, the text from the signature, the signature from its verification (if included), and the pages of a telegram comprising more than 50 words.

#### ARTICLE A.4. *Transmission of the preamble*

(Art. 41, § 1) § 1. The service indications forming the preamble shall be transmitted as follows:

- a) the letter B, but solely in the exchange of telegrams by Morse and sound-reading instruments, and then only when the sending office is working direct with the office of destination;
- b) the letter X, in the cases mentioned in Article B.5, § 4;
- c) the serial number of the telegram (Art. B.5) or the reference number (Art. C.3, § 1) if either of these numbers is to be transmitted;
- d) the nature of the telegram, by means of the regulation abbreviations (Regulations, Article 41), if necessary;

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\* For reception on a page-printing teleprinter, see Recommendation F.12.

e) the name of the office of destination, but only in an SVH telegram without an address, a telegram for forwarding ("to follow") bearing several destinations (Regulations, Art. 56, § 5 (1)), a service advice, a paid service or an acknowledgement of receipt;

f) (1) the name of the office of origin followed, if necessary, by the additions intended to distinguish it from other offices in the same locality (*example*: Berlin-Charlottenburg). The name of the office must be transmitted as it appears in the first column of the International List of Telegraph Offices and cannot be abbreviated or combined into a single word. *Examples*: La Union and *not* Launion; S. Alban d'Ay and *not* Salbanday;

(2) when the office of origin is indicated by a number, in addition to the name of the place (for *example*: Berlin 19), the name of the office shall be separated from the number by a fraction bar in the transmission (*example*: Berlin/19). On Morse and sound-reading instruments, this number shall be transmitted immediately after the name of the office, without being separated by a fraction bar or being abbreviated;

(3) when the opening of the office of origin has not yet been notified by the General Secretariat, the name of the office, the territorial sub-division, and the country, must be indicated;

(4) when a telegram is telephoned to a telegraph office by a subscriber served by a telephone exchange in a locality other than that in which the telegraph office is situated, the indication of the place of origin may be transmitted in the following way: Exeter telephoned from Feniton (Exeter denoting the telegraph office to which the telegram has been telephoned and Feniton the place in which the subscriber's telephone exchange is situated).

(Art. 41, § 1)

Should a telegram be handed in to a telegraph office (Stockholm, for *example*) by telex, by a subscriber living somewhere else (say Sundsvall), the place of origin may be transmitted as follows: "Stockholm telexed from Sundsvall";

g) the office number of the telegram, when this number is to be transmitted (Regulations, Article 40, § 2);

h) the number of words (Regulations, Article 31), with the exception of service advices and acknowledgements of receipt;

i) (1) the date and time of handing in of the telegram shown by two groups of figures, the first indicating the day of the month and the second consisting of a group of four figures (0001 to 2400) indicating the hours and minutes;

(2) in countries which do not use the 24-hour clock, the times may be transmitted by means of the figures 0001 to 1200, in which case, the letters m or a (morning), s or p (afternoon) shall be added to the time of handing-in;

j) other service instructions. The route to be followed, if one is indicated, must always be shown at the end; it may be followed only by the indication "Dévié..." However, within the country of destination, retransmission of the route indication shall be optional.

ARTICLE A.5. *Transmission of the other parts of a telegram*

§ 1. Every telegram must be transmitted as received from the sender, subject to the exceptions mentioned in Articles A.6, A.7 and A.8.

(Art. 37, § 6) § 2. With the exception of paid service indications, which must always be transmitted in abbreviated form, and in cases subject to Articles B.7 and C.8, the use of any abbreviations whatsoever and alterations of any kind shall be prohibited.

§ 3. An office having more than five telegrams with the same text, and comprising more than 30 words, for transmission to the same office, need transmit the text once only. In such a case the text shall be transmitted in only the first telegram, and in those that follow, having the same text, it shall be replaced by the words: text No. ... (the number of the first telegram being inserted). The same procedure may be adopted when the number of telegrams having the same text is five or less and the text comprises more than 50 words.

(Art. 37, § 7) This method of procedure necessitates the transmission in succession of all telegrams with the same text.

The office in correspondence must be warned of such a transmission by an advice on the following lines:

“ Note, here are five identical texts.”

§ 4. When reception by the receiving office is possible by means of perforated tape, the office should be warned sufficiently beforehand of the transmission of telegrams with the same text so that it can prepare to receive them by perforated tape.

§ 5. A telegram of more than 50 words shall be transmitted in pages of 50 words, in the following form:

(Art. 37, § 8)           119 Amsterdam 128 16 1015 page 1/50 = address, etc.  
                           119 ... (name of addressee) page 2/50 =  
                           119 ... (name of addressee) page 3/28 =

The double hyphen indicating the last word of each section of 50 words shall be transmitted after that word.

ARTICLE A.6. *Transmission of signs for which there is no corresponding signal in the telegraph alphabet*

§ 1. The signs accepted in the drafting of telegrams, although they have no corresponding signal in a telegraph alphabet, shall be sent as follows:

*Accentuated é or è:*

(Art. 16, §§ 4 and 5) a) In relations in which Alphabets No. 1 or No. 2 are used, the letter E shall be transmitted; when an accent on the E is essential to the meaning, the transmitting telegraphist shall repeat the word after the signature, putting the E accentuated between two spaces, to draw the attention of the receiving office to it. The receiving telegraphist then puts in the accent by hand.

(Art. 16, § 6) b) When the Morse Code is used, the accentuated signal E shall be transmitted.



*Roman figures:*

Roman figures shall be transmitted as arabic figures.

(Art. 21, § 4) If the sender has written the French word "romain", or a corresponding word in the language in which the telegram is drafted, in front of an arabic figure or group of figures, this word shall be transmitted and the receiving official shall leave this word on the telegram to be delivered, followed by the arabic figure or group of figures.

*Addition sign (+):* Transmit the cross sign (+).

*Subtraction sign (—):* Transmit the dash (—).

(Art. 21, § 5) *Multiplication sign (×):* Transmit the letter X.

*Division sign (:):* Transmit a colon (:).

*Division sign (/):* Transmit the fraction bar (/).

*Percentage sign (‰):*

- a) When Alphabet 1 is used, transmit the signal ‰.
- (Art. 16, §§ 5 and 6) b) In other relations, successively transmit the figure 0, the fraction bar and the figure 0. A whole number, a fractional number, or a fraction, followed by a ‰ sign, shall be transmitted by joining up the whole number, the fractional number, or the fraction to the ‰ sign by a dash.

*Examples:* for 2‰, transmit 2—0/0 and not 20/0.

*Per thousand sign (‰):*

- (Art. 16, §§ 4, 5, 6) Successively transmit the figure 0, the fraction bar, the figure 0 and the figure 0. A whole number, a fractional number, or a fraction, followed by a ‰ sign, shall be transmitted by joining up the whole number, the fractional number, or the fraction to the ‰ sign by a dash.

*Examples:* for 2‰, transmit 2—0/00 and not 20/00  
for 4½‰, transmit 4—1/2—0/00 and not 41/20/00.

*Inverted commas (quotation mark):*

- (Art. 16, §§ 4 and 5) a) When Alphabet 1 or 2 is used, transmit: the apostrophe (') twice at the beginning and end of the text within the inverted commas (" ").
- b) With Morse Code, the special inverted-comma signal before and after the words concerned.

However, Administrations and Recognized Private Operating Agencies using code converters may transmit inverted commas by twice repeating the apostrophe sign before and after the words.

(Art. 16, § 6) *Accentuated letters ä or æ, à or â, ñ, ö or ø, ü* (in relations in which the use of these signs has been authorized by special agreement between Administrations and Recognized Private Operating Agencies):

(Art. 16, §§ 4 and 5) a) When Alphabets No. 1 or No. 2 are used, transmit them in accordance with the agreement reached.

(Art. 16, § 6) b) When Morse Code is used, transmit the signals corresponding to these characters.

ARTICLE A.7. *Transmission of groups of figures and letters or of ordinal numbers and fractions*

§ 1. Ordinal numbers composed of figures and letters: 30<sup>me</sup>, 25<sup>th</sup>, etc. shall be transmitted in the form 30me, 25th, etc.

(Art. 21, § 7)

§ 2. Letters or groups of letters followed by letters or figures placed above or below the line shall be transmitted in the form substituted for them by the sender.

If, however, the expressions 30<sup>a</sup>, 30<sup>b</sup>, etc., 30<sup>bis</sup>, 30<sup>ter</sup>, etc., 30 I, 30 II, etc., 30<sup>1</sup>, 30<sup>2</sup>, etc., 30 A, 30 B, etc., indicating a house number, appear in the address of a telegram, the counter officer shall separate the number from the letters or figures accompanying it by a fraction bar. The expression in question shall consequently be transmitted in the following way in the address of a telegram: 30/a, 30/b, etc., 30/bis, 30/ter, etc. 30/1, 30/2, etc., 30/1, 30/2, etc., 30/A, 30/B, etc.

(Art. 21, § 7)

§ 3. Except as provided in § 2 above, groups consisting of figures and letters must be transmitted as set forth in the telegram.

(Art. 16,  
§§ 5 and 6)

Examples: 3B is transmitted as 3B  
AG 25 is transmitted as AG 25.

But when Alphabet No. 1 is used, a group made up of figures and letters must be transmitted by linking figures and letters with a double hyphen.

(Art. 16, § 4)

Examples: 3 = B, AG = 25.

§ 4. A number which includes a fraction shall be transmitted with the fraction linked to the whole number by a single hyphen.

(Art. 16,  
§§ 4, 5 and 6)

Examples: for 1¾, transmit 1—3/4, and not 13/4  
for ¾8, transmit 3/4—8, and not 3/48  
for 363½ 4 5642 transmit 363—1/2 4 5642, and not  
3631/2 4 5642.

§ 5. In the case of routine repetition with Morse Code, provided there can be no misunderstanding as a result of the presence together of figures and letters or groups of letters, figures may be rendered by means of the abbreviated signals.

(Art. 16, § 6)

Unless otherwise requested by the receiving office, the sending office may also use these signals in the preamble of telegrams, except in respect of distinguishing numbers of the office of origin and in the texts of telegrams consisting solely of figures. In the latter case, the telegrams must bear the service instruction "in figures".

(Art. 16, § 6)

ARTICLE A.8. *Signs not transmitted*

The following shall neither be charged for nor transmitted:

- (Art. 27, § 1) a) dashes used only to separate the different words or groups on the sender's copy;
- b) isolated signs, unless the sender has specifically requested their transmission.

ARTICLE A.9. *End indications*

- § 1. Every telegram shall be terminated by the cross signal preceded by a space.
- (Art. 16, § 4 and 5) § 2. The end of transmission shall be indicated by the cross and question mark signals, preceded by a space.
- § 3. The end of work shall be shown by a double transmission of the plus (+) sign, if Alphabet No. 1 or No. 2 are used, or the "end of work" signal in Morse Code.

ARTICLE A.10. *Transmission irregularities*

- (Art. 16, § 4) § 1. To indicate "wait", MOM shall be transmitted, if Alphabets 1 or 2 are used, or the "wait" signal in Morse Code.
- § 2. To show an error, the following shall be transmitted:
- (Art. 16, § 4) With Alphabet No. 1, the "error" signal (X);
- (Art. 16, § 5) With Alphabet No. 2, E space E space E space;
- With Morse, the error signal .....

The transmission shall then be resumed and begin with the last word correctly transmitted.

- (Art. 16, § 5) § 3. If Alphabet 2 is used together with perforated-tape transmission devices enabling badly punched characters to be eliminated, the signals corresponding to these characters shall be erased by a series of "letters" signals.

ARTICLE A.11. *Reception*

- (Art. 37, § 9) § 1. With the exception of mobile radio stations, no office may refuse to receive telegrams offered by a sending office, whatever their destination. However, in the case of an obvious mistake in routing or other manifest irregularity, the receiving telegraphist shall point it out to the sending office. If the latter fails to respond, a service advice shall be forwarded after receipt of the telegram and the sending office shall rectify, by service advice, the error made.
- (Art. 37, § 10) § 2. A telegram must not be refused or delayed because of irregularities in the service instructions, paid service indications, or certain parts of the address or text. The telegram must be accepted and then, if necessary, a service advice sent to the office of origin requesting rectification as in Article 85 of the Regulations.
- (Art. 37, § 5) § 3. When the receiving telegraphist finds reception unintelligible, he shall interrupt his correspondent, or cause him to be interrupted, and repeat or cause to be repeated the last word correctly received followed by a question mark. The sending telegraphist shall then go back and continue the transmission from that word. If a repetition is asked for after a long interruption of correspondence, the telegram and part of the telegram in question must be precisely indicated.
- (Art. 37, §§ 5 and 12) § 4. For stopping transmission from a correspondent, or, in multiplex instruments, from a particular sector, the following methods shall be applied until transmission stops:
- a) Morse simplex: transmit a series of dots.
- b) Morse duplex and Wheatstone duplex: transmit the letters "BK".

(Art. 37, §§ 5 and 12) c) Multiplex, simplex and duplex instruments: transmit a succession of letters "P" or signs "%".

d) Start-stop instruments: transmit a succession of letters "P" or figures "0".

(Art. 43, § 1) § 5. As soon as possible after transmission, the receiving telegraphist shall compare, in each telegram, the number of words received with the number announced. When the number of words is given in the form of a fraction, this comparison, except in the case of an obvious error, shall refer only to the actual number of words or groups.

§ 6. If the telegraphist finds a difference between the number of words announced to him and the number received, he shall notify his correspondent by indicating the number of words received and repeat the first letter of each word, and the first figure of each number. (Example: 17 j c r b 2 d ... etc.). If the sending telegraphist has simply made an error in announcing the number of words, he shall reply "admitted", and indicate the actual number of words (Example: 17 admitted); if not, he shall rectify the passage found to be incorrect according to the initials received. In both cases, he shall interrupt the transmission of the initials by his correspondent, as soon as he is able to rectify or confirm the number of words.

(Art. 43, § 2) In long telegrams where each page contains only 50 actual words, the receiving telegraphist shall give only the initials of the page containing the mistake.

When this difference does not arise from a mistake in transmission, the rectification in the number of words announced can only be made by agreement, reached, if necessary, by service advice, between the office of origin and the office in correspondence. Failing such agreement, the number of words announced by the office of origin shall be admitted, the telegram being forwarded, meanwhile, with the service indication "Correction to follow checked... words" transmitted in the abbreviated form "CTF... words", the meaning of which shall be indicated by the office of destination on the copy delivered to the addressee. The correction shall be requested from the office of origin by the office which has inserted the indication "CTF ... words".

(Art. 43, § 3) Repetitions shall be requested and given briefly and clearly.

(Art. 41, § 2) § 7. The information given in the preamble which reaches the office of destination and, in every case, the name of the office of origin, the number of words, and the date and time of handing-in, shall appear on the copy delivered to the addressee.

§ 8. At the top of the page, the receiving officer shall write the indications received in accordance with Article A.5, § 5 (transmission of telegrams of more than 50 words).

(Art. 37, § 8) On Morse and sound-reading instruments, the receiving telegraphist shall reproduce the double hyphen, if the telegram is in transit; if the telegram is for delivery, he shall mark the fiftieth word of the section by a small tick.

On printing instruments, the receiving telegraphist at the transit office shall maintain the double hyphen. At the office of destination, it shall be deleted and the fiftieth word of each section shall be marked by a small tick.

#### ARTICLE A.12. Routine repetition — Collation

(Art. 44, §§ 2 to 5) § 1. When telegraphists are in doubt as to the accuracy of the transmission or reception, they shall give or demand the partial or complete repetition of telegrams which they have either sent or received.

- § 2. For all classes of telegram, routine repetition shall be compulsory for all figures or mixed groups of letters, figures or signs in the address, text or signature.
- (Art. 44, §§ 2 to 5) § 3. For Government telegrams in plain language and for service telegrams, partial repetition shall be compulsory not only for figures but also for proper names and any doubtful words.
- § 4. For money order and postal cheque telegrams, partial repetition shall be compulsory not only for figures, proper names and any doubtful words, but also for the names of the offices of origin and destination.
- (Art. 44, § 6) § 5. On Morse and sound-reading instruments, when traffic is exchanged alternately, telegram by telegram, the routine repetition as well as the collation, if any (Regulations, Art. 54, § 1), shall be given by the receiving telegraphist. If the routine repetition or collation is corrected by the sending telegraphist, the words or figures corrected shall be repeated by the receiving telegraphist. If omitted, this second repetition shall be demanded by the sending telegraphist. On these instruments, when the exchange of traffic is made in series, and on high-speed instruments, the routine repetition or collation shall be given by the sending telegraphist immediately after the telegram. If the receiving telegraphist observes discrepancies between the transmission and the routine repetition or collation, he shall notify his correspondent, quoting the doubtful passages and adding a question mark after them. He shall also repeat the word preceding and the word following, where necessary.
- (Art. 44, § 7) § 6. On connections using duplex working or apparatus permitting two-way traffic, the complete collation of telegrams containing more than 100 words shall be given by the receiving telegraphist. This rule shall not be compulsory on connections using Wheatstone instruments or teleprinters. On instruments which enable transmissions to be made by perforated tape, the collation must be effected by a second perforation when given by the sending telegraphist.
- (Art. 44, § 8) § 7. In telegrams of more than 50 words, routine repetition shall be given at the end of every page, or of every telegram.
- (Art. 44, § 11) § 8. Routine repetition may under no circumstances be delayed or interrupted, except as specified in Regulations, Art. 37, § 1.
- (Art. 44, § 1) § 9. Any routine repetition shall be preceded by the abbreviation COL.

#### ARTICLE A.13. *Acknowledgement of receipt*

The receiving office shall acknowledge receipt of any telegram or series of telegrams it receives. The form to be taken by this acknowledgement of receipt shall depend on how the particular communication is operated (see Articles B.6 and C.6).

#### ARTICLE A.14. *Misprints and interruptions*

- (Art. 46, § 1) § 1. Corrections and requests for information relating to telegrams already sent on by the office in correspondence shall be made by urgent service advice (A Urgent).

(F.1)

§ 2. Telegrams containing obvious misprints can be retained only in cases where the rectifications can be speedily made. They must be retransmitted without delay with the service instruction "CTF" at the end of the preamble; this instruction (Art. 46, § 2) is supplemented by information about the nature of the rectification. For example "CTF fourth" meaning that the fourth word will be corrected. Immediately after the retransmission of the telegram, the rectification shall be requested by urgent service advice (A Urgent).

§ 3. Deferred rectifications must be expressly designated as urgent service advices (A Urgent).

§ 4. If, through interruption or any other cause, it is not practicable to give or receive the repetition or acknowledgement of receipt, this circumstance shall not (Art. 46, § 3) prevent the office which has received the telegrams from sending them on, subject to any necessary rectification following later, the service instruction "CTF" being inserted at the end of the preamble.

In cases of interruption, the receiving office shall immediately give an acknowledgement of receipt and, when necessary, shall request the completion of an unfinished telegram, either by another direct channel if there is one in service, (Art. 46, § 4) or if not, by an urgent service advice (A Urgent) forwarded by whatever means are available.

§ 5. The cancellation of a telegram, transmission of which has already begun (Art. 46, § 5) must always be asked for or notified by urgent service advice (A Urgent).

§ 6. When the transmission of a telegram has not been completed or the acknowledgement of receipt is not received within a reasonable time, the telegram shall (Art. 46, § 6) be transmitted afresh with the service instruction "Ampliation", except in the case of a money order telegram or a postal cheque telegram (Regulations Art. 47, § 3). The meaning of this service instruction "Ampliation" may be indicated on the addressee's copy by the office of destination.

§ 7. In service correspondence relative to the working of communications, it is (Art. 37, § 11) preferable that code expressions in the "Codes and Abbreviations for the use of the International Telecommunication Services" should be used.

## Section B. — Special rules for connections not put through by switching

### ARTICLE B.1. *Daily closing*

(Art. 4, § 3) § 1. In relations permanently open, the closing of daily sessions shall take place at a time agreed upon between the offices concerned.

(Art. 4, § 4) § 2. In relations between offices which are not permanently open, a terminal office may not close before having exchanged all outstanding international telegrams with an office which is open later and before having received confirmation that all these telegrams have been received.

(Art. 4, § 5) § 3. Between two directly communicating offices in different countries, the close of work may take place only by agreement between these offices. If these offices have different closing hours, the office that closes the earlier shall request the close of work. If they have the same closing time, the close of work shall be requested by the office of the country whose capital has a longitude East of the other's capital.

ARTICLE B.2. *Calling*

- (Art. 37, § 2) § 1. To call another office, the calling office shall transmit three times the answer-back signal of the office required and the word "de" followed by its own answer-back signal, unless there are special rules peculiar to the type of apparatus used. Between fixed stations the call shall be made at hand speed.
- (Art. 16, § 4) § 2. However, when Alphabet No. 1 is used, the word "ohé" shall be transmitted to call the office, followed by the answer-back signal of the office called, finishing with several inversions (alternate tapping of the keys for the signals "letter blank" and "figure blank").
- (Art. 37, § 2) § 3. However, on circuits operated by start-stop instruments, connected in such a way that the transmitting office may effect the unlocking, the transmission of telegrams shall begin without special call or previous notice to the receiving office.
- (Art. 37, § 2) § 4. If agreement has been reached between Administrations (or Recognized Private Operating Agencies) to use automatic answer-back devices, calling shall be effected by transmitting the signals "figures-shift" and "D" (or "who are you?"). The correct reception of the answer-back from the required office shall constitute a reply to the call. The transmission of certain classes of telegram on start-stop instruments may be announced by an audible or visible signal set off by transmitting the "figures-shift" and "J".
- (Art. 37, § 2) § 5. The office called must reply immediately, except in the case of start-stop correspondence, subject to § 4 above.  
In Morse working, the office called shall reply by transmitting its answer-back signal followed by the signal — • —.
- (Art. 37, § 2) § 6. If the office called is unable to receive, it shall give the "wait" signal. If it expects the wait to exceed ten minutes, the reason and probable duration shall be given.
- (Art. 37, § 2) § 7. When an office called does not reply, the call may be repeated at suitable intervals.
- § 8. When the office called does not reply to the repeated call, the condition of the channel must be examined.

ARTICLE B.3. *Alternate transmission of telegrams*

- (Art. 38, § 1) § 1. Two offices in direct communication by Morse or sound-reading instruments shall exchange telegrams alternately, telegram by telegram, having regard to Article 36 of the Regulations.
- (Art. 38, § 2) § 2. A telegram having priority in transmission shall not count in the alternate order.
- (Art. 38, § 3) § 3. The office which has just ended a transmission shall have the right to continue when it has telegrams awaiting transmission or when telegrams reach it which are entitled to priority over those which the office in communication has to transmit, unless the latter has already begun transmitting..
- (Art. 38, § 4) § 4. When an office has finished transmitting, the office which has just received shall transmit in its turn; if it has nothing to transmit, the other shall continue. If neither has anything to transmit, the offices shall give the signal for the end of work.
- (Art. 38, § 5) § 5. The receiving office shall have the right to interrupt the transmission in the case specified in Regulations, Art. 37, § 1.

ARTICLE B.4. *Series transmission, alternate working and continuous working*

(Art. 39, § 1) § 1. On high-speed instruments, exchanges shall take place in series when the offices in communication have several telegrams to transmit. This rule shall be applicable to transmission by Morse and sound-reading instruments, when the traffic justifies it and after an understanding between the offices in communication.

(Art. 39, § 2) § 2. Telegrams of the same series shall be considered as forming a single transmission, but each correct telegram, before being sent on its way, shall be retained until the next but one telegram begins or for the time required to transmit a telegram of average length.

(Art. 39, § 3) § 3. When two offices are connected by one "go" and one "return" path, or in the case of simultaneous working, transmission shall be continuous, but the telegrams shall be grouped in series of 10 unless the offices concerned employ, in accordance with this Section B, a special running series of numbers for the telegrams exchanged between them.

(Art. 39, § 4) § 4. When the exchange of telegrams takes place alternately, each series shall comprise a maximum of five telegrams if transmitted by Morse or sound-reading instruments, and a maximum of ten telegrams if transmitted by high-speed instruments. Nevertheless, every telegram containing more than 100 words on the Morse instrument, more than 150 words on sound-reading instruments, or more than 200 words on high-speed instruments, shall count as a series or terminate a series already in course of transmission.

(Art. 39, § 4) § 5. Similarly, in alternate transmission by series, the sending office shall end a series in course of transmission when it has only letter-telegrams to send; it shall not resume transmission until the office in correspondence has no more telegrams of higher priority on hand.

(Art. 37, § 12) § 6. Service messages and notes interposed between telegrams shall, in transmission by series, be separated from telegrams by one of the abbreviations RQ, BQ or XQ.

Example: RQ in 187 RPT...

(Art. 39, § 5) § 7. The receiving office shall have the right to interrupt a series in course of transmission in the case specified in the Regulations, Art. 37, § 1.

ARTICLE B.5. *Transmission with a continuous series of numbers*

§ 1. For telegrams transmitted over international circuits, every Administration (or Recognized Private Operating Agency) shall have the right to number telegrams in series. In each case, it shall tell the Administrations and Recognized Private Operating Agencies concerned.

(Art. 40, § 1) The exercise of this right shall not, however, impose on the Administration (or Recognized Private Operating Agency) to which the receiving office is subject the obligation to apply the special provisions laid down in Article B.6, §§ 4 to 7 for the exchange of acknowledgements of receipt. In such cases, the provisions of Article B.6, §§ 1 to 3 shall remain in force at the request of the Administration (or Recognized Private Operating Agency) concerned.



§ 2. The serial number shall be transmitted at the beginning of the preamble.  
(Art. 40, § 2) Administrations and Recognized Private Operating Agencies shall decide, in so far as each one is concerned, whether the office number shall be retained.

§ 3. When serial numbers are used, all telegrams shall be numbered in unbroken series. On instruments using international Alphabets No. 1 and No. 2, a special series shall be used for each sector or channel. This series shall differ from the series used for the other sectors or channels by distinguishing figures or letters. A special series may be assigned to each category of telegrams.  
(Art. 40, § 3)

§ 4. Telegrams with priority over ordinary telegrams and which are not transmitted in numerical order of the series, shall be marked with the distinguishing letter "X", placed before the serial number.

§ 6. Offices in correspondence shall agree upon the start and finish of the series  
(Art. 40, § 4) of numbers.

The offices in correspondence shall agree each day on the number to start the new series, i.e. 1, 2001, etc. Each series shall be started by the same number or by another number which the receiving office shall communicate to the sending office every day before beginning the new series.

§ 6. When telegrams have to be diverted and their serial numbers cannot be altered because they have already been perforated, the office which effects the diversion shall inform, by service message, the office to which the telegrams would otherwise have been transmitted and the office to which they actually are transmitted. The receiving office to which the telegrams should have been sent shall strike off its list the numbers of the telegrams which it is informed are being diverted.  
(Art. 40, § 5)

In all other cases, telegrams which are to be diverted shall be given new serial numbers.

§ 7. When the receiving office observes that a serial number is missing, it must inform the sending office forthwith, so that the necessary inquiries may be made.  
(Art. 40, § 6)

§ 8. When a serial number already used has to be struck out, the transmitting office shall inform the receiving office by service advice.  
(Art. 40, § 7)

#### ARTICLE B.6. *Acknowledgements of receipt*

§ 1. For a single telegram, it shall be acknowledged by the letter R followed by the number of the telegram received, for example: "R 436".

(Art. 45, § 2) § 2. For an SVH telegram, a Government telegram with priority, a money order or a postal cheque telegram, receipt shall be acknowledged in the form: "R 436 SVH" or "R 436 ETAT" or "R 436 MDT" or "R 510 VIR".

§ 3. (1) For a series of telegrams, the letter R shall be given with the number of telegrams received, and also the first and last numbers of the series, for example, "R 6 157 980".

(Art. 45, § 3) (2) If the series includes SVH telegrams, Government telegrams with priority, money order telegrams or postal cheque telegrams, the acknowledgement of receipt shall be supplemented by the numbers of these telegrams thus: "R 6 157 980 including 23 SVH 13 ETAT 290 MDT".

§ 4. (1) Where transmission is with a running series of numbers, an acknowledgement of receipt (LR) shall, subject to the reservation in Article B.5, § 1, be given only at the request of the sending telegraphist, if traffic is exchanged without interruption. When transmission is not continuous, the sending telegraphist must ask for an acknowledgement of receipt immediately after the end (Art. 40, § 8) of work.

(2) In every case, the acknowledgement of receipt must be transmitted immediately in the following form:

“ LR 683 missing 680 retained 665 ”. (This acknowledgement of receipt contains the last number received (683), the number 680 missing and the number 665 retained.) \*

(3) The sending telegraphist must request the acknowledgement of receipt immediately after the transmission of a SVH telegram, a Government telegram with priority, a money order or postal cheque telegram, or a series of money (Art. 40, § 9) order and/or postal cheque telegrams.

In such cases, the acknowledgement of receipt shall take the following form:

“ LR 683 MDTs 681 682 ETAT 683 ” \*

(4) The acknowledgement of receipt mentioned in § 4 (1) is given at the daily (Art. 40, § 10) closing of service. The transmitting telegraphist then adds the word “ closing ” \* to his invitation “ LR ”.

#### ARTICLE B.7. *Abbreviating the name of the office of destination*

In the transmission of telegrams between two countries linked by direct communication, the name of the office of destination may be abbreviated by arrangement between the Administrations (or Recognized Private Operating Agencies) (Art. 42, § 2) concerned, in the case of a well-known place in one of the countries concerned.

The abbreviations chosen must not be the same as the names of offices in the International List of Telegraph Offices. They cannot be used in the transmission of money order or postal cheque telegrams.

### Section C. — Special rules for switched connections (gentex calls)

#### ARTICLE C.1. *Routing*

§ 1. The gentex network is made up of telegraph offices of European countries participating in the service (gentex offices), of switching centres and of telegraph channels connecting the offices to switching centres and the switching centres to one another.

§ 2. Instructions for the routing of telegrams appear in the routing lists available to operators.

§ 3. Telegrams to an office which appears in the routing list shall be routed to the gentex office listed as serving that office, account being taken of § 5 below, if appropriate.

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\* In the service between fixed stations, the following forms of acknowledgement of receipt are currently used:

(a) xq to Paris = 180205 mgt LR 683 missing 680 RQ 678 cfm = NY (355);

(b) xq to Paris = 180415 gmt ETAT 683 MDTs 681 682 redok = NY (357);

(c) 15 to Paris from Moscow 28 0010 = closing 27/5 LR 701 missing 689 LS 816 blank 782 THRU (358).

§ 4. Telegrams to an office which does not appear in the routing list shall be routed in accordance with the instructions given at the beginning of the routing list of the country in which the office is located.

§ 5. Telegrams to limited service gentex offices shall be routed in accordance with the instructions appearing against these offices in the routing lists.

#### ARTICLE C.2. *Answer-back signals*

§ 1. The answer-back used in the gentex service is made up of 20 signals.

§ 2. The series of answer-back signals is as follows:

- Carriage return
- Line feed
- Figure-shift
- The figures representing the national call number
- Letter-shift
- For large offices, when necessary, one or two letters identifying the position
- Name (in full or abbreviated) of the office
- Space
- 1 or 2 letters identifying the country (see § 5 below)
- Letter-shift.

§ 3. The answer-back signal of special positions dealing with service notes and advices, when they exist, includes the group of letters INQ \* after the name of the office.

§ 4. The answer-back signal of specialized incoming positions for overflow traffic includes the group of letters DEB \* after the name of the office.

§ 5. The characteristic letters of the names of countries are as follows:

A	Austria	I	Italy
B	Belgium	L	Luxembourg
BG	Bulgaria	MC	Monaco
CH	Switzerland	N	Norway
CS	Czechoslovakia	NL	Netherlands
D	Germany	P	Portugal
DK	Denmark	PL	Poland
E	Spain	R	Roumania
EI	Ireland	S	Sweden
F	France	SF	Finland
GB	United Kingdom	SU	U.S.S.R.
GR	Greece	TR	Turkey
H	Hungary	YU	Yugoslavia

#### ARTICLE C.3. *Setting-up of calls*

§ 1. At the calling position, the telegram may be provided with a reference number which will be transmitted at the beginning of the preamble and will serve as an additional means of identifying the telegram if required.

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\* INQ standing for "inquiries".

DEB standing for "débordement" (overflow).

§ 2. To set up the call with the required office, the operator of the calling station proceeds to call.

The number sent by a gentex office to call a gentex office in another country is made up of:

- the prefix giving access to the called country from the calling station,
- the national number of the called office.

§ 3. Having set up the call, the operator at the calling station brings into operation the answer-back device in the station obtained together with that of his own station, when these two operations are not automatically controlled by the equipment in the calling or called country. The operator at the calling station checks the answer-back he obtains against that of the required office and if they correspond he then begins to transmit the telegram.

§ 4. If the answer-back received comes from an overflow position, transmission can begin.

§ 5. If the answer-back received belongs to a position in an office which is not required to intervene, the operator sends the signal BK, gives the clearing signal, and tries once again to put the call through to the office required.

Should this fresh attempt end by reception of the answer-back of a position which is not an overflow position and does not belong to the office required, the operator shall proceed in accordance with Article C.7, § 4.

§ 6. If the calling station receives the busy signal, the call shall be repeated after about two minutes. If the second call is unsuccessful, a third call shall be made after another two minutes. If the busy signal is again received, telegrams shall be diverted to that telegraph office in the same country as the required office shown in the routing list as competent in such cases.

§ 7. When a call is sent to a gentex office in a country admitting diversion to an overflow position, connection with the required gentex office or an overflow position may be effected after a period of up to one minute.

The operator of the calling station is informed thereof by reception of MOM. He will then await subsequent routing of his call.

#### ARTICLE C.4. *Transmission procedure*

§ 1. The operator in the calling station is primarily responsible for the transmission of telegrams. If a telegram fails to arrive or if its text is mutilated, he must prove that he has followed the correct procedure.

He can supply this proof by producing the original of the telegram and the control tape, if there is one, by examination of the called station answer-back signal, which must have been received without error in order to provide a simplified acknowledgement and by examination of the acknowledgement of receipt when such an acknowledgement is obligatory.

§ 2. When a call has been set up with the desired telegraph office, or with an overflow position, the telegram shall be transmitted in the manner described in the Telegraph Regulations and in Section A of these Rules. The prescribed routine repetition of different parts of the telegram or of the whole of it shall always be effected by the operator at the calling station.

§ 3. Before transmission of an SVH, S, F, MDT, VIR or urgent telegram, or of a service advice indicating transmission by ampliation of a money order or postal cheque telegram, the operator shall transmit the audible signal three times.

§ 4. When the operator has more than 5 telegrams with identical texts to transmit, he must first announce this fact by transmitting the signals RPFR TM... (...: number of telegrams) and by sending the audible signal. These telegrams shall then be transmitted as soon as the operator at the called station has replied by the signal GA. If the GA signal has not been received within one minute, then the operator shall go ahead with the transmission.

§ 5. After transmission of the telegram, the operator obtains the answer-back signal of the called station and then sends his own answer-back.

§ 6. If, after the exchange of answer-back signals following the transmission of the telegram, the operator of the calling station notes transmission errors in the telegram, he shall operate the audible signal three times and transmit the expression RECT followed by the necessary corrections; then he shall again exchange answer-back signals as described under § 5.

§ 7. When transmission of a single telegram has been completed, the operator of the calling station should, before exchanging answer-back signals, transmit the time of end-of-transmission in the form of 4 figures, unless it is sent automatically.

§ 8. Following the exchange of answer-back signals, the operator of the calling station sends the clearing signal, unless the telegram transmitted is an SVH, S, F, MDT or VIR telegram, or a service advice indicating transmission by ampliation of a money order or postal cheque telegram (in which case he should act as prescribed in Article C.5, § 2).

§ 9. When a calling station has several telegrams for the same office they shall be transmitted one after the other, once the calling station has made contact with that office, observing the prescriptions laid down in §§ 2 to 5. In such cases, the operator at the calling station shall exchange answer-back signals after every telegram.

When the last telegram has been transmitted, the operator of the calling station shall transmit successively the abbreviated indication of the number of telegrams transmitted (for instance, "TG 3" for a series of three telegrams) and the end-of-transmission time if it has not been transmitted automatically; he then proceeds to the final exchange of answer-back signals before sending the clearing signal.

#### ARTICLE C.5. *Receiving procedure*

§ 1. The called station checks the telegram or telegrams received in accordance with the provisions of the Telegraph Regulations and the rules of Section A of this Recommendation. If a correction is necessary, a request must be sent by RQ note to the transmitting office (see Article C 8 below).

§ 2. A called position receiving an audible signal announcing a telegram must be staffed by an operator as soon as possible.

a) If the receiving operator reads RPFR TM..., he shall put the perforating receiver into circuit, if such apparatus is available in the called office, and shall transmit GA. Should no perforating receiver be available, the receiving operator shall transmit GA forthwith.

- b) On receipt by the receiving operator of SVH, S, F, MDT, VIR or of a service advice indicating transmission by amplification of a money order or postal cheque telegram, he shall wait for the end of transmission of the text and the concluding exchange of answer-back signals; he then transmits MOM, checks the text received, obtains the answer-back signal of the calling station, compares it with that received at the beginning of the transmission, and acknowledges receipt (see Article C.6 below).
- c) If the receiving operator reads URGENT, he shall wait for the end of the telegram transmitted on the receiving position and deal with it immediately.
- d) Should the receiving operator read RECT, he must check the correction made and intervene only when necessary.

ARTICLE C.6. *Acknowledgement of receipt*

§ 1. A called station must give an acknowledgement of receipt to the calling station upon receipt of SVH, S, F, MDT, VIR telegrams or of a service advice indicating transmission by amplification of a money order or postal cheque telegram.

§ 2. These shall be acknowledged in the following way:

R — handing-in number and reference number (if there is one) — specialization and identification letters of the calling station — type of telegram (SVH, S, F, MDT or VIR, A).

§ 3. Telegrams requiring an acknowledgement of receipt shall be announced by three successive operations of the audible signal (see C.4, § 3 above). An operator at the called office shall man the position receiving signal as soon as possible (see Article C.5, § 2); he then waits for the end of transmission of the telegram and the concluding exchange of answer-back signals, transmits MOM, checks the text received, obtains the answer-back signal of the calling station, compares it with that received at the beginning of the transmission and acknowledges receipt as described in § 2 above.

The operator at the calling station gives the clearing signal.

§ 4. If the calling station has not received the MOM signal some 30 seconds after the end of transmission of the telegram, the operator shall give the clearing signal or continue with the transmission of other telegrams if there are others to send to the called office.

§ 5. If an office has been unable to acknowledge receipt before the call is cleared, it shall send this by service advice to the office which transmitted the telegram requiring it.

§ 6. If the office transmitting a telegram requiring an acknowledgement of receipt has not received it approximately one hour after transmission, a service advice requesting such acknowledgement shall be sent to the receiving office in the following form: SVP R — handing-in number and reference number (if there is one) — specialization and identification letters of the position which has transmitted the telegram — type of telegram and the address. An office receiving such a service advice reminder shall proceed forthwith to take the necessary action and shall give the acknowledgement of receipt by urgent service advice.

ARTICLE C.7. *Irregularities*

§ 1. If, during the transmission of a telegram, the receiving operator notices that it has been misdirected:

- when the office of destination is located in the same country as the office receiving it, the latter accepts the telegram and retransmits it to the office of destination,
- when the office of destination is not in the same country as the office receiving the telegram, the receiving operator shall interrupt the transmission and give notice of the routing error.

§ 2. If the fact that the telegram has been misdirected is noticed only after the call has been cleared, the receiving office retransmits it without delay and with priority over other telegrams in the same category, to the office of destination even when the latter is in another country.

§ 3. The operator manning a position is responsible for seeing that there is enough paper in the apparatus, that the inking system is fully serviceable, and that the apparatus is switched to "engaged" while the ribbon and paper are being replaced.

§ 4. Should the operator of a calling station notice, during the putting through of a call, anything which appears to him attributable to a fault in lines or equipment, he shall, if possible, transmit DER BK and give the clearing signal.

After two minutes or so, he shall try again to put the call through. If once again there are irregularities, he shall, if possible, transmit DER BK, give the clearing signal, record the irregularities on the telegram or telegrams, and effect disposal by the alternative route indicated on the routing list. He shall then report the fault.

§ 5. Should a mutilated answer-back signal be received, or should there be no answer-back signal at all, the operator shall transmit DER BK, give the clearing signal and proceed as in § 4 above.

§ 6. If the operator at the called station notes misprints or any incoherence in the text of a telegram which is being received, he shall send P or zero signals repeatedly until transmission stops. He shall then send MUT RPT AA... (or possibly, the reference number (SRL NR) or handing-in number (TG NR) of the first mutilated telegram when a series of telegrams is being received) and the last correctly received word or group. The operator at the calling station shall recommence transmission at the word or group indicated.

§ 7. Should a completely mutilated text be received, including mutilation of the answer-back signal of the calling station, an operator noticing this before the call is broken off stops the transmission and immediately reports the matter to the corresponding station by transmitting MUT RPT ALL.

§ 8. If the receiving operator cannot stop a bad transmission, or if the text received when the transmission is resumed continues to be mutilated, the receiving agent sends DER BK and the clearing signal.

§ 9. a) If the answer-back signal of the called station is not received or is badly received at the end of transmission of a telegram, the calling station sends DER BK and gives the clearing signal.

b) It then proceeds once more to call the required gentex office and resumes transmission, preceding it by the expression "fair copy" situated between two separation signals, except with MDT or VIR telegrams.

c) The procedure described under sub-paragraph b) above is also applied when the call is accidentally interrupted during transmission.

§ 10. If a call is accidentally interrupted during transmission, or if a call has been cleared after transmission of BK, the called office suspends the texts received until the calling office resumes transmission. If transmission is not resumed within 15 minutes, the called office sends a service note to the calling office, requesting any corrections or repetitions which may be necessary.

§ 11. When a completely mutilated text is received, and the answer-back signal of the calling station is also mutilated, the printed tape shall, if the call has already been broken off, be stuck on a telegram form. The name of the receiving station and the time of receipt shall be marked thereon and the telegram kept for inquiry purposes.

#### ARTICLE C.8. *Service notes and advices*

§ 1. When reception of a telegram is checked and mistakes are noted, a service note (RQ) shall be transmitted by means of a special call to the office which has transmitted the telegram. This latter office transmits the reply by a service note (BQ) as quickly as possible also by special call.

§ 2. The same treatment shall be given to calls for service notes (RQ or BQ) as to those for a telegram.

§ 3. A request (RQ or BQ) must contain the following indications:

- a) code word (RQ or BQ);
- b) office to which the RQ or BQ note is being sent;
- c) designation of the telegram in question by the handing-in number (and, if necessary, the reference number) of the telegram, followed by that of the operating position which has transmitted the telegram, separated by a fraction bar (e.g. 17/385/TC);
- d) the request or reply itself:

*Examples:* for RQ : RQ LYON 17/385/TC 9W = CFLAM8ABH +.  
                   for BQ : BQ AMSTERDAM 17/385/TC 9W OK.  
                   for RQ (in the case mentioned in No. 403 of the Telegraph Regulations): RQ LYON 376/TC PAGE 3 = RPT WA ... +.

§ 4. If a reply to an (RQ) note has not been received after a maximum period of 20 minutes, a second (RQ) note shall be transmitted, preceded by RAFSO, to the calling office. If no reply is received after a further 10 minutes, the telegram shall be sent on marked CTF and the type of correction indicated. The same applies when it is obvious from the outset that the clarification of an irregularity will take a fairly long time (for instance after the closing time of a telegraph office.)



§ 5. When a telegram is sent on marked CTF, due to a long-delayed reply (BQ) to a note (RQ), the office to which the RQ note has been sent shall be informed of the fact by a service advice (A).

§ 6. Requests which are transmitted one or more days after the telegram has been received shall be made by means of service advices (A).

§ 7. Service notes and advices shall make use of the codes listed in the annex to these Rules.

#### ARTICLE C.9. *Prohibitions*

§ 1. A gentex office shall not, under any circumstances, call a telex subscriber in another country.

§ 2. If an office connected to the gentex network receives a call from a telex subscriber in another country:

- a) when the receiving operator notices this before the call has been cleared, he shall immediately interrupt the transmission from the calling station and transmit NA BK and the clearing signal;
- b) when this is noticed after the call from the telex subscriber has been cleared, a service advice shall be sent to the gentex office which seems most appropriate in the country of origin, informing it that the telegram has been improperly handed in and that the telegram thus received has been cancelled.

#### ANNEX TO SECTION C OF THE RULES FOR THE TRANSMISSION OF TELEGRAMS IN THE INTERNATIONAL SERVICE

##### *Service codes and abbreviations to be used in gentex operation*

<i>Abbreviation</i>	<i>Meaning</i>
ABS	Telegraph office closed
ADRS	Address
ANH	Congestion
* ANUL ....	Delete ....
BK	I cut off
BQ	Reply to RQ
* CALL NR	National call number of a gentex office
CCT	Circuit
CFM	Please confirm / I confirm
CK	Please check number of words
COL	Collation - Please give / I give routine repetition
CRV	How do you receive?
CTF	Correction to follow
CTG	Category of telegram

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\* To be included in the decoding section of the proposed Code Book.

<i>Abbreviation</i>	<i>Meaning</i>
DBL	Double word(s)
* DEB	Overflow position
DER	Out of order
DER BK	Out of order, I cut off
* DER MOM	Bad reception, do not cut off, we are testing the line
* DETR	I am re-routing to...
DETR SVP	Please re-route to... / Alternative route?
* DIF	Different
DTE	Date of handing-in
E E E	Error signal
FIG	Figure(s)
GA	You may transmit
* IND	Answer-back signal
* INQ	Position specializing in the handling of service notes and advices
LTR	Letter(s)
MNS	Minutes
MOM	Please wait!
MOM PPR	Please wait! I have paper trouble
* MUT	Mutilated
NA BK	Correspondence with this telegraph office is not admitted, I cut off.
NC	No circuit
NOT R	Not received
NP	The called number is not / no longer in use
NR	Number
OCC	Busy
O/D	Telegraph office of destination
OK	Agreed
* OMTD	Omitted
O/O	Telegraph office of handing in
P (repeated)	Stop your transmission
PBL	Preamble of telegram
PPR	Paper
QGA	May I transmit?
QOK	Do you agree?
R ....	Received ....
RAFSO	Waiting reply to our service advice
RAP	I will call you again
* RECT	Correct please / I am correcting / correction?
RECT AA .....	Correct all after .....
AB .....	" all before .....
ALL	" the whole telegram
BN .....	" all between ..... and .....
SRL NR	" reference number
TG NR	" telegram number
WA .....	" word after .....
WB .....	" word before .....

\* See reference at bottom of page 192.

<i>Abbreviation</i>	<i>Meaning</i>
REF ....	With reference to ....
* ROUTE	Route to / I am routing to .... / Route?
* RPFR	Please prepare your reperforator
TM .....	Prepare your reperforator because of telegram with multiple addresses or because of telegrams having the same text
TXT	Prepare your reperforator because of long or difficult text
RPT	Repeat please / I repeat
RPT AA .....	Repeat all after .....
AB .....	" all before .....
ALL	" the whole telegram
BN .....	" all between ..... and .....
SRL NR ..	" reference number given by the transmitting office ....
TG NR	" telegram number
TXT	" text
WA .....	" word after .....
WB .....	" word before .....
RQ	Announcement of a request
SIG	Signature
* SRL NR	Reference number given by a gentex transmitting office
SVIN	Service indication
SVP	Please
* TCHN	Technical service / I shall advise the technical service
TEST MSG	Please send a test message
* TG	Telegram
* TG NR .....	Telegram number given by the handing-in office .....
* TPLE	Triple word(s)
* TPR	Teleprinter
* TXT	Text
UTCOD	Use the gentex code
W	Word(s)
WTG	We are waiting / I am waiting
+ ?	I have finished my transmission
Figure 0 (repeated)	Do you wish to transmit? Stop your transmission

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\* See reference at bottom of page 192.

RECOMMENDATION F.2

**ACTION TO BE TAKEN  
IN CASE OF INTERRUPTION OF TELEGRAPH CIRCUITS.  
POSSIBLE USE OF TELEX CIRCUITS**

*(formerly C.C.I.T. Recommendation G.12, Geneva, 1956)*

The C.C.I.T.T.,

CONSIDERING

that such interruptions are individual cases which may arise in many different ways,

UNANIMOUSLY DECLARES THE VIEW

that, for the time being, the procedure to be adopted should be settled by agreement between the Administrations and Recognized Private Operating Agencies concerned.

RECOMMENDATION F.10

**MAXIMUM TOLERABLE ERROR RATE FOR LAND-LINE TELEGRAPH  
COMMUNICATIONS USING FIVE-UNIT START-STOP APPARATUS**

*(formerly C.C.I.T. Recommendation F.7, Geneva, 1956)*

The C.C.I.T.T.,

CONSIDERING

- a) that it would be helpful in telegraph working to have a standard for assessing the quality of telegraph communications;
- b) that the error rate for telegraph communications, as laid down, would be suitable for this purpose (ratio between the number of alphabetic signals incorrectly translated to the number of such signals in the message, keying being correct);
- c) that the standard chosen should take account of the quality obtainable with present-day technique;
- d) that some Administrations have made measurements in this connection;
- e) that the standard should be reviewed and adapted to keep it in step with future technical progress,

UNANIMOUSLY DECLARES THE VIEW

- 1. that provisionally, for land-line telegraph communications in the general service, the subscribers' service and the leased circuits service, using five-unit start-stop apparatus, the maximum tolerable error rate to be recommended should be 3 in 100 000 alphabetic telegraph signals transmitted;

(F.10)

2. that Administrations and Recognized Private Operating Agencies should pursue the study of this question in order that the provisional standard may be modified to keep it in line with the progress of telegraph technique.

#### RECOMMENDATION F.11

### **MAXIMUM TOLERABLE ERROR RATE FOR RADIOTELEGRAPH COMMUNICATIONS USING FIVE-UNIT START-STOP APPARATUS (INCLUDING MIXED COMMUNICATIONS CONSISTING OF WIRE AND RADIO CIRCUITS)**

*(formerly C.C.I.T. Recommendation F.8, Geneva, 1956)*

The C.C.I.T.T.,

#### **CONSIDERING**

- a) that the propagation difficulties which exist on certain radio circuits make some errors in transmission unavoidable;
- b) that the type of transmission to be used on radio circuits may depend on the error rate which can be tolerated;
- c) that therefore it should be useful to establish the maximum error rate;
- d) that for this purpose the error rate as defined for telegraph communications should be used, i.e. the ratio of alphabetic telegraph signals incorrectly translated to the number of alphabetic telegraph signals of the message, assuming the keying to be correct;
- e) that for land-line communications a maximum tolerable error rate of 3 in 100 000 alphabetic telegraph signals has been provisionally accepted (Recommendation F.10);
- f) that this error rate cannot be used as such for radiotelegraph communications on account of essentially variable conditions peculiar to this type of transmission,

#### **UNANIMOUSLY DECLARES THE VIEW**

1. that the quality of service must be the same for telegraph communication in the general service, the subscribers' service, and the leased circuits service;
2. that in order to ensure a high grade of telegraph service with present-day technique, it is advisable to recommend provisionally, for the whole of a telegraph connection including a radio path, a maximum tolerable error rate of 10 in 100 000 alphabetic telegraph signals transmitted.

However, depending on the connections concerned, this error rate cannot always be maintained for the entire duration of the service. The Administrations and Reco-

(F.11)

gnized Private Operating Agencies concerned should reach mutual agreement on the percentage of time during which the maximum tolerable error rate must be respected;

3. that it devolves upon the C.C.I.R. to establish methods of measurement necessary for a practical control of error rate on radiotelegraph communications;
4. that the Administrations and Recognized Private Operating Agencies should continue to study this question in order that the provisional standard may be modified to keep it in line with the progress of radiotelegraph technique.

#### RECOMMENDATION F.11 bis

### CIRCUIT EFFICIENCY FOR RADIO-TELEPRINTER SYSTEMS WITH AUTOMATIC ERROR-CORRECTION (ARQ SYSTEMS)

(*New Delhi, 1960*)

The efficiency factor in time, which is defined as follows (List of Definitions, No. 33.23):

“Ratio of the time necessary to transmit a text automatically without repetition, at a specified modulation rate, to the time actually taken to receive the same text with a given error rate.”

is an interesting factor for the purpose of measuring the efficiency of circuits for radio-teleprinter systems with automatic error-correction.

For these reasons, the C.C.I.T.T.

#### UNANIMOUSLY DECLARES THE VIEW

that the efficiency of a circuit for radio-teleprinter systems with automatic error-correction should be assessed by the efficiency factor in time, to be measured as follows:

Traffic should be observed for a period of 24 hours, split into 15-minute periods.

Let the maximum number of characters capable of transmission in each 15-minute period, the “maximum clearance rate”, be  $N$ .

Count the number of RQ cycles ( $R$ ) in each 15-minute period and take the greatest of these,  $R_{max}$ .

The number of characters printed is then  $N - 4 R_{max}$  and the circuit efficiency is 
$$\frac{N - 4 R_{max}}{N}.$$

The number of uncorrected errors during each of these 15-minute periods will have to be indicated.

*Note 1.* — For an 8-character cycle, efficiency = 
$$\frac{N - 8 R_{max}}{N}.$$

*Note 2.* — The measurements can be made automatically.

(F.11 bis)

RECOMMENDATION F.12**PAGE-RECEPTION OF TELEGRAMS WITH AN AGREED LAY-OUT  
AND WITHOUT ERRORS***(Geneva, 1956, amended at New Delhi, 1960)*

Certain exchanges use page-printing teleprinters for reception, and hence want the corresponding offices to transmit their traffic in a predetermined form; the standards governing the lay-out of the various parts of a telegram often vary according to the receiving exchanges, and this leads to difficulties in the sending exchanges.

Certain receiving offices use the page on which the telegram has been received for delivery to the addressee and, consequently, the transmitting office must transmit its traffic without errors.

For these reasons, the C.C.I.T.T.

UNANIMOUSLY DECLARES THE FOLLOWING VIEW :

1. when page-printing teleprinters are used for reception, the corresponding exchange or exchanges should transmit traffic to that exchange without error, according to the following lay-out:

*"Number of signals:  
line feed"  
(see note b)*

1	sdz202 sz ur 287 rcb90 <sup>1</sup>
1	indiana harborind 29 2 1638 <sup>2</sup>
3	
1	lt fs
1	miss gisella cohen, grand hotel eden geneva ( <i>see note a</i> )
3	
1	1000 francs cabled to lucerne july 28 through swiss bank corporation
1	stop please cable if not received love
1	.... <sup>3</sup> .... daddy
3	
10	col lt fs 1000 28

(10 "letter-shift" signals) (*see note c*)

<sup>1</sup> Preamble, the parts referred to in Nos. 381 and 382 of the Telegraph Regulations (Geneva, 1958).

<sup>2</sup> Preamble, the parts referred to in Nos. 383 to 395 of the Telegraph Regulations (Geneva, 1958).

<sup>3</sup> Minimum 5 "spaces" before the signature.

2. the transmitting exchange should eliminate errors before transmission;
3. in the case of a telegram with more than 50 words, each section should be separated from the next by 4 lines. Collation should be made at the end of the telegram and not section by section.

*Notes:*

- a) The address should occupy two lines (or exceptionally three), each line containing not more than 43 characters.  
The precise operating rules for setting out the address in a page-printed telegram remain under study by the C.C.I.T.T. (See Question 3/I.)  
Administrations which, for the time being, are unable to accept the address in more than one line may continue to request transmission or reception of the address in one line.  
The Administrations and Recognized Private Operating Agencies which use window envelopes for delivery should ensure that such windows are long enough for the address to be put on one line of 69 signs, the height of the windows being left for the Administrations and Agencies concerned to determine.
- b) Administrations and Recognized Private Operating Agencies may to some extent adapt the vertical line spacing of their teleprinters for the reception of telegrams to ensure a suitable lay-out.
- c) It is considered that ten "letter-shift" signals can usefully be inserted after the ten-line spaces separating telegrams, to provide for cases in which the receiving office uses perforated-tape retransmission.



## SECTION 2

### SWITCHING NETWORK FOR THE GENERAL PUBLIC SERVICE GENTEX NETWORK

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#### RECOMMENDATION F.20

#### CONSTITUTION OF THE EUROPEAN SWITCHING NETWORK FOR THE GENERAL PUBLIC TELEGRAPH SERVICE USING START-STOP TELEPRINTERS

*(formerly C.C.I.T. Recommendation F.11, Geneva, 1956)*

The C.C.I.T.T.,

#### CONSIDERING

that the European start-stop teleprinter network using switching to carry the international traffic of the general telegraph service in Europe can be organized according to various plans;

that one of these plans—Plan A—entails the creation of a European network completely separate from the national networks;

that, in Plan A, the telegraph stations, lines and switching equipments used for terminating international calls in the territory of countries which are parties to the European switching network are independent of the telegraph stations, lines and switching equipments used in the inland services of these countries;

that such a plan would be advantageous in that it would give rise to an entirely new network, including the latest advances in switching technique with a numbering scheme and with answer-back codes both simple and thoroughly adapted to that arrangement of network;

that, on the other hand, separation, within a country, of systems of telegraph lines and operating stations into one group for the inland service and an independent group for the international service, would be costly;

(F.20)

that, for this reason, only the major telegraph offices of a country would be connected to the European switching network;

that, in addition, the creation of such a network (which, if full advantage is to be taken of the points in its favour, would have to be designed for a single signalling system and a single operating procedure) would require lengthy international study and hence would take several years;

that, at the present time, several European countries are operating, or will shortly operate national switching networks, and are ready to start a switching service from country to country;

that application of Plan A would require the unanimous agreement of the participants in the European switching network;

that, for the reasons explained above, such agreement cannot be obtained,

#### UNANIMOUSLY DECLARES THE VIEW

that, for the time being, the creation of a European network completely independent of national networks cannot be proposed for the European switching network of the general public service;

#### CONSIDERING FURTHER

that another plan—Plan B—entails interconnection, by switching, of the national networks now being operated by switching (or which are to be so operated);

that this plan presents an advantage in that it could be implemented by bilateral agreement between Administrations, and in certain relations could be very speedily applied;

that it presents another advantage in that it does not restrict the further development of the network, since it does not limit the connection of the European switching network to a few major offices and thus would make it possible for the retransmission of telegrams to be further reduced;

that it is more economical than Plan A;

that the right of Administrations freely to choose which of their offices are to be connected to the European switching network cannot be challenged;

that some Administrations have decided to connect a fair number of their telegraph offices to the European switching network;

that, on the other hand, other Administrations have decided to separate the national and international networks in their territories;

that, for this reason, full application of Plan B cannot be considered, and that it would be well to recommend a solution combining Plans A and B,

#### UNANIMOUSLY DECLARES THE VIEW

that the European switching network of the general public service should be so constituted that some Administrations would be able to use their national networks to terminate international communications, while others would be able to use a specialized network for international traffic within their territory (Plan C);

that, as regards trunk circuits between the switching centres of different countries, the Administrations concerned should be free to choose between the use of international telex trunk circuits and the constitution of trunk circuits reserved for general traffic;

that, to offset the diversity of operating conditions and technical equipment which might result from the application of Plan C, standardization of operating methods and signalling should be carried as far as the essential characteristics of the national networks permit;

that, in order to facilitate and expedite a thorough study of whether Plan C could be put into operation by all countries, it is desirable that the countries having some experience of the technical, operational and charging problems of this Plan should communicate all possible information on the subject to the other Administrations interested, through the medium of the C.C.I.T.T.,

#### CONSIDERING FINALLY

that operation entirely by automatic switching is much less expensive than manual or semi-automatic operation;

that it would be desirable to adopt, at least on a provisional basis, an abbreviated name for such a network,

#### UNANIMOUSLY DECLARES THE VIEW

that those networks whose interconnection is envisaged would have to be operated entirely by automatic switching;

that provisionally the word "gentex" would be used to designate the switching network for the general telegraph service.

### RECOMMENDATION F.21

#### **COMPOSITION OF THE ANSWER-BACK CODE FOR THE INTERNATIONAL GENTEX SERVICE**

*(Geneva, 1958, amended at New Delhi, 1960)*

The answer-back code sent by teleprinter equipment in the gentex service should provide as much useful information as possible for the operational services.

The number of telegraph offices taking part in the international gentex service seems to be growing considerably and it is therefore necessary for the name of an office obtained as the result of a call to be indicated very clearly to the operator at the calling station, who generally belongs to a country speaking a language other than that used in the station obtained.

It should be noted, moreover, that the average time taken to transmit the text of a telegram in the European system is about one minute and this means that roughly every minute three answer-back codes have to be checked by the operator (two at the beginning of the telegram, the answer-back code of the station obtained and the answer-back code of the calling station, and one at the end: the answer-back code of the station obtained). Procedure for checking answer-back codes should therefore be simple and speedy.

The name of the office should therefore appear in the answer-back as clearly and completely as possible.

Furthermore, inclusion of the call-numbers of the connected offices in the answer-back code has the advantage of immediately indicating to the receiving operator the call-number which he must select if he wishes to call back the calling office in order to discuss any dispute concerning the telegram received.

The answer-back code in the international gentex service should therefore include as much of the name of the office as possible, and the call-number of this office in its national network.

Inclusion in the answer-back code of the prefix to be dialled, for the purposes of routing a call towards the country concerned, is out of the question, as these prefixes vary according to the called or calling country.

But it is essential to show in the answer-back code one or two characteristic letters of the country in which the equipment is situated, for the worst routing mistake is that of sending a call to the wrong country.

It is difficult to include all this information in an answer-back code of 20 signals, but extension of the number of signals in the answer-back code to more than 20 cannot be admitted, for it would entail the total reconstruction of thousands of teleprinters. Furthermore, the 60 signals ( $3 \times 20$ ) used for exchanging answer-back codes for a telegram, constitute a limit which cannot be exceeded in operation without throwing out of balance the ratio between the time used for transmitting the text of the telegram and the total time taken by a communication in the gentex service.

Some Administrations wish to reserve the possibility of identifying in the answer-back code not only the office but also the nature of the position in the office (outgoing position, incoming position). Some of these Administrations even consider it useful to include in the answer-back code the identity of the position amongst all similarly specialized positions, so as to facilitate the location of any faults in the equipment or the tracing of any telegrams in dispute.

To avoid wastage of signals which would be entailed by case-shift signals, this wish can only be met by using letters, additional to those representing the name of the office, which would denote the specialization and identity of each position.

This would result in cutting down the number of letters available for the name in the answer-back code; however, as letters denoting specialization and identity are only useful in large and very large offices which are well-known internationally, the resulting abbreviation of the name of the office is acceptable so long as such additional information does not take up more than two signals in the case of large offices (one space signal, one of the initial letters of the alphabet: A, B, C, etc., for identifying a specialized outgoing position or one of the final letters of the alphabet Z, Y, X, etc. for identifying a specialized incoming position). For very large offices, where groups of machines having the same specialized function, outgoing or incoming, may comprise more than 12 machines, it will be necessary to dispense with three signals (one space signal, one specialization letter and one identification letter). The specialization letters chosen are:

T to indicate a position specializing in transmission,

R to indicate a position specializing in reception.

If an exchange that uses letters denoting specialization is also equipped with combined incoming/outgoing positions, such positions will be identified by the same specialization letter as the incoming positions.

Should outgoing or incoming groups comprise more than 26 machines, the letters S and Q, denoting outgoing or incoming specialization respectively, may be used in conjunction with the letters T and R, thus increasing the possibility of identification in a group of machines to 52.

In the case of overflow positions, they must indicate very clearly the name of the office obtained, for this name belongs to an office other than the one called. For this purpose, the call-number of the overflow office will not appear in the answer-back code of such a position, so as to leave space for the full name of the office and the characteristic indication DEB which has been chosen to denote "overflow".

Because of the limit of 20 signals, and the fact that machines in the gentex service can be connected to page-printing machines (making it necessary to retain the carriage return and line feed signals at the beginning of the answer-back code), in order to have 7 or 8 letters for the exchange name and 2 or 1 letters for the country plus the necessary shift signals, only 5 signals are left for the call-number in the national network. Fortunately, this is enough in almost all cases. Administrations wishing to take advantage of the possibility, offered by C.C.I.T.T. Recommendation F.13, of including up to 8 figures in the national call-number, will have to do their utmost to avoid reducing the number of letters used to denote the name of the office; such Administrations may then not be able to use letters showing the specialization and identity of positions.

In view of the above,

The C.C.I.T.T.,

#### UNANIMOUSLY DECLARES THE VIEW

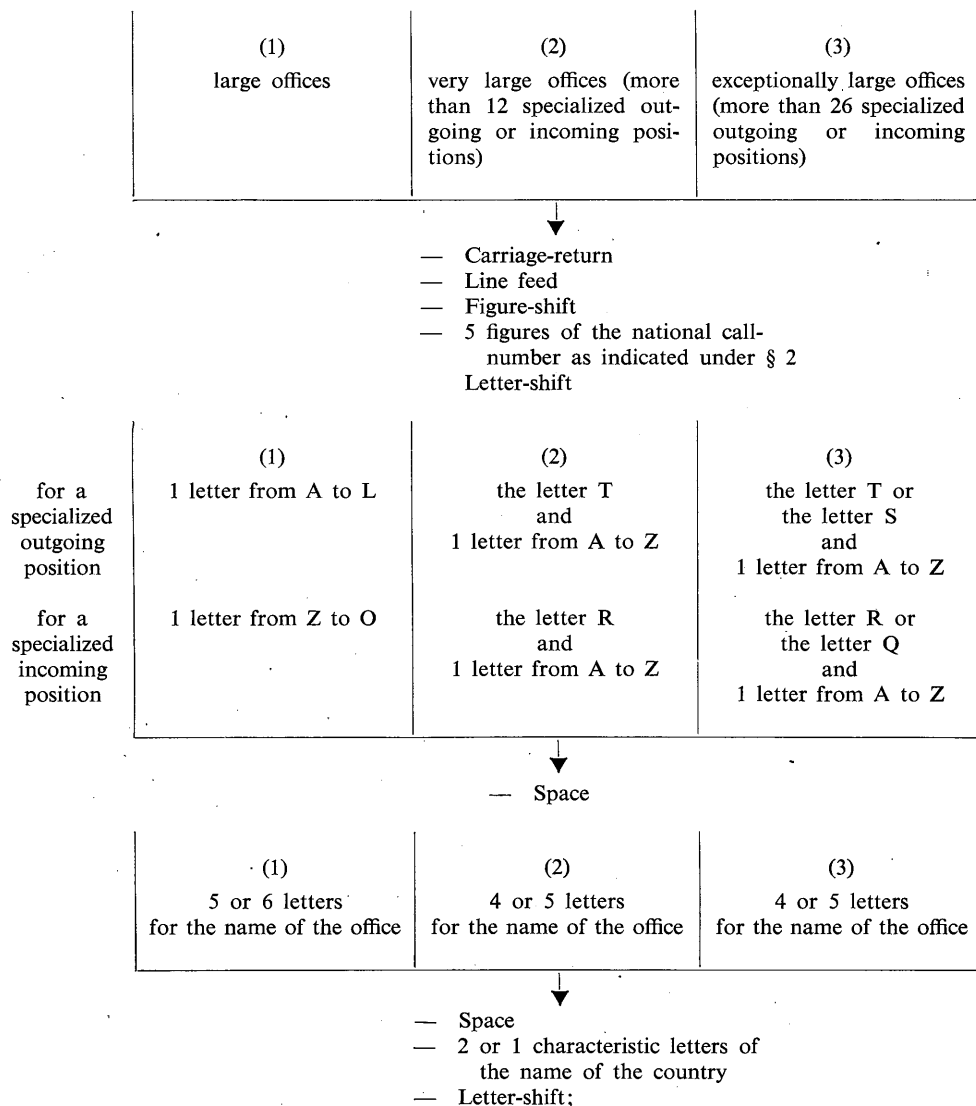
1. that answer-back codes of machines used in the international gentex service should be made up of 20 signals;
2. that, for machines other than those used on positions specialized for receiving overflow traffic, the series of 20 signals in the answer-back code should, in principle, be as follows:

- Carriage return
- Line feed
- Figure-shift
- 5 figures of the national call-number by which the office is to be called when a telegram is sent to it

(In some large offices, a position or group of positions may specialize in dealing with service advices concerning disputes, and in this case it is provided with a special call-number and answer-back code — see § 7 below.)

- Letter-shift
- 7 or 8 letters indicating as explicitly as possible the name of the office
- Space
- 2 or 1 characteristic letters of the name of the country, in accordance with the code listed under § 10
- Letter-shift;

3. that, if the national call-number consists of more than 5 figures, the number of letters used to denote the name of the office should then be reduced, if necessary, but not to less than 5;
4. that for Administrations that wish to give the specialization and identity of the positions with which equipment is associated in large offices, the series of 20 signals in the answer-back code should be made up as follows, according to the size of such offices:



5. if, in the exchanges referred to in point 4 above, combined incoming/outgoing positions are used in addition to specialized incoming or outgoing positions, the answer-back codes of these combined positions should be composed in the same way as the answer-back codes of a specialized incoming position;

6. the specialization letter T should be preferred to the letter S, and the letter R to the letter Q; letters S and Q should be used only when such use is justified by the exchange equipment;
7. that for the positions specialized in dealing with service messages, the series of 20 signals of the answer-back should be as follows:
  - Carriage return
  - Line feed
  - Figure-shift
  - 5 figures of the call-number of the specialized position or group of positions
  - Letter-shift
  - Space
  - Name of office in letters
  - Space
  - Letters INQ
  - Letter-shift;
8. that, for positions specialized in the reception of overflow traffic, the series of 20 signals in the answer-back code should be as follows:
  - Carriage return
  - Line feed
  - Letter-shift
  - Letters of the full name of the office
  - Space
  - Letters DEB
  - Letter-shift;
9. that, if an answer-back code does not make use of the 14 places that can be used for the call-number, the name of the office and the name of the country, the unused places should be filled in by "space" signals, the name of the office being first extended as far as possible;
10. That the characteristic letters of names of countries should be as follows:
 

A	Austria	I	Italy
B	Belgium	L	Luxembourg
BG	Bulgaria	MC	Monaco
CH	Switzerland	N	Norway
CS	Czechoslovakia	NL	Netherlands
D	Germany	P	Portugal
DK	Denmark	PL	Poland
E	Spain	R	Roumania
EI	Ireland	S	Sweden
F	France	SF	Finland
GB	United Kingdom	SU	U.S.S.R.
GR	Greece	TR	Turkey
H	Hungary	YU	Yugoslavia

RECOMMENDATION F.22**GENTEX REGULATIONS**

(Geneva, 1958, amended at New Delhi, 1960)

The C.C.I.T.T.,

CONSIDERING

Recommendations F.20 and F.21

UNANIMOUSLY DECLARES THE VIEW

- 1 that the following Regulations should be adopted for the gentex service;
2. that Administrations should make arrangements for their offices to apply these Regulations.

**Gentex regulations****ARTICLE 1.    *General***

§ 1. The gentex network is made up of telegraph offices of European countries, switching centres and telegraph channels, interconnecting the offices to switching centres and the switching centres to each other.

§ 2. The gentex network is operated by fully automatic switching.

§ 3. Gentex signalling shall be in accordance with C.C.I.T. and C.C.I.T.T. Recommendations relative to the technique of telegraph switching.

**ARTICLE 2.    *Call-numbers and answer-back signals***

§ 1. Unless other arrangements are made, the call-number dialled by a gentex office to call a gentex office in another country is made up of:

- the prefix giving access to the called country from the calling country;
- the national call-number of the called office, which must comprise figures only, up to a maximum of 8 figures.

§ 2.1. The answer-back signals of the equipment used in the gentex service are made up of 20 signals.

§ 2.2. For machines other than those used for positions specializing in the reception of overflow traffic, the series of 20 answer-back signals shall, in principle, be as follows:

- Carriage return
- Line feed
- Figure-shift
- 5 figures representing the national call-number by which the office must be called when a telegram is sent to it.

(In some larger offices, a position or group of positions may specialize in handling service notes and advices about complaints and be equipped with a special call-number and answer-back code—see § 3 below.)

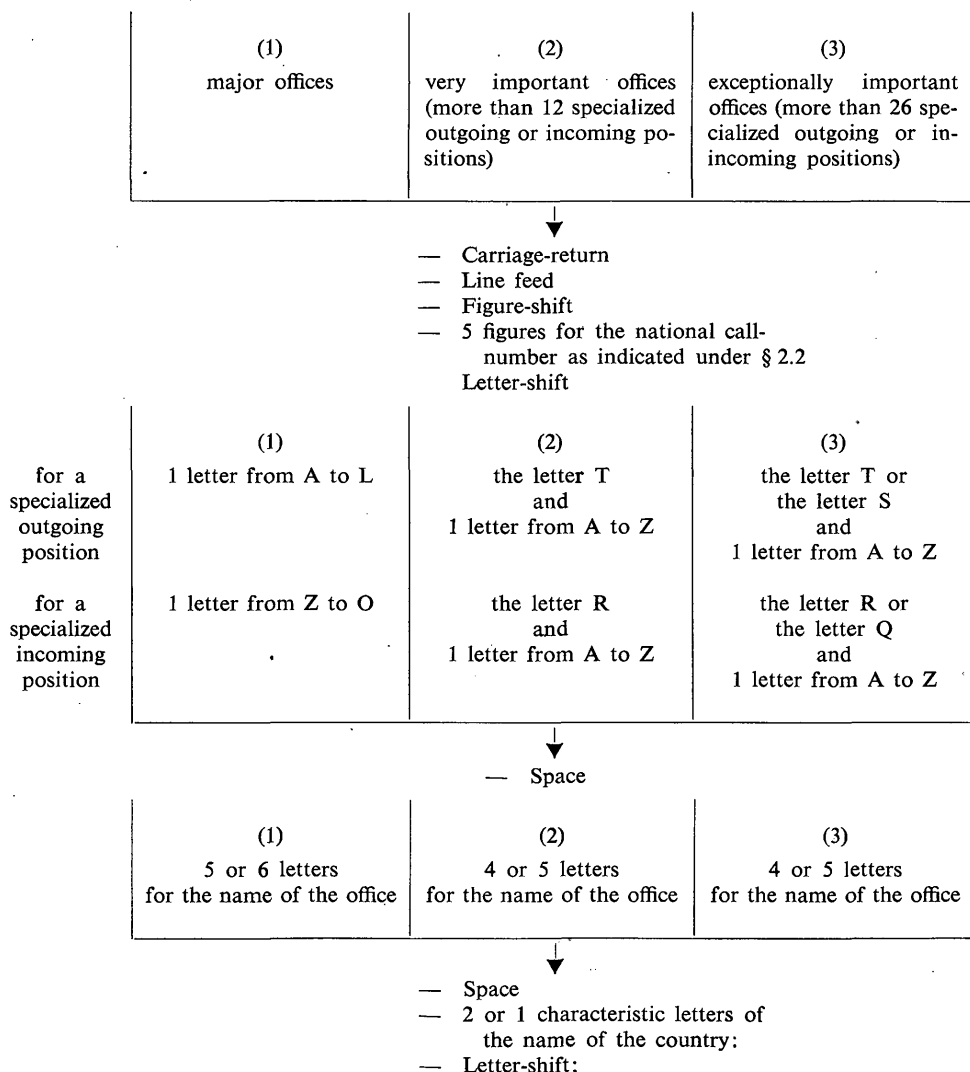
(F.22)



- Letter-shift
- 7 or 8 letters indicating the name of the office as explicitly as possible
- Space
- Two letters or one letter characterizing the name of the country, according to the code given in § 6
- Letter-shift

§ 2.3. If the national call-number has more than 5 figures, the number of letters used for the name of the office shall be reduced, if necessary, but may not be less than 5.

§ 2.4. For Administrations which indicate the specialization and identity of the positions to which the machines are assigned in the major offices, the series of 20 signals in the answer-back code shall be made up as follows, according to the importance of these offices:



§ 2.5. If, in the exchanges referred to by point 2.4 above, combined incoming/outgoing positions are used in addition to specialized incoming or outgoing positions, the answer-back codes of these combined positions should be composed in the same way as the answer-back codes of a specialized incoming position.

§ 2.6. The specialization letter T should be preferred to the letter S, and the letter R should be preferred to the letter Q; the letters S and Q should be used only when such use is justified by the exchange equipment.

§ 3. For the positions specializing in the handling of service notes and advices, the series of 20 answer-back signals shall be as follows:

- Carriage return
- Line feed
- Figure-shift
- 5 figures of the call-number peculiar to the special position or group of positions
- Letter-shift
- Space
- Letters of the name of the office
- Space
- Letters INQ
- Letter-shift

— § 4. For the positions specializing in the reception of overflow traffic, the series of 20 answer-back signals shall be as follows:

- Carriage return
- Line feed
- Letter-shift
- Letters of the full name of the station
- Space
- Letters DEB
- Letter-shift

§ 5. Should the answer-back signals not fill the fourteen places available for the national call-number, full name of the office, and indication of the country, the remaining shall be filled with space signals.

§ 6. The following shall be the characteristic letters of the name of countries for the purpose of answer-back signals:

A	Austria	I	Italy
B	Belgium	L	Luxembourg
BG	Bulgaria	MC	Monaco
CH	Switzerland	N	Norway
CS	Czechoslovakia	NL	Netherlands
D	Germany	P	Portugal
DK	Denmark	PL	Poland
E	Spain	R	Roumania
EI	Ireland	S	Sweden
F	France	SF	Finland
GB	United Kingdom	SU	U.S.S.R.
GR	Greece	TR	Turkey
H	Hungary	YU	Yugoslavia

ARTICLE 3. *Equipment of positions in telegraph offices*

§ 1. The transmitting or receiving stations in the gentex service shall be equipped with tape-printing teleprinters using International Alphabet No. 2, possessing an answer-back unit and able to work in simplex, preferably with a control tape.

§ 2.1. Stations must be equipped for the following:

- the setting-up of calls,
- the clearing of calls,
- reception of the call signal,
- clearing if the paper runs out.

§ 2.2. As far as possible, these stations shall also be equipped to signal the following:

- apparatus blocked,
- tape broken,
- faulty tape feed.

§ 3.1. In an office, the stations used in the gentex service can be grouped into those specializing in transmission and those specializing in reception. Administrations shall arrange this specialization so that the incoming grade of service shall not be less than the C.C.I.T.T. recommended limits.

§ 3.2. Both-way and incoming-only stations in the same office shall all have a common call-number. When one of these stations is faulty, a call arriving at that office shall be directed to a free station in the same group.

§ 3.3. When the positions in an office specialize in incoming or outgoing operations, the special purpose of the positions and their identity, when included in the answer-back signals, shall be indicated as follows:

- a) in offices where there are 12 stations or less in a given group: the name of the office in the answer-back signal shall be preceded by one of the letters A to L for an outgoing-only position, and by one of the letters Z to O for an incoming-only position;
- b) in offices where there are more than 12 and not more than 26 stations in a given group: the name of the office in the answer-back signal shall be preceded by the letter T followed by one of the letters A to Z for an outgoing-only position, and by the letter R followed by one of the letters A to Z for an incoming-only position;
- c) in offices where there are more than 26 stations and less than 53 in a given group: the name of the office in the answer-back signal shall be preceded by the letter T or by the letter S followed by one of the letters A to Z for an outgoing-only position, and by the letter R or the letter Q followed by one of the letters A to Z for an incoming-only position.

ARTICLE 4. *Responsibility of transmitting or receiving stations*

§ 1.1. The operator in the calling station is primarily responsible for the transmission of telegrams. If a telegram fails to arrive or if its text is mutilated, he will have to prove that he has followed the regulations.

§ 1.2. He can provide this proof by producing the original of the telegram and the control tape, if there is one, by examination of the called station's answer-back signals, which must have been received without error in order to be used as a simplified acknowledgement of receipt, and by an examination of the acknowledgement of receipt when such acknowledgement is demanded.

§ 2. The operator manning a position is responsible for seeing that there is enough paper in the machine, that the inking system is fully serviceable, and that the machine is switched to "engaged" while the ribbon and paper are being replaced. In addition, he shall be responsible for correcting any errors he notices in the telegrams received.

ARTICLE 5. *Operating preceding transmission*

§ 1. At the calling station, the telegram may be provided with a reference number which will be transmitted at the beginning of the preamble and will serve as an additional means of identifying the telegram if required.

§ 2. To set up the call with the office required, the operator of the calling station shall proceed according to the rules for his network, and shall dial the call-number in accordance with Article 2, § 1.

§ 3. Having set up the call, the operator obtains the answer-back signal of the called station followed by that of his own station, when these two operations are not automatically controlled by the equipment in the calling or called country. The operator at the calling station checks the answer-back signal obtained against that of the required office and if they correspond he then begins to transmit the telegram.

§ 4.1. If the answer-back signal received is not from the required office, the reason may be one of the following:

- (1) the answer-back signal belongs to an overflow position, in which case the call has been put through to an overflow position which can receive the telegram; transmission of the telegram can therefore begin;
- (2) the answer-back signal received belongs to a position in an office which is not required to intervene. The operator sends the signal BK, gives the clearing signal, and again tries to put the call through to the office required.

§ 4.2. Should this fresh attempt end in reception of the answer-back signal of a position which is not an overflow position and does not belong to the office required, the operator shall proceed in accordance with Article 10, § 1.

§ 5. If the calling station receives the busy signal, the call shall be repeated after about 2 minutes. If the second call is also unsuccessful, a third call shall be made after another 2 minutes or so. If the busy signal is again received, telegrams shall be diverted to a telegraph office in the same country as that of the office required and which is competent in such cases (see Article 14, § 2.5).

§ 6. Before transmission of an SVH, S, F, MDT, VIR or urgent telegram or of a service advice indicating transmission by amplification of a money order or postal cheque telegram, the operator shall transmit the audible signal three times.

§ 6.2. When the operator has more than 5 telegrams with identical texts to transmit, he must first announce this fact by transmitting the signals RPFR TM... (... : number of telegrams) and by sending the audible signal. These telegrams shall then be transmitted as soon as the operator at the called station has replied by the signal GA. If the GA signal has not been received within one minute, then the operator shall go ahead with the transmission.

*Note.* — The operator in the receiving station thus has time to switch his machine to a reperforator if he is equipped with one.

#### ARTICLE 6. *Actual transmission of a telegram*

§ 1. When communication has been established with the desired telegraph office or with an overflow position, the telegram shall be transmitted in the manner described in the Telegraph Regulations. The prescribed routine repetition of the different parts of the telegram, or of the whole of it, shall always be effected by the operator at the calling station.

§ 2. After transmission of the telegram, the operator obtains the answer-back signal of the called station and then transmits his own.

§ 3. If, after the exchange of answer-back signals following the transmission of the telegram, the operator at the calling station notes transmission errors in it, he shall operate the audible signal three times, transmit the expression RECT followed by the necessary corrections; then he shall again exchange answer-back signals as described under § 2.

#### ARTICLE 7. *Operations following transmission of a telegram*

§ 1. When transmission of a single telegram has been completed, the operator of the calling station should, before exchanging answer-back signals, transmit the time of end-of-transmission in the form of 4 figures, unless it is sent automatically.

§ 2. Following the exchange of answer-back signals, the operator of the calling station gives the clearing signal, unless the telegram transmitted is an SVH, S, F, MDT or VIR telegram or a service advice indicating transmission by ampliation of a money order or postal cheque telegram (in which case he should act as prescribed in Article 23).

#### ARTICLE 8. *Series transmission*

§ 1. When a calling station has several telegrams for the same office, once the calling station has made contact with that office, they shall be transmitted one after the other observing the prescriptions laid down in Articles 6 and 7. In such cases, the operator at the calling station shall exchange answer-back signals after every telegram.

§ 2. When the last telegram has been transmitted, the operator at the calling station transmits successively an abbreviated indication of the number of telegrams transmitted (for instance, "TG 3" for a series of 3 telegrams) and the end-of-transmission time if it has not been transmitted automatically; he then exchanges answer-back signals for the last time before giving the clearing signal.

ARTICLE 9. *Reception of telegrams*

§ 1. The called station checks the telegram or telegrams received in accordance with the provisions of the Telegraph Regulations. If correction is necessary, a signal must be sent by RQ note to the transmitting office (see Article 19).

§ 2. When a telegram is announced by the audible signal, the position receiving this signal shall be manned by an operator as soon as possible.

- a) If the receiving operator reads RPFR TM..., he shall put the perforating receiver into circuit, if such apparatus is available in the called office, and then shall transmit GA. Should no perforating receiver be available, the receiving operator shall transmit GA forthwith.
- b) On receipt by the receiving operator of SVH, S, F, MDT, VIR or in the case of a service advice indicating transmission by amplification of a money order or postal cheque telegram, the operator shall wait for the end of transmission of the text and the concluding exchange of answer-back signals, transmit MOM, check the text received, obtain the answer-back of the calling station, compare it with that received at the beginning of the transmission, and give the acknowledgement of receipt (see Articles 22 and 23.)
- c) If the receiving operator reads URGENT, he shall wait for the end of the telegram.
- d) Should the receiving operator read RECT, he must check the correction made and intervene only when necessary.

ARTICLE 10. *Abnormal conditions before transmission*

§ 1.1. Should the operator of a calling station notice, during the putting through of a call, anything which seems to him due to faulty lines or equipment, he shall, if possible, transmit DER BK and give the clearing signal.

§ 1.2. After two minutes or so, he shall try again to put the call through. If, once again, there are abnormal conditions, he shall, if possible, transmit DER BK, give the clearing signal, record the abnormal conditions on the telegram or telegrams and dispose of it or them by an alternative route (see Article 14, § 2). He shall then report the fault.

§ 2. Should a mutilated answer-back signal be received, or should there be no answer-back signal at all, the operator shall send DER BK, give the clearing signal and proceed as in § 1.2 above.

ARTICLE 11. *Abnormal conditions during the call*

§ 1. If the operator at the called station notes misprints or any incoherence in the text of a telegram which is being received, he shall send P or zero signals repeatedly until transmission stops. He shall then send MUT RPT AA ... (or possibly, the reference number SRL NR or the handing-in number TG NR of the first mutilated telegram when a series of telegrams is being received) and the last correctly received word or group. The operator at the calling station shall recommence transmission at the word or group indicated.

§ 2. Should a completely mutilated text be received, including mutilation of the answer-back signal of the calling station, an operator noticing this before the call

is broken off shall stop the transmission and immediately report the matter to the corresponding station by transmitting MUT RPT ALL.

§ 3. If the receiving operator cannot stop a bad transmission, or if the text received when the transmission is resumed continues to be mutilated, the receiving operator sends DER BK and gives the clearing signal.

§ 4.1. If the answer-back signal of the called station is not received or is badly received at the end of transmission of a telegram, the calling station sends DER BK and gives the clearing signal.

§ 4.2. It then proceeds once more to call the required exchange and resumes transmission, preceding it by the expression "ampliation" between two separation signals. However, in the case of money order or postal cheque telegrams, a fair copy is sent by service advice stating that this money order or postal cheque telegram has already been sent once, and giving the routing of it.

Reception of such a service advice should be specially acknowledged, as for MDT or VIR telegrams (see Article 22).

§ 4.3. The procedure described under § 2 above is also applied when the call is accidentally interrupted during transmission.

§ 5. If a call is accidentally interrupted during transmission, or if a call has been cleared after transmission of BK, the called office suspends the texts received until the calling office resumes transmission. If transmission is not resumed within 15 minutes, the called office sends a service note to the calling office, requesting any corrections or repetitions which may be necessary.

§ 6. When a completely mutilated text is received, and the answer-back signal of the calling station is also mutilated, if the call has already been cleared, the printed tape shall be stuck on a telegram form. The name of the receiving station and the time of receipt shall be marked thereon and the telegram kept for inquiry purposes. Since the receiving station cannot, in such circumstances, transmit a request to the transmitting station, there is, inevitably, the loss of a telegram if the transmitting station has failed to notice the fault.

§ 7. Shortage of paper in a machine makes it send the clearing signal automatically. A break in the tape or faulty tape feed, shall, where possible, give rise to a local signal, if the clearing signal is not sent automatically.

#### ARTICLE 12. *Other abnormal conditions*

When a machine runs continuously and is not being used for sending or receiving, its position should be marked engaged and the fault reported. The mains supply to the machine should be disconnected if the fault persists.

#### ARTICLE 13. *General measures for the maintenance of good serviceability*

§ 1.1. No telegram should be transmitted or received by machines or lines which are not fully serviceable.

§ 1.2. Faulty machines or lines should be withdrawn from service so that they cannot be used for a call and should be marked "engaged", so that a call arriving on such a line or machine would be re-routed to another machine or line belonging to the same group.

§ 2. Any position which is temporarily withdrawn from operation should be switched to engaged as indicated under § 1.2.

§ 3. Each operator should know how and where to report faults.

#### ARTICLE 14. *Routing lists*

§ 1. All countries taking part in the gentex service shall draw up a routing list containing information about the routing of traffic to telegraph offices connected to this service and to other offices which, while not connected, normally deal with a fair amount of international traffic. This list should be sent to all the countries concerned.

§ 2. Routing lists should be of the A4 size (210×297 mm) and should contain the following information:

- 1) in the first column, the alphabetical list of the offices chosen in accordance with the preceding paragraph (names of telegraph offices connected to the gentex network should be underlined);
- 2) in the second column, the national call-number of the gentex office to be called for routing traffic to the office shown in column 1 (a space will be left in this column for inserting the prefix or prefixes to obtain access to the country concerned);
- 3) in the third column, the answer-back signals of the offices connected to the gentex network, or of the gentex office serving an office which is not connected to this network (without the characteristic letter or letters of the specialized receiving positions);
- 4) in the fourth column, the service hours of offices connected to the gentex service or of the gentex office serving an unconnected office (see Article 15, § 2);
- 5) in the fifth column, the name of the office in the gentex network which should be called for alternative routing when the office given in the third column is closed, out of order or engaged.

§ 3. This list shall be preceded by a general note indicating the routing of telegrams to offices not mentioned on the list.

§ 4.1. When certain important gentex offices possess specialized positions to deal with service notes and advices concerning disputes, or specialized positions for the reception of fault notices, the national call-numbers and answer-back signals of such positions shall appear in an annex to the routing list.

§ 4.2. If a gentex office is equipped with an automatic test-phrase transmitter (with or without distortion) the national call-number of such a transmitter shall also be indicated in this annex.

*Annex.* — Example: the first part of a routing list (Switzerland in this case), and the annex to this list.



## GENTEX SERVICE WITH SWITZERLAND

*Routing list*

Telegrams to Swiss telegraph offices not included in this list should be routed through *Zurich* when such offices have *German* or *Italian* names, and through *Geneva* when they have *French* names.

Telegraph office	Prefix	National call No.	Answer-back signal of the gentex office serving the office	Service hours	Alternative routing when the gentex office is closed, engaged or out of order
Aarau		5	5 Zuerich CH	N	
Adelboden		3	3 Bern CH		
Altdorf Uri		5	5 Zuerich CH		
Altstätten St. Gallen		5	5 Zuerich CH		
Arbon		5	5 Zuerich CH		
Arlesheim		6	6 Basel CH		
Arosa		5	5 Zuerich CH		
Ascona		5	5 Zuerich CH		
Bad Ragaz		5	5 Zuerich CH		
Baden		5	5 Zuerich CH		
Balsthal		5	5 Zuerich CH		
Basel		6	6 Basel CH		Zuerich
Bellinzona		5	5 Zuerich CH		
Bern		3	3 Bern CH		Zuerich

## ANNEX

*Call numbers of specialized positions in Switzerland*

Service	Call-numbers	Text of answer-back signals
Zurich position dealing with service notes and advices	91	91 ZUERICH INQ
Zurich position for reception of fault notices	94	94 ZUERICH TCHN
Central transmitter of text with distortion for the whole of Switzerland	96	no answer-back unit
Central transmitter of text without distortion for the whole of Switzerland	99	no answer-back unit

ARTICLE 15. *Telegrams to offices with a restricted service*

§ 1. Restricted-service gentex offices should not be called when they are closed; traffic to such offices should be routed to the permanent-service offices mentioned in the fifth column of the routing list for receiving traffic intended for restricted-service offices.

§ 2. The hours of service for gentex traffic of restricted-service offices shall be the same for all offices under one Administration; this rule shall not be compulsory for the networks where there is automatic overflow to another office when an office is closed.

ARTICLE 16. *Overflow and waiting period*

Administrations may make arrangements for calls to be automatically routed to overflow positions when all the receiving positions of a called office are busy. Diversion of a call to an overflow position may be made after a period of up to one minute; when this occurs, the calling telegraph office should be informed immediately of the start of this period by the transmission of MOM. Subsequently, the call should proceed following either the reception of the answer-back signal of the office required or the answer-back of an overflow position.

ARTICLE 17. *Telegrams to offices not connected to the gentex network*

§ 1. Telegrams to an office which, while not connected to the gentex network, appears in the routing list, shall be routed to the gentex office mentioned in the list as serving this office, account being taken of Article 15, if applicable.

§ 2. Telegrams to an office which does not appear on the routing list shall be routed in accordance with the instructions given at the beginning of the routing list of the country in which the office is located.

ARTICLE 18. *Misdirected telegrams*

§ 1. If, during the transmission of a telegram, the receiving operator notices that it has been misdirected:

- a) when the office of destination is located in the same country as the office receiving it, the latter must accept the telegram and retransmit it to the office of destination;
- b) when the office of destination is not in the same country as the office receiving the telegram, the receiving operator shall interrupt the transmission and give notice of the routing error.

§ 2. If the fact that the telegram has been misdirected is noticed only after the call has been cleared, the receiving office shall retransmit it without delay and with priority over other telegrams in the same category, to the office of destination, even when the latter is in another country.

ARTICLE 19. *Service notes*

§ 1. When reception of a telegram is checked and mistakes are noted, a service note (RQ) shall be transmitted by means of a special call to the office which has transmitted the telegram. This latter office transmits the reply by a service note (BQ) as quickly as possible also by special call.

§ 2. The same treatment shall be given to calls for service notes (RQ) or (BQ) as to those for a telegram.

- § 3. A request or reply (RQ or BQ) must contain the following indications:
- a) code word (RQ or BQ);
  - b) exchange to which the RQ or BQ note is being sent;
  - c) designation of the telegram in question by the handing-in number (and, if necessary, the reference number) of the telegram, followed by that of the operating position which has transmitted the telegram, separated by a fraction bar (e.g. 17/385/TC);
  - d) the request or reply itself.

*Examples:* for RQ: RQ LYON 17/385/TC 9W = CFLAM8ABH +.  
 for BQ: BQ AMSTERDAM 17/385/TC 9W OK.  
 for RQ (in the case mentioned in No. 403 of the Telegraph Regulations): RQ LYON 376/TC PAGE 3 = RPT WA ... +.

§ 4. If a reply to an (RQ) note has not been received after a maximum period of 20 minutes, a second (RQ) note shall be transmitted, preceded by RAFSO, to the calling telegraph office. If no reply is received after a further 10 minutes, the telegram shall be sent on marked CTF, and the type of correction indicated. The same applies when it is obvious from the outset that the clarification of an irregularity will take a fairly long time (for instance after the closing time of a telegraph office).

#### ARTICLE 20. *Service advices (A)*

§ 1. When a telegram is sent on, marked CTF, due to a long-delayed reply (BQ) to a note (RQ), the exchange to which the RQ note has been sent shall be informed of the fact by a service advice (A).

§ 2. Requests which are transmitted one or more days after the telegram has been received shall be made by means of service advices (A).

#### ARTICLE 21. *Use of codes*

Service notes and advices shall make use of the codes listed in the annex to these Regulations.

These codes shall also be used when, in exceptional circumstances, operators have to communicate while a call is still connected.

The expression UTCOD ("use the gentex code") should be used to inform the corresponding office that it is necessary to use the code expressions of the gentex service.

#### ARTICLE 22. *Telegrams with acknowledgement of receipt and the form of such acknowledgements*

§ 1. A called office must give an acknowledgement of receipt to the calling station upon reception of SVH, S, F, MDT and VIR telegrams, or of a service advice indicating transmission by ampliation of a money order or postal cheque telegram (Article 11, § 4.2).

§ 2. Such an acknowledgement of receipt shall be given in the following way:  
 R — handing-in number and reference number (if there is one) — specialization and identification letters of the calling position in the calling office — type of telegram (SVH, S, F, MDT, VIR, or A, sent in accordance with Article 11, § 4.2).

ARTICLE 23. *Operational procedure for acknowledgement of receipt*

§ 1. Telegrams requiring an acknowledgement of receipt shall be announced by three successive operations of the audible signal (Article 5, § 6.1). An operator at the called office shall occupy the position receiving this signal as soon as possible (Article 9, § 2); he then waits for the end of transmission of the telegram and the concluding exchange of answer-back signals, transmits MOM, checks the text received, obtains the answer-back signal of the calling station, compares it with that received at the beginning of the transmission and gives the acknowledgement of receipt in the form described in Article 22, § 2.

The operator at the calling station gives the clearing signal.

§ 2. If the calling station has not received the MOM signal some 30 seconds after the end of transmission of the telegram, the operator shall give the clearing signal or continue to transmit other telegrams if there are others to send to the office obtained.

§ 3. If an office has been unable to acknowledge receipt before the call is cleared, it shall send this by service advice to the office which transmitted the telegram requiring it.

§ 4. If the office which has transmitted a telegram requiring an acknowledgement of receipt has not received it approximately one hour after transmission, a service advice requesting such acknowledgement shall be sent to the receiving office in the following form: SVP R — handing-in number and reference number (if there is one) — specialization and identification letters of the position which has transmitted the telegram — type of telegram and the address. An office receiving such a service advice reminder shall proceed forthwith to take the necessary action and shall give the acknowledgement of receipt by urgent service advice.

ARTICLE 24. *Accounting methods*

Administrations and Recognized Private Operating Agencies taking part in the gentex service shall prepare accounts for outgoing telegrams, whether transmitted by the gentex network or not.

ARTICLE 25. *Establishment of accounts*

§ 1. Accounts shall be established in accordance with Article 92 of the Telegraph Regulations (Paris, 1949).

§ 2. Administrations and Recognized Private Operating Agencies may also, by special arrangement, base the accounts on statistics agreed upon by the other Administrations and Recognized Private Operating Agencies concerned.

MISCELLANEOUS

ARTICLE 26. *Prohibition of communications with telex subscribers in other countries*

§ 1. An office connected to the gentex network shall not, under any circumstances, call a telex subscriber in another country.

§ 2. If an office connected to the gentex network receives a call from a telex subscriber in another country:

- a) when the receiving operator notices this before the call has been cleared, he shall immediately interrupt the transmission from the calling station and transmit NA BK and the clearing signal;

- b) when this is noticed after the call from the telex subscriber has been cleared, a service advice shall be sent to the gentex office which seems most appropriate in the country of origin, informing it that the telegram has been improperly handed in and that the telegram thus received has been cancelled. The Administration of the country of the telex subscriber shall inform him of this.

ARTICLE 27. *Application of the Regulations*

§ 1. The present Regulations apply to all transmission procedures used by the gentex service whether by wire or radiotelegraph circuit.

§ 2. The Telegraph Regulations shall apply to any case which is not covered by the present Regulations.

ANNEX TO THE GENTEX REGULATIONS

*Service codes and abbreviations to be used in gentex operation*

<i>Abbreviation</i>	<i>Meaning</i>
ABS	Telegraph office closed
ADRS	Address
ANH	Congestion
* ANUL ....	Delete ....
BK	I cut off
BQ	Reply to RQ
* CALL NR	National call number of a gentex office
CCT	Circuit
CFM	Please confirm / I confirm
CK	Please check number of words
COL	Collation - Please give / I give routine repetition
CRV	How do you receive?
CTF	Correction to follow
CTG	Category of telegram
DBL	Double word(s)
* DEB	Overflow position
DER	Out of order
DER BK	Out of order, I cut off
* DER MOM	Bad reception, do not cut off, we are testing the line
* DETR	I am re-routing to...
DETR SVP	Alternative route? / Please re-route to...

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\* To be included in the decoding section of the proposed Code Book.

<i>Abbreviation</i>	<i>Meaning</i>
* DIF	Different
DTE	Date of handing-in
E E E	Error signal
FIG	Figure(s)
GA	You may transmit
* IND	Answer-back signal
* INQ	Position specializing in the handling of service notes and advices
LTR	Letter(s)
MNS	Minutes
MOM	Please wait !
MOM PPR	Please wait ! I have paper trouble
* MUT	Mutilated
NA BK	Correspondence with this telegraph office is not admitted. I cut off
NC	No circuit
NOT R	Not received
NP	The called number is not / no longer in use
NR	Number
OCC	Busy
O/D	Telegraph office of destination
OK	Agreed
* OMTD	Omitted
O/O	Telegraph office of handing in
P (repeated)	Stop your transmission
PBL	Preamble of telegram
PPR	Paper
QGA	May I transmit ?
QOK	Do you agree ?
R ....	Received ....
RAFSO	Waiting reply to our service advice
RAP	I will call you again
* RECT	Correct please / I am correcting / correction ?
RECT AA .....	Correct all after .....
AB .....	" all before .....
ALL	" the whole telegram
BN .....	" all between ..... and .....
SRL NR	" reference number
TG NR	" telegram number

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\* See reference at bottom of page 220.

<i>Abbreviation</i>	<i>Meaning</i>
RECT TXT	Correct text
WA .....	" word after .....
WB .....	" word before .....
REF ....	With reference to ....
* ROUTE	Route to .... / I am routing to .... / Route ?
* RPFR	Please prepare your reperforator
TM .....	Prepare your reperforator because of telegram with multiple addresses or because of telegrams having the same text
TXT	Prepare your reperforator because of long or difficult text
RPT	Repeat please / I repeat
RPT AA .....	Repeat all after .....
AB .....	" all before .....
ALL	" the whole telegram
BN .....	" all between ..... and .....
SRL NR ..	" reference number given by the transmitting office .....
TG NR	" telegram number
TXT	" text
WA .....	" word after .....
WB .....	" word before .....
RQ	Announcement of a request
SIG	Signature
* SRL NR	Reference number given by a gentex transmitting office
SVIN	Service indication
SVP	Please
* TCHN	Technical service / I shall advise the technical service
TEST MSG	Please send a test message
* TG	Telegram
* TG NR .....	Telegram number given by the handing-in office ...
* TPLE	Triple word(s)
* TPR	Teleprinter
* TXT	Text
UTCOD	Use the gentex code
W	Word(s)
WTG	We are waiting / I am waiting
+ ?	I have finished my transmission Do you wish to transmit?
Figure 0 (repeated)	Stop your transmission

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\* See reference at bottom of page 220.

**RECOMMENDATION F.23****GRADE OF SERVICE FOR LONG-DISTANCE INTERNATIONAL CIRCUITS USED  
IN THE GENTEX SERVICE**

*(formerly C.C.I.T.T. Recommendation F.18, Geneva, 1956)*

The C.C.I.T.T.,

**CONSIDERING**

that the main purpose of the gentex service is to ensure that general service traffic shall be passed without delay, whilst also ensuring a sufficient use of groups of long-distance international circuits intended to carry the general service traffic,

**UNANIMOUSLY DECLARES THE VIEW**

that the grade of service corresponding to a loss probability of 1 in 50 as set out in column 3 of Table B of Recommendation F.64 should apply to the groups of long-distance international circuits used in the gentex service.

**RECOMMENDATION F.24****AVERAGE GRADE OF SERVICE FROM COUNTRY TO COUNTRY  
IN THE GENTEX SERVICE**

*(New Delhi, 1960)*

Recommendation F.23 gives a recommended grade of service for groups of long-distance international circuits used in the gentex service.

However, it would be helpful for outgoing countries to be certain that gentex calls can be put through with a loss-probability sufficient to maintain the grade of gentex service without delay working.

Small offices connected to the gentex network cannot ensure, at the incoming end, a very high grade of service, otherwise their equipment would be uneconomically used.

It is sufficient for an outgoing country to be able to count on an average grade of service for all gentex calls to a given incoming country.

In view of the foregoing, the C.C.I.T.T.

**UNANIMOUSLY DECLARES THE VIEW**

that it is helpful to define an average grade of service between countries for gentex calls,

that this grade of service should be expressed as the proportion of calls which reach the incoming country participating in the gentex service, but which fail to get through to its gentex stations, and

that this grade of service should not involve more than an average of 1 lost call in 10 during the busy hour on a normal day. Calls routed to an overflow position are considered as successful calls.

(F.24)



RECOMMENDATION F.30**END-OF-MESSAGE SIGNAL***(New Delhi, 1960)*

The C.C.I.T.T.,

UNANIMOUSLY DECLARES THE FOLLOWING VIEW :

1. when it is necessary to provide for switching of traffic in different directions, for semi-automatic or fully automatic switching systems using continuous perforated tape or equivalent devices for storage or retransmission, an end-of-message signal is inserted after the end of a telegram or of the last telegram of a series to be routed in a given direction;
2. this signal will consist of the sequence: letter-shift NNNN;
3. the switches which would have to recognize the "end-of-message" signal can be designed in such a way as to do so by translating the sequence of 4 signals corresponding to combination 14 of Alphabet 2 (NNNN or ,,,).

*Notes*

1. See Recommendation S.4 (*Red Book*, Volume VII).
2. A distinction should be made between the end-of-message signal and the message-separation signal.  
The end-of-message signal is a switching signal used as described in this Recommendation; the message-separation signal serves to ensure that there is enough tape between messages for tape-interruption transit system; this signal is not standardized by the C.C.I.T.T.
3. See the annexed table.

# ANNEX TO RECOMMENDATION F. 30

Table illustrating the use of various sequences of combinations for special purposes

Purpose of sequence	Sequence recommended in S.4	METHOD OF OPERATION		
		Message switching (including storage)	Through switching (without message storage)	Point-to-point operation
Start of message	ZCZC	Required in most systems	Could be useful in special cases	Not ordinarily required
Start of text *	GGGG	Useful for presentation of address for routing purposes in some semi-automatic systems, etc.	Could be useful in special cases	Not ordinarily required
Suppression of delay signals	HHHH	Not required (delay signal not envisaged)	Required for some types of message (e.g. cypher) when routed over synchronous error-corrected radiotelegraph channels	Not required on public systems (delay signal not envisaged)
End of telegram	{ + + + + Z Z Z Z }	Could be useful in special cases	Could be useful in special cases	Not ordinarily required
End of message	NNNN	Essential in most systems to separate individual messages at relay centres and to control message switching	Required only when it is necessary positively to reconnect delay-signal facility after use of suppression of delay signals facility	Not ordinarily required
Connection of reperforator (or equivalent device)	CCCC	{ Not normally used (as storage is incorporated in the system) Could be used for connection and disconnection of a supplementary storage device }	Could be useful for special purposes; requires special equipment at point of reception	Could be useful for special purposes; requires special equipment at point of reception
Disconnection of reperforator (of equivalent device)	FFFF			

\* Note: Objection has been raised to the use of GGGG as "start-of-text" signal — This must be regarded as provisional only.

## SECTION 3

### TARIFFS AND ACCOUNTING METHODS FOR THE INTERNATIONAL GENERAL TELEGRAPH SERVICE

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#### RECOMMENDATION F.40

##### COUNTING OF WORDS PREPARATION OF A VOCABULARY

*(formerly C.C.I.T. Recommendation G.8, Geneva, 1956)*

The C.C.I.T.T.,

##### CONSIDERING

1. the proposal to recommend to Members of the Union the setting-up of committees comprising representatives of Administrations, Recognized Private Operating Agencies and Organizations representing the users of international telegraph services of all countries with a common language, with the purpose of drawing up vocabularies of commercial terms characteristic of the language or in current use in the country concerned, with an indication of the corresponding number of telegraph words;
2. that the difficulties of reckoning the charge for such terms should not be exaggerated, for they can be overcome by a liberal interpretation of the Telegraph Regulations and by making a study of some special cases relating to the counting of signals, expressions, etc. appearing in the Regulations;
3. that the high cost of preparing, circulating and keeping up to date such vocabularies would be out of all proportion to their actual value;
4. that § 149 of the Regulations (Paris Revision, 1949) gives the right to take appropriate measures against any abuse in the use of the terms in question;
5. that lists of these terms, already published by some of the Administrations and Recognized Private Operating Agencies, are now used by many other Administrations and Recognized Private Operating Agencies,

(F.40)

## UNANIMOUSLY DECLARES THE VIEW

- a) that there is no call to recommend Members of the Union to set up committees to draw up vocabularies of characteristic commercial terms in the various languages, with an indication of the corresponding number of chargeable words;
- b) that it is preferable to leave Administrations and Recognized Private Operating Agencies to reach such agreements, and take such action, as they may see fit in this field.

RECOMMENDATION F.45**DETERMINATION OF TERMINAL RATES IN THE EUROPEAN SYSTEM***(Geneva, 1958)*

The C.C.I.T.T.

Having examined the results of the study to determine the elements of the cost of routing telegrams in the European system (see *Violet Book* — Supplements — pages 330 to 335);

## CONSIDERING

that charging with a fixed amount per telegram and a variable transmission rate per word does not meet with adequate approval;

that, under these conditions, charging for telegrams should be by the word, as at present;

that, for a telegram of an average length of 15 words, the cost of handing in or delivery per word is between 6.6 and 10 gold centimes;

that the real average load of a circuit should be assessed at 2500 words per day (instead of 5000 words, which practice has revealed to be too heavy a load);

that, because of this fact, the average cost of transmitting an incoming or outgoing telegram is 5 gold centimes per word,

## DECLARES THE VIEW

that terminal rates for one country should be the same at both incoming and outgoing services;

that these rates should be between 11.6 and 15 gold centimes per word.

*Note.* — The Administration of the U.S.S.R. declares that its terminal rate will be 32 gold centimes per word and its transit rate 24 gold centimes per word.

(F.45)

RECOMMENDATION F.50**ACCOUNTING IN THE PUBLIC TELEGRAPH SERVICE***(formerly C.C.I.T. Recommendation G.14, Geneva, 1956)*

The C.C.I.T.T.,

**CONSIDERING**

1. that in general, and for the operational needs of the international switching system of the general telegraph service in particular, the accounting between Administrations and Recognized Private Operating Agencies should be based on the transmitted traffic;
2. that several Administrations and Recognized Private Operating Agencies, especially in the extra-European system, prefer that accounts should be based on the received traffic,

**UNANIMOUSLY DECLARES THE VIEW**

that, for the time being, there is no point in modifying the existing rules for the drawing up of accounts in the telegraph service, since the provisions of § 901 of the Telegraph Regulations (Paris Revision, 1949) permit Administrations and Recognized Private Operating Agencies to adopt such measures as they consider appropriate for drawing up accounts.

RECOMMENDATION F.51

**ACCOUNTING PROCEDURE TO BE APPLIED  
WHEN A CIRCUIT CARRYING V.F. TELEGRAPHY  
IS REPLACED BY ANOTHER HAVING A DIFFERENT ROUTING**

*(Geneva, 1956, amended at New Delhi, 1960)*

The C.C.I.T.T.

**UNANIMOUSLY DECLARES THE VIEW**

that the following accounting procedure should be applied:

1. The durations of the diversions during a whole month (Sundays excepted) are added together, each diversion being reckoned in minutes. The total number of minutes, after agreement between the Administrations at the two ends of the diverted voice-frequency system is divided by 60 (any remainder being disregarded) giving as a result the number of full hours during the relevant month.
2. Division by 24 gives the number of full days for which payment should be made. If the remainder exceeds 11 hours, it is counted as a whole day; if it is 11 or less it

(F.51)

is disregarded. If the total number of hours is less than 24 the same procedure is followed (11 hours or less to be disregarded, as expressed in paragraph 1).

3. The number of days thus obtained is expressed as a percentage of a whole month of 25 days (hereinafter called A%). A% of the month's traffic shall be considered as having been routed via the diverted route.

Hence:

$$A = \frac{\text{number of days of change-over} \times 100}{25}$$

4. Where there are two or more voice-frequency systems on the same route between the same two terminal points, and one (or more) of these systems is diverted to another route, the following procedure will apply for the general telegraph and telex services:
  - a) For each diverted voice-frequency system the A% shall be calculated separately in the normal way;
  - b) The volume of traffic handled via the circuits of the diverted voice-frequency system(s) shall be derived from the total traffic in the month on the basis of the proportion between the number of circuits in the diverted system(s) and the total number of circuits on the route used for the service in question on the 15th day of the month concerned.
5. For the *general telegraph service*, the Administration establishing the monthly accounts first considers all the telegrams as having been exchanged over normal circuits. The number of words is converted into equated words. A% of this figure then represents the traffic sent over the emergency circuit. The Administration responsible for establishing the accounts indicates this percentage of the total traffic separately.
6. When the accounts are established in accordance with para. 952 of the Telegraph Regulations, the Administration to whom the normal transit rate accrues shall pay the new transit Administration(s) its (their) quota(s) for A% of the total traffic, the balance of the total traffic (100% minus A%) being accounted for as if transmitted via the normal route.
7. When the accounts are established in accordance with para. 953 of the Telegraph Regulations, the Administration responsible for preparing the accounts shall send sufficient extra copies of the accounts to the Administration of origin to enable the latter to forward one copy to each of the new transit Administrations.
8. In the monthly *telex* accounts the total traffic is divided into two portions, one of which (100% minus A%) exchanged by the normal route is accounted for at normal quotas, and the other (A%) is accounted for at quotas appropriate to the diversion route.
9. The rental of *leased circuits* for each monthly or quarterly period will be paid by the renter in the normal way, as if no diversion had taken place. If no special arrangement has been made between the Administrations concerned, the Administration(s) which, according to the agreement in force for the rented circuit in question, collect(s)

the transit amount relating to the voice-frequency system section from the renter(s) shall, in case of diversion of the voice-frequency system, distribute the said amount to the Administration(s) on the normal route (100% minus A%) and the new Administration(s) (A%) for the months concerned.

10. In cases where only a section of the voice-frequency system is diverted, the Administrations which make the diversion inform the Administrations at the two ends of the voice-frequency system.
11. Where working channels in a diverted voice-frequency system extend beyond the countries at the ends of the system, each of the two Administrations at the ends of the voice-frequency system is responsible for notifying the above-mentioned A% to those terminal Administrations of the extended channels lying beyond its territory.
12. The value of "A", for the purposes of paras. 10 and 11, should be determined by the Administrations concerned not later than the fifth day of the following month.
13. The quotas applying to extra transit Administrations that handle traffic via alternate routes shall be given by the following rules, unless otherwise agreed between the countries in question.

*General telegraph service:* The amount for the new transit Administrations shall be the notified transit quotas, or, as the case may be, the available transit share proportionately divided into quotas. If no transit share is available between adjacent countries, payment of a transit share shall be subject to special agreement.

*Telex service:* Charges shall be apportioned in accordance with Recommendation F.60, Annex 2.

*Leased circuits:* Any transit quota is shared equally by the new transit countries. Where no transit quota is available between neighbouring countries, the payment of any such quota shall be the subject of special agreement.

## SECTION 4

### TELEX SERVICE

#### RECOMMENDATION F.60

#### **DRAFT REGULATIONS FOR THE SUBSCRIBERS' TELEGRAPH SERVICE BY START-STOP APPARATUS (TELEX SERVICE)**

*(Brussels, 1948, amended at Arnhem, 1953, Geneva, 1956 and 1958, and New Delhi, 1960)*

The C.C.I.T.T.,

in view of Article 84 of the Telegraph Regulations (Geneva, 1958)

UNANIMOUSLY DECLARES THE VIEW

that the following Regulations should be adopted for the telex service:

#### **REGULATIONS FOR THE TELEX SERVICE**

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## CHAPTER ONE

## Scope of the Regulations — Definitions

## ARTICLE 1

## General provisions

- § 1. These Regulations fix the rules to be followed for the subscribers' telegraph service, permitting the users to communicate directly and temporarily by means of start-stop apparatus. This service is called telex service.
- § 2. Questions of an essentially technical nature concerning the telex service are dealt with by special C.C.I.T.T. Recommendations, including the following:
- S.3 Characteristics, from the transmission point of view, of the local end, with its termination when start-stop apparatus using International Alphabet No. 2 (50 bauds).
- S.5 Standardization of page-printing start-stop apparatus and co-operation between page-printing and tape-printing start-stop apparatus.
- S.6 Standardization of start-stop apparatus in the telex service.
- U.1 Signalling conditions for use in the international telex service

## ARTICLE 2

## Definitions

- § 1. Unless otherwise indicated, terms used in these Regulations, and which are defined in the "List of Definitions of Essential Telecommunication Terms — Part I", correspond to the definitions in this List.
- § 2. The following terms used in these Regulations have the undermentioned definitions:
- Auxiliary telex route:* route used when the normal route is congested.
- Emergency telex route:* route to be used in case of complete interruption or major breakdown of the normal and auxiliary routes.
- International telex position:* Manual position in an international telex centre for establishing telex calls between two countries.

## CHAPTER II

## International telex network — Duration of the telex service

## ARTICLE 3

## Constitution of international telex circuits — Routes

- § 1. International telex circuits are made up using of telegraph circuits.
- § 2. The networks of the countries operating the telex service shall, as far as possible, be directly connected.

- § 3. In case of breakdown, any defective international circuit (or section of an international circuit) must be repaired with all possible speed and, pending repair, every attempt must be made to provide a replacement circuit with the minimum delay.
- § 4. Each intermediate Administration (or Recognized Private Operating Agency) shall provide the sections of international circuits passing through the territory which it serves.
- § 5. For each relation, the Administrations (or Recognized Private Operating Agencies) concerned shall, by mutual agreement, decide upon one or more normal telex routes and, to the extent possible, upon auxiliary telex routes and emergency telex routes.
- § 6. In this respect, the Administrations (and/or Recognized Private Operating Agencies) shall conform, as far as possible, with the principles recommended by the C.C.I.T.T., as regards the constitution and maintenance of circuits and installations.
- § 7. If it should become necessary to use the auxiliary or emergency telex routes, the countries concerned shall take urgent measures to make them available.
- § 8. The General Secretariat shall publish a yearly list of telex circuits and routes (see Recommendation F.95).

#### ARTICLE 4

##### **Maintenance and upkeep of telex communications — Role of international telex positions**

Any faults in installations noted by international telex positions must be reported without delay to the technical service responsible for the maintenance and upkeep of switched telegraph communications.

The technical services responsible for the maintenance and upkeep of telex communications are recommended to use the abbreviations given in the list of service abbreviations for the maintenance and upkeep of telegraph communications, annexed to C.C.I.T.T. Recommendation R.90.

#### ARTICLE 5

##### **Duration of service — Legal time**

- § 1. Each Administration (or Recognized Private Operating Agency) shall fix the working hours of its centres.
- § 2. International telex centres must, so far as possible, afford continuous service.
- § 3. Switching centres that are not open continuously are required to extend their service beyond the normal closing hours when there are calls in progress.
- § 4. Each centre shall use the legal time of its country or of its zone. Each Administration (or Recognized Private Operating Agency) shall notify this time or times to the General Secretariat which will advise the other Administrations (and/or Recognized Private Operating Agencies).

## CHAPTER III

## Classes of telex call

## ARTICLE 6

## Classes of telex call

§ 1. Accepted classes of telex call are:

- a) Safety of life telex calls (SVH).
- b) Government telex calls.
- c) Service telex calls.
- d) Ordinary private telex calls.
- e) Requests for information.

§ 2. In addition, subscription calls may be accepted by special agreement between Administrations (and/or Recognized Private Operating Agencies).

§ 3. Administrations (and/or Recognized Private Operating Agencies) may decide by special agreement among themselves to accept classes of telex call other than those mentioned above.

## ARTICLE 7

## Telex calls concerning the safety of life

Safety of life calls (SVH) are those requested in accordance with Article 38 of the International Telecommunication Convention, Geneva, 1959.

## ARTICLE 8

## Government telex calls

§ 1. Government telex calls are those originating with one of the authorities which enjoy the advantages of Government telegrams and telephone calls, in accordance with the International Telecommunication Convention.

§ 2. The person booking a Government telex call must state his name and rank on request.

§ 3. A Government telex call shall have priority only if priority has been specifically requested by the calling subscriber.

## ARTICLE 9

## Service telex calls

§ 1. (1) Service telex calls are those which relate to the working of the international telex or telegraph service; such calls may be exchanged free of charge between the Administrations (and/or Recognized Private Operating Agencies) concerned with the international telex service.

(2) However, in services between Administrations of the European system, the telephone service may use, free of charge, the telex service conducted by Administrations of the

European system for the exchange of telex calls concerning the working of the international telephone service, which calls shall then be regarded as service telex calls.

(3) By agreement between the Administrations (or Recognized Private Operating Agencies) concerned, the free use of their telex service may, in cases of absolute necessity, be authorized by these Administrations (or Recognized Private Operating Agencies) for the exchange of telex calls in the extra-European system concerning the working of the international telephone service. These calls shall then be regarded as service telex calls.

(4) By way of reciprocity, the agreements mentioned in the preceding sub-paragraph may provide that, in the same relations and under the same conditions of absolute necessity, the telex service may use, free of charge, the telephone service conducted by the Administrations (or Recognized Private Operating Agencies) for the exchange of telephone calls relating to the working of the international telex service. These telephone calls shall then be regarded as service telephone calls.

- § 2. Service telex calls may be requested only by persons authorized to do so by their respective Administration (or Recognized Private Operating Agency).
- § 3. The Chairman of the Administrative Council, the Secretary-General of the Union, the Director of the C.C.I.T.T., the Director and Vice-Director of the C.C.I.R. and the Chairman of the I.F.R.B. are authorized to book, free of charge, service telex calls to Administrations (or Recognized Private Operating Agencies), relating to the official business of the Union.
- § 4. Service telex calls must be made, as far as possible, outside the busiest hours.

#### ARTICLE 10

##### Ordinary private telex calls

Ordinary private telex calls are telex calls, other than service or Government calls, which do not receive any special treatment.

#### ARTICLE 11

##### Subscription telex calls

- § 1. Subscription telex calls are those which are arranged to take place daily between the same stations, at the same time, agreed upon in advance, for the same duration, and which have been booked for a specified period.
- § 2. Subscription telex calls must relate exclusively to the personal affairs of the correspondents or those of their firms.
- § 3. (1) Subscription telex calls shall be subject to the acceptance by the person requiring them, of a subscription contract. The subscription contract may take effect from any date, but for those taken on a monthly basis the first day of the month shall be regarded as the commencing date. Any balance of payment due for service given prior to that date shall be added to the first monthly account.  
(2) The monthly subscription shall be extended from month to month unless it has been cancelled by either party at least eight days before the end of the current month. Nevertheless, by special agreement between the Administrations (and/or Recognized Private Operating Agencies) concerned, earlier cancellation may be granted, after the first month, subject to eight days notice being given in advance.

- (3) A subscription contract made for one or more indivisible periods of seven consecutive days shall not be renewable by tacit agreement.
- § 4. The time and duration of subscription telex calls shall be fixed by the international telex centre or centres concerned, with due regard to the subscriber's request and the commitments and facilities of the service.
- § 5. If at the time specified in the contract, there is, between the international telex centres concerned, a circuit on which no telex call is in progress and for which there is no priority Government call or SVH call on hand, the call shall be set up at the time fixed. Otherwise, it shall be set up as soon as possible on the first circuit fulfilling these conditions after the time fixed.
- § 6. A subscription telex call shall be definitively disconnected when the caller gives the signal that the call is ended before the expiry of the duration specified for each subscription call. If, at the end of this duration, the caller has not already given the signal that the call is ended, the operator shall warn the caller and disconnect the call, unless the call can be continued without blocking other traffic.
- § 7. Subscribers shall arrange that their stations shall be free at the time fixed for the call.

## ARTICLE 12

### Requests for information

- A request for information is a request made by a person with the object of ascertaining:
- whether a certain person, whose name is given, together with the additional details necessary for identification (for example his complete address), is a telex subscriber, and if so, what is his call-number and answer-back code;
  - the name of the person to whom a given call-number or answer-back code in a specified telex system is allotted.

## CHAPTER IV

### Operation of the telex service

## ARTICLE 13

### Operating systems

- § 1. Administrations (and/or Recognized Private Operating Agencies) shall reach mutual agreement upon the most appropriate method of operation to be applied in the international relations that concern them, account being taken of the undermentioned provisions.
- § 2. It is strongly recommended that the telex network of each country be on an automatic switching basis and that it be possible for subscribers to reach one another by fully automatic selection.
- § 3. Wherever fully automatic selection has not yet been adopted, it is recommended that semi-automatic operation should be introduced, whereby the operator of the originating international telex position receives the booking, sets up and controls the call.
- § 4. The operator of the originating international position must be acquainted with the necessary operating particulars of the networks of the country of destination. The incoming Administration of arrival will give all the necessary technical information to the outgoing Administration.

- § 5. If the two networks employ manual switching, the calls must be controlled by the operator of the originating country.
- § 6. (1) If one network employs manual switching and the other automatic switching, the Administrations shall reach an agreement allowing the operator of the international telex position in the country using manual switching to select the called subscriber directly, where the conditions of §§ 3 and 4 above are fulfilled.
- (2) If it is the originating country that has an automatic switching system, the Administrations concerned may agree to allow calls from the originating country to arrive automatically at the international telex position in the country of destination.
- § 7. The number of circuits between two networks and the switching equipment should in all cases be calculated as far as possible for a no-delay telex service.
- § 8. Telex calls established manually or semi-automatically will normally be controlled by the international telex position in the country of origin. However, where a telex call is established over two or more international links, of which the first link is provided by landline or submarine cable and the second or a subsequent link by radio, and access to the radio link is obtained manually in the transit country concerned, control of the call will be exercised at the outgoing end of the first radio link in the call (i.e. in a transit country).

#### ARTICLE 14

##### **Establishment and disconnection of telex calls by the international telex positions**

- § 1. International telex centres connected with each other by several international telex circuits may, by mutual agreement, allocate certain of these circuits for setting up transit telex call or for the establishment of telex traffic in one direction only.
- § 2. For the operation of international telex circuits, the French language shall be used between Administrations (and/or Recognized Private Operating Agencies) having different languages, in the absence of special agreements between them for the use of other languages.
- § 3. In the manual service, all bookings, modifications of bookings and cancellation advices shall be transmitted as quickly as possible to the international telex centre charged with establishing the telex call booked.
- § 4. In the manual service, calling signals on international circuits must be answered immediately. If, after a suitable period of calling, the centre called does not reply, it shall be asked by any appropriate means to resume the service on the international circuit in question; any international telex centre that is in a position to help in this matter must do so.
- § 5. (1) In the case of manual switchboards in the countries of origin and destination, and when there is congestion on a particular international telex route, recourse may be had to the advance preparation of calls. Preparation shall consist of completing all the operations necessary in order that the two stations (calling and called) may be connected without any loss of time on the international circuit.
- (2) On circuits which have not been allocated for the passing of traffic in a single direction, telex calls of the same category are, in principle, established in alternate order; the international telex centres concerned may, by mutual agreement, temporarily change the alternate working hours if, by so doing, the flow of traffic and the maintenance of chronological order, as laid down in Article 18, § 3, would be improved.
- (3) Telex calls already prepared must not be delayed for the benefit of calls of higher priority, with the exception of SVH calls.

- § 6. Without prejudice to the provisions of Article 16, the operator directing the calls at the international telex position shall verify that transmission between the correspondents is satisfactory; he shall note the time when the call is established as well as the time when the telex call ends and/or its duration. He shall record service incidents and other items, necessary for the preparation of the international accounts.
- § 7. With the exception of the cases provided for in Article 11, § 6 and Article 15, § 3, and of cases where an infringement of the present Regulations or national instructions has been noted, operators are forbidden to cut off, or break into, an established call which is proceeding normally.

#### ARTICLE 15

##### Limitation of the duration of telex calls

- § 1. (1) In general, the duration of ordinary private telex calls and service telex calls shall not be limited.
- (2) However, under congestion conditions, the international telex centres concerned may agree to limit the duration of calls to twelve, or even six, minutes.
- § 2. (1) The duration of Government and SVH telex calls shall not be limited.
- (2) However, transit Administrations (and/or transit Recognized Private Operating Agencies) shall have the right, in the case of breakdown or congestion, to limit the duration of Government telex calls to twelve minutes when these calls are established through the intermediary of one of their exchanges.
- (3) In such a case the operator of the transit country shall advise the controlling operator that restrictions on duration are in force.
- § 3. If the duration of the call is limited, the caller shall be informed, when the call is about to be connected, that it will be cut off after the due time.

#### ARTICLE 16

##### Operating procedure on international telex positions

- § 1. (1) If the called subscriber can be obtained directly by the controlling international telex operator, this operator:
- holds the calling subscriber and selects a free circuit;
  - selects the called subscriber;
  - sets up the call to the called subscriber and obtains the answer-back of the called subscriber which must also be received by the calling subscriber;
  - obtains the answer-back of the calling-subscriber which must also be received by the called subscriber;
  - operates the timing equipment;
  - on reception of the clearing signal, clears down the connection.
- (2) If the called subscriber is engaged, the controlling international telex operator signals OCC, followed by RAP when the calling subscriber has to be recalled, and then releases the calling subscriber.
- § 2. (1) If the called subscriber is obtained via two international telex positions:
- the controlling international telex operator holds the calling subscriber and selects a free circuit;



- b) the operator at the second international telex position announces himself by the abbreviated name of his telex exchange \*;
  - c) the controlling international telex operator signals the particulars of the called subscriber;
  - d) the operator of the second international telex position:
    - 1) holds the circuit from the controlling international telex position,
    - 2) selects the called subscriber,
    - 3) signals the letters DF to the controlling international telex position,
    - 4) establishes the communication between it and the called subscriber;
  - e) the controlling international telex operator:
    - 1) establishes the communication with the calling subscriber and obtains the answer-back of the called subscriber, which must, at the same time, be received by the calling subscriber;
    - 2) obtains the answer-back of the calling subscriber which must also be received by the called subscriber,
    - 3) operates the timing equipment,
    - 4) on receiving the clearing signal, clears down the connection.
- (2) If the called subscriber is engaged, the operator of the second international telex position signals OCC and clears down the international circuit.
- § 3. (1) If the called subscriber is obtained via more than two international telex positions:
- a) the controlling international telex operator holds the calling subscriber and selects a free circuit;
  - b) the operator at the second international telex position announces himself by his abbreviated name (see § 2 (1) b);
  - c) the controlling international telex operator sends his own answer-back and signals the particulars of the called subscriber;
  - d) the operator at the second international telex position extends the call to the third international telex position and signals THRU to the calling international telex position;
  - e) the operator of the third international telex position announces himself by his abbreviated name (see § 2 (1) b);
  - f) the controlling international telex operator sends his own answer-back and signals the particulars of the called subscriber;
  - g) the operator of the third international telex position:
    - 1) holds the circuit from the international telex position at which the call is controlled,
    - 2) selects the required subscriber,
    - 3) signals the letters DF to the controlling international telex position,
    - 4) establishes the communication between it and the called subscriber;
  - h) the controlling international telex operator:
    - 1) establishes the communication with the calling subscriber,
    - 2) obtains the answer-back of the called subscriber, which must also be received by the calling subscriber,

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\* It is recommended that, as far as possible, the abbreviated name of the telex exchange shall be transmitted by means of the answer-back unit and shall be so constituted as to permit the identification of the operator's position concerned in the connection of an international call.

- 3) obtains the answer-back of the calling subscriber, which must also be received by called subscriber,
  - 4) operates the timing equipment,
  - 5) on receiving the clearing signal, clears down the connection.
- (2) If the operator of the second international telex position finds all the circuits to the third position engaged, he should signal NC and clear down the international circuit.
- (3) If the called subscriber is engaged, the international telex operator of the exchange of arrival should follow the procedure indicated in § 2 (2).
- § 4. Except when applying C.C.I.T.T. Recommendation U.21 it is not possible to recall the operator of a telex position to a connection already set up.
- § 5. All instructions necessary for the efficient handling of a subscriber's international telex traffic may only be given to that subscriber through the medium of the international terminal exchange to which he is connected.

## ARTICLE 17

**Code expressions used in the international telex service**

In service correspondence the following code expressions should be used:

ABS	Absent subscriber, office closed
BK	I cut off
CFM	Please confirm / I confirm
COL	Collation please / I collate
CRV	Do you receive well / I receive well
DER	Out of order
DF	You are in communication with the called subscriber
EE E	Error
GA	You may transmit / may I transmit?
INF	Subscriber temporarily unobtainable, call the information service
MNS	Minutes
MOM	Wait; waiting
MUT	Mutilated
NA	Correspondence with this subscriber is not admitted
NC	No circuits
NCH	Subscriber's number has been changed
NP	The called party is not, or is no longer, a subscriber
NR	Indicate your call number / my call number is ...
OCC	Subscriber is engaged
OK	Agreed / do you agree?
P *	Stop your transmission
(or figure 0 *)	
PPR	Paper
R	Received
RAP	I shall call you back
RPT	Repeat / I repeat
SVP	Please

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\* To be repeated until the transmission is brought to a stop.

TAX	What is the charge? / the charge is ...
TEST MSG	Please send a test message
THRU	You are in communication with a telex position
TPR	Teleprinter
W	Words
WRU	Who is there?

## ARTICLE 18

**Priority of telex calls**

- § 1. When the telex service normally provides a demand service, no priority shall be given to certain classes of telex call.
- § 2. Under fault or congestion conditions, and in general when the telex service does not provide a demand service, either normally or temporarily, international telex calls shall be set up in the following order:
- a) telex calls concerning safety of life;
  - b) service calls concerning the re-establishment of international telecommunication links which have been totally interrupted;
  - c) Government telex calls for which priority has specifically been requested;
  - d) Government telex calls for which priority has not been requested, ordinary private telex calls, service telex calls other than those mentioned in b)
- § 3. In the international telex centre, calls shall take their priority according to their category and time of receipt at this exchange (see Article 14, § 5 (2)).

## CHAPTER V

**Booking of telex calls**

## ARTICLE 19

**Way of booking telex calls**

In the booking of a call, the telex installation of the subscriber required must be designated by the name of the country, the subscriber's exchange if necessary, and his call number, as it appears in the official directory of the country concerned.

## ARTICLE 20

**Validity of telex bookings**

Bookings of telex calls not completed shall cease to be valid:

- § 1. Where all the offices concerned are open continuously:
- a) at midnight, if the telex call has been booked before 10 p.m. on the same day,
  - b) at 8 a.m. if the telex call has been booked after 10 p.m. the previous evening.
- § 2. Where all the offices concerned are not open continuously:  
at the telex service closing time at the end of the day.

## ARTICLE 21

**Modifications of telex bookings**

- § 1. In the case of all bookings of telex calls, and subject to the provisions of Article 20 relative to the validity of bookings, the caller may, so long as the required subscriber has not been obtained:
- a) cancel his booking,
  - b) specify the time after which the booking should be cancelled,
  - c) change the number of the station required within the territory of the country of destination.
- § 2. Modifications of bookings shall be permitted free of charge; the Administration (or Recognized Private Operating Agency) of origin may, however, make a special charge covering the additional work of recording. This charge shall not enter into the international accounts.

## CHAPTER VI

**Subscribers' equipment**

## ARTICLE 22

**Characteristics of subscribers' equipment**

- § 1. The sent signals of the start-stop equipment used in the telex service are those of International Alphabet No. 2 as mentioned in the Telegraph Regulations.
- § 2. For the answer-back code, it is recommended that an abbreviated name designating the subscriber should be used, followed by the name of the locality where he resides; nevertheless, Administrations are at liberty to use any other way of composing the answer-back code, particularly by using the subscriber's number.
- § 3. (1) The subscriber's equipment must be arranged in such a way that a call can be received, the answer-back taken, the message transmitted and the connection cleared without the intervention of the called subscriber.
- (2) The motor of the teleprinter will rotate continuously for the duration of an established telex connection.
- § 4. In exceptional cases, Administrations may allow subscribers to dispense with the stipulations of § 3 (1) for periods previously notified. In such cases means must be provided for the transmission of the code expression ABS either automatically or, in the case of manual exchange, by the incoming switchboard operator.

## CHAPTER VII

**General provisions relating to telex correspondence**

## ARTICLE 23

**Restriction on the use of a telex station**

- § 1. Administrations reserve the right to suspend the telex service in the cases mentioned in Articles 31 and 32 of the Convention.

§ 2. Administrations and Recognized Private Operating Agencies should refuse to make the telex service available to:

- a) a telegraph forwarding agency which is known to be organized for the purpose of sending or receiving telegrams for retransmission by telegraphy with a view to evading the full charges due for the complete route.
- b) an agency which is known to be organized for the purpose of sending or receiving messages intended for transmission by telegraphy or telex;

## CHAPTER VIII

### Directories

#### ARTICLE 24

##### Compilation of directories

- § 1. As far as possible each Administration (or Recognized Private Operating Agency) shall publish a directory of its subscribers at least once a year (for example, on 1st April).
- § 2. It is to be recommended that directories should have the uniform dimensions of 210×148 mm (A.5).
- § 3. (1) The directory shall be composed of two separate lists, a list of subscribers and a list of answer-back codes.
- (2) The list of subscribers shall be drawn up as follows:
- a) places where stations are located, classified in alphabetical order,
  - b) within that classification, subscribers' names, arranged in alphabetical order.
- (3) It shall be set out as follows:

Place	Subscriber's name and address	Subscriber's exchange *	Call number	Answer-back code
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- (4) The list of answer-back codes shall be compiled in alphabetical order as follows:

Answer-back code	Subscriber's name and place	Subscriber's exchange *	Call number
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- § 4. (1) The directories sent to Administrations (and/or Recognized Private Operating Agencies) of a country shall be set up in roman letters. The call number published shall be that which the calling subscriber has to transmit in order to obtain the called subscriber after he has followed the procedure prescribed in his own country to gain access to an international circuit.

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\* If necessary.

(2) When directories are written in a language other than the language used in that country, they shall be accompanied by an explanatory note to facilitate the use of such directories. This note shall be drawn up in whatever official language of the Union has been agreed upon by the Administrations (and/or Recognized Private Operating Agencies).

§ 5. (1) Once a quarter (for instance, 1 July, 1 October, 1 January) each Administration (or Recognized Private Operating Agency) shall, if possible, send to the other Administrations (or Agencies) a supplement to its directory, containing all the changes that have occurred in the position of its network during the preceding quarter.

(2) The arrangement and layout of the supplements must be exactly the same as those of the directories (see §§ 2 and 3 above).

## ARTICLE 25

### Supply of directories

§ 1. Each Administration (or Recognized Private Operating Agency) shall supply, by mutual arrangement and free of charge, to the Administrations (and/or Recognized Private Operating Agencies) with which a telex service exists, a sufficient number of copies of its subscribers' lists for official use.

§ 2. (1) Each Administration (or Recognized Private Operating Agency) must inform the other Administrations (or/and Recognized Private Operating Agencies) not later than 1 February each year, of the total number of directories likely to be required for its subscribers.

(2) If this announcement is not made, the number of directories indicated in the last request by the Administration (or Recognized Private Operating Agency) concerned shall be taken as the number to be supplied.

§ 3. (1) A subscriber wishing to obtain a copy of the telex directory of another country must apply to his own Administration (or Recognized Private Operating Agency).

(2) If an application for its directory is received direct by an Administration (or Recognized Private Operating Agency) from a subscriber in a foreign country, the request shall be forwarded by that Administration (or Recognized Private Operating Agency) to the Administration (or Recognized Private Operating Agency) of the subscriber's country.

§ 4. For each directory of another country to be purchased by subscribers, the Administration (or Recognized Private Operating Agency) shall credit the supplying Administration with the equivalent in gold francs of the sale price of the directory applied in the country of origin plus any postal charges involved in supplying such directories.

## CHAPTER IX

### Tariffs and charging — Adjustment of charges and reimbursements

## ARTICLE 26

### Telex rates

§ 1. The unit charge is the charge pertaining to an ordinary private telex call of three minutes' duration, exchanged during the period of heavy traffic.

§ 2. The amount of the unit charge is fixed on the basis of the gold franc by agreement between the Administrations (and/or Recognized Private Operating Agencies) concerned.

- § 3. The unit charge expressed in gold francs shall always be the same in both directions in a given relation, regardless of the telex route (normal, auxiliary, emergency) used for the establishment of a communication in this relation.
- § 4. (1) With manual or semi-automatic operation:
- a) any telex call of 3 minutes duration or less shall be charged as for three minutes;
  - b) when the duration of a call exceeds 3 minutes, a charge per minute shall be made for the period in excess of the first 3 minutes. Any fraction of a minute shall be charged as for one minute. The charge for one minute shall be one third of the charge for 3 minutes.
- (2) In order to avoid too great a dissymmetry in the charges collected, one of the following two methods of charging should be used in the fully automatic international telex service:
- a) charging minute by minute,
  - b) charging by periodic pulses of the type used in the national automatic service.
- § 5. Transit Administrations (or Recognized Private Operating Agencies) shall abide by the agreements between terminal Administrations (or Recognized Private Operating Agencies), as far as the charging procedure is concerned.

#### ARTICLE 27

##### Chargeable duration of a telex call

- § 1. The chargeable duration of a telex call begins at the moment the connection is established between the calling and the called subscribers.
- § 2. It ends at the moment when the clearing signal given by the calling or called subscriber is transmitted over the international circuit. To this end, the international telex position must be able to receive the clearing signal from both sides.
- § 3. With manual or semi-automatic operation, the operator of the controlling international telex position shall determine the chargeable duration, unless other arrangements have been made by agreement between the Administrations (or Recognized Private Operating Agencies) concerned, taking into account, where necessary, any difficulties in transmission or any irregularities which he may observe.
- § 4. If, after a call, a subscriber claims a reduction in charges as a result of difficulties or irregularities during the call, he may be requested by his Administration to supply copies of the message in question as transmitted and received. If the faults are clearly attributable to either of the subscribers, no reduction in the charge shall be made.

#### ARTICLE 28

##### Composition of the tariff

- § 1. The rates for telex calls referred to in Article 26 shall be made up of the terminal rates and any transit rate or rates.
- § 2. Each Administration (or Recognized Private Operating Agency) shall fix its terminal rates and, taking into account the recommendation contained in Article 26, § 5, its transit rates.
- § 3. (1) For the fixing of terminal rates, the territory of the Administrations (and/or Recognized Private Operating Agencies) concerned may be divided into charge zones.
- (2) Where there is a division into charge zones, it is understood that, in a given international relation and over a given route, the terminal rate shall be uniform within each charge zone.

(3) Each Administration (or Recognized Private Operating Agency) shall fix the number and extent of the charge zones for its services with each of the other Administrations (and/or Recognized Private Operating Agencies).

(4) It is however desirable that the number of charge zones should be kept to a minimum.

#### ARTICLE 29

##### **Charging during periods of light traffic**

- § 1. (1) A reduction in rates during periods of light traffic may be made by special agreement between the Administrations (and/or Recognized Private Operating Agencies) concerned.
- (2) In relations for which such arrangements have been made, the charge applied for any telex call during a period of light traffic equals, as nearly as possible, three fifths (3/5) of the charge which would be applied to such a call during a period in which no such reduction in charge is applied.
- § 2. Administrations (or Recognized Private Operating Agencies) shall mutually agree upon the periods of light traffic during which such a reduction in rates may be applied, and also on the charging of telex calls extending into both the period during which no reduction in charge is applied and the period of light traffic.

#### ARTICLE 30

##### **Charges for Government and SVH telex calls**

Government and SVH telex calls shall be charged as ordinary private telex calls.

#### ARTICLE 31

##### **Charges for subscription telex calls**

- § 1. In general, subscription telex calls are subject to the charge for ordinary private telex calls of the same duration exchanged during the same period.
- § 2. However, if a demand service is impossible during certain periods of heavy traffic, as may be determined for each relation by the international telex terminal exchanges concerned, then Administrations (and/or Recognized Private Operating Agencies) may, by mutual agreement, apply to subscription telex calls a maximum charge equal to twice the charge for an ordinary private telex call of the same duration, exchanged during a period in which no reduction for ordinary private telex calls is applied.
- § 3. When a telex demand service is in force in any particular relation, the Administration (and/or Recognized Private Operating Agency) concerned may agree to accept subscription telex calls lasting longer than 60 minutes. These calls shall be charged at 75% of the rate for the period during which the subscription call takes place.
- § 4. (1) The monthly subscription charge shall be reckoned on the basis of 30 days.
- (2) The monthly subscription charge may, however, be reckoned on the basis of 25 days, if the subscriber waives the use of his subscription on any one day of the week, being the same day each week and being specified in advance in the agreement.



- (3) The subscription charges for one or more periods of 7 consecutive days shall be reckoned on the basis of 7 days, but no reduction shall be allowed if the subscriber waives the use of one or more calls.

#### ARTICLE 32

##### **Charges for requests for information**

- § 1. A request for information is charged for, in the international service, only if it is not accompanied by the booking of a call and if it also involves the use of an international circuit.
- § 2. Except where there are special arrangements between the Administrations (or Recognized Private Operating Agencies) concerned, the charge made for the request for information shall equal one third (1/3) of that pertaining to a 3-minute telex call exchanged between the person requesting the information and the person who is the subject of the request, during the charging period in which the request for information is forwarded by the originating international exchange.

The amount of this charge is not entered in the international accounts.

#### ARTICLE 33

##### **Right to round off charges**

- § 1. The charges to be collected in accordance with agreements between Administrations (and/or Recognized Private Operating Agencies) may be rounded up or down to meet the monetary or other convenience of the country of origin.
- § 2. Modifications adopted by virtue of the foregoing paragraph shall apply only to the charge collected in the country of origin and shall not involve any alteration in the share of the charges proper to the other Administrations (and/or Recognized Private Operating Agencies) concerned. The rates must be rounded up or down to the monetary unit or fraction of the monetary unit in use in the country concerned.

#### ARTICLE 34

##### **Fixing of monetary equivalents \***

- § 1. For the collection of charges from the public, each country should, in principle, apply to the rate expressed in gold francs an equivalent in its national currency approaching as nearly as possible the value of the gold franc. However, when the equivalent is not applied or when the equivalent applied is less than the true equivalent, the accounts shall always be prepared in gold francs in conformity with Article 28.
- § 2. (1) Each country should, so far as practicable, notify the General Secretariat of the equivalent it has chosen, as well as the date from which it will collect charges according to this equivalent.
- (2) The General Secretariat shall draw up a table of the information it receives and forward it to all Members and Associate Members. It shall also inform them of the date on which new charges based on any new equivalent come into force, and shall bring any subsequent information to their notice.

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\* Common provisions of the Telegraph and Telephone Regulations.

## ARTICLE 35

**Charges in particular cases — Adjustment of charges and reimbursements**

- § 1. (1) With manual or semi-automatic operation, when correspondents experience difficulty in the course of a telex call, the difficulty being due to the telex service, the chargeable duration of the call shall be reduced to the total period during which telex conditions have been satisfactory; the international telex position of origin shall decide, by virtue of Article 27, § 3, whether the charge for the minimum period of 3 minutes shall be paid.
- (2) Any complaint made after the completion of the call shall be investigated by the international exchange of origin. According to circumstances, the international exchange or exchanges concerned shall communicate direct to the international exchange of origin the information which may be necessary for the enquiry.
- (3) When a refund must be granted, the international exchange responsible for charging is entitled to modify the entries in the documents used for the establishment of international accounts, if necessary after agreement with the international exchanges affected. (Telephone Regulations, 1958, No. 191). Any refunds granted to a subscriber which it has not been possible to deduct from the international accounts before they were sent out shall be borne by the Administration (or Recognized Private Operating Agency) which levied the charge for which the refund has been made.
- § 2. (1) When, through an action of the correspondents, a subscription call has not taken place or has not lasted for the prescribed duration, no compensation shall be given nor reimbursement made.
- (2) When, through an action of the telex service, it has not been possible for a subscription call to take place or for it to last for the prescribed duration, such a call shall be replaced by a call of equivalent duration to the unused time, to be exchanged as soon as practicable after the prescribed time, with priority over other calls of the same class. If the call cannot be replaced or made good in this way, only the charge pertaining to the time used shall be included in the international accounts. In reckoning the charge for the time used, the basis shall be the charge relative to the whole time prescribed for a subscription call, and this basic charge shall be equal to one twenty-fifth ( $\frac{1}{25}$ ) or one thirtieth ( $\frac{1}{30}$ ) of the total monthly subscription irrespective of the month concerned. For a subscription call contract made for 7 consecutive days, the basic charge shall be equal to one seventh ( $\frac{1}{7}$ ) of the total subscription.
- § 3. For any telex call, other than a subscription telex call, in the case of refusal by the calling station or in the absence of a reply from the latter when it is called, the cost of one minute of ordinary private call exchanged between the two stations concerned during the charge period in which the refusal or non-reply took place shall be payable.
- However, Administrations and Recognized Private Operating Agencies concerned may, by special agreement, collect total charges different from those mentioned above.
- § 4. A call booked to a wrong number and established with the station having that number shall be charged as for a call with a correct number.
- However, if the international telex position is advised by the calling subscriber immediately after the establishment of the call, the charge payable for the call to the wrong number may be an amount not exceeding the cost of one minute's telex call for the charge period during which the request for the call to the wrong number was made.
- The amount of this charge shall not be entered in the international accounts.

## CHAPTER X

## Accounting

## ARTICLE 36

## Accounting

- § 1. (1) Unless otherwise arranged, the charges relating to the telex service shall form the subject of separate monthly accounts to be drawn up by the Administration of the country of origin.
- (2) In the manual or semi-automatic services, these accounts shall be prepared so as to show for each chargeable period the number of calls and the number of minutes charged in each category grouped according to zones of destination. Furthermore, if the traffic has been transmitted by routes with differing itineraries, the traffic transmitted over each route shall be shown separately with an indication, if the case arises, whether it is an emergency route (see Annex 2).
- (3) In the automatic service, these accounts shall be prepared in accordance with Recommendation F.67.
- § 2. The Administration responsible for establishing a set of monthly accounts must send them direct to each of the Administrations concerned.
- § 3. (1) The provisions of the Telephone Regulations dealing with exchange and acceptance of accounts as well as conservation of vouchers and payment of balances are applicable.
- (2) By agreement between the Administrations (and/or Recognized Private Operating Agencies) concerned the accepted monthly accounts shall be included separately in the quarterly telephone or telegraph accounts presented, in accordance with telephone procedure, by the creditor transit and terminal Administrations to the debtor terminal Administration. Alternatively, separate quarterly accounts in respect of telex traffic may be prepared. The settlement of accounts can then be effected with either the Telephone or the Telegraph Department of the creditor Administrations by arrangement.
- § 4. Accounting arrangements concerning the paid supply of directories, in accordance with Article 25, § 2 (3), shall be established in the following manner:

At least once a year, and preferably at the end of the current period of the directories concerned, each Administration (or Recognized Private Operating Agency) which has supplied to another Administration (or Recognized Private Operating Agency) directories in respect of which payment is due, shall include in its account for telex calls the amounts due to it for such directory supplies, including postage and/or freight.

## CHAPTER XI

## Directives for subscribers

## ARTICLE 37

## Operating procedure for a telex call

For the transmission of a telex call, the subscriber must follow the directions given him in instructions drawn up in accordance with the detailed directives contained in Annex 1 of the Regulations.

The instructions to subscribers should also comprise information regarding the code expressions used in the international telex service which are listed in Article 17 of the Regulations.

## ANNEX 1

### OPERATING PROCEDURE FOR A TELEX CALL

#### I. Setting-out of the text

§ 1. (1) The heterogeneous groups (composed of two or three sorts of characters: letters, figures, signs) are transmitted without spaces or interspacing signs, as well as the homogeneous groups (words, whole numbers...).

(2) However, when a group, or part of a group, is composed of a whole number and an ordinary fraction, the fraction is separated from the number by means of a dash without space.

##### Examples:

for "one and three quarters":  $1\frac{3}{4}$

for "three quarters" followed by "eight":  $\frac{3}{4}$ -8.

§ 2. The inverted commas sign (quotation mark) (" ") shall be signalled by transmitting the apostrophe sign (') twice, at the beginning and end of the text within the inverted commas (quotation marks) (" ").

§ 2bis. The minutes sign (') and the seconds sign (") shall be transmitted by means of the apostrophe sign, transmitted once for the minutes sign, and twice for the seconds sign.

§ 3. To indicate the sign  $\frac{\circ}{\circ}$  or  $\frac{\circ}{\circ\circ}$ , the figure 0, the fraction bar, and the figures 0 or 00 shall be transmitted successively.

§ 3bis. A whole number, a fractional number, or a fraction followed by a  $\frac{\circ}{\circ}$  or  $\frac{\circ}{\circ\circ}$  sign, shall be transmitted by joining up the whole number, the fractional number or the fraction to the  $\frac{\circ}{\circ}$  or  $\frac{\circ}{\circ\circ}$  sign by a dash.

##### Examples:

for  $2\frac{\circ}{\circ}$ , transmit 2-0/0 and not 20/0

for  $4\frac{1}{2}\frac{\circ}{\circ\circ}$ , transmit 4- $\frac{1}{2}$ -0/00 and not  $4\frac{1}{2}$ 0/00.

§ 4. When the accents on a letter are essential to the sense of the text, repeat at the end of the message the group containing such letter, placing this letter between two spaces.

##### Examples:

ach e te for achète, achet e for acheté.

§ 5. Groups in which figures intervene (particularly numbers) to be repeated at the end of the message.

§ 6. To pass to the beginning of the next line—i.e. to start a new line—press first "carriage return", then "line feed", and again "carriage return".

§ 7. An error is corrected in the following manner:

- a) in manual transmission, the signal "space" and the letter E are signalled alternately three times, restarting the transmission from the last group correctly sent;
- b) in perforating, the wrong group and everything following it is "effaced" by depressing the "letter" key.

- § 8. A subscriber preparing a perforated tape for automatic transmission must take care:
- a) that the signal "who are you" does not appear on the tape;
  - b) that in starting a new line, the provisions of § 6 are followed;
  - c) that the tapes are perforated to the end. He should accordingly finish perforated tapes with a series of "letters" perforations.
- § 9. Letters or signs coupled with the letters F, G and H should not be used in international communications, except in the case of countries with which there are special arrangements. (Each country will inform its subscribers of the letters or signs used in the country as secondaries of letters F, G and H, will mark these distinctively on the keyboard, and will indicate the countries with which there are special arrangements.)

## II. Operating procedure

- § 10. Since the establishment of a connection is always indicated by the transmission, through the intermediary of the international telex position, of the answer-back of the called subscriber, followed by that of the calling subscriber, subscribers should not intervene before the transmission of these two codes is completed.
- § 11. (1) The caller checks whether the answer-back he has received is in fact that of the called subscriber. (If it is not, he should interrupt the call, and inform the international telex position.)
- (2) The calling subscriber can, however, check whether the connection is satisfactory by obtaining the answer-back of the called subscriber.
- § 12. If he considers it desirable, he operates the call bell and ends with the "line feed" (see § 6) followed by "letters".
- § 13. The calling subscriber should then proceed as follows:
- a) start a new line (see § 6) and send the signal "letters";
  - b) send any particulars of the message such as "urgent", "acknowledge receipt", etc.;
  - c) start a new line;
  - d) send the message, starting a new line whenever necessary;
  - e) start a new line;
  - f) repeat the groups mentioned in §§ 4 and 5;
  - g) if there are several messages, each message must be followed by the group to be checked, by the sign + and by starting a new line;
  - h) after transmission of the message (or, as the case may be, of the last message), and/or of the groups to be checked, has been completed, he sends the signs +?, followed by "letters", thus indicating to the correspondent that the latter can transmit in his turn. If he receives no reply, he obtains the answer-back signal of his correspondent, checks it, and then signals his own answer-back;
  - i) he sends the sign + twice, then "letters";
  - j) he gives the clearing signal.
- § 14. If present, the called subscriber answers as soon as he receives notification of the end of transmission (+?) in the following manner: he sends the signal "R", followed by the number of messages received.

§ 15. During an exchange of messages, the following rules must be observed:

- a) before each transmission, the signal "letters" must be sent;
- b) to interrupt the correspondent, transmit the letter P or the figure 0 until the correspondent stops sending;
- c) to invite the correspondent to transmit, signal +?, followed by the signal "letters";
- d) to ask him to wait, transmit the combination MOM.

§ 16. If during a transmission there has been a pause of more than 30 seconds, transmission is resumed by the signal "letters" and then 2 seconds are allowed to elapse before continuing.

§ 17. If, for any reason, it is necessary to send a test message over an international circuit, one of the two following texts should be used:

VOYEZ LE BRICK GÉANT QUE J'EXAMINE PRÈS DU WHARF  
THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG.

## ANNEX 2

### USE OF EMERGENCY ROUTES

When emergency telex routes are used, the following provisions shall apply, except in the case of arrangements to the contrary among the Administrations (and/or Recognized Private Operating Agencies) concerned:

1. Charges for telex calls exchanged exceptionally over emergency routes shall be the same as when the normal route is used.
2. All telex calls exchanged over emergency routes shall be entered in the international accounts for the whole of their chargeable duration.
3. When an emergency route is used, the total rate for the normal route (between the first charge zones of the terminal countries) shall be divided equally among the various Administrations concerned with the emergency route in question, whatever may be the nature and length of the circuits used. (When the subscriber's exchange area is beyond the first charge zone, the country of origin shall credit the account of the country of destination with an additional charge equal to the difference between the charge pertaining to the subscriber's exchange area and that pertaining to the first charge zone.) In order that this procedure may be applied in the case of a call involving an international transit exchange, the operator at the transit exchange must in each case advise the operator at the international exchange in the originating country of the emergency route used.

*Examples:* 1. Switzerland — France. Emergency route: Zurich — Frankfurt.

Total rate for the normal route (between first charge zones): 1 gold franc.

Apportionment if the emergency route is used:

Switzerland — Germany — France: each receives  $\frac{1.0}{3} = 0.333$  gold franc.

2. Switzerland — Great Britain. Emergency route: Zurich — Brussels.

Total rate for the normal route: 3.70 gold francs.

Apportionment if the emergency route is used:

Switzerland — France — Belgium — Great Britain: each receives  $\frac{3.70}{4} = 0.925$  gold franc.

RECOMMENDATION F.61**USE OF TAPE-PRINTING TELEPRINTERS IN THE TELEX SERVICE**

*(formerly C.C.I.T. Recommendation H.2, 1951)*

The C.C.I.T.T.,

**CONSIDERING**

that the Administrations are not unanimously of the opinion that the use of page-printers in the telex service should be made obligatory;

that, in these circumstances, it is necessary to define the characteristics of tape-printers used in the telex service to permit their satisfactory interconnection with page-printers;

that the existence of different operating procedures for page and tape-printers would be highly undesirable,

**UNANIMOUSLY DECLARES THE VIEW**

1. that Administrations deciding to authorize the use of tape-printers in the telex service should make the necessary technical arrangements for their satisfactory interworking with page-printers;
2. that such Administrations should also issue special instructions to the users of tape-printers to insure absolute adherence to the page-operating procedure;
3. that tape-printers connected with the telex service should therefore be provided with the following features:
  - a) end-of-line indicator (character counter);
  - b) keys permitting the transmission of "carriage return" and "line feed" signals;
  - c) confirmation of the receipt of the "carriage return" and "line feed" signals by printing the symbols agreed in C.C.I.T.T. Recommendation S.4;
4. that, as a result of the use of a uniform operating procedure throughout the telex service, special directory markings to indicate users of tape-printers are unnecessary.

RECOMMENDATION F.62**DUPLEX OPERATION IN THE TELEX SERVICE**

*(formerly C.C.I.T. Recommendation H.3, Geneva, 1956)*

The C.C.I.T.T.,

**CONSIDERING**

- a) that the introduction of duplex operation in the international telex service may be of interest;

(F.62)

- b) that there is justification for prescribing certain technical directives to be observed by the Administrations that desire to carry out trials of duplex operation in the international telex service,

UNANIMOUSLY DECLARES THE VIEW

1. that the Administrations which decide to authorize duplex operation in the international service should make the requisite technical arrangements to maintain the answer-back procedure recommended by the C.C.I.T.T. (cf. Recommendation F.60, Art. 24 and 25);
2. that the possibility of taking a local record should be maintained for telex installations equipped for duplex operation and, in particular, that these installations should be equipped with two teleprinters when duplex working is not carried out systematically, making use of an automatic transmitter;
3. that, in a case where duplex international telex communication is permitted, the tariffs for the duplex communication should be on the same basis as for simplex communication;
4. that, however, Administrations may levy a surcharge on subscribers who can use duplex operation, based either on a flat rate or on each call;
5. that the rapporteurs of the Administrations operating a duplex telex service either internally or in the international system should advise the telex study group of the technical arrangements and operating methods adopted.

RECOMMENDATION F.63

**CONFERENCE AND BROADCAST CALLS IN THE INTERNATIONAL TELEX SERVICE**

*(formerly C.C.I.T.T. Recommendation H.9, 1954)*

The C.C.I.T.T.,

CONSIDERING

- a) that experience is so far insufficient to enable recommendations to be drawn up on the appropriate technical arrangements for establishing international conference or broadcast calls over the telex network;
- b) that Administrations and Recognized Private Operating Agencies should continue to give attention to the methods of operating to be used in the establishment of calls in these categories, because of the difficulties caused when the called subscribers are busy,

(F.63)



## UNANIMOUSLY DECLARES THE VIEW

that the rapporteurs of the Administrations and Recognized Private Operating Agencies permitting the establishment of broadcast and conference calls in their internal telex network, should advise the competent study group of the technical arrangements and operating procedures employed.

RECOMMENDATION F.64**DETERMINATION OF THE NUMBER OF INTERNATIONAL TELEX CIRCUITS  
REQUIRED TO CARRY A GIVEN VOLUME OF TRAFFIC**

*(formerly C.C.I.T. Recommendation H.10, 1954)*

The C.C.I.T.T.,

## CONSIDERING

1. that it is essential to provide an adequate number of circuits between two telex networks in order to provide the rapid service stipulated in Recommendation F.60;
2. that the use of tables for the determination of the number of circuits as a function of the traffic to be dealt with during the busy hour is an established practice in all Administrations, and is a convenient means of indicating a standard;
3. that international telex circuits may be selected either at manual positions, or via automatic switching equipment, particularly where subscriber to subscriber dialling is employed between two networks,

## UNANIMOUSLY DECLARES THE VIEW

that, provisionally, Administrations and Recognized Private Operating Agencies should use Table A or B below, according to the system of selection employed (i.e. manual selection or automatic selection) in the international service.

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*General notes*

1. If, for the purpose of design (as distinct from the maintenance of a rapid service), it is desired to obtain values of "traffic offered" in Erlangs, these may be determined by adding to the figures of "traffic carried" in Tables A and B the respective values of "traffic lost" for the value concerned.
2. Tables A and B are directly applicable only to full availability groups of circuits which are operated either wholly as both-way circuits, or wholly as unidirectional circuits. Where groups of circuits are divided into both-way unidirectional components, the division and number of circuits in each component will be agreed between Administrations.

TABLE A

Traffic capacity table for telex manually selected circuits (Note 1)

Number of circuits (a)	Average intensity for traffic carried in the busy hour, expressed in Erlangs, for a grade of service (probability of loss) of:		
	1 in 10 (b)	1 in 30 (c) (Note 3)	1 in 50 (d) (Note 3)
1	0.2	0.066	0.034
2	0.9	0.43	0.33
3	1.5	0.89	0.76
4	2.3	1.49	1.29
5	3.2	2.17	1.92
6	(Note 2)	2.92	2.67
7		3.77	3.44
8		4.66	4.25
9		5.56	5.09
10		6.47	5.93
11		7.39	6.79
12		8.31	7.67
13		9.24	8.57
14		10.2	9.48
15		11.1	10.4
16		12.1	11.3
17		13.0	12.3
18		13.9	13.2
19		14.9	14.1
20		15.9	15.0

*Note 1.* Table A makes allowance for the manual operator to continue the search for a free line over the group of circuits concerned for a period of 30 seconds if all are engaged, after which the search is abandoned and the call suspended.

*Note 2.* Column (b) of Table A will, in general, only be used in respect of small groups of circuits of considerable length, having due regard to the desire to provide a rapid service; as well as to economic considerations.

*Note 3.* In all other cases the figures of column (c) shall be used in preference to those of column (d).

*Note 4.* Table B is in accordance with the formula of Erlang, and therefore does not allow for a period of search (e.g. delayed hunting or continuous hunting). It is recommended to use for preference the figures corresponding to a probability of loss of 1 in 50.

TABLE B

Traffic capacity table for automatically selected circuits (Note 4)

Number of circuits	Average intensity for traffic carried in the busy hour, expressed in Erlangs for a grade of service (probability of loss) of:	
	1/30	1/50
1	0.034	0.020
2	0.289	0.22
3	0.73	0.59
4	1.27	1.07
5	1.88	1.63
6	2.53	2.23
7	3.23	2.87
8	3.95	3.56
9	4.70	4.26
10	5.47	4.98
11	6.25	5.72
12	7.05	6.48
13	7.86	7.25
14	8.68	8.04
15	9.51	8.83
16	10.34	9.63
17	11.18	10.44
18	12.04	11.25
19	12.89	12.07
20	13.75	12.91
21	14.62	13.75
22	15.50	14.60
23	16.38	15.46
24	17.27	16.31
25	18.15	17.16
26	19.05	18.02
27	19.95	18.89
28	20.85	19.75
29	21.75	20.62
30	22.65	21.49
31	23.55	22.36
32	24.46	23.25
33	25.37	24.13
34	26.27	25.01
35	27.18	25.90
36	28.09	26.79
37	29.0	27.69
38	29.92	28.58
39	30.84	29.48
40	31.76	30.38

RECOMMENDATION F.65**TIME-TO-ANSWER BY OPERATORS AT INTERNATIONAL TELEX POSITIONS**

*(formerly C.C.I.T. Recommendation H.11, 1954)*

The C.C.I.T.T.,

**CONSIDERING**

- a) that a rapid answer to calling signals by the operators at incoming international telex positions is essential to ensure a rapid telex service;
- b) that a rapid answer is a very important factor in the efficient utilization of international telex circuits;
- c) that the time-to-answer has a direct effect on the costs of staffing and of switchboard provision,

**UNANIMOUSLY DECLARES THE VIEW**

that Administrations should endeavour to provide, at international telex terminal exchanges, a sufficient number of incoming operating positions, and of operators, to ensure that the average time taken by operators to answer calling signals does not exceed 10 seconds, and that 95% of calls are answered in 30 seconds or less.

RECOMMENDATION F.66**RATES FOR TELEX CALLS**

*(Geneva, 1956, amended at New Delhi, 1960)*

The C.C.I.T.T.,

Having examined the results of the study on the cost price of an international telex call,

**CONSIDERING**

- a) the development of automatic operation in the international telex service of the European system;
- b) the new methods of fixing rates arising from this automatic operation;
- c) the difficulty of maintaining a close relationship between telex and telephone rates;
- d) the desirability of advising uniform bases for the determination, by the countries concerned, of the different elements entering into the composition of the telex rates according to the switching system used,

(F.66)

## UNANIMOUSLY DECLARES THE VIEW

that Administrations and Recognized Private Operating Agencies of the European system should fix their terminal and transit quotas independently of all relationship with the rates charged in the telephone service;

that, where this suggestion is adopted, Administrations and Recognized Private Operating Agencies should, in determining their quotas in the telex service, as far as possible, take into consideration the Recommendation contained in the following table.

## Guidance on the establishment of rates for 3-minute telex calls in the European system

Terminal traffic*** (international section of the route)					Transit traffic **				
Operational method	Fixed circuit cost and switching cost for each international telex centre (gold fr.)		Circuit cost for 100 km crowflight distance * (gold fr.)		Operational method	Fixed cost (gold fr.)		Cost for 100 km crowflight distance * (gold fr.)	
	1956	1960	1956	1960		1956	1960	1956	1960
Manual service	0.84	—	0.09	—	<i>Direct transit</i>				
					a) manual operation	—	—	0.09	—
Semi-automatic outgoing service	0.63	0.84	0.0675	0.09	b) semi-automatic operation	—	—	0.0675	0.09
					c) automatic operation	—	—	0.0675	0.084
Semi-automatic incoming service	0.1575	0.21	0.0675	0.09	<i>Transit with inter-connected VF telegraph circuits</i>				
					a) manual operation	0.30	—	0.09	—
Outgoing fully automatic service	—	0.43	—	0.084	b) semi-automatic operation	0.225	0.30	0.0675	0.09
					c) automatic operation	0.225	0.28	0.0675	0.084
Incoming fully automatic service	0.1575	0.20	0.0675	0.084					

*Transit switching* to be determined according to switching costs, depending on the system used.

\* For the calculation of charges based on the length of circuits, any fraction less than 50 km can be rounded up to a maximum of 50 km and any fraction between 50 and 100 km can be rounded up to 100 km.

\*\* It is pointed out that in the study undertaken in 1956 to determine the cost price, it has been suggested that a uniform average charge of 0.12 gold franc per 100 km crowflight could be accepted for unswitched transit traffic as a whole.

\*\*\* The costs for the national section are to be added to the costing elements of the international section. Each country should add the amount it deems appropriate for the characteristics of its national network.

By way of information, the inquiry held in 1960 revealed that the cost for the national section of an international telex call does not exceed 0.12 gold franc per chargeable minute for the countries which took part in this enquiry (this figure has been mentioned by countries of average size).

Note. — 1956 and 1960 are the years during which the C.C.I.T. and the C.C.I.T.T., respectively, completed their cost studies.

RECOMMENDATION F.67**ACCOUNTING IN THE FULLY AUTOMATIC  
INTERNATIONAL TELEX SERVICE***(New Delhi, 1960)*

With fully automatic international telex operation, the charge for calls will, in general, be automatically registered on subscribers' meters and Administrations generally will no longer have tickets available for working out the distribution of charges on the basis of the chargeable duration of calls.

When technically possible, the recording, for international accounts, of the chargeable duration of each actual call is the method most to be recommended, avoiding as it does any disparities between the revenue collected from users and the amounts shown in the international accounts. This method, however, cannot be applied in all networks and it is therefore also necessary to envisage other methods for the establishment of international telex accounts.

It should also be noted that there is a rather high number of service calls in the telex service, for both telegraph and telephone requirements.

Finally, precautions should be taken, when the circuits of a system are used for gentex operation and for fully automatic telex operation, to ensure that gentex calls are not metered with telex calls.

In view of the foregoing, the C.C.I.T.T.

**UNANIMOUSLY DECLARES THE VIEW that:**

1. The accounts for the fully automatic international telex service should be established between Administrations according to one of the following methods:
  - a) by basing them on the chargeable durations recorded for subscribers, when the outgoing Administration possesses equipment capable of showing these durations;
  - b) by basing them on the total (actual) duration of calls measured on international circuits in the outgoing international exchange by means of appropriate meters. When, in relations where signalling systems are used which make it impossible to assess the call durations without excessive complications, the Administrations measure the total occupation time of the outgoing circuits; a correction factor should be applied to the traffic figures so as to assess, in total actual call duration, the traffic which is to serve as the basis for preparing the accounts. The corrections to be applied should be determined by agreement between the Administrations concerned.
  - c) accounting may be dispensed with, or a lump-sum settlement applied, by agreement between the Administrations concerned.
2. If a system of circuits is used both for gentex operation and for automatic telex operation, the method described under 1 b) may be allowed only if the meters concerned are not operated in the case of gentex calls.

(F.67)

If a circuit is capable of fully automatic and semi-automatic use, and if, further, the method mentioned under 1 b) is applied, the equipment in the international outgoing exchange should be capable of identifying semi-automatic calls so that the meters concerned are not operated in the case of semi-automatic calls.

3. Measurements of the call-duration shall be made according to the country of destination. When the country of destination comprises several charging areas, these measurements will ordinarily be made according to the charging area.
4. The measurement of call-durations made by the outgoing international exchange to a given country of destination need not necessarily distinguish between routes involving different transit countries, provided that the traffic is transmitted over direct circuits which constitute the normal route. If no distinction is made, then for international accounting purposes, the total volume of traffic sent via each route is assumed to be proportional to the number of circuits in service in the various routes.
5. To avoid the need for an analysis of routes actually taken by a call beyond a transit exchange when several routes involving different transit countries to the destination in question are possible from the transit exchange the distribution of transit traffic over these different routes shall be taken to be the same as the distribution of traffic originating at the transit exchange for the destination concerned. The distribution between the routes shall be assessed by the Administration of the transit exchange and communicated to the Administration of the outgoing country every six months.
6. Traffic representing test or service calls, expressed in minutes should be deducted from the international accounts. If this deduction cannot be made directly (and this is especially the case with the method described under 1 b), the Administrations concerned should decide between themselves, after taking sample meterings if necessary, on the percentage of such traffic to be deducted from the traffic measured.

In international accounts, the traffic expressed in minutes relating to wrong numbers should not be deducted since the overall duration of this type of call is very small in relation to the total traffic.

When free calls are allowed (for example during international telecommunication conferences), deductions may be made in the international accounts by the Administration of the country on whose territory a conference is held.

7. The arrangements concerning the acceptance of international accounts, as defined in the Telex Regulations, shall apply to automatic traffic.
8. The degree of accuracy of the call-duration measuring apparatus should be  $\pm 2\%$  for a set of measurements covering an adequate number of calls which, in light traffic relations, may lead to acceptance of the fact that 2% accuracy should be obtained on the overall measurements for a year but not for each of the partial measurements made during that year (monthly measurements, for example, if the monthly interval is retained for the establishment of international accounts).

## SECTION 5

### LEASING OF TELEGRAPH CIRCUITS

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#### RECOMMENDATION F.70

##### LEASING OF INTERNATIONAL TELEGRAPH CIRCUITS

*(Geneva, 1956, amended at New Delhi, 1960)*

The C.C.I.T.T.

UNANIMOUSLY DECLARES THE VIEW that:

1. In relations where, after the requirements of the public telegraph service and of the telex service have been satisfied, telegraph circuits are available, such circuits may be leased to one or more users on the following terms:
2.
  - a) as a general rule, the circuit leased will be available throughout the 24 hours;
  - b) however, it shall be for Administrations (or Recognized Private Operating Agencies) to decide whether in certain cases a lease may be granted for a shorter period. The rental and conditions will then be fixed by agreement between the Administrations (and/or Recognized Private Operating Agencies) concerned.
3. Circuits may be rented for either
  - a) "single use", i.e. when there is only one user at each end of the circuit, or
  - b) "multiple use", i.e. when there is more than one user at either or both ends of the circuit.
4. Correspondence passed over rented circuits must concern only the undertaking(s) or interest(s) for which the circuits have been rented. Moreover, in the case of a rental for multiple use, the users must be concerned with the same type of business.
5. Each Administration concerned in a lease shall decide, in each particular case, whether the lease is to be regarded as a lease for single use or for multiple use, within the terms of § 3.

(F.70)



6. When an Administration concerned in a lease decides that the particular case shall be regarded as a lease for multiple use, it may either
  - a) charge the same rent as for single use, or
  - b) apply a multiple use surcharge in addition to the rental charge for single use.
7. If a multiple use surcharge is applied it shall in no case exceed  $37\frac{1}{2}\%$  of the single use rate for the section in the country which applies the multiple use surcharge.
8. An international leased circuit crossing a transit country shall be charged for as one circuit if no intermediate station is installed in the transit country. If, however, a user is connected to the circuit in the transit country, the circuit shall be divided for charging purposes into two sections which shall be charged for independently.
9.
  - 1) As a general rule, the lease must be for at least one month, counting from the day on which the circuit is made available to the user.
  - 2) The lease shall be renewable from month to month by tacit agreement. If either party intends to terminate the contract, a fortnight's notice shall be given before the end of the current lease period.
  - 3) The lease for one month shall be one twelfth of the lease for one year.
  - 4) For a lease of more than one month which includes a fraction of a month at the end of its duration, the rent for the fraction of a month shall be calculated on the basis of a daily rent equal to  $1/25$ th of the monthly rent (or  $1/300$ th of the annual rent).
10. By agreement between the Administrations (or Recognized Private Operating Agencies) concerned, the lease may cover a period of less than one month. In this case, the fees are calculated as follows:
  - a) for the first day:  $1/10$ th of the monthly fee;
  - b) for the second day:  $1/10$ th of the monthly fee;
  - c) for the following 8 days:  $1/20$ th of the monthly fee, per day;
  - d) after the first 10 days:  $1/25$ th of the monthly fee, per day, the total being in no case more than the monthly rent.

*Note.* — For the purposes of paragraph 10, one day may be taken to mean one period of 24 consecutive hours.
11.
  - 1) The lease shall be payable in advance.
  - 2) One of the users taking part in the lease may be accepted by the Administrations (or Recognized Private Operating Agencies) as responsible for the fees due from all the users sharing in the lease of the circuit.

12. Rentals in the European system:

The Administrations and Recognized Private Operating Agencies will fix the rates for leased telegraph circuits by special agreements.

13. Rentals in the extra-European system:

The Administrations and Recognized Private Operating Agencies will fix the rates for leased telegraph circuits by special agreements.

14. Use of an alphabet other than Alphabet No. 2 is permissible in leased circuits, provided the modulation rate is always 50 bauds and the terminal equipment is designed for connection to start-stop apparatus so that normal termination of the circuit is possible during testing and fault location.

15. The Administrations (or Recognized Private Operating Agencies) reserve the undisputed right to take over the leased circuit if required in the general interest.

16. 1) In cases of interruption of the circuit, for which an Administration (or Private Operating Agency) is responsible, a refund should be granted only at the request of the parties concerned and if the circuit has been completely interrupted for a continuous period of three hours or more. The refund payable should be 1/5th of one day's rental (one day's rental being calculated as 1/300th of the amount fixed as the annual rental) for each period of three hours continuous interruption, with a maximum rebate of one day's rental for any consecutive 24 hours.

2) Defective operation of the circuit, which precludes intelligible communication, should be treated in all respects as an interruption for the purpose of granting a rebate. However, Administrations (or Recognized Private Operating Agencies) can decline to consider requests for refund provoked by unfavourable propagation conditions on radio circuits.

3) Requests for reimbursement of charges for the use of public telecommunication services—whether telephone, telegraph or telex—incurred during the period of interruption should not be admitted.

## RECOMMENDATION F.71

### **ACCOUNTING METHOD IN THE LEASING OF INTERNATIONAL TELEGRAPH CIRCUITS**

*(formerly C.C.I.T. Recommendation H.6, 1951)*

The C.C.I.T.T.,

Having examined § 14 of Resolution No. 9, part II, of the International Telegraph Conference, Paris, 1949, and

#### **CONSIDERING**

that it is desirable to adopt a uniform method of accounting of the rental for the lease of telegraph circuits in the European system,

(F.71)

## UNANIMOUSLY DECLARES THE VIEW

that each terminal Administration should collect and retain its own share of rental for a circuit between adjacent countries;

that, when transit countries are involved, the terminal Administrations should agree with the transit Administrations as to the method and amount of collection and accounting.

RECOMMENDATION F.72**TARIFFS APPLICABLE TO LEASE OF CIRCUITS TO METEOROLOGICAL SERVICES**

*(formerly C.C.I.T. Recommendation H.7, Arnhem, 1953)*

The C.C.I.T.T.,

Having regard to Resolution No. 12 annexed to the Telegraph Regulations, Paris, 1949, and

## CONSIDERING

that no preferential reductions should be granted in the rental for leased telegraph circuits, whatever be the character of the organizations using them,

DECLARES THE VIEW, BY 19 VOTES TO 1,

that therefore no preferential tariff should be granted for the leasing of circuits to the meteorological services

## AND REQUESTS

the Secretary-General of the Union to bring this matter to the notice of the Administrations (and/or Recognized Private Operating Agencies) and to ask them to envisage the application of this Recommendation as from 1 January 1954.

RECOMMENDATION F.73**METERING OF TRAFFIC ON LEASED TELEGRAPH CIRCUITS**

*(formerly C.C.I.T. Recommendation H.8, 1951)*

The C.C.I.T.T.,

## CONSIDERING

1. that the required system of metering is based on transmission time, and that such metering shall be effected by recording the time of transmission in both directions on the circuits, in fractions of 10 seconds (or 6 seconds), whether transmission is by duplex or simplex;

(F.73)

2. that the technical design of a service for metering on the lines stated in § 1, above, presents no difficulties;
3. that the standardization of the detail of such a device is unnecessary and may even be undesirable, because of circuit detail variations in different countries;
4. that it is, however, essential that the performance limits of such a device should be standardized,

#### UNANIMOUSLY DECLARES THE VIEW

that metering equipment, where used, shall conform to the following provisions:

1. that the metering device shall become operative as soon as transmission begins in either direction of the circuit;
2. that the meter shall register once per unit time period, during which signals have been transmitted;
3. that the unit time period shall be 10 (or 6) seconds;
4. that the device becomes inoperative at the end of the last unit time period in which a transmission signal was received;
5. that the device shall be inoperative during any prolonged interruption of the circuit.

#### ANNEX

By way of example, designs of metering equipment developed by the Netherlands and the United Kingdom Administrations, are given below, together with brief circuit details:

##### *Diagram of the Netherlands equipment — Figure 1*

###### Brief circuit operation:

By means of the polarized relays T1 and T2, it is possible to read on both transmission paths. If messages are transmitted on one transmission path or on both paths, the A relay is energized as soon as the impulse contact *i* is closed. The A relay remains energized via the *a*<sup>1</sup> contact until the impulse of the central impulse device is finished. Via the *a*<sup>2</sup> contact the meter M is energized. The *a*<sup>3</sup> contact delays the release of the A relay in order to ensure that the meter M gets an impulse of sufficient length, if the A relay is energized just towards the finish of an impulse. The supervising relays S<sub>1</sub> and S<sub>2</sub> prevent metering if for some length of time 'start' polarity is on the line, which may be the case with breakdowns or clearing signal.

1

##### *Diagram of the United Kingdom equipment — Figure 2*

###### Brief circuit operation:

Relay M with its associated resistor and capacitor is designed to have a release lag of approximately 300 milliseconds and to hold to telegraph signals. Also the release lag of relay B is required to be less than the operate lag of relay G.

Telegraph signals are detected on either or both lines by the polarized relay A. The contact *a*<sup>1</sup> normally rests on the mark contact, so that relay M be normally operated. At the first change

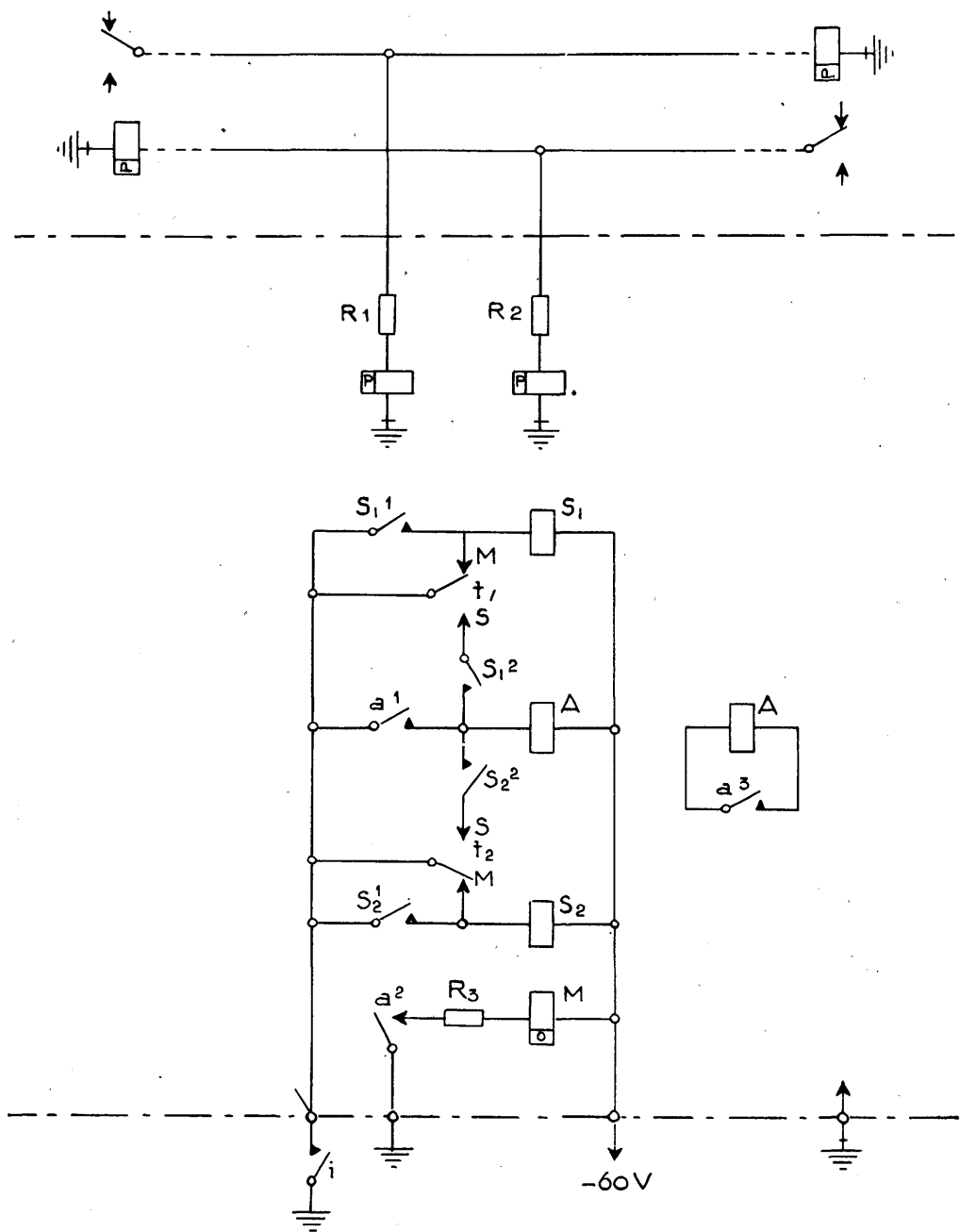


FIG. 1

TRAFFIC METER FOR RENTED TELEGRAPH CIRCUITS

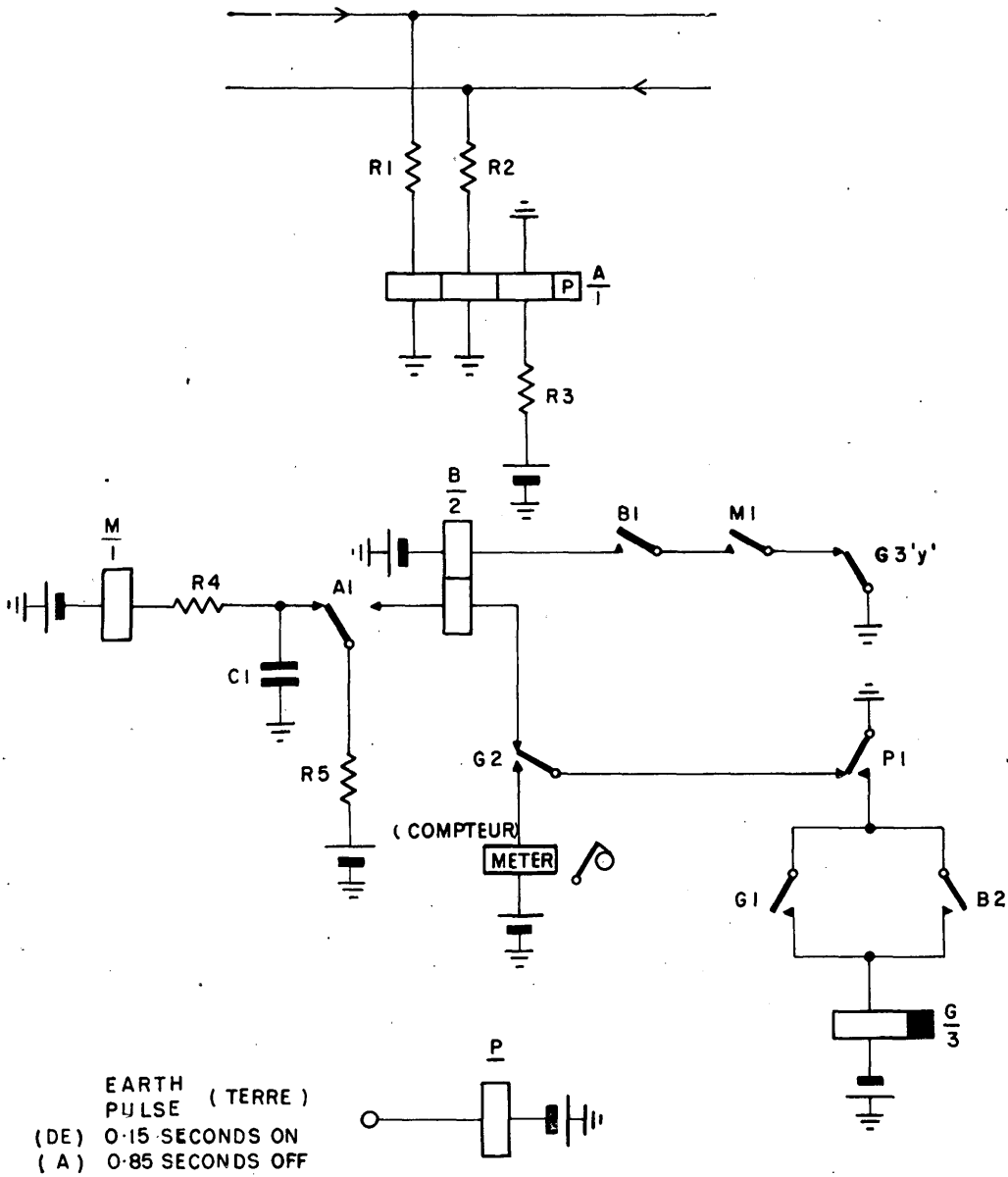


FIG. 2

METERING CIRCUIT FOR RECORDING THE TRANSMISSION  
TIME OF A RENTED TELEGRAPH CIRCUIT.

CIRCUIT DE COMPTAGE POUR L'ENREGISTREMENT DU TEMPS  
DE TRANSMISSION SUR UN CIRCUIT TÉLÉGRAPHIQUE LOUÉ

from mark to space, relay B operates via A1, G2 and P1 and holds over its second winding via B1, M1 and G3'y'. If, at any time, a long space signal releases relay M, the hold circuit for relay B is broken by M1.

When an earth pulse is received, relay P operates, and if relay B is held over its second winding, P1 operates relay G via B2. Relay G locks via G1, prepares for the meter operation at G2, and releases relay B at G3'y'.

At the end of the earth pulse, relay P releases and earth is applied to operate the meter via P1 and G2 for a period equal to the release lag of the relay G. Relay G releasing, restores the circuit to normal.

The Netherlands Administration has carried out tests to ascertain the probable error in the estimation of the transmission time, with the apparatus described above. It is clear that the timing pulses cannot, in general, be coincident with the commencement of traffic, or for that matter with the completion of traffic, and that there will be, because of this, some difference between the actual and measured times of traffic. It is to be expected that, with traffic of normal type, the difference would be small, since the chance of shortening is equal to that of lengthening. This has been confirmed by the tests carried out by the Netherlands Administration.

The United Kingdom Administration prefers, for practical reasons, to use a 6-second pulse rather than a 10-second pulse. This also has the advantage that meter registrations can be read directly in minutes.

#### RECOMMENDATION F.74

### **LEASED TELEPHONE CIRCUITS USED SIMULTANEOUSLY FOR TELEGRAPHY AND TELEPHONY**

*(formerly C.C.I.T. Recommendation H.13, 1954)*

The text of this Recommendation relating to both telegraph and telephone working appears in the Part I of this volume under Recommendation E.61.

#### RECOMMENDATION F.75

### **TARIFFS AND CONDITIONS FOR THE EXPERIMENTAL LEASING OF CIRCUITS FOR DATA TRANSMISSION**

*(New Delhi, 1960)*

Pending the conclusion of the technical and tariff studies for data transmission in the international service, which may take some time, it would be desirable for the Administrations which may be asked to lease circuits for data transmission to meet such requests so that they may follow the establishment and operation of these transmissions on an experimental basis.

When normal telecommunication circuits are used for data transmission, there is no reason, from the technical viewpoint, why normal rates should not be applied, subject

(F.75)

to any special fees which might be requested for the supply and maintenance of terminal equipment by the Administration (or Recognized Private Operating Agency) concerned.

Any tariff fixed in these conditions would be only provisional and users should be warned that the rates in no way prejudice the final decision to be taken by the Administration concerning rules for data transmission.

The equipment to be connected to the circuit should be approved by the Administration and should meet the technical conditions laid down by this Administration to ensure that use of the circuit does not hamper the use of other telecommunication circuits.

The terminal equipment should permit the connection of standardized telephone or start-stop apparatus and the performance of all measurements and tests on the leased circuit in ordinary terminal conditions.

If, to ensure satisfactory transmission, the specified requirements are more severe than those ordinarily applicable to the circuit in question, an increased fee should be levied if they are met.



## SECTION 6

### OPERATING METHODS FOR FACSIMILE AND PHOTOTELEGRAPH SERVICE

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#### RECOMMENDATION F.80

#### PROVISIONS ABOUT PHOTOTELEGRAMS

*(Geneva, 1958, amended at New Delhi, 1960)*

The C.C.I.T.T.,

having regard to chapter XXV of the Telegraph Regulations (Geneva, Revision 1958),

UNANIMOUSLY DECLARES THE VIEW

that the following rules be adopted for the phototelegraph service in the European system:

#### RULES FOR PHOTOTELEGRAMS IN THE EUROPEAN SYSTEM

##### A. DEFINITION — FIELD OF APPLICATION

1. A phototelegram is a facsimile telegram to be transmitted by phototelegraphy.
2. These rules apply to phototelegrams exchanged either between public stations or between public and private stations.
3. The provisions embodied in the International Telegraph Regulations apply to phototelegrams, subject to the following conditions.

##### B. CONDITIONS GOVERNING ACCEPTANCE AND DELIVERY

1. Subject to the consent of the Administrations (or Recognized Private Operating Agencies) concerned, anything which can be transmitted satisfactorily by phototelegraphy shall be accepted as a phototelegram.

(F.80)

2. Senders should be advised to avoid the use of the colours blue, lilac, green or yellow, or gilt print, or prints on yellow, red or grey paper, which lack the qualities necessary for good transmission and to avoid handing in phototelegrams with very weak contrasts or inadequate definition.
3. Phototelegrams must be rectangular in shape. Each Administration shall decide what is the maximum format capable of being sent in a single transmission by all the machines used by that Administration (e.g.  $13 \times 18$  cm for machines having 66-mm diameter cylinders). However, in relations where apparatus is used permitting the single transmission of greater areas, Administrations may authorize larger sizes.
4. Phototelegrams of larger dimensions than those admitted in the relation concerned must be divided into parts by the sender. The order of transmission of the parts must be indicated.
5. Every phototelegram must bear an address. Signature shall be optional. Both address and signature may be written on a telegram form in which case they shall be transmitted free of charge. If written on the phototelegram, they shall form part of the area of the phototelegram to be transmitted.
6. Every phototelegram shall include a preamble. The relevant instructions shall be the same as those for the preamble of a telegram. But the number of words shall be replaced by a statement of the charging step.
7. Phototelegrams to countries not connected to the phototelegraph system shall be allowed. The receiving phototelegraph station shall reforward such phototelegrams by prepaid letter direct to the addressee, by the fastest postal route.
8. A public station having received phototelegrams shall deliver them, unless they are for retransmission to the addressee. If the addressee does not reside in the place of destination, the phototelegram shall be sent by post, in accordance with the instructions in the address.
9. A public station having on hand phototelegrams for a private station shall not act on a request for transmission made by the private station until it has checked the identity of the latter.

#### C. CHARGING

1. The rates for phototelegrams between public stations and between public and private stations—with the exception of charges for special services—and the share of charges accruing to Administrations, shall be governed by Recommendation F.83.

#### D. SPECIAL SERVICES

1. The following special services shall be authorized for phototelegrams exchanged between public stations: urgent (=Urgent=), prepaid reply (=RPx=), despatch to the sender of a print from the film received (=KP=). However, special =Urgent= and =KP= services are optional.

The reply-paid voucher may be used either to send another phototelegram, or to send any other telegram.

2. The special "prepaid reply" service is not allowed if the destination is within a country which is not connected to the international phototelegraph network. (Case covered by Section B, § 7.)
3. The following special services shall be authorized for phototelegrams exchanged between public stations and for phototelegrams transmitted by private stations to public stations:

Telegraphic advice of delivery . . . . .	=PC=
x addresses . . . . .	=TMx=
Communicate all addresses . . . . .	=CTA=
Express paid . . . . .	=XP=

Despatch to destination by express post . . . . .	=Postxp=
Registered post . . . . .	=PR=
Poste restante . . . . .	=GP=
Poste restante registered . . . . .	=GPR=
Telegraph restant . . . . .	=TR=
Day delivery . . . . .	=Jour=
Night delivery . . . . .	=Nuit=
x copies in addition to the first to be delivered to the addressee	=Kx=
Delivery to the addressee of the negative film instead of the positive print . . . . .	=Film=

4. The special services =TMx=, =CTA=, =XP=, =Kx=, =Film= shall, however, be optional.
5. The special urgent service (=Urgent=) shall be allowed for phototelegrams exchanged between private and public stations in relations where this service exists for telephone traffic. Lightning call (=Lightning=) can be requested by a private station, for transmission to a public station, in relations where this service is available for telephone traffic. In this case, the phototelegram is treated by the public station as an urgent phototelegram.
6. The indications of special services shall be transcribed in the abbreviated form shown in §§ 1 and 3 above. In all cases they should be placed before the address. They shall be transmitted free of charge.
7. The supplementary charge for the special service =Postxp= shall be two (2) gold francs; for the special service =PR= one (1) gold franc. When the sender asks for both these services, he shall pay both supplementary charges, that is, three (3) gold francs.
8. The supplementary charge for the special service =TMx= shall be three (3) gold francs for each copy after the first.
9. The supplementary charge for the special service =Kx= shall be two (2) gold francs for each copy after the first.
10. In the case of the special service =KP=, a supplementary charge of two (2) gold francs shall be payable for the copy, and an additional supplementary charge of eighty (80) gold centimes for the despatch of the copy by registered letter.
11. Surcharges for the special services =PC=, =XP=, are the same as for telegrams.
12. The other special services are free of surcharge.
13. The supplementary charges for special services requested for phototelegrams transmitted by a private station to a public station shall be collected from the addressee.

#### E. REFUNDS AND REBATES

##### (a) *Between public stations*

1. When a phototelegram is cancelled at the sender's request before transmission begins, the charge paid shall be refunded, but the Administration concerned may retain a cancellation fee from the amount already paid by the sender.
2. Should cancellation be requested after transmission has begun or has ended, but before the phototelegram has been delivered, there shall be no refund.
3. The charges collected shall be refunded to the sender whenever a phototelegram has not reached its destination, except when it has been sent by post.

4. When the addressee lives in the locality of the receiving station, the charges levied shall also be refunded if more than eight hours have elapsed between the time of handing in at the sending station and the time of delivery.
5. When the addressee does not live in the locality of the receiving station, the period of eight hours giving right to reimbursement shall be reckoned from the time of handing in at the sending station to the time of transfer to the postal service.

*(b) From a public station to a private station*

6. The provisions of paragraph E.1 above are also applicable to cancellations of phototelegrams by the sender, or their refusal by the addressee.

If cancellation is requested after transmission has begun, no refund of charges will be made.

7. Charges shall not, in general, be refunded or waived unless transmission has failed to take place or has been defective, owing to circuit interruption or to faults in the apparatus at the public station. Reimbursement of charges shall be left to the discretion of the Administration to which the public station belongs.

*(c) From a private station to a public station*

8. The provisions of the Telephone Regulations for withdrawal of requests for telephone calls apply also to the case of withdrawal of phototelegraph calls.
9. §§ 3, 4, 5 and 7 above shall also apply to phototelegrams from a private station to a public station.

F. ACCOUNTS

*(a) Between public stations*

1. Accounting methods for charges levied for traffic between public stations shall be the same as for telegraph charges. These accounts shall constitute a special section in the telegraph accounts.
2. The accessory charges for the special services indicated in Section D shall be excluded from the accounts, with the exception of those relating to prepaid reply (=RPx=), express paid (=XP=), despatch to destination by express post (=Postxp=), multiple phototelegrams (=TMx=), despatch to the sender of a print from the film received (=KP=) and to extra copies for delivery to the addressee (=Kx=).

*(b) From a public station to a private station*

3. Accounting methods for charges levied for these phototelegrams shall be the same as for telegraph charges; when the accounts are established by the country of destination, the public station shall inform the international phototelegraph position in its country of the particular scale of charges pertaining to each phototelegram. The latter station, when booking the call, shall pass this information on to the IPP in the country of destination for accounting purposes.

This accounting shall constitute a special section in the telegraph accounts. The special surcharge for use of the public station is retained by the Administration governing the public station.

*(c) From a private station to a public station*

4. Accounting methods for charges in connection with the use of circuits shall be the same as for telephone charges and shall constitute a special section in the telephone accounts.

The special surcharge applying to the use of a public station is retained by the Administration operating the public station.

5. The supplementary charges for special services are not included in the international accounts. They are retained by the Administration operating the public station.

## RECOMMENDATION F.81

### **PHOTOTELEGRAMS**

*(formerly C.C.I.T. Recommendation G.11, Geneva, 1956)*

The C.C.I.T.T.,

#### **CONSIDERING**

- a) that the Telegraph Regulations contain rules for the phototelegraph service, applicable only to the European system, while as regards the extra-European system, the Administrations and Recognized Private Operating Agencies concerned are left free to determine for themselves, by mutual agreement, the charges for phototelegrams and the rules that shall apply thereto;
- b) that No. 596 of the Telegraph Regulations (Paris, 1949) lays down that anything capable of being transmitted as a phototelegram may be accepted for phototelegraph transmission,

#### **UNANIMOUSLY DECLARES THE VIEW**

that Administrations and Recognized Private Operating Agencies have to abstain from applying to telegrams to be transmitted as phototelegrams restrictive provisions as regards the languages, characters or symbols used in drawing them up. While abiding by these provisions, Administrations and Recognized Private Operating Agencies can lay down supplementary rules for the presentation of telegrams to be transmitted as phototelegrams.

## RECOMMENDATION F.82

### **RULES FOR PHOTOTELEGRAPH COMMUNICATIONS ESTABLISHED OVER CIRCUITS NORMALLY USED FOR TELEPHONE TRAFFIC \***

*(Geneva, 1958, amended at New Delhi, 1960)*

The C.C.I.T.T.,

#### **CONSIDERING**

- a) that, in international phototelegraph communications, the time of occupation of international telephone circuits often greatly exceeds the duration of the actual phototelegraph call;

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\* This text is published also as Recommendation E.32 in Series E (Telephone operation) of the C.C.I.T.T. Recommendations.

- b) that this drawback results *in part* from the inadequacy of existing rules on the setting-up, supervising and clearing of phototelegraph calls over circuits normally used for telephone traffic, even if these circuits have been designated in advance as capable of carrying phototelegraph communications;
- c) that phototelegraph communications between public stations on the one hand, and public and private stations on the other, require close collaboration between the telegraph and telephone services of the various Administrations and Recognized Private Operating Agencies;
- d) that, on the other hand, phototelegraph communications between private stations do not concern the telegraph services, although it is desirable for all phototelegraph communications between public stations, between public and private stations, and between private stations to be established in the same way,

#### UNANIMOUSLY DECLARES THE VIEW

that the Annex below should be taken as a set of provisional rules for phototelegraph communications;

that further study should be devoted to conditions of acceptance, operational procedures and technical means likely to lead to the rapid and economic development of the phototelegraph service;

that such study should pay particular attention to the fact that phototelegraph traffic is nearly always concentrated in very short periods when special events take place, and that it is difficult to establish communication with phototelegraph stations, because the latter are often unable to accept the communication immediately.

#### ANNEX

##### Rules for phototelegraph communications

##### A. APPLICATION

§ 1. The Rules below define the procedure to be followed for operating and charging in the international phototelegraph service of the European system.

(The Telegraph and Telephone Regulations shall apply to the phototelegraph service, subject to these Rules.)

§ 2. These Rules govern international phototelegraph communications:

- between public stations,
- between a public and a private station,
- between private stations.

(A phototelegraph installation, operated by an Administration (or by a Recognized Private Operating Agency), shall be called a "public phototelegraph station". A phototelegraph installation, operated by a private organization, shall be called a "private phototelegraph station".)

##### B. CONDITIONS OF ACCEPTANCE

§ 3. Conditions of acceptance of phototelegrams:

- between public stations and
- between a public station and a private station

are defined in Section B of Recommendation F.80 on phototelegrams.

- § 4. Private phototelegraph stations may be authorized by Administrations (or Recognized Private Operating Agencies) to exchange phototelegraph calls with other private phototelegraph stations.

Phototelegraph calls between private stations are allowed without any time limit. However, when telephone traffic is subjected to restrictions, the exchange of phototelegraph calls between private stations may be delayed or limited by agreement between the terminal centres concerned.

- § 5. If the telephone service is operated with advance preparation, bookings of phototelegraph calls rank in the order in which they are accepted among bookings for telephone calls of the same category.

#### C. GENERAL PROVISIONS

- § 6. In relations where telephone circuits are used for both the phototelegraph service and the telephone service, the Administrations concerned shall assign by mutual agreement a certain number of circuits for phototelegraph transmissions, taking into account the usual requirements of both phototelegraphy and the telephone service. These circuits shall be specially marked at terminal exchanges and repeater stations with a view to the protection of the phototelegraph transmissions.

- § 7. The telephone circuits used for international phototelegraph transmissions shall, as far as practicable, be 4-wire circuits.

For phototelegraph transmission, they shall *normally* be disconnected from the switching equipment used for telephone calls.

Interconnection of circuits for setting up phototelegraph calls should be 4 wire-4 wire, as far as possible, both on the international and the national side.

- § 8. Administrations shall designate in each "international phototelegraph terminal centre" an authority responsible for the international phototelegraph communications. This authority is in a position to carry out, or cause to be carried out, all the operation necessary for the establishment of international phototelegraph communications. This authority shall henceforth be called the "International Phototelegraph Position" (IPP).

Administrations are recommended to centralize, as far as possible, in one place all the technical, operational and charging procedure necessary in an international centre when telephone circuits are used for phototelegraph communications.

- § 9. A booking for a phototelegraph call, emanating from a public or private phototelegraph station is routed to (or arrives directly at) the IPP of the country of origin responsible for setting up the international phototelegraph call which has been booked. This IPP then becomes the control IPP for establishing the call.

#### D. ESTABLISHMENT, SUPERVISION AND CLEARING OF INTERNATIONAL PHOTOTELEGRAPH COMMUNICATIONS

- § 10. If the telephone service on the international circuits needed for a phototelegraph circuit is by advance preparation, the control IPP shall advise the telephone office responsible for these circuits that a phototelegraph transmission is to take place. The control IPP agrees with the telephone service on the probable time at which the phototelegraph transmission will be taking place.

The IPPs shall proceed as follows when establishing an international communication:

- a) The control IPP transmits the following information as quickly as possible to the IPP of destination:
  - designation of the transmitting station,
  - designation of the station of destination, and in addition:
    - aa) for communications between public stations:
      - category of phototelegram to be transmitted,
      - date and time when the phototelegram is handed in,
      - probable time at which the phototelegraph call will take place;
    - ab) for communications between a public station and a private station:
      - category of phototelegram to be transmitted, or
      - category of call booked,
      - date and time when the phototelegram is handed in (or date and time of the booking, if the call is booked from a private station),
      - if necessary, indication of the subscriber responsible for the charges,
      - probable time at which the phototelegraph call will take place;
    - ac) for communications between private stations:
      - category of call booked,
      - date and time of booking,
      - if necessary, indication of the subscriber responsible for paying the charges,
      - probable time at which the phototelegraph call will take place.
- b) The IPP of destination shall take the necessary steps to advise immediately the phototelegraph station of destination by telephone that a phototelegraph transmission is about to take place.
- c) If the called phototelegraph station is in a position to receive the phototelegram call at the time fixed, the IPP of destination informs the control IPP. At the said time, the two IPPs take the necessary steps, in agreement with the telephone service, to establish the communication. Care must be taken to avoid interrupting telephone calls in progress.
- d) If the called phototelegraph station is not in a position to receive the call at the time fixed, the IPP of destination fixes the time when the transmission is to take place, taking into account the information received from the receiving phototelegraph station. It then communicates the time fixed to the control IPP which informs the calling station.
- e) The control IPP then takes the necessary measures, in agreement with the telephone service, to establish the phototelegraph communication between the stations concerned at the agreed time.

§ 11. If the telephone service involved is demand service, the outgoing IPP shall take an available circuit for the phototelegraph call, after ensuring that telephone calls in progress are not interrupted; it shall use this circuit to call the incoming IPP.



- a) To establish a phototelegraph call, it shall transmit the data mentioned under 10 a) above, to the incoming IPP, except for the probable time of the phototelegraph call.
- b) The incoming IPP shall take the necessary steps to advise immediately the called phototelegraph station by telephone that a phototelegraph transmission is about to take place.
- c) If the called phototelegraph station is in a position to receive the phototelegraph call immediately, the two IPPs shall straightway establish the necessary communication.
- d) If the called phototelegraph station is not in a position to receive the call immediately, the IPP of destination fixes the time when the transmission is to take place, taking into account the information received from the receiving phototelegraph station. It then communicate the time fixed to the control IPP which informs the calling station. The two immediately clear the international telephone circuit.
- e) At the time agreed upon, the outgoing IPP shall take the necessary steps to establish the phototelegraph communication.

§ 12. The control IPP shall note the time when the phototelegraph communication starts.

The beginning of the communication is the moment when the connection with the called station is offered to the caller. When the international circuit is extended towards a national PP at the caller's end, the latter shall determine the beginning of the communication and indicate it to the IPP in its country when the communication is cleared (see § 14).

§ 13. The control IPP supervises the transmission in progress:

- a) on the transmission (go) path by means of a device enabling it to check, without risk of interference, that transmission is taking place,
- b) on the (return) path by means of a device enabling it to listen to service conversation from the phototelegraph receiving station.

Intervention in the circuits should be avoided after communication has been established, unless such intervention has been requested by one of the IPPs or one of the phototelegraph stations connected.

§ 14. After consulting the receiving phototelegraph station, the calling phototelegraph station announces the end of the call either direct to its IPP, or, in the case of extension of an international circuit, to the national PP on which it depends.

The latter must inform its IPP as quickly as possible, giving the time at which it received notice of the end of the call. The control IPP notes the end-of-transmission time and immediately communicates the notice announcing the end to the incoming IPP, and, if necessary, to the transit IPP, which must inform the control IPP of any country through which the additional path passes.

The outgoing and incoming IPPs and any transit IPPs then take the necessary measures to restore the international circuit to the telephone service without delay.

It is recommended that the called station should likewise announce the end of communication so that the called station may be cleared more quickly.

§ 15. Unless the Administrations concerned decide to the contrary, the terminal IPPs do not come to an agreement on the chargeable duration, since this is determined by the control IPP.

**E. SPECIAL PROCEDURES FOR PHOTOTELEGRAPH STATIONS**

- § 16. For each phototelegram to be transmitted, the outgoing public station shall prepare a narrow tape comprising the preamble and address (and, if necessary, the signature and special service indications), unless these indications have been written on the phototelegram by the sender.

This tape is transmitted with the phototelegram.

- § 17. As soon as the communication is established, the interconnected phototelegraph stations proceed to adjust the apparatus and to transmit, in accordance with the instructions of the receiving station, adopting the following order of operations:

- a) if necessary, agreement on the index of co-operation and speed of transmission, then synchronization adjustment by means of the synchronization frequency,
- b) phasing of drums,
- c) adjustment of the white level,
- d) adjustment of the black level,
- e) start,
- f) transmission.

- § 18. If the phototelegram is being transmitted by a private station to a public station, the public station shall ask the private station, if necessary, for information regarding establishment of the preamble and conditions of delivery to the addressee.

**F. FAULTY TRANSMISSIONS**

- § 19. In the case of fault conditions, the IPP shall immediately make arrangements to clear the fault or make another circuit available.

- § 20. When, after completion of the call, it is seen that the transmission was faulty, the receiving phototelegraph station shall inform its IPP. If it so desired, the receiving phototelegraph station can make a new booking with its IPP for a phototelegraph call, in the manner defined in § 9, and its IPP then takes the necessary steps immediately to establish a new phototelegraph communication with the sending station.

If the phototelegraph station which receives the faulty picture and books a new call is a private station, its attention should be drawn to the fact that both calls will be chargeable if the faults in the picture are not due to the telephone or telegraph services.

**G. CHARGING**

- § 21. Charges for phototelegrams and phototelegraph calls are governed by Recommendation F.83.

**H. REBATES**

- § 22. Rebates of charges for phototelegrams are governed by Recommendation F.80 (Section E).

- § 22bis. In communications between private stations, no charge is collected when, on account of faulty circuits, the transmission has not taken place or has not been concluded. In the latter case, the private station responsible for the charges must support its request for a rebate in accordance with the provisions of § 24 below.

- § 23. The provisions of the Telephone Regulations relative to withdrawal of a booking or refusal of telephone calls are applicable to phototelegraph calls between private stations.
- § 24. To obtain rebates when it is seen that, after interruption of the call, the transmission was faulty, the phototelegraph station having paid the charge for the queried call should apply to its Administration, accompanying its request for a rebate with the original of the picture and the faulty proof received at the other end.

#### I. ACCOUNTING

- § 25. The accounts of charges for phototelegraph calls between private stations are established in the same way as the accounts for telephone charges; they shall be shown in a special section of the telephone accounts.
- § 26. If the Administration agrees to grant a rebate after a call has been cleared (see § 24) the charge for the phototelegraph call shall be refunded and the note "charge not collected owing to faulty transmission" entered in the international accounts established by this Administration. This presupposes of course that the accounting service must be informed of the decision to grant the rebate, with all the necessary information to identify the call in question. In this way, each country concerned with the queried phototelegraph call defrays its share of the refund.

### RECOMMENDATION F.83

#### **RATES FOR PHOTOTELEGRAMS AND PRIVATE PHOTOTELEGRAPH CALLS \***

*(Geneva, 1958, amended at New Delhi, 1960)*

1. A study of the costing of phototelegraph calls and phototelegram transmissions was carried out by the C.C.I.T.T. Sub-Study Group 2/3 in 1958. The results are published in Volume II of the *Red Book* on page 369.
2. These results have been taken as a basis for the establishment of rates close to the costing, assuming that subsequent development of the phototelegraph service would result in better operational conditions and, hence, in a reduction in the duration of occupation of telephone circuits.
3. As phototelegraph apparatus in service may have different cylinder diameters, the dimensions of the phototelegram received may not be the same as the original: they

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\* This text is published also as Recommendation E.59 in series E (Telephone operation) of the C.C.I.T.T. Recommendations.

may be reduced or increased in the same ratio. The surface area of the original phototelegram can therefore no longer be taken as a basis for phototelegram charges. It is the duration of the phototelegram transmission which really matters for calculating the duration of occupation of phototelegraph apparatus. This duration depends simply on one of the dimensions, namely the one in the same sense as the axis of the cylinder (so long as the other dimension is not greater than the operational length of the circumference of the cylinder). It is this dimension along the axis of the cylinder which is the *chargeable length*; its influence on charging depends on its relation to the diameter of the cylinder of the outgoing apparatus.

4. By considering normal size to be a picture with a chargeable length twice the diameter of the transmitting drum and whose other dimension would correspond to the circumference of the drum under consideration (e.g. a picture of 13 cm  $\times$  18 cm for a drum of  $D=66$  mm), the variable part of the charge corresponding to the duration of the call (including preparation and handing back of the circuit to the telephone service) would be based on  $5y$ ,  $y$  being the unit telephone call in the relation under consideration.

In the case of phototelegrams of a chargeable length less or more than twice the diameter  $D$  of the transmitting drum, the variable part of the charge would vary as follows:

for a chargeable length of	charge corresponding to
1.5 $D$	4 $y$
2.5 $D$	6 $y$
3 $D$	7 $y$

5. For the fixed part, 56 gold francs corresponds to the cost price. This fixed share should be equally divided between the two terminal Administrations in the case of an exchange of phototelegrams between public stations.
6. For phototelegram transmission between a public station and a private station, one half of the fixed part would be collected by the public station as a surcharge for its intervention.
7. With regard to the service between private stations, a surcharge of 4 minutes for the preparation of the call and the handing back of the circuit to the telephone service is justified.
8. The same charging procedure would be applied to service between a private station and a public station; the fixed surcharge for the part played by the public station would be collected on behalf of the public station.
9. Summing up, the rates for phototelegrams and phototelegraph transmissions between private stations, *if based on mean costs*, could be established as follows:

I. *Phototelegrams exchanged between public stations*

Scale of rates	Chargeable length of phototelegram	Total charge (in gold francs)	
1st step	1.5 D or less	56+4y	<i>Note:</i> increased by 1y per step for each extra ½ D
2nd „	over 1.5 D up to 2 D	56+5y	
3rd „	over 2 D up to 2.5 D	56+6y	
4th „	over 2.5 D up to 3 D	56+7y	

II. *Phototelegrams transmitted from a public station to a private station*

Scale of rates	Chargeable length of phototelegram	Total charge (in gold francs)	
1st step	1.5 D or less	28+4y	(same remark as in I above)
2nd „	over 1.5 D up to 2 D	28+5y	
3rd „	over 2 D up to 2.5 D	28+6y	
4th „	over 2.5 D up to 3 D	28+7y	

III. *Phototelegrams transmitted from private station to public station*

$$(C + 4) \frac{y}{3} + 28 \text{ gold francs per phototelegram}$$

(C being the duration in minutes of a connection between the two stations).

IV. *Phototelegraph transmission between private stations*

$$(C + 4) \frac{y}{3}$$

10. However, the C.C.I.T.T. observed that application of these rates would lead to higher charges than at present, such that there would be a sharp reduction in phototelegrams. It feels able to recommend only a reasonable increase.

In view of the foregoing, the C.C.I.T.T.

UNANIMOUSLY DECLARES THE VIEW

- a) that phototelegrams transmitted by a public station, either to another public station or to a private station, should be charged for according to the same principle, i.e. a fixed tariff, with various charging steps;

- b) that phototelegrams transmitted by a private station to a public station should be charged for in the same way as phototelegraph calls between private stations, i.e. the charge varying according to the use of telephone circuits for phototelegraph transmissions, and to the charging period (period of heavy or light traffic).

However, in the service between public station and private station, the Administration responsible for the public station receives a surcharge for intervention by the public station.

*Phototelegraph calls booked by a public station*

- c) The rates for phototelegrams between public stations, with the exception of charges for special services and the shares of charges accruing to Administrations, should be calculated in accordance with the following table:

Scale of rates	Dimensions of phototelegram			Total charge in gold francs (to be levied at outgoing end)	Share accruing to			
	1st side for the following drum diameters				2nd side (chargeable length)	outgoing Admin.	transit Admin.	incoming Admin.
	66 mm	70 mm	88 mm					
1st step				1.5 D or less	20+4y	10+4a	4b	10+4a
2nd step	≤ 18 cm	≤ 20 cm	≤ 24 cm	over 1.5 D up to 2 D	20+5y	10+5a	5b	10+5a
3rd step				over 2 D up to 2.5 D	20+6y	10+6a	6b	10+6a

increased by *y* per step for each extra 0.5 D  
(D = diameter of the drum of the sending phototelegraph apparatus)

- d) The rates for phototelegrams transmitted by a public station to a private station and the shares of charges accruing to Administrations (or Recognized Private Operating Agencies) should be calculated in accordance with the following table:

Scale of rates	Dimensions of phototelegram			Total charge in gold francs (to be levied at outgoing end)	Share accruing to			
	1st side for the following drum diameters				2nd side (chargeable length)	outgoing Admin.	transit Admin.	incoming Admin.
	66 mm	70 mm	88 mm					
1st step				1.5 D or less	10+4y	10+4a	4b	4a
2nd step	≤ 18 cm	≤ 20 cm	≤ 24 cm	over 1.5 D up to 2 D	10+5y	10+5a	5b	5a
3rd step				over 2 D up to 2.5 D	10+6y	10+6a	6b	6a

increased by y per step for each extra 0.5 D  
(D = diameter of the drum of the sending phototelegraph apparatus)

- e) The lengths of phototelegrams are measured in centimetres, a fraction of a centimetre being reckoned as a full centimetre.
- f) For divided phototelegrams, the charge is calculated separately for each part.
- g) For an = Urgent = phototelegram, the charge shall be doubled.

*Phototelegraph calls booked by a private station*

- h) The charge for a phototelegram transmitted by a private station to a public station, or vice versa at the request of the private station, and the shares accruing to Administrations should be calculated as follows:

Charge	in gold francs	Share accruing to the		
		Admin. of the country of the private station	transit Administration	Admin. of the country of the public station
Total	$10 + (C+4) \frac{y}{3}$			
to be collected on behalf of the private station	$(C+4) \frac{y}{3}$	$(C+4) \frac{a}{3}$	$(C+4) \frac{b}{3}$	$10 + (C+4) \frac{a}{3}$
to be collected on behalf of the public station	10			

- i) Charges for phototelegraph calls between private stations, and the shares accruing to Administrations are calculated in accordance with the following table:

Total charge (in gold francs) to be collected at the outgoing end	Share accruing to the		
	outgoing Administration	transit Administration	incoming Administration
$(C+4) \frac{y}{3}$	$(C+4) \frac{a}{3}$	$(C+4) \frac{b}{3}$	$(C+4) \frac{a}{3}$

- j) If a private station books an = Urgent = or = Lightning = phototelegraph call, the rates for the corresponding unit telephone call should be applied.
- k) In relations where reversed-charge phototelegraph calls are allowed, the rules governing such calls should be agreed upon by the Administrations (or Recognized Private Operating Agencies) concerned.

*Special services*

- l) The surcharges for the special services allowed for phototelegrams exchanged between public stations and phototelegrams transmitted by private stations to public stations are governed by the provisions of Recommendation F.80.
- m) For multiple phototelegrams transmitted by a private station to a public station, the surcharge for intervention by a public station (the table under section h) above) should be divided equally between the addressees.

*Note:* In the tables shown above

- $y$  is the charge (in gold francs) for a unit telephone call for the circuit used for the phototelegraph transmission,
- $a$  and  $b$  are the shares of the charge  $y$  accruing to the terminal and transit Administrations (or Recognized Private Operating Agencies).
- $C$  signifies the duration (in minutes) counted from the moment the phototelegraph connection with the called station is offered to the caller until the moment the calling station signals the end of the communication.



## SECTION 7

### STATISTICS AND PUBLICATIONS ON INTERNATIONAL TELEGRAPHY

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#### RECOMMENDATION F.90

##### **SPEED OF TRANSMISSION OF INTERNATIONAL TELEGRAMS**

*(formerly C.C.I.T. Recommendation F.1, Geneva, 1956)*

*(amended, Geneva, 1958)*

The C.C.I.T.T.,

#### CONSIDERING

1. the present speed of communications by telephone and by airmail;
2. the need for Administrations and Private Operating Agencies to be acquainted with the times of transmission of telegrams:
  - a) to enable them to seek means of improving such times of transmission;
  - b) in order that they may possess factual data enabling them to judge the adequacy of the service;
3. that to meet the above needs it is necessary to be able to base comparisons on representative statistics relating to the largest possible number of important international circuits,

#### UNANIMOUSLY DECLARES THE VIEW

1. that all Administrations and Private Operating Agencies should have statistics compiled each year of the transmission time of international telegrams, drawn up by the receiving office in two returns, by filling in forms A and B contained in the Annex to the present Recommendation;
2. that the Secretary-General should send copies of returns A and B established by receiving Administrations (or Private Operating Agencies) to each transmitting Administration concerned, as soon as possible, so that they may be informed of the quality of their services;

(F.90)

3. that the Secretary-General should centralize the data and communicate the results, in suitable diagrammatic form, in the *Telecommunication Journal*;
4. that the Secretary-General should give Administrations an idea of the comprehensiveness of the statistics and acquaint them with any observations of Administrations and particularly with any observation of the Administrations of origin regarding the particulars of their outward traffic furnished by receiving Administrations;
5. that, although it is not at present possible to fix a maximum time for the transmission of international telegrams, it is nevertheless desirable:
  - a) that 75% of the telegrams originating in the locality of the sending office should be transmitted to the receiving office within a period of 30 minutes;
  - b) that 75% of the other telegrams from the country of the sending office should be transmitted to the receiving office within a period of 45 minutes;
6. that Administrations should apply the following procedure for the establishment of these statistics:
  - a) the two terminal Administrations shall agree between themselves which relations are to be considered for the statistics;
  - b) the statistics are to be established in the third week of October, on three days, excluding Saturdays, Sundays, Mondays, or public holidays;
  - c) only telegrams received between 9 a.m. and 7 p.m. (local time) will be taken into consideration for the purposes of the statistics;
  - d) receiving Administrations should take into account any differences in local time;
  - e) in the case of extra-European circuits, on which traffic is heaviest outside these hours, the returns should be drawn up during the 10 busiest consecutive hours for each day and each relation;
  - f) to ensure that telegrams are properly sorted for allocation to forms A and B, the transmitting office shall mark each telegram handed in at the transmitting office itself with the letter A next to the name of the office of origin; this applies to the days on which the statistics are compiled;
  - g) telegrams received through the gentex network shall be grouped in returns A and B according to the country of origin (one line per country).

ANNEX

Forms to be completed by receiving offices

RETURN A

Transmitting country: \_\_\_\_\_ Receiving country: \_\_\_\_\_

Return giving time of transmission of ordinary telegrams received between 9 a.m. and 7 p.m. and handed in at the sending office.

Connection:		Method of operation		Number of telegrams received within a period of						Total of telegrams examined	Remarks *
Sending offices	Receiving offices	App.	Wire/ Wireless	15 min.	16-30 min.	31-45 min.	46-60 min.	61-120 min.	over 120 min.		
				between time of acceptance and time of receipt							
a) <i>Gentex:</i>											
b) <i>Station to station:</i>											
Totals											
Percentage											

RETURN B

Transmitting country: \_\_\_\_\_ Receiving country: \_\_\_\_\_

Return giving time of transmission of ordinary telegrams received between 9 a.m. and 7 p.m. and handed in at offices other than the transmitting office but belonging to the same country.

Connection:		Method of operation		Number of telegrams received within a period of						Total of telegrams examined	Remarks *
Sending offices	Receiving offices	App.	Wire/ Wireless	15 min.	16-30 min.	31-45 min.	46-60 min.	61-120 min.	over 120 min.		
				between time of acceptance and time of receipt							
a) <i>Gentex:</i>											
b) <i>Station to station:</i>											
Totals											
Percentage											

\* If a sending office belongs to a Recognized Private Operating Agency, state the name of the agency.

RECOMMENDATION F.91**GENERAL TELEGRAPH STATISTICS***(formerly C.C.I.T. Recommendation F.5, Geneva, 1956)*

The C.C.I.T.T.,

## CONSIDERING

- that the present form of the General Telegraph Statistics was decided by the International Telegraph Conference, Madrid, 1932;
- that since that time there have been important changes in the working of the international telegraph service, notably the introduction of new services (e.g. telex service) and technical developments (e.g., automatic switching);
- that the General Telegraph Statistics should take account of these changes;

## UNANIMOUSLY DECLARES THE VIEW

- that the General Secretariat of the Union should draw up the General Telegraph Statistics in accordance with the formula in the Annex.

*Note.* — In the chapter “Definitions” the new statistics show under continents the same territories as those actually appearing in the General Telegraph Statistics prepared annually by the General Secretariat of I.T.U.

The C.C.I.T.T. is of the opinion that this arrangement, which has been in use since 1932, is susceptible of revision but, as it has insufficient information, it was not possible to make any changes. Nevertheless, it was agreed to complete the list of countries of Central and Eastern Asia shown under the paragraph “Asia”, 2nd sub-paragraph, by the addition of *China*.

(The C.C.I.T.T. would draw the attention of the Telegraph Administrations concerned and of the next Telegraph and Telephone Conference to this point.)

## ANNEX

**General Telegraph Statistics**

compiled from official documents by the General Secretariat  
of the International Telecommunication Union

*General observations*

These statistics apply only to the public telegraph network.

The letter E in a column heading under the name of a country means: Government operation.

The letter P in a column heading under the name of a country means: operation by Recognized Operating Agencies.

A dash in one of the columns indicates that the information is not available, or that the service to which the heading refers does not exist or has been suspended.

The “explanatory notes” in the statistical table sent to Administrations for completion are given below. They show how certain headings are to be interpreted.

The definitions of the terms used in the statistical table are also given below in alphabetical order. Some of them are adapted to the special requirements of the table.

*Explanatory notes.*

1. Combined circuits made up of wire and radio sections are considered as fixed radio circuits (see Section IV).
2. Including speaker circuits, but excluding the circuits mentioned under E of Section III.
- 2 bis. Including speaker circuits, but excluding the circuits mentioned under D of Section IV.
3. Circuits between countries of the extra-European system or between a country in the extra-European system and a country in the European system.
4. Put an X opposite the system if used, and an O if it is not used.
5. Indicate the number of equipments installed and available for operation, whether the apparatus be in use or not.
6. Count as a single unit the whole equipment (transmission and reception) for a telegraph transmission channel (i.e., for one direction of transmission).  
Each country will count the equipment on its own territory as one half of a unit in the case of an international telegraph transmission channel.  
(For example, a voice-frequency telegraph equipment rack operating 18 outgoing transmission channels and 18 incoming reception channels will count as 18 units; the equipment at the distant end will also count as 18 units or, all in all, 36 units for this particular 18-frequency two-way voice-frequency system. This number will be reduced to 18 in the case of an international system.)
7. If telephone exchanges intervene in establishing communications, they are not counted under this heading.
8. Under this heading are to be included the telex subscribers' stations (rented) and the telegraph stations (or offices) which have access, either directly or indirectly (for example, through a private switchboard), to the switching network.
9. For Administrations with exchange equipment enabling them to determine this figure.
10. Circuits operated in manual and/or semi-automatic service may be connected to a manual switchboard. A manual switchboard usually consists of several operators' positions.

*Definitions*

<i>Continents:</i>	For statistical purposes, continents are delimited as follows (this delimitation, in accordance with the desire expressed by the Telegraph Regulations Committee at the Madrid Conference (1932) has been maintained by later conferences):
<i>Africa:</i>	North Africa (including the Azores, Madeira, the Canaries, Cape Verde Islands); West Africa; East Africa (including the Seychelles, Madagascar, Reunion, Mauritius); South Africa.

- America:* North America (including Greenland, Bermuda, and the Bahamas);  
Central America;  
West Indies;  
South America (including the Falklands and South Georgia).
- Asia:* Western Asia: includes Turkey in Asia, the Syrian Republic, Lebanon, Israel, Jordan, Arabia, etc.;  
Central and Eastern Asia: the U.S.S.R. in Asia, Japan, India, Cambodia, Laos, Viet-Nam, Pakistan and China;  
Asiatic archipelago: Indonesia, Borneo, Republic of the Philippines.
- Europe:* Northern Europe (including the Faroes and Iceland);  
Central Europe;  
Western Europe;  
Eastern Europe (including the U.S.S.R. in Europe and Turkey in Europe);  
Southern Europe (including Malta).
- Oceania:* Australia;  
Dutch New Guinea and New Guinea (Territory of);  
New Zealand;  
Pacific archipelago (Melanesia, Polynesia, Micronesia).
- European system:* Includes all the countries of Europe, with Algeria and those territories outside Europe which have been declared by the respective Administrations to belong to this system (No. 160 of the International Telegraph Regulations, Paris revision, 1949).
- Extra-European system:* Comprises all countries other than those in the European system.
- Facsimile telegraphy:* A system of telegraphy providing reproduction in the form of fixed images (photographic or otherwise) of the form, and possibly of the depth of tone and of the colours, of an original document, whether written, printed, or pictorial.
- Fixed service:* A radio service between specified fixed points.
- General telegraph service:* A telegraph service for the use of the public, providing for the acceptance and delivery of telegrams.
- Phototelegraphy:* A system of facsimile having special regard to tone reproduction, in which the reception involves photographic processes.
- Phototelegram:* A facsimile telegram which must be transmitted by phototelegraphy.
- Point-to-point (telegraph circuit):* A circuit permanently established between specific stations.
- Public phototelegraph station:* A phototelegraph station set up in a telegraph centre, and used for the public phototelegraph service.
- Public telegraph network:* A network set up to provide a telegraph service for the public and belonging to an Administration operating telecommunications (or Recognized Private Operating Agency). May be used for the general telegraph service, the telex service or the leased circuit service.
- Public (telegraph) office:* A telegraph office in direct contact with users for the handing-in or delivery of telegrams.

<i>Radio station:</i>	A combination of transmitters and receivers, including the accessory equipment required for carrying on a definite radiocommunication service.
<i>Service (telegraph) circuit:</i>	A special circuit used for communications in connection with the management of the telegraph service.
<i>Subscriber's line (or station line):</i>	Permanent circuit between a subscriber's telegraph station or a telegraph post and the switching centre which serves it.
<i>Switching centre:</i>	A centre with equipment for switching.
<i>Switching centre (automatic):</i>	An installation in which the switching manœuvres are carried out by electrically-controlled apparatus without the intervention of an operator.
<i>Switching centre (manual):</i>	An installation in which the switching manœuvres are carried out by an operator.
<i>Telegraph centre:</i>	A place in which the necessary resources in material and personnel are assembled to fulfil a specific function in operating a telegraph service.
<i>Telegraph circuit:</i>	A permanent connection between two instrument rooms or switching centres, without intermediate switching.
<i>Telegraph network:</i>	A group of stations, installations, centres and lines, co-ordinated for the purpose of providing a telegraph service.
<i>(Telegraph) office:</i>	A centre equipped with telegraph apparatus for the transmission or reception of telegrams.
<i>Telegraph service:</i>	Any service for the transmission of telegrams.
<i>(Telegraph) station:</i>	An installation operated by a telegraphist or a user, comprising a transmitting (or receiving) apparatus, and the necessary auxiliary equipment.
<i>Telex communication:</i>	The effect given to the booking of a telex call when it has been established between the calling and called stations.
<i>Telex service:</i>	A telegraph service enabling its subscribers to communicate directly and temporarily among themselves, by means of start-stop apparatus and of circuits of the public telegraph network.
<i>Transit telegram:</i>	A telegram routed across one or more transit countries.
<i>Trunk circuit:</i>	A permanent circuit between the switching equipment at two switching centres.

### Telegraph statistics 19.....

I. Population, according to the latest census . . . . .	.....
II. Area (in square kilometres) . . . . .	.....
III. Public telegraph network (wire) (1)	
A. Number of point-to-point telegraph circuits used in the general telegraph service (2)	
(a) internal . . . . .	.....
(b) international, between countries in the European system . .	.....
(c) international, in the extra-European system (3) . . . . .	.....

B. *Number of trunk telegraph circuits*

1. Circuits used exclusively by the general telegraph service (2)
  - a) internal . . . . .
  - b) international, between countries in the European system . . . . .
  - c) international, in the extra-European system (3) . . . . .
2. Circuits used exclusively for the telex service
  - a) internal . . . . .
  - b) international, between countries in the European system . . . . .
  - c) international, in the extra-European system (3) . . . . .
3. Circuits used jointly by the general telegraph service and the telex service
  - a) internal . . . . .
  - b) international, between countries in the European system . . . . .
  - c) international, in the extra-European system (3) . . . . .

C. *Number of subscribers' (or stations) lines to switching centres*

1. Telex subscribers' lines . . . . .
2. Lines from stations in telegraph centres and offices . . . . .

D. *Number of telegraph circuits permanently leased to users*

- a) internal . . . . .
- b) international, between countries in the European system . . . . .
- c) international, in the extra-European system (3) . . . . .

E. *Number of circuits used exclusively for facsimile telegraphy (or phototelegraphy)*

- a) internal . . . . .
- b) international, between countries in the European system . . . . .
- c) international, in the extra-European system (3) . . . . .

IV. *Public telegraph network of the fixed radio service (1)*A. *Number of point-to-point telegraph circuits used in the general telegraph service (2 bis)*

- a) internal . . . . .
- b) international, between countries in the European system . . . . .
- c) international, in the extra-European system (3) . . . . .

B. *Number of trunk telegraph circuits*

1. Circuits used exclusively by the general telegraph service (2 bis)
  - a) internal . . . . .
  - b) international, between countries in the European system . . . . .
  - c) international, in the extra-European system (3) . . . . .



2. Circuits used exclusively for the telex service
  - a) internal . . . . .
  - b) international, between countries in the European system . . . . .
  - c) international, in the extra-European system (3) . . . . .
3. Circuits used jointly by the general telegraph and telex services
  - a) internal . . . . .
  - b) international, between countries in the European system . . . . .
  - c) international, in the extra-European system (3) . . . . .
- C. *Number of telegraph circuits permanently leased to users*
  - a) internal . . . . .
  - b) international, between countries in the European system . . . . .
  - c) international, in the extra-European system (3) . . . . .
- D. *Number of circuits used exclusively for facsimile telegraphy (or phototelegraphy)*
  - a) internal . . . . .
  - b) international, between countries in the European system . . . . .
  - c) international, in the extra-European system (3) . . . . .
- V. *Equipments for the circuits and station lines mentioned in Sections III and IV*

Number of equipments (5) (6)

  - a) for within-band telegraphy . . . . .
  - b) for sub-audio telegraphy . . . . .
  - c) for supra-audio telegraphy . . . . .
  - d) for telegraphy on phantom or super-phantom circuits . . . . .
  - e) for voice-frequency-division telegraphy . . . . .
  - f) for time-multiplex telegraphy . . . . .
  - g) for interband telegraphy . . . . .
  - h) for error detection (with or without automatic correction) . . . . .
  - i) number of radiotelegraph transmitters . . . . .
  - j) number of radiotelegraph receivers . . . . .
- VI. *Offices, radio stations, switching centres, telegraph stations*
  - A. *Number of telegraph offices*
    1. belonging to the Telegraph Administration . . . . .
    2. belonging to State railways or to railway companies . . . . .
    3. belonging to Recognized Private Operating Agencies . . . . .
  - B. *Number of radio stations in the fixed service (general telegraphy and/or telex)*
    1. transmitting . . . . .
    2. receiving . . . . .
  - C. *Number of switching centres (7) (switching centres under E excluded)*
    1. Switching centres used exclusively for the general telegraph service
      - a) automatic switching centres . . . . .
      - b) manual switching centres (10) . . . . .

2. Switching centres used exclusively for telex service
  - a) automatic switching centres . . . . .
  - b) manual switching centres (10) . . . . .
3. Switching centres common to the general telegraph service and to the telex service
  - a) automatic switching centres . . . . .
  - b) manual switching centres (10) . . . . .

D. *Number of telegraph stations connected to switching centres (8)*

1. Telex subscribers' stations
  - a) connected to automatic switching centres . . . . .
  - b) connected to manual switching centres (10) . . . . .
2. Stations in telegraph centres or offices
  - a) connected to automatic switching centres . . . . .
  - b) connected to manual switching centres (10) . . . . .

E. *Number of switching centres serving exclusively the facsimile (or phototelegraph) service . . . . .*

F. *Semaphore stations with a public telegraph service . . . . .*

VII. *Telegraph apparatus in telegraph centres (or offices) used in the general and telex networks (including service apparatus)*

1. Type of apparatus used (4)
  - a) Morse (or sounder or buzzer) . . . . .
  - b) Wheatstone, Creed-Wheatstone . . . . .
  - c) Hughes . . . . .
  - d) Baudot . . . . .
  - e) Siemens (rapid printers) . . . . .
  - f) Siemens-Hell . . . . .
  - g) Murray . . . . .
  - h) start-stop . . . . .
  - i) facsimile . . . . .
2. Number of start-stop machines in service
  - a) standardized in accordance with C.C.I.T.T. Recommendations
    1. tape-printing . . . . .
    2. page-printing . . . . .
  - b) not in accordance with C.C.I.T.T. Recommendations
    1. tape-printing . . . . .
    2. page-printing . . . . .
3. Number of facsimile telegraph machines used by Administrations and Recognized Private Operating Agencies
  - a) direct-recording facsimile apparatus . . . . .
  - b) phototelegraph apparatus . . . . .

VIII. *Telegraph traffic*

A. *Traffic of countries in the European system*

1. Internal traffic of the country
  - a) total number of outward telegrams . . . . .
  - b) number of outward phototelegrams . . . . .

## 2. International traffic in the European system

- a) number of full-rate and urgent telegrams, outward . . . . .
- number of full-rate and urgent telegrams, inward . . . . .
- b) number of letter-telegrams, outward . . . . .
- number of letter-telegrams, inward . . . . .
- c) number of press telegrams, outward . . . . .
- number of press telegrams, inward . . . . .
- d) number of transit telegrams (each telegram counted once only) . . . . .
- e) number of outward, inward and transit phototelegrams . . . . .

## 3. International traffic in the extra-European system

- a) number of full-rate and urgent telegrams, outward . . . . .
- number of full-rate and urgent telegrams, inward . . . . .
- b) number of letter-telegrams, outward . . . . .
- number of letter-telegrams, inward . . . . .
- c) number of press telegrams, outward . . . . .
- number of press telegrams, inward . . . . .
- d) number of transit telegrams (each telegram counted once only) . . . . .
- e) number of outward, inward and transit phototelegrams . . . . .

B. *Traffic of countries in the extra-European system*

## 1. Internal traffic of the country

- a) total number of outward telegrams . . . . .
- b) total number of outward phototelegrams . . . . .

## 2. Traffic with countries in the same continent

- a) number of full-rate and urgent telegrams, outward . . . . .
- number of full-rate and urgent telegrams, inward . . . . .
- b) number of letter-telegrams, outward . . . . .
- number of letter-telegrams, inward . . . . .
- c) number of press telegrams, outward . . . . .
- number of press telegrams, inward . . . . .
- d) number of transit telegrams (each telegram counted once only) . . . . .
- e) number of outward, inward and transit phototelegrams . . . . .

## 3. Traffic with Europe

- a) number of full-rate and urgent telegrams, outward . . . . .
- number of full-rate and urgent telegrams, inward . . . . .
- b) number of letter-telegrams, outward . . . . .
- number of letter-telegrams, inward . . . . .

- c) number of press telegrams, outward . . . . .
- number of press telegrams, inward . . . . .
- d) number of transit telegrams (each telegram counted once only) . . . . .
- e) number of outward, inward and transit phototelegrams . . . . .
- 4. Traffic with other continents . . . . .
  - a) number of full-rate and urgent telegrams, outward . . . . .
  - number of full-rate and urgent telegrams, inward . . . . .
  - b) number of letter-telegrams, outward . . . . .
  - number of letter-telegrams, inward . . . . .
  - c) number of press telegrams, outward . . . . .
  - number of press telegrams, inward . . . . .
  - d) number of transit telegrams (each telegram counted once only) . . . . .
  - e) number of outward, inward, and transit phototelegrams . . . . .

## IX. Telex service traffic

### A. Inland traffic of the country

- 1. Number of chargeable calls (irrespective of duration) exchanged between subscribers' posts (9) . . . . .
- 2. Total number of chargeable minutes (9) . . . . .
- 3. Total number of pulses in millions noted on the meters of subscribers' lines (9) (indicating the gold-franc amount corresponding to one pulse) . . . . .

### B. International traffic with countries in the European system

- 1. Number of chargeable calls (irrespective of duration), outward, inward and transit (9) . . . . .
- 2. Total number of chargeable minutes (9)
  - a) outward . . . . .
  - b) inward . . . . .
  - c) transit . . . . .

### C. International traffic with countries in the extra-European system

- 1. Number of chargeable calls (irrespective of duration) outward, inward, and transit (9) . . . . .
- 2. Total number of chargeable minutes (9)
  - a) outward . . . . .
  - b) inward . . . . .
  - c) transit . . . . .

RECOMMENDATION F.92

## SERVICE CODES

(formerly C.C.I.T. Recommendation F.6, Geneva, 1956, amended at New Delhi, 1960)

The C.C.I.T.T.,

## CONSIDERING

that it would be useful for the operating services of Administrations and Recognized Private Operating Agencies to have a book containing the various codes used in the international telegraph service;

that it would be desirable for such a book to contain the codes and abbreviations commonly used in other telecommunication services, as well as the codes used in international telegraphy;

that the various codes now in use, if assembled in a single volume, might provide the basis for a more unified system of service codes,

## UNANIMOUSLY DECLARES THE VIEW

1. that the various codes and abbreviations commonly used in international telecommunication services should be assembled in one volume and published by the General Secretariat of the I.T.U.;
2. that this publication should be called:

CODES AND ABBREVIATIONS FOR THE USE  
OF THE INTERNATIONAL TELECOMMUNICATION SERVICES

*Published by the International Telecommunication Union*

3. that the contents thereof should be arranged in three main sections, headed:

Decoding;  
Coding;  
Miscellaneous.

## CONSIDERING

1. that in its Recommendation F.6 (1956), the C.C.I.T. included the following instructions for the publication of this book:
  - a) The codes suggested for inclusion (in whole or in part) in the proposed book are summarized, classified and numbered below, together with references to their origins, when these are not apparent:

*Code documents already adopted internationally*

- I. Telegraph Regulations.
- II. Radio Regulations, Appendix 9, Section I — The “Q” Code as a whole — see page 251 *et seq.*

(F.92)

- III. Radio Regulations, Appendix 9, Section II — Miscellaneous abbreviations and signals — see page 270 *et seq.*
- IV. Radio Regulations, Appendix 11, paragraph 3 (1) — Spelling analogy code — see page 275 *et seq.*

*Code documents which are now recommendations adopted by Plenary Assemblies*

- V. C.C.I.R., VIIth Plenary Assembly, 1953, Recommendation 141 — SINPO Code. Tabulation and footnotes a) to d) — see pages 188 and 189.
- VI. C.C.I.R., VIIth Plenary Assembly, 1953, Recommendation 141 — SINPFEMO Code. Tabulation and footnotes as in V above.
- VII. C.C.I.T., VIIth Plenary Assembly, 1953, Recommendation H.1, Article 26. Code expressions used in the international telex service.

*Code documents of Recognized Private Operating Agencies*

- VIII. Cable and Wireless Ltd. Service Code.
- IX. Cable and Wireless Ltd. "Z" Code.
- X. Cable and Wireless Ltd. Facsimile Reporting Code.
- XI. Italcable. "Dizionario delle Abbreviazioni Telegrafiche".

- b) From the code documents numbered I to XI, the following should be included, without alteration, in the book:

- III. Radio Regulations. Miscellaneous abbreviations and signals, as amended by the VIIIth Plenary Assembly of the C.C.I.R.
- IV. Radio Regulations. Spelling analogy code.
- V. SINPO Code, taking into account the amendments made by the VIIIth Plenary Assembly of the C.C.I.R.
- VI. SINPFEMO Code, taking into account the amendments made by the VIIIth Plenary Assembly of the C.C.I.R.
- VII. Code expressions used in the international telex service.
- X. Cable and Wireless Ltd.: Facsimile Reporting Code.

The remaining codes, Nos. I, II, VIII, IX, and XI should be included in part only. The material selected for retention as it stands, or with slight changes, is shown in the appendices on pages 338 to 346 of the C.C.I.T. *Violet Book*.

- c) The accepted code documents proved, on examination by the C.C.I.T., to be of two fundamentally different kinds, namely:

C.1 those containing a series of individual codes and abbreviations, each comprising a letter group with an assigned meaning. All accepted code documents except those mentioned in C.2 below belong to this category;

C.2 those of different form, namely:

SINPO

SINPFEMO

The spelling analogy code

The Cable and Wireless Facsimile Reporting Code.

Clearly, the four items mentioned in C.2 above belong to the "Miscellaneous" section, since no question of separate arrangement of coding and decoding arises as a practical issue.

The material referred to in C.1 above should be set out as follows:

### *Decoding Section*

In this section, all code letter groups and abbreviations, irrespective of their source, should be listed in alphabetical order down the left-hand side of the page with their meaning given on the right.

The "Q" and "Z" Codes should be excluded from this alphabetical sequence, although there should be cross references in the relevant places in the sequence showing where these two codes may be found elsewhere in the book, i.e., in the "Miscellaneous" section.

### *Coding section*

This section should comprise:

The five-letter group codes appearing in Appendix I to the Telegraph Regulations, plus those taken from the Cable and Wireless Service Code, but excluding duplications. This material should be classified according to the fields of operation in which the codes are used. The Cable and Wireless Service Code provides the basic pattern of layout required, and the few additional codes in Appendix I to the Telegraph Regulations should be merged in this layout.

A second part, consisting of groups of codes according to the use made of them, thus:

"Telex codes"

"Miscellaneous telegraph codes", comprising:

Miscellaneous abbreviations and signals, and miscellaneous codes and abbreviations taken from the International Telegraph Regulations.

The codes and abbreviations from the foregoing services should be arranged in alphabetical order.

### *Miscellaneous Section*

The following should appear in the Miscellaneous Section, separately, and each with its own heading:

Document V	SINPO
Document VI	SINPFEMO
Document IV	Spelling Analogy Code
Document X	Cable and Wireless, Ltd.: Facsimile Reporting Code
Document II	"Q" Code (series QRA-QUZ)
Document IX	"Z" Code, Cable and Wireless Ltd.

It might be argued with some justification that both the "Q" Code (alphabetical arrangement) and the "Z" Code should appear in the Decoding Section, and that the "Q" Code (functional arrangement) should appear in the Coding Section.

Both codes, however, are subject to special qualifying instructions; for example, some code letter groups may have numbers added to them, i.e., QRK/1-5 and ZSI/1-5. Moreover, the "Q" Code has a dual significance in that the letter code group can be used as either a question or an answer. Since the question of special instructions can more conveniently be covered when the "Q" and "Z" Codes appear as separate entities, the C.C.I.T. considered it best to place them in the Miscellaneous Section where all material is arranged in this way.

2. that, in accordance with these instructions, the General Secretariat published a first edition of "Codes and abbreviations for the use of the international telecommunication services" in 1958;
3. that fairly numerous additions and modifications therein are to be proposed;
4. that the time is not yet ripe for unification of the various codes; and that, before such unification is attempted, the first edition should be reviewed with a view to a second edition;
5. that it would be more convenient for those using the book of Codes and abbreviations if, in future, it were to appear in three separate booklets (one for each language), the existing format being retained,

UNANIMOUSLY DECLARES THE VIEW

1. that henceforward the book of "Codes and abbreviations for use in international telecommunication services" should appear in three separate booklets (one in English, one in French, and one in Spanish), but retaining the same format as the first edition;
2. that the changes described in the following Annex should be made in the second edition.

ANNEX

**Additions and modifications for the second edition of the book of "Codes and abbreviations"**

**New codes**

1. *Five-letter codes for telex*

A series of five-letter international telex code abbreviations for administrative use should be introduced. These expressions have been divided into three categories: Administrative, Operational, and Maintenance.

2. *Gentex code*

It is proposed that the gentex code should be included in the volume of service codes.

With the gradual expansion of fully-switched systems it is recommended that the legends of the gentex and telex code systems should be aligned whenever possible. In the meantime the individual lists should be maintained in the Service Code Book.

3. *Five-letter code for transferred-account or collect telegrams (telegrams payable by an addressee or a third party)*

The provision now made in the International Telegraph Regulations (Article 13, Geneva, 1958) for the acceptance of telegrams without prepayment of charges in the country of origin will necessitate the inclusion of the five-letter expressions used for this service throughout the international telecommunication system.

**Revision of existing codes**

4. *Five-letter codes (Part II, Section 1)*

The five-letter code expressions listed in the coding section of the I.T.U., Service Code Book (Part II, Section 1) should be divided into additional sections under the present headings, cover-



ing particular spheres of operation, thus giving a clearer layout and facilitating the task of both administrative and operating staff.

5. *An additional expression*

Add:

MEJIM = Held. Radio connection not yet obtained. Ship will be called up to the .... inclusive.

6. *Reduction in the number of groups*

To achieve a numerical reduction, all groups being described by a single word in all three languages should be omitted.

7. *Telex code (Part II, Section 2)*

The proposals made in the Telex Regulations (New Delhi, 1960) should be included in the telex code expressions.

8. *Miscellaneous telegraph codes (Part II, Section 2)*

a) *Miscellaneous abbreviations and signals (Radio Regulations)*

The existing headings of the Miscellaneous telegraph codes should be made more readable, and the expressions should be revised to include those given in Appendix 13, Section II, of the Radio Regulations (Geneva, 1959).

b) *Miscellaneous codes and abbreviations (Telegraph Regulations)*

These should be brought into line with the current Telegraph Regulations (Geneva, 1958).

9. *Miscellaneous codes (Part III) 1) and 2) SINPO and SINPFEMO Codes*

It is proposed that these two codes be made into a single code, called the "SINPO and SINPFEMO Signal Reporting Code". The Special Remarks column has been amended in accordance with the revised Radio Regulations (Appendix 14). Tables I and II should be combined, thus Table III will become Table II. The words "Signal Strength" should be added to the titles.

10. *Spelling Analogy Code*

This code should be renamed the "Spelling Analogy Table" and should include, as a separate additional table, the alphabetical wording currently given in the Radio Regulations (Geneva, 1959).

11. *"Q" Code*

Some amendments will be necessary to bring this code into line with the new list given in the Radio Regulations (Geneva, 1959) (Appendix 13, Section 1). An index should be included for ease of reference.

12. *"Z" Code*

Two alterations should be made in this code.

13. *Part I of the Code Book*

The amendments proposed for Part II call for appropriate alterations in Part I as well.

**Layout.**

14. a) Every page in the Service Code Book should be numbered.  
b) There should be a thumb index for ease of reference.  
c) For the sake of uniformity, it would be well if signal strength code digits were given in ascending scale, as for the "Q" Code.

**RECOMMENDATION F.93****ROUTING TABLE FOR OFFICES CONNECTED  
TO THE GENTEX SERVICE**

*(formerly C.C.I.T. Recommendation F.14, revised, Geneva, 1958)*

The C.C.I.T.T.,

IN VIEW OF C.C.I.T.T. Recommendation F.22, Article 14,

**CONSIDERING**

that gentex offices need information about the routing of traffic to the offices connected to the gentex service and the offices which, while not being attached thereto, nevertheless normally have to deal with a good deal of international traffic;

that for the time being there is no call to include this information in the list of telegraph offices open for international traffic,

**UNANIMOUSLY DECLARES THE VIEW**

that the I.T.U. General Secretariat should issue a document containing the routing lists published by the countries connected to the gentex service, in accordance with Article 14 of Recommendation F.22 of the C.C.I.T.T., dealing with regulations for the gentex service;

that changes in these lists, if notified after this document is published, should be communicated by means of the I.T.U. General Secretariat Notifications.

**RECOMMENDATION F.94****TABLES OF INTERNATIONAL TELEX TRAFFIC**

*(formerly C.C.I.T. Recommendation H.4, Geneva, 1956)*

The C.C.I.T.T.,

**CONSIDERING**

the importance to Administrations and Recognized Private Operating Agencies of being able to follow the development of telex service;

that with this in view the General Secretariat establishes annual statistics derived from information provided by Administrations and Recognized Private Operating Agencies;

(F.94)

that these statistics will henceforth be included in the general telegraph statistics,

CONSIDERING FURTHER

that comparative tables of traffic have been drawn up for several years at the instance of the Chairman of the competent Study Group of the C.C.I.T.T.;

that these tables are of great interest for following the development of the service;

that it is desirable to give them an official character by having them compiled by the General Secretariat,

UNANIMOUSLY DECLARES THE VIEW

that the General Secretariat should publish annually, by means of the *Telecommunication Journal*, the statistical data listed below:

1. a general table of international telex traffic in January, expressed as the number of chargeable minutes in relation to the number of direct circuits in service;
2. a comparative table showing figures of international telex traffic in January for different years;
3. a comparative table showing annual international telex traffic for these same years.

RECOMMENDATION F.95

**LIST OF TELEX CIRCUITS AND ROUTES**

(formerly C.C.I.T. Recommendation H.12, 1954)

The C.C.I.T.T.,

CONSIDERING

- a) the publication, envisaged in Article 4, § 8, of the International Telex Regulations (Recommendation F.60), of a list of telex routes;
- b) the value of regulating the use of different routes;
- c) the preparation of a description of international telex circuits which is in progress,

AND TAKING INTO ACCOUNT

that the information which it would be desirable to ask the General Secretariat to publish should include:

1. a list of international telex circuits with a brief description of the routing and of the location of the regenerative repeaters;
2. a list of routes (normal, auxiliary and emergency) which may be used in international telex relations,

UNANIMOUSLY DECLARES THE VIEW

that all Administrations and Recognized Private Operating Agencies participating in the international telex service should forward annually to the General Secretariat:

- a) a list, drawn up in accordance with the annexed table, showing the international telex circuits in use at 31 December;
- b) a list drawn up in the following form showing, for each relation, the various routes:

(F.95)

Relation	Routes			Remarks
	Normal *	Auxiliary	Emergency	

\* Indicate the transit country if any.

*Note.* — Publication of this information will be undertaken by the General Secretariat in the manner indicated in Article 4, § 8, of Recommendation F.60.

## ANNEX

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ter- minal ex- change A (see (a))	Ter- minal ex- chan- ge B	Rout- ing (see (b))	No. of circuits (see (c))	No. of V.F. links per circuit (see (d))	Loca- tion of inter- mediate V.F. equip- ment, if any (see (d))	Location of regenerative repeaters, if any		No. of uni- direc- tional circuits for A-B traffic	No. of uni- direc- tional circuits for B-A traffic	No. of circuits for both- way traffic	Operat- ing method A to B (see (e))	Operat- ing method B to A (see (e))	Com- ments and any special features
						Trans- mission A-B	Trans- mission B-A						

*Explanatory Notes:*

- (a) One line in the table should be used for a description of telex circuits between A and B. However, if the circuits are divided into several groups according to the particular route, one line should be devoted to a description of the circuits in each of those groups.
- (b) Briefly characterize the route followed by each group of circuits.
- (c) Indicate the number of circuits described in the same line.
- (d) V.F. — Voice frequency.
- (e) *Automatic* if the subscribers of a country can directly dial the subscribers in another; *semi-automatic* if action by a manual operator at A or B is required (then indicate at which office such action is taken); *manual* if action by manual operator is required at both A and B.

**LIST OF QUESTIONS  
APPLYING TO TELEGRAPH OPERATION AND TARIFFS  
ENTRUSTED TO STUDY GROUP I  
FOR THE PERIOD 1961-1964**

Question No.	Brief description	Other Study Groups or organizations co-operating in the study	Text, page
1/I	Counting of words.	—	309
2/I	New principles for telegraph tariffs.	—	310
3/I	Page reception of telegrams.	—	310
4/I	Reception on forms prepared in advance.	VIII	311
5/I	Possible modification of international telegraph Alphabet No. 2.	VIII	311
6/I	New telegraph alphabet.	VIII	312
7/I	Standardization of service texts in telegraph switching.	X	314
8/I	World-wide routing plan for telex and gentex services.	X	315
9/I	Revision of rules for the gentex service.	—	315
10/I	Retransmission of messages.	VIII and X	316
11/I	Observations on the grade of service in telex traffic.	X	317
12/I	Use of the operator-recall signal.	—	317
13/I	Charging of telex calls making use of two or more radiotelegraph channels with automatic error-correction.	—	317
14/I	Revision of the Telex Regulations.	—	317
15/I	Costing of telex calls and revision of Recommendation F.66.	III	318
16/I	World-wide provisions for phototelegraphy.	II and XIV	318
17/I	Simultaneous phototelegraph transmission to multiple addresses.	II, XIV and XV	318
18/I	Unification of service codes.	C.C.I.R.	318
19/I	Regional alphabets.	VIII	319

**Question 1/I. — Counting of words**

*(former Question 40/21, 1957-1960; Resolution 3 of the Geneva Conference, 1958)*

The Administrative Telegraph and Telephone Conference, Geneva, 1958,

**CONSIDERING**

that the regulations in Chapter IX of the Telegraph Regulations relating to the counting of words, although they have been carefully revised, still present certain difficulties both in operation and to users,

**INSTRUCTS**

the C.C.I.T.T. to pursue its study concerning the counting of words taking account of the proposals submitted to the Telegraph and Telephone Conference, Geneva, 1958.

**ANNEX 1 TO QUESTION 1/I**

*List of proposals relative to word counting submitted to the Telegraph and Telephone Conference (Geneva, 1958) which should be considered in connection with the study of Question 1/I*

No. of the proposal	Source	Page of the Volume of Proposals (VP) or Document of the Conference (DC)
4	China	VP 4
1111	Spain	VP 22.1
158	Sweden	VP 72
172	Yugoslavia	VP 75
173	Australia	VP 76
184	Italy	VP 78
185	Italy	VP 79
187	C.C.I.T.T. (16 Administrations)	VP 80
197	Australia	VP 84
198	France	VP 84
199	France	VP 84
200	Switzerland	VP 85
206	Japan	VP 88
215	Belgium	VP 91
216	Belgian Congo	VP 91
217	France	VP 91
219	Czechoslovakia	VP 92
220	Australia	VP 92
226	U.S.S.R.	VP 94 rev. 1.
227	Yugoslavia	VP 95 rev. 1.
unnumbered	International Chamber of Commerce	DC 22 and DC 109
unnumbered	Tunisia	DC 32
1319	China	DC 67

The following proposals submitted to the 1958 Telegraph and Telephone Conference, in addition to chapter IX of the Telegraph Regulations (Geneva Revision 1958) and the examples given in Appendix 1 to these Regulations, are brought to the notice of Study Group I.

*Note.* — Proposals which were submitted to this Conference and accepted by it *in their entirety* are not indicated in this list; their texts or equivalent texts are to be found in the Telegraph Regulations (Geneva Revision). Proposals which were *withdrawn* during the Telegraph and Telephone Conference are likewise excluded from the list.

The Rapporteurs of Study Group I are requested to state whether the proposals in the above list submitted by their respective Administrations should be taken into consideration in the C.C.I.T.T. study. Each Administration is of course entitled to submit to the C.C.I.T.T. any proposal it had previously submitted to the Conference and then withdrawn during the Conference. Administrations may also submit new proposals if they wish.

## ANNEX 2 TO QUESTION 1/I

### *Proposal from Cable and Wireless Ltd.*

In our view a certain degree of ambiguity exists regarding the actual counting of the expressions envisaged in paragraph 147 (Article 19 of the Telegraph Regulations).

We are of the opinion that some definition of the actual counting of such expressions as "UNESCO", "SABENA", etc. at 15 letters to the word should be quoted in Article 29.

Whilst Appendix 1 does quote an example of the counting to be applied it would seem that additional clarification is required within the framework of the Regulations themselves.

For this reason we would propose an addition of a further paragraph in Article 29:

"Abbreviated denominations of international or national organizations, including business undertakings, in the form of initial letters combined as one group."

### **Question 2/I. — New principles for telegraph tariffs**

*(former Question 39/21, 1957-1960)*

New tariff principles for telegrams. Study of the principles which could be followed for the purpose of establishing tariffs for telegrams which would not be based on the word "pure and simple".

*Note.* — See Supplements, page 321.

### **Question 3/I. — Page reception of telegrams**

Study of operational rules to be recommended for applying Recommendation F.12 as regards the layout of the address on page-printed telegrams.

(Question 3/I)

**Question 4/I. — Reception on forms prepared in advance**

*(continuation of Question 12/21, 1957-1960; also concerns Study Group VIII)*

Study of the reception of telegrams on forms prepared in advance.

*Comments*

This question applies to:

- a) the reception of telegrams in the general service;
- b) the reception of messages in the telex service.

In case *a*), standard layout of forms is essential.

In case *b*), it is quite certain that a standard layout of forms cannot be contemplated, as the forms have to be adapted to the special requirements of the users.

However, some functions, such as

- the placing of forms on the teleprinters,
- signalling to indicate that this placing has been completed,
- advance of the forms on the drum

are to be found in all cases. A study of the appropriate signalling will have to be undertaken.

*Note.* — See Supplements, page 326.

**Question 5/I. — Possible modification of international telegraph Alphabet No. 2**

*(former Question 41/21, 1957-1960, amended; Resolution 2 of the Geneva Conference, 1958; results of study to be submitted to Study Group VIII)*

The Administrative Telegraph and Telephone Conference, Geneva, 1958,

## CONSIDERING

1. that the reservation of the "figures" position in combinations 6, 7 and 8 of the international telegraph Alphabet No. 2 for internal service requirements does not satisfy the needs of Administrations using a national alphabet having a greater number of letters than that available in the existing Alphabet No. 2;
2. that to bring the methods of operation used in the internal service into line with those employed in the international service, at least two additional combinations must be allotted from the figure case in Alphabet No. 2 to internal service requirements,

## INVITES THE C.C.I.T.T.

1. to study the possibility of modifying the international telegraph Alphabet No. 2 in such a way as to make at least two additional signals from the figure case available to Administrations for their internal requirements;

(Question 5/I)



2. to submit the results of such study to the next Administrative Telegraph and Telephone Conference.

#### *Comments*

The two additional signals will be obtained by dropping the sign : and replacing the two brackets by a single graphical sign.

A decision must be taken on:

- the signal to be used for the single bracket,
- the graphical sign for this single bracket.

#### **Question 6/I. — New telegraph alphabet**

*(former Question 22/21, 1957-1960; Question 8/VIII of Study Group VIII; study to be prepared by a joint Working Party of Study Groups I and VIII)*

1. Study of the requirements which the telegraph service may be called upon to meet in future.
2. Study of a telegraph alphabet which would meet these needs.

#### ANNEX 1 TO QUESTION 6/I

The aim is to ascertain for what purpose or type of service a new alphabet is needed.

It will therefore be useful to know the ideas of operating services on the facilities which the general telegraph service and the telex service may be able to offer users in the distant future (10 to 15 years).

Thinking ahead should not be restricted to extensions to existing services, but they should be sufficiently extended to cover the possible requirements of new services for commerce and industry.

This problem can be simplified, however, if the range of possibilities could be restricted as far as possible by excluding features which could not be provided in any such service. Two of these possibilities which it will probably be impossible to include are:

- compatibility with existing alphabets
- the possibility of meeting the very diverse data-processing code requirements which are known to exist.

It appears that technical difficulties exclude any possibility of interworking because, although an alphabet having more than five units can be coded in a way to permit transmission to machines designed for international telegraph Alphabet No. 2, transmission in the reverse direction is extremely difficult because the transmission time of a character in Alphabet No. 2 is less than that of a character sent by machines designed for a longer alphabet.

As regards data transmission, it should be mentioned that the study of a standardized international alphabet for data transmission for use either by telex subscribers or telephone subscribers has been called for.

(Question 6/I)

## ANNEX 2 TO QUESTION 6/I

*(Extract from the report of the Warsaw meeting of the Working Party;  
contribution S-Com 2/1 — No. 66, 1957-1960)*

For the moment, the great majority of Administrations do not wish to abandon Alphabet No. 2 for general service and for telex.

An extended alphabet is at present needed only for the special requirements of specialized networks. Administrations cannot now see clearly what their requirements might be in the distant future; it is not certain, nor is it impossible, that new requirements, such as having the same facilities as on typewriters, the introduction of new control signals, transmission of data, etc. would make it necessary one day to choose an extended alphabet.

When such requirements begin to assume a definite form, it will be too late for the C.C.I.T.T. to begin the study of a new alphabet, which takes several years.

This is why the C.C.I.T.T. considers that the study of a new alphabet should be continued. This does not mean, of course, that Administrations have decided ultimately to apply the conclusions of this study, but that it seems that such a study would make it possible to reach conclusions more rapidly when new requirements become known.

The following represents the maximum possibilities to be expected of a new alphabet:

1. the use of both capitals and small letters,
2. the addition of the following letters with diacritical signs:

á	à	â	ä	ą	å	æ
ć				ç		
é	è	ê	ë	ę		
		î	ï			
					ı	
ń						ñ
ó		ô	ö			ø
ś						
	ù	û	ü			
ź					ż	

Among these letters, it should be possible to obtain the following as capitals or small letters:

ı	ż
ø	æ
ä	ö
ü	

3. the addition of the following signs:

‰	‱
Fr	£
\$	
§	* (asterisk)
&	No.
®	©
<u>H</u> (underlined)	
1/	1/2
1/4	3/4
2 (squared index 2)	3 (cubed index 3)

4. the addition of the following punctuation marks:

; ! “

5. allocation of signals for the following operations:

return to the preceding line,  
change of line-spacing,  
back-spacing,

beginning of telegram,  
 end of telegram,  
 message separation,  
 starting a perforator-receiver.  
 stopping a perforator-receiver.  
 disturbance signal,  
 delay in synchronous service,  
 error,  
 tabulation (six signs).

This, with the signs already used in international telegraph Alphabet No. 2, requires 170 combinations.

Allowing for further requirements and the protection of certain signals, a total of 200 combinations would be needed.

Without shift, an 8-unit code (256 combinations) is required.

With shift, a 7-unit code ( $2 \times 128$  combinations) is necessary.

On this basis, the Working Party studied just how far it was possible to go with a 6-unit code.

It was felt that one of the most attractive extensions of the telegraph facilities would be the use of capitals and small letters.

In many languages, small letters cannot be used without diacritical signs.

To keep within the limits of the 6-unit code, diacritical signs can be used only with small letters, and not with capitals. There seems to be no great objection to this.

Diacritical signs would not cause the carriage to move on a space and would have to be in the same shift as the small letters.

The essential characteristics of the new 6-unit code would therefore be as follows:

- use of small and capital letters, the same code combination going with the small and capital versions of a same letter;
- figures in the same shift as the small letters;
- diacritical signs which do not cause the carriage to advance and which are placed in the same shift as the small letters;
- no diacritical signs over capitals.

### ANNEX 3 TO QUESTION 6/1

(See extracts from contributions under: *Considerations on the new telegraph alphabet* — in the Supplements to Volume VII, page 313 onwards.)

#### Question 7/I. — Standardization of service texts in telegram switching

(Continuation of Question 9/21, 1957-1960; also concerns Study Group X)

Study of the standardization of signal sequences and service texts transmitted by the switching equipment in the international telex and gentex networks when calls are being put through, especially when these calls do not reach a normal completion.

(Question 7/I)

*Comments*

In principle, unsuccessful telex calls should not be charged for. However, in some networks, unsuccessful calls are indicated by means of signal sequences preceded by the "call-connected" signal; in such cases, it might be difficult for outgoing Administrations to avoid charging equipment being brought into play upon reception of the call-connected signal, and unsuccessful calls might therefore be charged. To restrict the consequences of this possibility as much as possible, the clearing signal should follow immediately after the service signal sequences have been sent.

Administrations should try to reduce the number of cases in which these exceptions can occur.

*Note.* — See Recommendation S.4 (Volume VII of the *Red Book*).

**Question 8/I. — World-wide routing plan for telex and gentex services**

*(Question 8/X of Study Group X)*

Is there a need to draw up numbering and routing plans for the intercontinental telex and gentex service, and if so, what should they be?

*Comments*

The rapid growth of intercontinental telex and gentex traffic, and in particular the development of subscriber dialling in intercontinental relations which has been made possible by the provision of intercontinental coaxial cable systems, make it desirable to consider the economics of telex traffic routing on a world-wide basis. The time differences between terminal countries in such relations, and the consequent differences in the hours of peak traffic loading, may make it economic to employ tandem transit routing to a much greater extent than has been necessary in the purely European network. However, the development of a comprehensive plan for the economic employment of tandem routing depends, amongst other considerations, on agreement on numbering and routing plans. Moreover, even when a country is served by more than one telex network, the telex number of a subscriber should contain all the digits which must be dialled or passed by a correspondent or controlling operator in an overseas country to obtain connection, whatever itinerary may be employed for routing a call. It is also desirable to restrict the number of digits which must be examined by the equipment to determine the charging rate.

**Question 9/I. — Revision of rules for the gentex service**

*(continuation of Question 37/21, 1957-1960)*

1. Modifications to be made to the text of Recommendations concerning the gentex network so as to take account of the practical experience gained in operating this network and of the results of its development.
2. Study of the use of page-printing equipment in the gentex network.

(Question 9/I)

**Question 10/I. — Retransmission of messages**

*(Question 10/X of Study Group X; (also concerns Study Group VIII; study to be prepared by a joint Working Party of Study Groups I, VIII and X)*

What technical, operational and financial arrangements should be prescribed for international message telegraph systems using message relay techniques with automatic or semi-automatic switching of messages and tape or electrical storage?

*Comments*

In the study of this question account should be taken of the desirability that:

1. such relay systems should be fully compatible, and
2. other systems using conventional techniques (e.g. point-to-point systems using manual transfer of messages between circuits) should be able to interwork with such relay systems with only minimal changes in procedure, etc.

The study of this question should extend to all relevant aspects of the subject, including:

1. the transmission conditions appropriate to message relay operations;
2. interworking between telegraph codes used at present, method of operation and speed of operation;
3. the message format, with particular reference to any functional signals, destination indicators \*, priority indicators, etc., required for use at automatic or semi-automatic transit centres;
4. any other information (e.g. accounting information) in which provision should be made for automatic operation;
5. any special operational aspects (e.g. limitations on length of messages);

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\* The system of destination indicators recommended for use with international message telegraph systems using message-relay techniques with automatic or semi-automatic switching of messages and tape or electrical storage, should if possible be designed in such a way that it could also be used:

- a) to provide short designations, of international validity, for the principal offices to which international telegrams may be sent;
- b) in registered abbreviated telegraphic addresses to indicate more precisely the terminal office in the international system to which messages addressed to such addresses should be sent;
- c) to simplify the arrangements at international centres which handle traffic in transit between networks employing different techniques (e.g. between a message relay network and a through switched network such as the gentex system).

(Question 10/I)

6. general considerations relating to traffic control, emergency routings, etc., called for particularly by message-relay operations.

*Note.* — See Supplements, page 329.

**Question 11/I. — Observations on the grade of service in telex traffic**

*(Question 21/21, 1957-1960, amended; study in co-operation with Study Group X)*

It is considered desirable that observations should be made on international telex traffic, to verify the grade of service given to subscribers. How should these be made, what standard should be laid down, and what arrangements should be made for advising other countries concerned?

A checking system analogous to that recommended for the telephone service by Recommendation E.83 will have to be proposed.

**Question 12/I. — Use of the operator re-call signal**

Establishment of rules for the operational use of the operator re-call signal on telex calls set up on radiotelegraph circuits.

*Note.* — See Recommendation U.21.

**Question 13/I. — Charging of telex calls making use of two or more radiotelegraph channels with automatic error-correction**

*Note.* — See Question 4/X (Volume VII): telex signalling over radio circuits.

**Question 14/I. — Revision of the Telex Regulations**

*(continuation of Question 24/21, 1957-1960)*

Study of possible amendments to the Telex Regulations:

- a) with regard to the actual regulations,
- b) with regard to rates, taking into account the provisions of Recommendation F.66 of the C.C.I.T.T.

(Question 14/I)

**Question 15/I. — Costing of telex calls and revision of Recommendation F.66**

Costing of international telex calls. (This study was allocated to the "Costing" Working Party of Study Group III and is to be finished before 1 April 1962.)

Resulting proposals for amending Recommendation F.66.

**Question 16/I. — World-wide provisions for phototelegraphy**

(former Question 42/21, 1957-1960; Resolution 1 of the Geneva Conference, 1958; study in co-operation with Study Groups II and XIV)

The Administrative Telegraph and Telephone Conference, Geneva, 1958,

## CONSIDERING

1. that the phototelegraph service in the extra-European system is steadily developing and
2. that the existing provisions relative to the European service are not wholly adapted to the extra-European system,

## RESOLVES

that the C.C.I.T.T. study this question, with a view to issuing a Recommendation on provisions which might be applied by all Members and Associate Members of the Union.

*Note.* — See Supplements, page 335

**Question 17/I. — Simultaneous phototelegraph transmission to multiple addresses**

(study in co-operation with Study Groups II, XIV and XV)

Should simultaneous phototelegraph transmission to multiple addresses be envisaged in the international service?

If so, what operating and tariff methods should be used for these calls?

**Question 18/I. — Unification of service codes**

(former Question 10/21, 1957-1960; study in co-operation with the C.C.I.R.)

Study, in co-operation with the C.C.I.R., of the need for unifying the various codes used in international telecommunication services and, if necessary, study of this unification.

(Question 18/I)

**Question 19/I. — Regional alphabets**

*(this question is also Question 9/VIII of Study Group VIII; to be prepared by the joint Working Party of Study Groups I and VIII for Alphabets)*

Study of new regional alphabets for the exchange of information by start-stop apparatus in languages that are not based on Roman characters.

The possibility of interworking of these alphabets with international telegraph Alphabet No. 2 will have to be considered.



## SUPPLEMENTS TO PART II

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### CONTRIBUTIONS CONSIDERED WORTH PUBLISHING RECEIVED DURING THE PERIOD 1957-1960

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## NEW PRINCIPLES FOR TARIFFS

**C.C.I.T.T. Secretariat: Text of proposals 567 (Portugal) and 952 (Denmark) submitted to the Paris Conference (1949) for the establishment of new tariff systems**

*(Contribution S-Com 2/1 — No. 21, June 1957)*

*Note.* — The C.C.I.T.T. Secretariat thought it might be useful to publish extracts from the proposals referred to in Resolution No. 10 of the Paris Conference (1949), which deal with new rate-fixing systems (Proposal 567 by Portugal and Proposal 952—in actual fact, 847—by Denmark).

### **Proposal 567 by Portugal (extracts)**

#### *Composition of the tariff*

1. The ordinary or normal tariff for the transmission of a simple telegram (that is to say, without supplementary services) between two offices A and B situated in different countries shall be reckoned on the basis of the value of the rate per word for ordinary telegrams—unit charge.

1 *bis*. The unit charge mentioned in the preceding paragraph shall be composed of the following elements:

- a) the terminal charge of the office of origin (A);
- b) the terminal charge of the office of destination (B);
- c) the intermediate charge to be divided equally between the Administrations (or Private Operating Agencies) taking part in the connection between the two offices.

1 *ter*. In the adjacent services system, the “unit charge” must not exceed the sum of the two terminal charges of the respective adjacent countries.

2. The rates resulting from the application of the provisions of paragraphs 1 and 1 *bis* to telegrams exchanged between offices A and B of any two countries of the Union must be equal and always the same in both directions of any relation, whatever the route or section of the route or the method of transmission used.

3. Administrations (or Private Operating Agencies) which provide or participate in direct international communication channels between the offices A and B of two countries of the Union, may require the terminal Administrations to guarantee a minimum revenue from the transit charges for the services in which they share.

*Reasons*

1. The draft revision of the tariff system submitted by the Portuguese Administration is based upon actual experiments made in different countries and zones during the last 10 years.

In Portugal, the best results have been obtained by rationalizing the tariff system for telegraph relations in the "CAM triangle zone" (Continent, Azores, Madeira), in "intercontinental relations" with the Portuguese colonies, in "adjacent relations" with Spain and in "transatlantic relations" with Brazil, on lines similar to the preceding proposals.

The experiments made since 1938 by the British Commonwealth with the "flat rate" system, and by English-speaking countries (U.S.A. and the British Commonwealth) with the "ceiling rate" system (Bermuda Agreement, 1946) are similar to the "tariff reform" suggested by the Portuguese Administration.

This reform aims at reconciling different points of view, which have already been discussed, and, by incorporating certain recognized improvements, seeks to establish rational principles for the simplification of services, which may serve as a logical experimental basis for future comparative studies.

2. We do not aspire to a world tariff system; such a utopian idea is incompatible with the telegraph system. However, the example of the U.P.U. should encourage the Union to effect a "reform by zones" in the same Cartesian spirit of first considering the parts in order eventually to solve the whole problem.

Neither are we concerned with a "ceiling tariff", as this could have real and practical significance only if it were applied to zones or clearly defined relations mutually agreed upon between the Administrations concerned. The first step, although no more than an experiment, is to fix the boundaries of these "zones" or relations in a realistic and practical way. Experiments made during the last 10 years have already furnished more than enough yardsticks to enable Administrations, without undue risk, to try out "partial standardization" in their services, regardless of distance, technical systems or the number of intermediaries. This, in general, is the procedure followed by the U.P.U. for ordinary and registered post throughout the world.

3. The Conference of Rio de Janeiro (1946) and the recommendations of the International Chamber of Commerce at Montreux (1947), as well as various telegraph experts at the Atlantic City Conferences (1947) and at the C.C.I.T. Meeting in Brussels (1948), have strongly supported "partial standardization according to zones".

Users in all countries, who usually appreciate the very fine organization of the U.P.U., which has a "universal rate" and charges the same price for the despatch of a letter from Paris to Vienna as from Buenos Aires to Madrid, will easily understand why the world must be divided into telegraphic "zones", each with its own rates, to the advantage of people in neighbouring countries.

The Portuguese proposal merely co-ordinates and simplifies the methods already in use, by grouping together in a conventional and practical way those countries of the Union which could form small "telegraphic worlds", in accordance with Article 3 (Purposes of the Union) and Article 41 (Regional Organizations) of the Atlantic City Convention.

4. The solution submitted by the Portuguese is based upon the following fundamental principles:

- a) International telegraphy must be a "system of co-operation" representing an embodiment, technically and economically, of the domestic telegraph systems of each country. It is neither logical nor just, nor yet in accordance with the spirit of the Convention, to balance national telegraph budgets by imposing sacrifices on a minority of the users of the international services.
- b) The "terminal rates", therefore, must be fixed, as far as possible, in universal values near to the average figure for "domestic rates" per ordinary word in force in the various countries. There is nothing to justify a terminal rate much greater than the domestic rate, as the organization used has been set up in the national interest.
- c) The countries of the Union must not be divided into "large and small countries" for the purpose of fixing terminal rates.

Co-operation must be on a world scale, as it is in the U.P.U. because the small countries make greater sacrifices than the large countries in the working of their telegraph systems.

From the point of view of telegraphy, the various countries are equivalent to parts of a single machine, and the costs of operation per work unit (the telegram) are greater in small systems with less traffic. It is unreasonable, therefore, that terminal rates should be higher in countries having large networks, where the telegraph system is operated under the most favourable conditions.

5. The solution recommended by the Portuguese Administration is intended to make the "zone system" more general, to achieve uniformity in the matter of terminal rates, and to establish the principle of "transit rates of fixed total amount" instead of the principle of variability of the amount and number of rates.

The suggested criterion for sub-dividing the world into continental zones is as good as any. The "universal rate" is not practicable, and the present system involves very serious disadvantages which increase as air mail develops.

It will be for the countries concerned, in accordance with the general regulations of the Convention, to adapt their methods to this conventional system, or to draw up bilateral agreements to enable them to operate under the most suitable system.

It cannot be said that the Portuguese proposals are impracticable or complicated, for much more radical methods have already been adopted, such as the "single zone" system in the service of the Portuguese colonies, the "flat rate" service in the British Commonwealth and the "ceiling rate" system of Anglo-Saxon peoples. It is true that these methods have drawbacks, but they also have great advantages.

### **Proposal 847 by Denmark**

#### *Proposal to amend the basis of the charging system in the extra-European service*

1. Three classes of telegrams shall be admitted:

- (1) Urgent telegrams,
- (2) Ordinary telegrams,
- (3) Letter telegrams.

2. Letter telegrams shall be delivered by post, ordinary telegrams by messenger or telephone, and urgent telegrams by the fastest means available.
3. There shall be no restrictions with regard to contents or number of words. At least one text word, however, shall be compulsory.
4. Rates shall be composed as follows:
  - a) *Charge per word*: Words shall be counted in accordance with general rules;
  - b) *Fixed charge per telegram*: To cover internal costs at both ends in connection with handing-in and distribution (inclusive of postage, exclusive of messenger costs);
  - c) *Messenger costs*.
5. Rates for the different classes of telegrams:
 

*Letter telegrams*:  $a \times \text{number of words} + b$ ;

*Ordinary telegrams*:  $a \times \text{number of words} + b + c$ ;

*Urgent telegrams*:  $(a \times \text{number of words} + b + c) \times 1.5$ .
6. Level for rates:
  - a) 50% of present basic rate;
  - b) 1.00 gold franc;
  - c) 0.50 gold franc.
7. Accounting:
  - a) Shall be divided between participating services in the usual manner;
  - b) Shall be divided equally between the two terminal countries;
  - c) Shall be paid in its entirety to the country of destination.

*Note.* — Provided that the telegraph correspondence between any two countries is approximately the same in both directions, and if a universal rate for “*b*” and “*c*” could be established (which should be possible as the question of finance involved is not significant) the international accounting could be simplified, as there would be no need to include “*b*” and “*c*” which could be kept by the collecting country.

#### *Reasons*

Before the war there was already a decided desire within the Administrations to do away with the very complicated telegram categories that existed, in particular the special reduction of charges for telegrams in code. It seems, however, that it was difficult to reach unanimity.

Since the reopening of the extra-European traffic after the war, great changes in the distribution of the various categories have been manifest. Today the position is that deferred telegrams and letter telegrams constitute the bulk of the traffic and are the decisive factors for the remunerative functioning of the service.

With modern installations, it may be said that from an operational point of view the contents of a telegram are of no practical significance. Plain language, code and cypher will give the operators practically the same work. If any difference exists, it may be said

that code and cypher are the more expensive to handle in view of the fact that these give rise to more frequent collation. A reduction of the charge for code telegrams must, therefore, be said to be illogical.

Deferred telegrams and letter telegrams may not contain code. This classification of telegrams according to their contents is irrational, when operating costs are practically the same.

The basis of charging must primarily be the transmitting costs per word. But in connection with the handling of telegrams there are expenses which, in practice, are independent of the number of words, for instance, expenses in connection with handing-in, internal distribution, delivery by messenger, etc. It therefore seems natural, when charging telegrams, to distinguish between the part which depends on the length of the telegram and that independent of the number of words.

In view of the fact that the operating costs per word are the same no matter what the class of telegram, it appears that the transmitting charge per word should always be the same except in urgent telegrams, where a certain surcharge is natural as these telegrams enjoy special priorities in transmission.

A uniform word-rate is the more essential when the deferred and letter telegrams constitute the bulk of the traffic, if the service is to pay its way.

The conclusion of the above arguments seems to be that the minimum charge for a telegram—irrespective of category—should be a charge per word covering transmitting costs (paragraph 4 *a* and 6 *a*), plus a fixed charge per telegram to cover expenses other than actual transmission and delivery by messenger (paragraph 4 *b* and 6 *b*). When delivery by messenger is desired a special charge to cover messenger costs should be collected (paragraph 4 *c* and 6 *c*).

The level of these rates as proposed in paragraph 6 are based on calculations in the internal Danish service.

To be able to estimate what the charge per transmitted word (paragraph 6 *a*) should be, an investigation has been made to ascertain the effective rate per word in traffic between Denmark and America. This investigation showed the effective rate to be nearly 50 per cent of the basic rate.

As a tentative figure, the future basic rate has, therefore, been fixed at 50 per cent of the present full rate. This would give the same gross income as now, with perhaps a small increase owing to the collection of “*b*”, and in some cases “*c*”.

For the Administrations and Operating Agencies, the advantage of this system would be that they would become independent of changes in the use of the various categories now existing, and that special services are paid for according to their value. To the public it would mean that there would be no possibility of sending telegrams at lower rates than 50 per cent of the present full rate, but to compensate for this there would in future be no restrictions with regard to the contents of telegrams and their number of words, and the present full-rate correspondence would be 50 per cent cheaper.

Hitherto, telegraph correspondence has also been seen in a special light, depending on categories. Certain categories seem to entitle telegrams to lower charges than others,

for instance, press telegrams, meteorological telegrams, and in certain cases, Government telegrams. Such a discrimination in the treatment of telegrams according to category must be designated as irrational. It is not the task of the telecommunication service to sort the traffic of the correspondents and grant some of them a subsidy, a subsidy which ultimately must be borne by other correspondents. This should not be construed to mean that such categories do not deserve a subsidy. But, it is not the concern of the telecommunication service to grant it.

However, if it is felt that press telegrams and meteorological telegrams should be specially classified, this can be fitted into the scheme. Government telegrams are not mentioned as they are dealt with separately.

\* \* \*

The above proposal has been limited to the extra-European system. It may, however, be equally well applied in the European system. In order not to create a material increase of rates, in consideration of the weight which "b" and "c" would carry in the total rate, it would be necessary to reduce the word-rate "a" to some extent. It could, however, hardly be avoided that the charge for telegrams containing few words would be higher than at present. This would be quite rational as there can be no doubt that a total rate of 0.70 gold franc for a 5-word telegram, the present charge between some European countries, must mean a considerable deficit.

## RECEPTION ON PREPARED FORMS

### United Kingdom: Study of reception on forms prepared in advance

*(Contribution S-Com 2/1 — No. 85, June 1959)*

Reception of telegrams on forms prepared in advance is not practised either on the national or international public telegraph services, including telex, within the United Kingdom. In the absence of any firsthand experience of this method of operation, it is proposed to limit our comments to the method of reception indicated in Recommendation C.21 (Documents of the VIIIth Plenary Assembly, Geneva, *Violet Book*, page 109).

This Recommendation gives particulars of the sprocket-feed mechanism of the teleprinter, the mounting of the engaging pins on the platen and dimensions of the paper, etc. Figure 4, on page 111 of the *Violet Book*, shows the area of the paper available for the accommodation of the intelligence contained in the telegram itself, including preamble and collation, if any.

1. From the operational point of view, the reception of telegrams on forms prepared in advance calls for two main considerations.
  - a) the telegram should be transmitted in an agreed format; and
  - b) printing of the telegram at the receiving end of the circuit must be within the area provided for the purpose on the form.

2. The method of transmitting traffic without error to offices equipped with page-printing teleprinters has already been standardized in Recommendation F.12 of the C.C.I.T.T., and although the format cannot be considered as final in view of the revision that may be effected, there is no reason to envisage any changes that would prevent its adoption as the format to be used in transmitting to teleprinters equipped with forms prepared in advance. The United Kingdom Administration attaches considerable importance to standardization in the preparation of telegrams and in the interests of uniformity would, therefore, favour the use of the format proposed by Recommendation F.12 in the preparation of telegrams for transmission to machines equipped for the reception of forms prepared in advance.
3. In order to ensure that telegrams are printed at the point of reception within the area provided on the form it is necessary:
  - i) to align the forms on transmitting and receiving teleprinters in such a way that printing on the latter will commence at a predetermined position;
  - ii) to indicate to the sending office that alignment has been effected and that transmission may commence;
  - iii) to advance the paper to the different parts of the message.

From item (iii) it is assumed that forms would have separate areas for the accommodation of the various parts of the telegram.

4. It remains a matter for technical examination as to the best means to be used in advancing the paper to the predetermined or required position. It would seem necessary to provide three signals for the purpose, viz. a "start-of-form" signal, a "start-transmission" signal, and an "intermediate form-position" signal for the three above-mentioned functions respectively. Since the setting-up process will be necessary for each individual telegram and for pages of long telegrams, it is desirable, from the operating point of view, that setting-up should be achieved as quickly as possible in order to reduce pre-transmission delay to a minimum.
5. It would seem that the procedure to move the form to various positions will be at variance with the procedure recommended by the C.C.I.T.T. in Recommendation F.12. In that case it would be preferable to use a form on which the area to accommodate the telegram was blank paper, i.e. devoid of any specifically marked areas for the various parts of the telegram. This would then necessitate start-of-form and start-transmission signals only and permit use of Recommendation F.12 procedure. The uniformity in transmission to page-printing teleprinters stressed in paragraph 2 would be secured. It would also have the advantage of ease of operation in dealing with telegrams having various forms of address from the two-words registered or abbreviated address to the long fully-addressed type of telegram, including the telegram bearing paid service indications.
6. Blank forms of the type envisaged would tend to minimize difficulties which it is thought might arise from the necessity to accommodate telegrams containing a wide variation in the number of words. The short telegram containing only a single text



line presents few difficulties, save perhaps some extravagance in the use of paper. Operationally, the fewer the number of words in the telegram, the greater distance the paper must be advanced before the next telegram can be accepted. It is not anticipated that there would be any difficulty in handling long telegrams, which in the public service are normally divided into pages for operational convenience, each page except the last containing 50 actual (as distinct from chargeable) words.

7. In Recommendation F.12 there is provision for the signalling between telegrams and long pages of telegrams of 10 line-feed spaces to facilitate tearing off the paper and, more important perhaps, to minimize the inconvenience attendant upon handling short length telegrams in page-printed form. It is probable that experience in the use of forms prepared in advance may indicate a need to modify what is otherwise an acceptable method of transmission.
8. Finally, if forms prepared in advance are manufactured in continuous rolls it would be an operational advantage were provision made to facilitate separation or the tearing off of each message as received.

## TELEX SERVICE

### France: Duplex operation in the international telex service

*(Extracts from contribution S-Com 2/1 — No. 131, May 1960)*

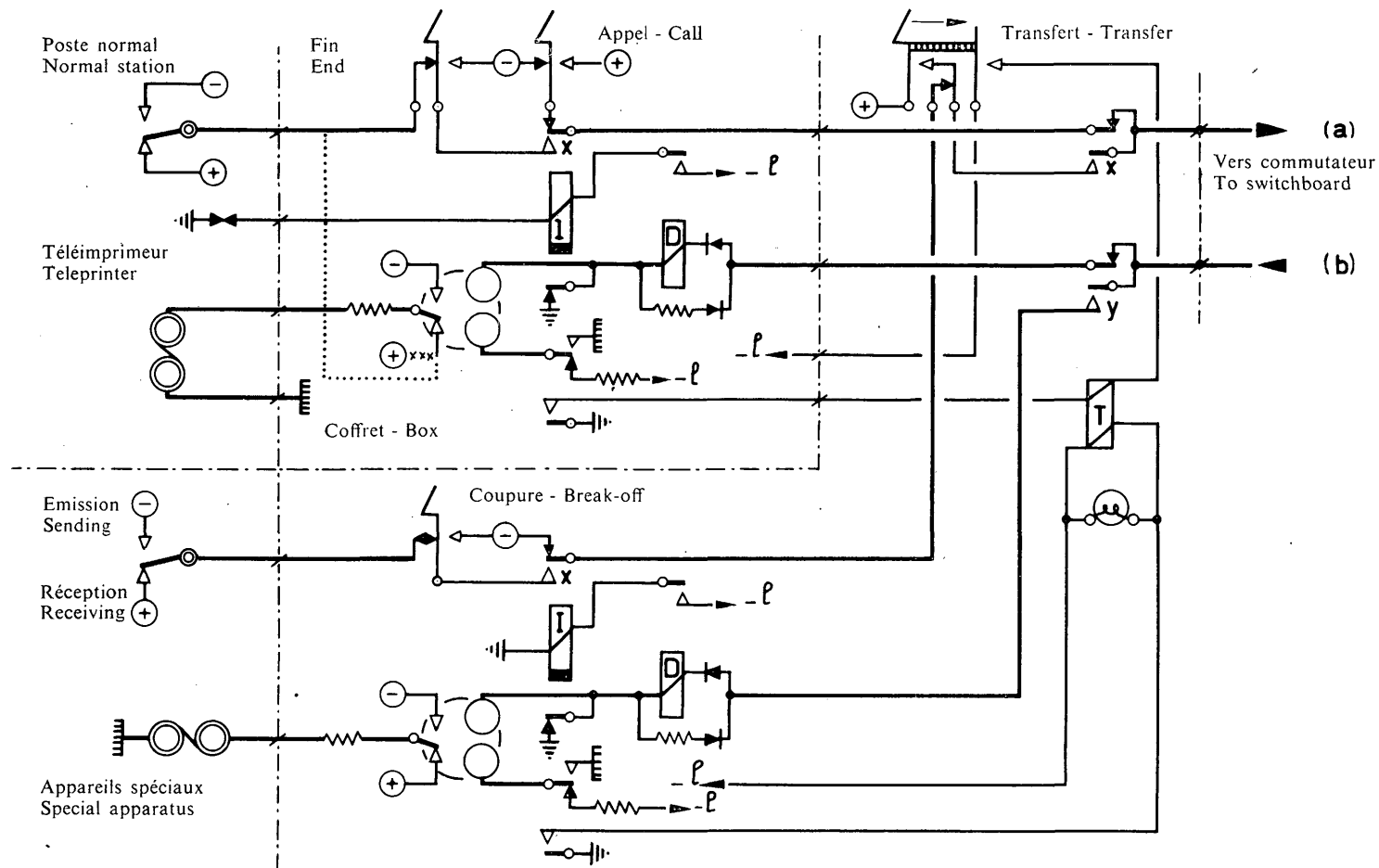
(See attached diagram.)

Since the contribution mentioned in the documents of the VIIIth Plenary Assembly (*Violet Book*, Supplements, pp. 343-349), a new device allowing for duplex operation has been brought into service in the French telex network. The principle of this device is indicated in the diagram attached hereto.

The subscriber's installation, when it is free, and until the call has been completely set up, functions like that of a normal line. In particular, the answer-back of the teleprinter can be seized at any time, when a call arrives.

A key, which is effective only when the call has been set up with a correspondent, enables the normal-type teleprinter to be replaced either by two separate sets (one for receiving and the other for sending) or by devices specially designed for the transmission of coded tape or of data-transmission signals, and for all these devices the combination "who is there" may hinder operation.

At the end of the call, the line is automatically reconnected to the normal teleprinter while relay *T* which maintained the transfer is removed as a result of the supervisory device constituted by the group of relays *D* and *I*.



TELEX STATION WITH TRANSFER OF CALL  
on special apparatus (duplex, mixer, etc.)

**Sweden: Telex calls for broadcasts**

*(Extracts from contribution S-Com 2/1 — No. 109, September 1959)*

The facility of using telex calls for broadcasts has been allowed both in the Swedish inland service and in relations between the Nordic Countries (except for Iceland which does not yet possess a telex network). The position used for telex calls for broadcasts is provisional; it is manually operated and it is capable of setting up two calls for simultaneous broadcasts, one with a maximum of 20 called stations and the other with a maximum of 13. On these calls, only the calling subscriber can transmit; thus, correspondence proceeds only in the calling-called subscriber direction.

The subscriber books a call by dialling a special telex number, the broadcast call operator calls back the calling subscriber announcing "Please wait", and then contacts the called subscribers. She transmits the information "Here is a call for broadcast" to each of them and then sets off the answer-back of the called subscriber in question. If a subscriber is busy, the operator makes only one fresh attempt to call after having contacted the other called subscribers.

The caller is then informed of any absent subscribers so that he may decide whether to cancel the booking or proceed to transmit to the subscribers who are available.

If it has been possible to set up the call with all the subscribers, or if the calling subscriber wishes to transmit despite the absence of one or more of the other subscribers, the operator announces "Call for broadcast set up" and puts the caller in touch with all the called subscribers. The chargeable duration of the call begins from that moment and lasts until the moment when the caller gives the end clear-forward signal. At the end of the call, the operator indicates which, if any, of the subscribers cleared the call during transmission.

The "who is there" key must not be depressed when a call for broadcast is in progress. If one of the called subscribers operates his teleprinter during transmission, the text he writes will reach neither the sending station nor the other called stations. Hence, a subscriber cannot attract the attention of the calling subscriber. He will not be able, by sending from his machine, to interrupt the call sent by the caller to the other subscribers, but the message appearing on his own machine will be mutilated.

Neither the call to the broadcast call position nor the broadcast call itself is recorded on the ordinary meter for internal telex calls of the calling subscriber. On the other hand, for each station receiving the call, the calling subscriber pays:

1. a charge for each three-minute period or fraction thereof; this charge is roughly the same as the ordinary charge for an ordinary call with the called station;
2. a supplementary charge regardless of the duration of the call.

The unit charges are collected for all called stations taking part in a broadcast call at the beginning, and cover the whole call duration, even if one or more subscribers clear during transmission.

Once the setting-up of a broadcast call has begun, the supplementary charge mentioned under 2) applies for all subscribers, regardless of whether the broadcast call is completed or not, or whether all the desired subscribers take part in it or not.

The above provisions apply to the Swedish inland service.

If the broadcast telex call is made to subscribers in the area covered by the Nordic Countries, the charge is made up of:

1. a basic charge per unit, based on the charge for a telex call to the most distant telex exchange in each country,
2. a fixed charge per unit for each telex exchange called, with the exception of the most distant exchange in each country,
3. a fixed supplementary charge for each receiving subscriber regardless of call duration.

However, calls of this type have not yet been exchanged in the inter-Nordic service.

Finally, we would mention that it is impossible to exchange conference telex calls in Sweden or between the Nordic Countries.

## RETRANSMISSION OF MESSAGES

### United Kingdom: Transit with reperforators

*(Contribution S-Com 2/1 — No. 86, June 1959)*

The main overseas telegraph centre of the United Kingdom Administration handles a considerable volume of transit traffic over its public circuits and offers the following comments on the study of the use of tape- or page-printing apparatus in conjunction with the use of reperforators and autotransmitters for the reception and retransmission of public international traffic (at transit centres, where it is at present the normal practice to retransmit traffic).

1. At many transit centres where it is at present the normal practice to retransmit telegrams, it is customary to receive the messages on tape printers. The receiving operator corrects errors in transmission, wherever possible, when gumming the tape on to message forms to avoid unnecessary RQs before passing each message forward for retransmission. Given ideal conditions, the telegrams could be received either alternately or simultaneously on tape reperforators and such tape could be used for retransmission of the message. The use of reperforator reception alone, however, precludes the correction of any errors which may exist at this stage and unless messages are badly

mutilated they would ordinarily be retransmitted directly from the received perforated tape. The correction of errors would then devolve upon the receiving operator at the office of destination.

2. The transit centre may, however, require a legible copy of each message:
  - a) in order to check from the sequence or serial number that all telegrams due to be received in that series have in fact been received and the sequence is intact;
  - b) to provide a record of messages sent on the outgoing circuit in case of request for a complete rerun;
  - c) for accounting purposes.

These requirements can be met by taking a copy of all telegrams sent on the outgoing circuits where one of the advantages of ensuring that each outgoing telegram bears both incoming and outgoing special serial numbers is that the foregoing three requirements can thereby be met.

3. To produce message copies for these purposes by gumming printed tape would clearly be uneconomic and page-printing is to be preferred. It follows therefore that whatever method of reception may be used at the destination offices, it is advantageous to prepare messages for transmission to those offices via a tape relay centre in page-reception form.
4. Public telegrams commence with a serial number or prefix which can easily be recognized as the start of a message. A separate start-of-message signal is not therefore necessary with manual tape relay operation. For automatic operation, however, a uniform start-of-message signal which can be identified by the equipment is required. Public telegrams do not, however, terminate in a uniform manner and a uniform end-of-message signal is necessary to define the end of the message at switching points using manual or automatic continuous tape transfer. At torn-tape relay centres a message-separation signal or sequence is also required. While this could also be used as the end-of-message signal in such a system, it is considered that for international use, where the need may arise to interconnect relay centres having different modes of operation, start- and end-of-message signals should always be provided. Message separation signals which are only required at torn-tape relay centres should be inserted at the outgoing side of the preceding office, transmitting towards the torn-tape centre.
5. It may be expedient in certain circumstances to use page- or tape-printing teleprinters for local terminal traffic and to switch to reperforators for transit traffic. This would enable the perforated tape to be used in the delivery of the local traffic over subscribers' telegraph circuits. The use of reperforator switching signals, as recommended by Study Group 8 would enable this type of switching to be carried out, but whereas the four-letter signals recommended may be necessary in other relations, the same functions can be effected more simply in the public international telegraph service

by using the secondaries of combinations 10 and 4 for the insertion and removal of the reperforator. This is possible on point-to-point circuits because the "bell" and "who are you" signals are not used in the international public service. The United Kingdom Administration has made limited use of these arrangements on point-to-point circuits by bilateral agreements with very satisfactory results. For switched services, using the "answer-back" procedure, these combinations would also be satisfactory so long as it is not required to switch out the reperforator at a point in the telegram at which an answer-back would be objectionable.

6. The operation of message relay systems using perforated tape as the transfer medium involves examination of the tapes by operators to determine the routes over which the messages are to be forwarded. These operations would be considerably simplified in linked systems if each message were prefixed by an internationally agreed destination indicator code which would define both the country and the principal town within the country to which the message should be directed on the tape relay system. Such codes would require to have a logical basis and be readily remembered and interpreted by operators. They should also be in a form which would permit interpretation by automatic means.

## PHOTOTELEGRAPHY

### **Federal Republic of Germany: Abacus for the interworking of phototelegraph apparatus having different drum dimensions**

*(Contribution SG/IV — No. 16, December 1954)*

*Note.* — In the abacus, there are four scales corresponding to the drum diameters used in practice. On the transmitter diameter scale, select the point corresponding to the length of the original in the direction of the axis of the drum. Then, if we now cross horizontally to the drum factor scale, the value obtained must not exceed the receiver drum factor, if the picture is to be transmitted without recourse to splitting-up.

To ascertain the length to which the transmitter drum can be used, we must find, on the transmitter diameter scale, the value ( $L/D$ ) corresponding to the receiver drum factor.

The abacus also provides information about the duration required for picture scanning with indices of 352 and 264 in normal circumstances, and for the permissible variants.



**Australia: Rules for world-wide phototelegraphy**

*(Contribution S-Com 2/1 — No. 119, February 1960)*

At present, C.C.I.T.T. Recommendations relating to phototelegraphy are currently contained in:

- F.80 — Conditions of acceptance and delivery, special services, refunds and rebates, accounting, in the European system.
- F.81 — Avoidance of restrictive conditions of acceptance.
- F.82 — General rules for phototelegraph communications over telephone circuits.
- F.83 — Phototelegraph rates.

The provisions of Recommendation F.80, almost without exception, are now incorporated in the Geneva, 1958, Revision of the Telegraph Regulations, as are the provisions of Recommendation F.83 so far as the European system is concerned, and Recommendation F.81 appears to stand on its own feet. It would seem, therefore, that the principal task will be to revise Recommendation F.82 taking into account the need to cover phototelegraph communications over radio circuits and combined radio/wire circuits.

Australia has had a good deal of experience with phototelegraphy in extra-European relations where phototelegraph operations are concluded over radio or combined radio/wire circuits and offers the attached contribution in the hope that it will facilitate the formulation of draft world-wide rules.

It should be mentioned that:

- a) the draft text proposed by Australia omits the present provisions of Recommendation F.82 that have been incorporated in the Telegraph Regulations, the view being held that the Regulations do not need to be repeated in C.C.I.T.T. Recommendations; and
- b) although the order of presentation has been altered, the substance of the existing Recommendation relating to phototelegraph communications over telephone circuits has not been changed.

**DRAFT REVISION OF ANNEX TO RECOMMENDATION F.82  
RULES FOR PHOTOTELEGRAPH COMMUNICATIONS**

*A. Application*

1. The Rules below are supplementary to the provisions of the Telegraph Regulations and the Telephone Regulations relating to phototelegraphy. (New paragraph.)
2. These Rules are applicable to international phototelegraph communications
  - between public stations,
  - between a public and a private station,
  - between private stations.

(A phototelegraphy installation operated by an Administration (or by a Recognized Private Operating Agency) shall be called a "public phototelegraph station". A phototelegraphy installation operated by a private organization shall be called a "private phototelegraph station".) (Former § A.2 slightly revised.)



3. To facilitate the application of these Rules, Administrations shall designate in each international phototelegraph terminal centre an authority responsible for the international phototelegraph communications. This authority must be able to carry out, or cause to be carried out, all the operations necessary for the establishment of international phototelegraph communications. This authority shall be called the "International Phototelegraph Position" (IPP). (Former § C.8, in part amended.)
4. A booking for a phototelegraph call emanating from a public or private phototelegraph station is routed to (or arrives directly at) the IPP of the country of origin responsible for setting up the international phototelegraph call which has been booked. This IPP then becomes the control IPP for establishing the call. (Former § C.9.)

*B. General provisions for phototelegraph communications over telephone circuits*

5. The telephone circuits used for international phototelegraph transmission shall, as far as practicable, be 4-wire circuits. For phototelegraph communications, they shall normally be disconnected from the switching equipment used for telephone calls. Interconnection of circuits for setting up phototelegraph calls shall be 4-wire to 4-wire, as far as possible, both on the international and national side. (Former § C.7.)

*C. General provisions for phototelegraph communications over radio circuits*

6. In relations where wire circuits are not available for the phototelegraph service, the Administrations concerned shall by mutual agreement assign certain radio circuits for phototelegraphy and allot the frequencies of such circuits taking into account the usual requirements of phototelegraphy and, where appropriate, the telegraph service. These circuits shall be specially marked at terminal patch boards with a view to the protection of the phototelegraph transmissions. (New paragraph.)

*D. Establishment, supervision and clearing of phototelegraph communications over telephone circuits*

7. If the telephone service on the international circuits needed for a phototelegraph communication is by advance preparation, the control IPP shall advise the telephone office responsible for these circuits that a phototelegraph transmission is to take place. The control IPP shall reach agreement with the telephone service on the probable time at which the phototelegraph transmission will take place.

The IPPs shall proceed as follows when establishing an international communication:

- a) the control IPP transmits the following information as quickly as possible to the IPP of destination:
  - designation of the transmitting station,
  - designation of the station of destination, and in addition:
- aa) for communications between public stations:
  - category of phototelegram to be transmitted,
  - date and time when the phototelegram is handed in,
  - probable time at which the phototelegraph call will take place;

- ab)* for communications between a public station and a private station:
    - category of phototelegram to be transmitted, or category of call booked,
    - date and time when the phototelegram is handed in (or date and time of the booking, if the call is booked from a private station),
    - if necessary, indication of the subscriber responsible for paying the charges,
    - probable time at which the phototelegraph call will take place;
  - ac)* for communications between private stations:
    - category of call booked,
    - date and time of booking,
    - if necessary, indication of the subscriber responsible for paying the charges,
    - probable time at which the phototelegraph call will take place;
  - b)* the IPP of destination shall take the necessary steps immediately to advise the phototelegraph station of destination by telephone that a phototelegraph transmission is about to take place;
  - c)* if the called phototelegraph station is in a position to receive the phototelegraph call immediately, the IPP of destination informs the control IPP. The latter designates the circuit to be used for the proposed transmission and then the two IPPs take the necessary steps, in agreement with the telephone service, to establish the communication. Care must be taken to avoid interrupting telephone calls in progress;
  - d)* if the called phototelegraph station is not in a position to receive the call immediately, the IPP of destination fixes the time when the transmission is to take place, taking into account the information received from the receiving phototelegraph station. It then communicates the time fixed to the control IPP which informs the calling station;
  - e)* the control IPP then takes the necessary measures, in agreement with the telephone service, to establish the phototelegraph communication between the stations concerned at the agreed time. (Former § D.10.)
8. If the telephone service involved is demand service, the outgoing IPP shall take an available circuit for the phototelegraph call, after ensuring that telephone calls in progress are not interrupted; it shall use this circuit to call the incoming IPP:
- a)* to establish a phototelegraph call, it shall transmit the data mentioned under D. 7 *a)* above, to the incoming IPP, except for the probable time of the phototelegraph call;
  - b)* the incoming IPP shall take the necessary steps immediately to advise the called phototelegraph station by telephone that a phototelegraph transmission is about to take place;
  - c)* if the called phototelegraph station is in a position to receive the phototelegraph call immediately, the two IPPs shall immediately establish the necessary communication;
  - d)* if the called phototelegraph station is not in a position to receive the call immediately, the IPP of destination fixes the time when the transmission is to take place, taking into account the information received from the receiving phototelegraph station. It then

communicates the time fixed to the control IPP which informs the calling station. The two IPPs immediately clear the international telephone circuit;

- e) at the time agreed upon, the outgoing IPP shall take the necessary steps to establish the phototelegraph communication. (Former § D.11.)
9. The control IPP shall note the time when the phototelegraph communication starts. (Former § D.12.)
10. The control IPP supervises the transmission in progress:
- a) on the transmission (GO) path by means of a device enabling it to check, without risk of interference, that transmission is taking place,
  - b) on the (RETURN) path by means of a device enabling it to listen to service conversation from the phototelegraph receiving station.
- Intervention in the circuits should be avoided after communication has been established, unless such intervention has been requested by one of the IPPs or one of the phototelegraph stations connected. (Former § D.13.)
11. Unless the Administrations concerned decide to the contrary, the terminal IPPs do not come to an agreement on the chargeable duration, since this is determined by the control IPP. (Former § D.15.)

E. *Establishment, supervision and clearing of phototelegraph communications over radio circuits*

12. The IPPs shall proceed as follows when establishing an international connection:
- a) the control IPP prepares and transmits a "rush" service advice to the IPP of destination containing the following information:
    - designation of the transmitting station,
    - designation of the station of destination, and in addition:
      - aa) for communications between public stations:
        - category of phototelegram to be transmitted,
        - date and time when the phototelegram is handed in,
        - the frequencies allocated for the transmission of the phototelegram, i.e., one in the direction from the control IPP and one in the direction from the IPP of destination,
        - probable time at which the phototelegraph transmission will take place;
      - ab) for communications between a public station and a private station:
        - category of phototelegram to be transmitted or category of call booked,
        - date and time when the phototelegram is handed in (or date and time of the booking, if the call is booked from a private station),
        - the frequencies allocated for the transmission of the phototelegram, i.e., one in the direction from the control IPP and one in the direction from the IPP of destination,
        - if necessary, an indication of the subscriber responsible for paying the charges,
        - probable time at which the phototelegraph call will take place;

- ac) for communications between private stations:
    - category of call booked,
    - date and time of booking,
    - if necessary, an indication of the subscriber responsible for paying the charges,
    - probable time at which the phototelegraph call will take place;
  - b) the IPP of destination shall advise the phototelegraph station of destination by the quickest means available that a phototelegraph transmission is about to take place;
  - c) if the called phototelegraph station is in a position to receive the phototelegram, the IPP of destination shall inform the control IPP;
  - d) if the called phototelegraph station is not in a position to receive the phototelegram, the IPP of destination shall fix the time when the transmission is to take place and inform the control IPP accordingly;
  - e) the control IPP shall then take the necessary measures to establish the phototelegraph communication between the stations concerned at the agreed time. (New paragraph modelled on new paragraph D.7.)
13. The control IPP shall note the time when the phototelegraph transmission commences. (New paragraph same as new paragraph D.9.)
14. The control IPP supervises the transmission in progress:
- a) on the transmission (GO) path by means of a device enabling it to check, without risk of interference, that transmission is taking place, and
  - b) on the (RETURN) path by means of a device enabling it to listen to service conversation from the phototelegraph receiving station.

Intervention in the circuits should be avoided after communication has been established, unless such intervention has been requested by one of the IPP's or one of the phototelegraph stations connected. (New paragraph same as new paragraph D.10.)

*F. Establishment, supervision and clearing of phototelegraph communications  
over combined telephone and radio circuits*

15. In relations where telephone circuits are used in combination with radio circuits, the procedures to be observed by IPPs for the establishment of the phototelegraph communication, so far as the telephone service is concerned, shall be as prescribed in section D. The procedures to be observed by IPPs for the establishment of the phototelegraph communication, so far as the radio circuit is concerned, shall be as prescribed in Section E. (New paragraph.)
16. The control IPP shall ensure that the information outlined in paragraph 7 a) of Section D or paragraph 12 a) of Section E, as appropriate, is transmitted to the authority responsible for joining the telephone and radio circuits. This authority is known as the "supervisory station". The supervisory station shall relay the information received to the IPP of destination as quickly as possible. The IPP of destination shall inform the phototelegraph station of destination. (New paragraph.)
17. As far as practicable, the radio and telephone sections of a combined phototelegraph circuit shall be established simultaneously in order to avoid the need for retransmission of the phototelegram from the supervisory station. (New paragraph.)

18. If it is not possible to establish the second section of a combined phototelegraph circuit within a reasonable time after the first section is available, the supervisory station shall receive the phototelegram and retransmit it when the forward circuit becomes available. (New paragraph.)
19. If, for passing service communications, one section of a combined phototelegraph circuit employs speech and the other employs morse, the supervisory station shall repeat the service communications from one section to the other. (New paragraph.)
20. The supervisory station shall take a monitor copy of each phototelegram transmitted over a combined phototelegraph circuit. If the phototelegram received at the supervisory station is satisfactory, and the phototelegram received by the phototelegraph station of destination is not satisfactory, a repeat transmission may thus be given by the supervisory station over the forward circuit only. (New paragraph.)

*G. Special procedures for phototelegraph stations*

21. For each phototelegram to be transmitted from a public phototelegraph station, a narrow tape shall be prepared, comprising the preamble and address (and, if necessary, the signature and special service indications) unless these particulars have been written on the phototelegram by the sender. The tape is transmitted with the phototelegram. (Former § E.16 slightly amended.)
22. The phototelegraph station of destination shall observe the incoming signal and determine whether it is suitable for reception of the phototelegram. (New paragraph.)
23. The phototelegraph station of destination shall advise the IPP of destination promptly of the merit of the signal and whether reception of the phototelegram will commence immediately or, if not, the estimated delay before reception will commence. (New paragraph.)
24. As soon as satisfactory communication is established, the interconnected phototelegraph stations shall proceed to adjust the apparatus and to transmit, in accordance with the instructions of the receiving station, adopting the following order of operations:
  - a) if necessary, agreement on the index of co-operation and speed of transmission, then synchronization adjustment by means of the synchronization frequency;
  - b) adjustment of the white level;
  - c) adjustment of the black level;
  - d) phasing of drums;
  - e) start;
  - f) transmission; and
  - g) stop. (Former § E.17 amended.)
25. If the phototelegram is being transmitted by a private station to a public station, the public station shall ask the private station, if necessary, for information regarding particulars of the preamble and conditions of delivery to the addressee. (Former § E.18.)
26. When appropriate, after consulting the phototelegraph station of destination, the phototelegraph station of origin announces the end of transmission. The two phototelegraph stations shall immediately notify their respective IPPs. The IPPs shall then take the necessary steps to restore the international circuit to normal use. In the case of extension of

an international circuit to a national circuit, the phototelegraph station concerned with the national circuit shall also immediately notify its national authority of the end of transmission. (Former § E.14 amended.)

#### H. *Faulty transmissions*

27. In the case of faulty conditions, the IPP observing these faulty conditions shall immediately make arrangements to clear the fault or make another circuit available. (Former § F.19.)
28. When, after completion of a phototelegraph transmission, it is seen that reception was unsatisfactory, the receiving phototelegraph station shall inform its IPP. If so desired, the receiving phototelegraph station can make a new booking with its IPP for a phototelegraph call and its IPP shall then take immediate action to establish a new phototelegraph communication with the sending station. (Former § F.20.)
29. If the phototelegraph station which receives the unsatisfactory phototelegram and books a new call is a private station, its attention should be drawn to the fact that both calls will be chargeable if the faults in the phototelegram are not due to the telephone or telegraph service. (Former § F.20.)

#### Cable and Wireless Ltd.: Tariffs and cancellations

*(Extracts from contribution S-Com 2/1 — No. 102, June 1959)*

##### *Charging*

The existing method of charging for phototelegrams, based on the division of the surface area of the telegram into strips having an area of 150 sq. cm., should continue to apply as opposed to the European scale of charges based on the length of the photo.

##### *Acceptance and cancellation*

It would seem imperative that a procedure for universal application should be formulated with respect to the acceptance and cancellation of phototelegrams in both the European and extra-European systems.

The proposed rules of procedure which would allow a more rigid control of the phototelegraph service are:

1. In the event of cancellation of a phototelegram after transmission has begun, either at the request of the sender or because of refusal by the addressee to accept the phototelegram, there should be no refundment of charges and normal accounting will be applied.
2. When a circuit has actually been established and cancellation is requested before transmission has begun, a charge equal to one third of the "first-step" charge should be made. This charge is to be retained by the Administration (or Operating Agency) of origin.
3. The same conditions should apply to phototelegrams accepted on a "collect" basis; this to be made clear when "collect" facilities are arranged.

4. Telegraphic or telephonic messages requesting a picture circuit should not contain any information relating to the content of the picture. Such communications should be handled as paid telegraph or telephone traffic.
5. Full charges should apply where a customer requests transmission of a phototelegram despite adverse circuit conditions. The phototelegram should be accepted "at sender's risk" and not more than two reruns should be attempted.

#### **Federal Republic of Germany: Phototelegraph calls on radio circuits**

*(Extracts from contribution S-Com 2/1 — No. 102, June 1959)*

1. The provisions governing phototelegrams in the European system could, as far as most of them are concerned, also be applied to extra-European phototelegrams. In so far as different provisions are needed because of transmission peculiarities on the radio circuit, appropriate provisions should be added to Recommendation F.80. Such additions would more especially be made in the provisions dealing with refund of charges, and accounting procedures.
2. Experience shows that special radio transmitters and receivers have to be continuously available for phototelegraph calls by radio, even when radiotelephone circuits already exist in the particular relation. Hence, in setting up phototelegraph calls by radio, some other method must be chosen than that applied in setting up phototelegraph calls on metallic telephone circuits (see Recommendation F.82). It is our view that the International Telegraph and Telephone Consultative Committee ought to issue a special recommendation, entitled: "Rules for phototelegraph communications using radio circuits".

These would lay down the procedure for transmission by combined wire and radio circuit as well.
3. The radio circuit should always be a channel providing two-way transmission, so that the phototelegraph stations may exchange "service" information before and during transmission of the phototelegram properly so called, and so that the receiving phototelegraph station may at any time ask the corresponding station to break off a phototelegraph transmission if disturbances make the picture useless. If the direction used for the picture does not allow for speech transmission (for example, with F 4 transmission), so that recourse to Morse is necessary, the reverse direction should, as far as possible, be available for speech transmission.

4. To make the radio circuit available for picture transmission, the phototelegraph stations at the ends of the radio circuit shall agree among themselves, and with the radio offices concerned, on the transmission frequencies to be used on the two sides, by the exchange of service advices (XQ). We think that if the phototelegraph station proposes the frequency on which it will announce its presence at the same time as it asks for the radio circuit to be set up, the latter could be made available much more quickly (the stations concerned generally know from experience the wavelengths used for phototelegraph transmissions by radio). In such circumstances, an answer to the service advice XQ would no longer be required, unless the corresponding station uses a frequency different from the one proposed, or if, for any reason, the phototelegram is to be transmitted later.

The Administrations and Recognized Private Operating Agencies concerned must ensure that a service advice XQ is transmitted and delivered to the addressee with all possible despatch.

5. To ensure smooth co-operation between the phototelegraph stations at the ends of the radio circuit, the staff employed therein should, if at all possible, have a good knowledge of English and French. They should, in any event, be thoroughly at home with Morse and with the international abbreviations laid down for service communications in phototelegraphy (see Codes and Abbreviations for use in International Telecommunication, issued by the General Secretariat, International Telecommunication Union, Geneva, Switzerland, 1958).

6. If a phototelegram for transmission by radio does not originate in the place where the radio transmitter is located, or if the addressee of the phototelegram does not live in the place where the radio receiving station is located, a combined radio and wire circuit should, as far as possible, be made available for the phototelegraph transmission. In this way, retransmission, which needlessly prolongs the time taken to transmit a phototelegram and may result in poor reproduction, is no longer required at the junction of wire and radio sections.

In practice, there may be some difficulty in making a combined circuit available when the wire and radio sections are not available at the same time. Above all, care must be taken to ensure that there is no delay in interconnecting the expensive radio section with the wire section.

7. If, on the receiving side, efforts to get simultaneous availability of wire and radio circuits are unsuccessful, we think that retransmission should be used. However, if several pictures have to be transmitted, interconnection between the wire section and the radio section must be prepared for the following transmissions.
8. On the transmitting side, in the case of single pictures, retransmission should always be used, in order to ensure that phototelegraph transmission can begin just as soon as the radio circuit becomes available. In series transmission, the first picture should



also be ready in good time, at the phototelegraph station in the radio transmitter area. During transmission of this picture there will be time to prepare the inter-connection between wire and radio sections for the other transmissions.

9. Experience shows that with phototelegraph transmissions on a combined circuit, it is always useful if the public phototelegraph stations at the two ends of the radio path can be brought into circuit as supervisory stations. Preparations for the phototelegraph transmission should be supervised from there, because such stations have the most experience in traffic with the corresponding stations overseas (see also under 5) and have wide experience of radio traffic.
10. Furthermore, we recommend that the phototelegraph transmission itself should also be received by the supervisory station at the point where the wire and radio sections join. In case of breakdown, the cause (wire or radio section) can then be readily ascertained. Repetition of the transmission may then be limited to one or the other of the two sections.
11. The supervisory station should also send the call sign laid down in the Radio Regulations (Chapter V, Article 17, No. 384) between transmissions and between calls.
12. We are of the opinion that the method of making combined wire and radio circuits available can be applied also when, in series transmission, the various pictures are addressed to different correspondents within the country of destination. The change in address should then be communicated during the last but one transmission period to the supervisory station in the country of destination, so that the latter may ensure, during transmission of the preceding pictures that the wire section is made available for transmission to the new addressee.
13. As regards the *costs* of phototelegraph communications on radio circuits, and of phototelegram transmission by radio, there should be an inquiry similar to that made in connection with the costs of phototelegraph transmissions on wire circuits.
14. It would be logical for the *rates* for extra-European telegrams to be calculated from a tariff having the same basis as Recommendation F.83 for phototelegrams in the European system.
15. We should very much like to see Administrations and Recognized Private Operating Agencies agree among themselves to ensure that a country operating phototelegraph stations in various places shall invariably be considered as a single charging area.  
But they should be allowed to levy a special surcharge in communications with private phototelegraph stations.

16. Accordingly, we would emphasize that the investigations asked of the C.C.I.T.T. in Resolution 1 of the Geneva Telegraph and Telephone Conference should embrace a review of Recommendation F.81.

## LEASE OF TELEGRAPH CIRCUITS

### **Denmark: Study by the Danish Administration of the hours of use of leased international telegraph circuits**

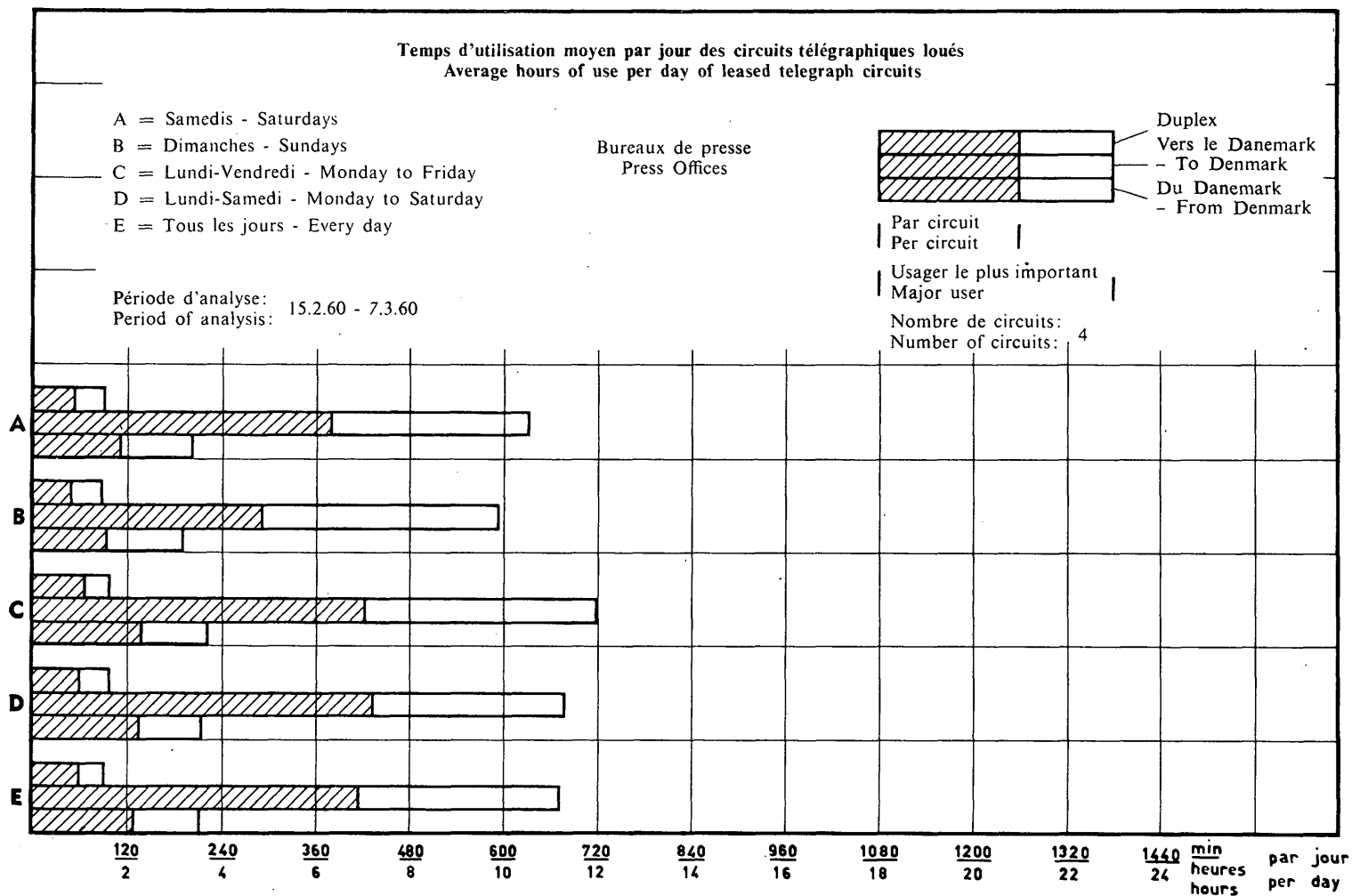
*(Extracts from contribution S-Com 2/1 — No. 133, May 1960)*

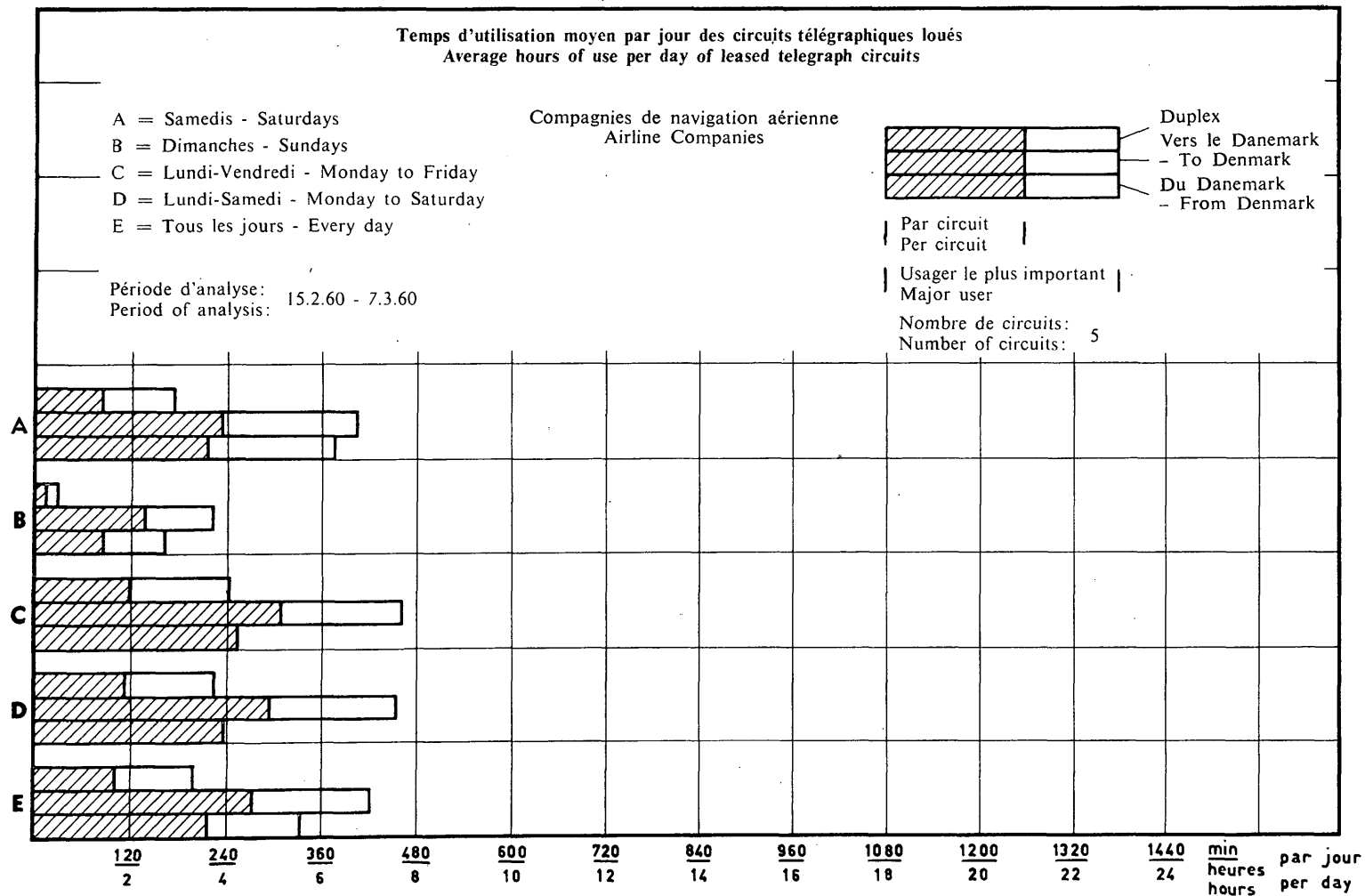
From 15th February to 7th March, 1960, and from 7th March to 28th March, 1960, the Danish Administration arranged for hours of use to be investigated on a number of leased international telegraph circuits. The following groups of users were concerned:

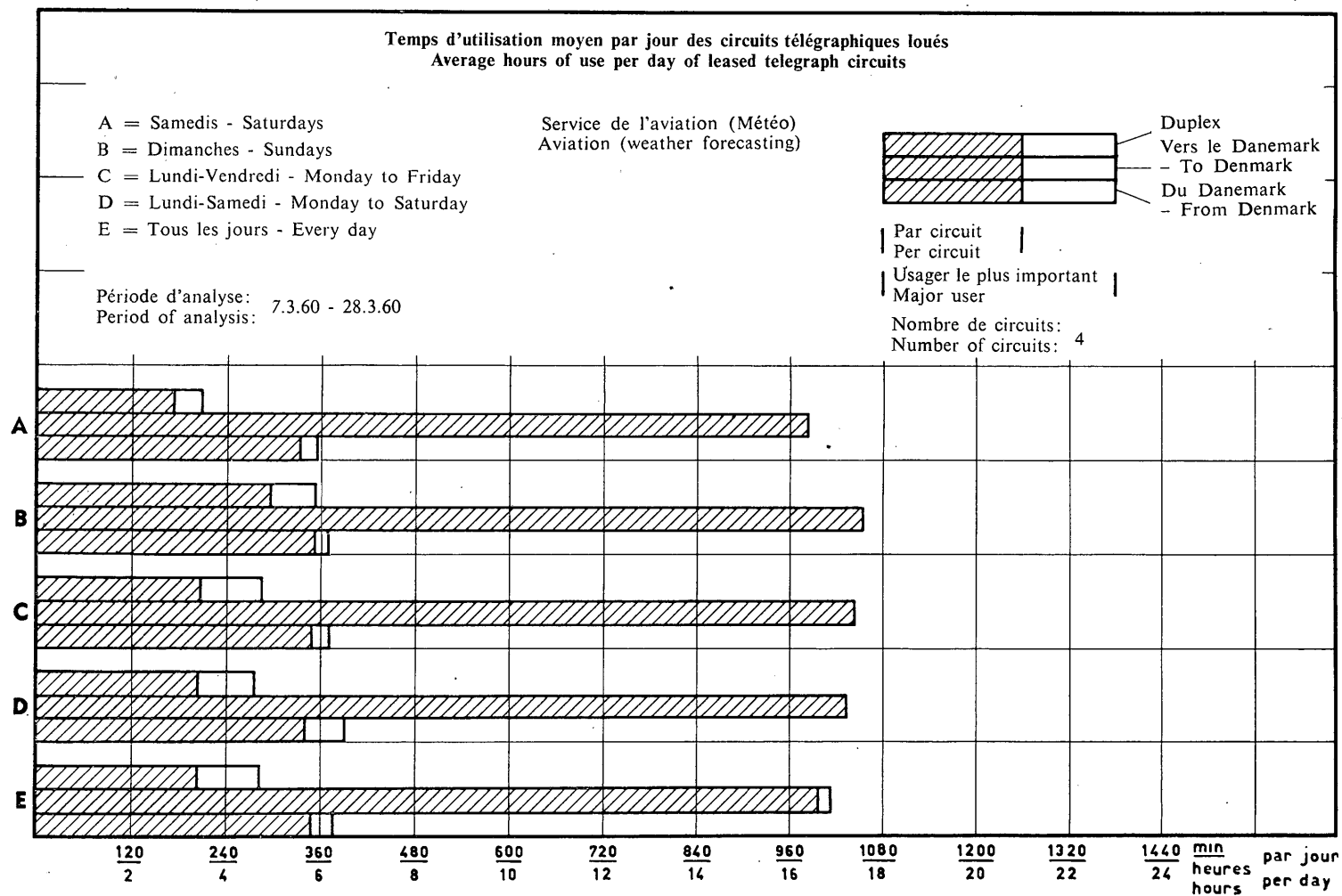
1. Press offices — four circuits,
2. Airline companies — five circuits,
3. Aviation (weather forecasting) — four circuits,
4. Civil aviation — three circuits.

Two of the circuits on which the analysis was made were one-way circuits for traffic to Denmark. The others were arranged for duplex traffic. There are, in Denmark, no leased international telegraph circuits using simplex.

The following annexes show the results.







Temps d'utilisation moyen par jour des circuits télégraphiques loués  
Average hours of use per day of leased telegraph circuits

A = Samedis - Saturdays  
B = Dimanches - Sundays  
C = Lundi-Vendredi - Monday to Friday  
D = Lundi-Samedi - Monday to Saturday  
E = Tous les jours - Every day

Période d'analyse: 7.3.60 - 28.3.60  
Period of analysis:

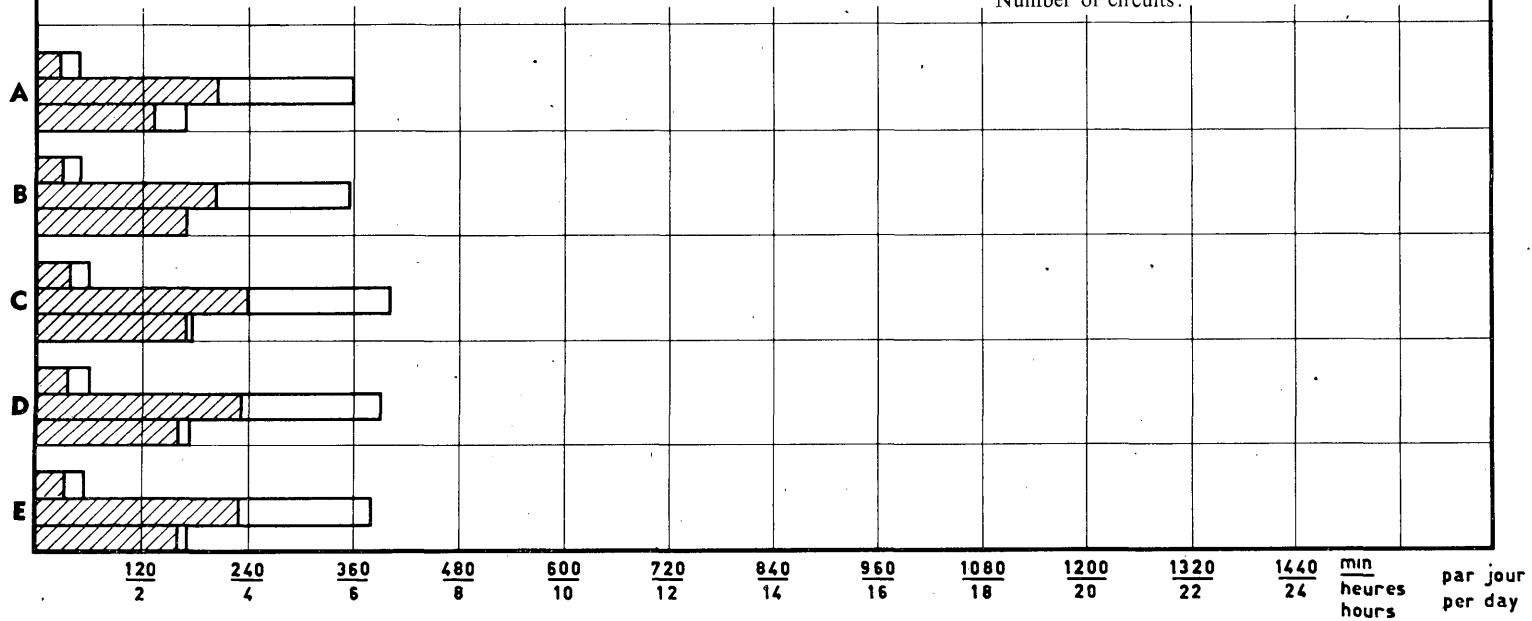
Service de l'aviation civile  
Civil Aviation

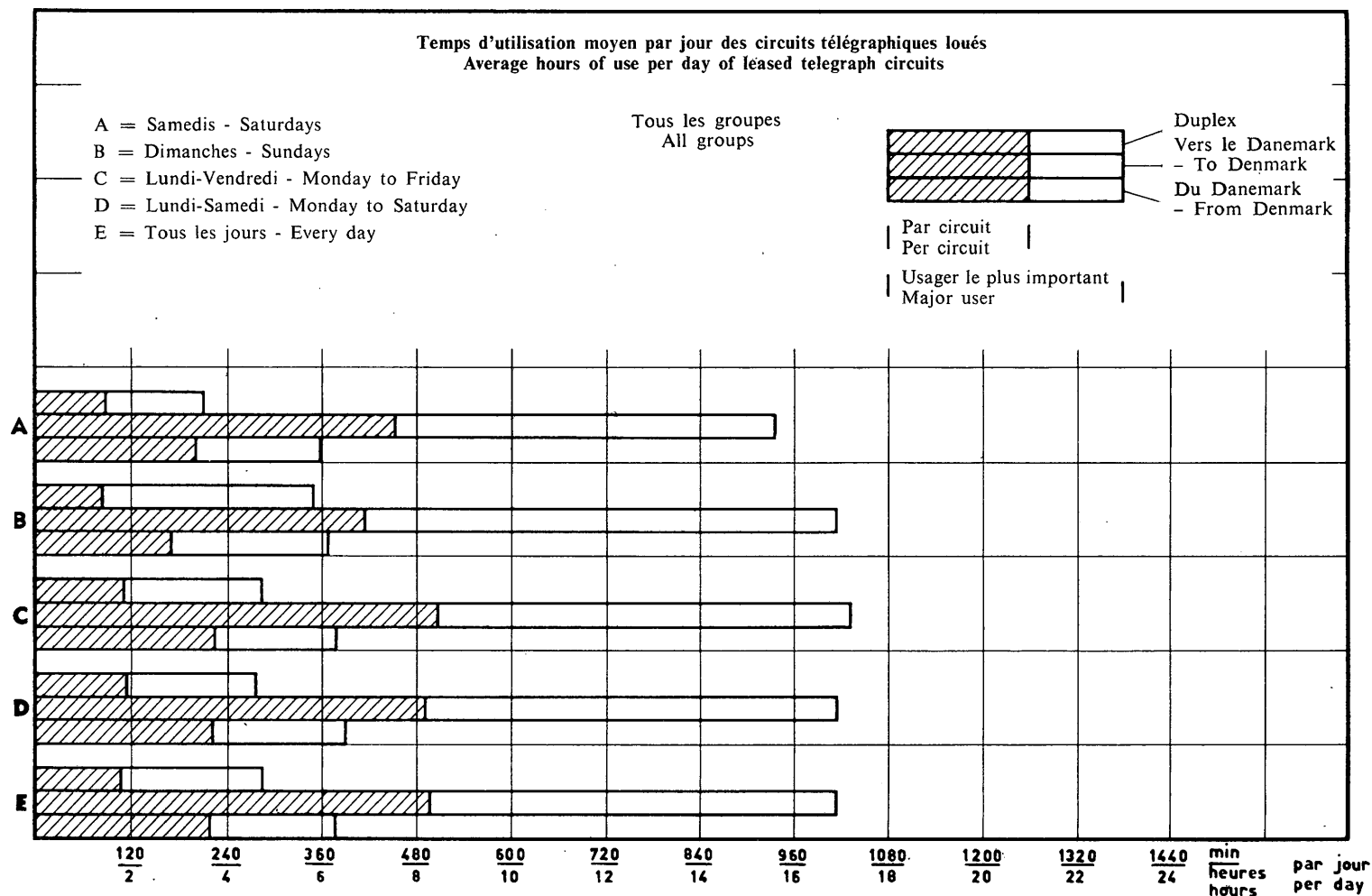
Duplex  
Vers le Danemark - To Denmark  
Du Danemark - From Denmark

Par circuit  
Per circuit

Usager le plus important  
Major user

Nombre de circuits: 3  
Number of circuits:





**Sub-Study Group 2/1: Report on tariff principles  
for leased telegraph circuits**

*(Extracts from document AP II/19 — July, 1960)*

So far, the fees for leased international circuits in Europe have been based on the telex unit charge in the relation concerned and the fixed charge of 80 telex units per day.

One disadvantage of this methods was that in any variation in the telex unit charge in a relation — for example, owing to a change-over from manual to fully-automatic or semi-automatic operation — the application of Recommendation F.70 entailed a variation in the fees for leased circuits.

Many countries, moreover, including relatively large countries, applied the same telex charge throughout their territory in the international service, with the result that circuits of quite different lengths were leased at the same price.

The Sub-Study Group considered that it would be more logical to base leased circuit rentals on the costs of international circuits.

In this connection, the Sub-Study Group possessed the results of the study carried out by the C.C.I.T. on the average cost of a voice-frequency telegraph channel and of a telegraph circuit (in Europe, for channels conforming to C.C.I.T.T. Recommendations).

The results of that study were incorporated in the report of former C.C.I.T. Study Group XI (published on page 374, Supplements to the C.C.I.T. *Violet Book*).

The Sub-Study Group found little difficulty in agreeing that the charge formula should consist of a fixed portion established on the basis of the cost of channel terminal equipments and another portion which would vary with the length of the circuit.

The difficulty is that the majority of Administrations, while they accept the new formula, wish to maintain their present revenue from the terminal shares of circuit rentals; such revenue was established on the basis of various past formulae and varies considerably from one Administration to another. Attempts to arrive at a single formula with standard coefficients for the terminal fee proved fruitless.

Agreement was possible only on the following type of formula:

$$X + Y L$$

Following discussions with those in favour of a formula of this kind which would nevertheless mention the number of units, such as

$$24\,000 (x + y L),$$

agreement was reached on a formula reflecting the average cost elements:

- viz. 1500 gold francs per terminal equipment, and  
900 gold francs per 100 kilometres of circuit per year.

To facilitate future studies regarding channels with a modulation rate other than 50 bauds, the cost elements of which may not be a linear function of those of a 50-baud circuit, the Sub-Study Group decided on the following type of formula:

$$k_1 1500 + k_2 900 \frac{L}{100}$$

per year, in gold francs, L being the crowflight distance in km.



An attempt was made to fix the values of  $k_1$  and  $k_2$ , but many Administrations wanted them to be such that

$$\begin{aligned} k_1 \ 1500 &= X \quad \text{and} \\ k_2 \ 900 &= Y, \end{aligned}$$

$X$  and  $Y$  being the values they wished for their own network.

Agreement on a mean value, which would have obliged some Administrations to lower their rates and others to increase them, was not possible.

It was possible to specify only a minimum value for  $k_1$  ( $k_1 \geq 3$ ) and minimum and maximum values for  $k_2$  ( $3 \leq k_2 \leq 6$ ). Within these limits, Administrations will be free to determine their values for  $k_1$  and  $k_2$ . The fee for the national section (section of the circuit between the international exchange and the circuit extremity in the country) is left open.

It appears, however, that most Administrations do not intend to increase their present rates and would even be prepared to reduce them gradually in some cases. The formula is flexible enough to meet these possibilities.

With regard to transit fees, agreement was reached in Munich on the formula:

$$\begin{aligned} 24\,000 \times 0.12 \times \frac{L}{100} \\ \text{i.e., } 2880 \times \frac{L}{100} \end{aligned}$$

In the new form, this formula would read:

$$3.2 \times 900 \times \frac{L}{100}$$

Here  $L$  represents the crowflight distance between the beginning and end of the transit circuit. In cases where the circuit departs somewhat from a straight line between these two points (to pass through an international transit exchange, for example), the Administration concerned may reckon  $L$  on a basis other than the crowflight distance.

## COST OF TELEX CALLS

### Sub-Study Group 2/3: Cost of a fully automatic international telex call

(July 1960)

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#### I. Bases of calculation

After examining the replies from Administrations to the September 1959 questionnaire for the study of the cost of a fully automatic international telex call in the European system, Sub-Study Group 2/3 adopted the following values for the various headings of the questionnaire which were taken into account in calculating the cost.

#### VALUES ADOPTED

##### *CA: Switching expenses*

##### *Investments*

31.33 Total costs (overheads included) of the equipment (in service and in reserve) in international telex exchanges per incoming semi-automatic switching and for incoming fully automatic switching (subscriber to subscriber) per incoming international telex circuit operated semi-automatically or automatically . . . . . In gold frs. 1400

34.35 Total costs (including overheads) of the equipment (in service and in reserve) in international telex exchanges for outgoing fully automatic switching (subscriber to subscriber) per outgoing international telex circuit operated automatically . . . . . In gold frs. 7000

##### *Switching costs: annual charges*

36. *Charges on capital:* average rate of interest paid on borrowed capital 5%

37. *Depreciation costs:* average length of life assumed for the equipment used for fully automatic switching . . . . . 10 years

	In gold frs.
38. Residual value of fully automatic switching equipment . . . . .	0
39. <i>Annual maintenance costs for switching equipment</i>	
Average annual cost of maintenance (including overheads) per international telex circuit in service:	
a) incoming semi-automatic or fully automatic . . . . .	200
b) outgoing fully automatic . . . . .	500
40. <i>Annual accomodation costs:</i>	
Annual rental, for each international telex circuit in use:	
a) incoming semi-automatic or fully automatic . . . . .	20
b) outgoing fully automatic . . . . .	100

*CB: Annual operating costs*

41. Average cost of providing operating staff (including foremen, supervisors, the staff of specialized accessory services, such as administration, inquiries, accounting, etc., and reserve staff) and including overheads, for each international telex circuit in service:

- |  |      |
|--|------|
| a) semi-automatically or automatically operated for incoming traffic . . | 200  |
| b) automatically operated for outgoing traffic . . . . .                 | 1400 |

This sum of 1400 gold francs takes into account the use of automatic printing or perforating ticket machines by some Administrations.

*CC: Annual costs of an international telex circuit*

Sub-Study Group 2/3 did not have this point for study. In the absence of other bases, the amount of 1500 gold francs, mentioned on pp. 371-375 of the "Supplements" (1956), was taken for the fixed-line costs.

As regards the line costs depending on length, Sub-Study Group 2/3 did not specifically examine the influence of a reduction in the number of minutes taken into consideration. It was left to Sub-Study Group 2/1 to decide whether the influence in question should lead to a modification of the sum of 0.0675 gold franc mentioned in Recommendation F.66.

*CD: Costs of the national section of an international telex call*

42. The costs for the national section are to be added to the costing elements of the national section of the international telex call. Each country should add the amount it deems appropriate for the characteristics of its national network <sup>1</sup>.

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<sup>1</sup> By way of information, the inquiry held in 1960 revealed that the cost for the national section of an international telex call does not exceed 0.12 gold franc per chargeable minute for the countries which answered this questionnaire. (This figure has been mentioned by countries of average size.)

*CE: Number of chargeable minutes per circuit*

43. Average number of chargeable minutes per year and per fully automatic international telex circuit . . . . . 32 000 <sup>1</sup>

*Note.* — When Sub-Study Group 2/3 examined the replies given to point 43 of the questionnaire, regarding the average number of chargeable minutes per year and per *semi-automatic* telex circuit, it noted that the number of chargeable minutes per circuit has gone down considerably as compared with the estimates made by the C.C.I.T. in 1956.

The question of revising the costing of semi-automatic telex calls was not referred to Sub-Study Group 2/3, while the inquiry carried out in 1960 was only a partial inquiry in which replies were received only from Administrations that were essentially concerned by fully automatic telex operation. Hence, Sub-Study Group 2/3 was unable to draw final conclusions concerning a revision of the values indicated in 1956 for the costing of semi-automatic telex calls.

Sub-Study Group 2/3 draws the attention of Sub-Study Group 2/1 to the fact that it is however probable that the value of 40 000 chargeable minutes for a semi-automatic circuit is now too high. It suggests that the costs should be worked out on the basis of a lower figure — perhaps even as low as 30 000 or 32 000 chargeable minutes.

## II. Calculation of the cost of a telex call per chargeable minute

This cost is the sum of:

- circuit costs;
- charges on the capital cost of switching equipment;
- Maintenance and accomodation cost of switching equipment;
- operating costs;
- depreciation cost of switching equipment;
- cost of switching the call to/from the international terminal exchange through the inland network to/from the subscriber.

### *Symbols:*

- O annual operating costs;
- E capital invested (in gold francs);
- e maintenance and accomodation costs per annum (in gold francs);
- r rates of interest (as %) ( $\frac{5}{100}$  in this case);
- v length of life, in years;
- N number of chargeable minutes per telegraph circuit per year.

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<sup>1</sup> Figure obtained from statistics established by impulse counts.

Cost calculations can be shown in the form of annual charges by summarizing the various items, and the cost per minute can be deduced therefrom. The following table gives these results, which are compared with those established by the C.C.I.T. in 1956.

	S-COM 2/3 value (1960)		C.C.I.T. value (1956)	
	Outgoing	Incoming	Outgoing	Incoming
Interest = $\frac{E \times 5}{100}$	350	70	300	60
Maintenance = e	600	220	500	220
Depreciation = $\frac{E}{10}$	700	140	600	120
Operation = O	1 400	200	1 400	200
Line end	1 500	1 500	1 500	1 500
Total gold francs	4 550	2 130	4 300	2 100
Number of minutes N	32 000	32 000	40 000	40 000
Cost per minute	0.1420	0.0666	0.1075	0.0525

The calculations can also be shown in the form appearing on pages 379 and 380 of the "Supplements" (1956), breaking down the following costing elements into amounts per chargeable minute:

1. for the outgoing exchange,
2. for the incoming exchange,
3. for the circuit.

1. *Automatic service (outgoing exchange)*

$$O = 1\,400 \text{ (see reply 41 b),}$$

$$E = 7\,000 \text{ (see reply 34-35),}$$

$$N = 32\,000 \text{ (see reply 43),}$$

$$e = 600 = 500 + 100 \text{ (see replies 39 b and 40 b),}$$

$$v = 10 \text{ (see reply 37).}$$

*Fixed circuit costs*

$$\text{for one end } \frac{1\,500}{32\,000} = 0.0469$$

*Charges on capital costs (interests)*

$$\frac{Er}{N} = \frac{7\,000}{32\,000} \times \frac{5}{100} = 0.0109$$

*Maintenance costs*

$$\frac{e}{N} = \frac{600}{32\,000} = 0.0187$$

*Depreciation costs*

$$\frac{E}{v} \times \frac{1}{N} = \frac{7\,000}{10} \times \frac{1}{32\,000} = 0.0218$$

*Operating costs*

$$\frac{O}{N} = \frac{1\,400}{32\,000} = 0.0437$$


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For one minute of call, per outgoing exchange = 0.1420

2. *Automatic service (incoming exchange)*

O = 200 (see reply 41 a),

E = 1 400 (see reply 31.33),

N = 32 000 (see reply 43),

e = 220 = 200 + 20 (see replies 39 a and 40 a),

v = 10 (see reply 37).

*Fixed circuit costs*

$$\text{for one end } \frac{1\,500}{32\,000} = 0.0469$$

*Charges on capital costs (interests)*

$$\frac{Er}{N} = \frac{1\,400}{32\,000} \times \frac{5}{100} = 0.0022$$

*Maintenance costs*

$$\frac{e}{N} = \frac{220}{32\,000} = 0.0069$$

*Depreciation costs*

$$\frac{E}{v} \times \frac{1}{N} = \frac{1\,400}{10} \times \frac{1}{32\,000} = 0.0044$$

*Operating costs*

$$\frac{O}{N} = \frac{200}{32\,000} = 0.0062$$


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For one minute of call, per incoming exchange = 0.0666

**PART III**

**GENERAL TARIFF PRINCIPLES  
COSTING STUDIES — LEASE OF CIRCUITS**

**Questions entrusted  
to Study Group III**

### **Question 1/III**

*(New question)*

How should the costs and services offered be assessed when rates are fixed for the different telecommunication services?

#### *Comments*

This question was considered on several occasions in 1960 during the meetings of Study Group 2 and the Organization Committee of the C.C.I.T.T.; it is highly desirable that it should be set for study very soon, particularly for the information of new or developing countries.

### **Question 2/III**

*(Former Question 43 of Sub-Study Group 2/3 studied in 1958/1960)*

#### **Part 1**

Costing of international telex calls.

(This study should be finished before 1 April 1962, see questionnaire for the costing study shown in the Annex below.)

#### **Part 2**

Resulting proposals for amending Recommendation F.66.

*Note.* — Part 2 is also Question 15/I of Study Group I.

#### **Annex**

(to Question 2/III)

#### **Questionnaire for the costing study of an international telex call, in the European system**

##### *General comments*

1. This questionnaire is aimed at finding average cost price factors of an international telex call. Subsequently, based on these average cost price factors, proposals will be made for tariff factors to be recommended for the international telex service. The conversion of the average cost price factors into proposed tariff factors will be studied later by the competent Study Groups of the C.C.I.T.T.

(Question 2/III)



2. For the time being, this enquiry is limited to the European telex service.
3. These questions have been devised by a working party composed of Messrs. Besseyre, Bornemann, Chapuis and Perry.
4. The average cost of an international telex call depends:
  - a) on the average cost of the telegraph circuit used for the call. This cost will itself depend on:
    - the average cost of the telephone circuits used to carry voice-frequency telegraph channels;
    - the average cost of equipment for telegraph transmission on these carrier circuits, with especial reference to voice-frequency telegraph panels;
    - the average number of voice-frequency telegraph channels used to make up a voice-frequency telegraph circuit during an international telex call;
  - b) on the average cost of telex switching, which itself depends on:
    - the average cost of switching in an international centre;
    - the average cost of switching in a national centre;
    - the average number of national centres used to set up an international telex call.
5. The following difficulties arise with regard to the average cost of the telephone circuits carrying voice-frequency telegraphy:
  - a) These last few years, the C.C.I.T.T. has made no inquiry into the cost of the telephone circuits. It would go beyond our terms of reference to investigate this point here.
  - b) There are Telegraph Administrations which have no carrier-current circuits, but have to lease circuits belonging to telephone concerns. Here, then, rentals will take the place of costs as a matter for consideration.
  - c) Besides which, past inquiries have shown that circuit costs do not generally exceed switching expenses in a telex circuit of average length. Hence it would seem enough to assess total circuit expenses for international adoption, in the light of the experience acquired by Administrations and without detailed calculation (see Part A of the questionnaire).
6. Answers received from Administrations will be treated as confidential, as will the conclusions arrived at by the Working Party of Study Group III of the C.C.I.T.T. which will decide on the average component costs in the light of these answers. Only Study Group proposals dealing with charging components will be published. The considerations which led to transformation of cost components into charging components will be treated as confidential too.

*Special comments*

1. The Supplements to the documents of the VIIIth Plenary Assembly of the International Telegraph Consultative Committee (May, 1957), page 361 et seq., contain material dealing with the average costs of a telex call.
2. Figures for costs supplied in response to the questions hereinafter should be expressed in both gold francs and national currency.
3. Figures equipment costs should be present prices for the equipment when new.
4. Investment expenses will not include the value of buildings or land. It would seem better to assess the cost of premises in the form of an annual rental, under the item for annual expenditure, in view of the fact that voice-frequency equipment and telex switching equipment generally occupy parts of buildings used for general telegraphy or for other services as well.
5. In calculating staff costs, account will be taken of salaries and all allowances, and of costs borne by management, such as contributions to retirement pensions, insurance contributions, free medical care, and such like.

Besides which, supervisory staff must be allowed for, together with staff assigned to special duties (secretaries, information clerks, complaint handlers, statisticians and accountants dealing with international accounts), replacements and reinforcements.

6. Administrations overheads will be included in the figures provided. These overheads comprise the cost of central services, investigations, staff training, publicity, taxation, etc.
7. The inquiry required relates to the whole of an international telex call, including prolongation of the call on national systems.
8. Some of the figures adopted in 1957 for calculation of depreciation have been used again as replies to the appropriate items in the questionnaire on the grounds that a fresh inquiry into these particular points appeared superfluous.

**A. Questions relating to the annual average cost of telephone circuits  
used to carry voice-frequency telegraphy**

These costs take the form  $A + B \frac{L}{100}$  km, L being the length of the circuit in kilometres, as the crow flies, rounded off to the nearest multiple of 100.

1. Give the figures (in gold francs) assumed by you for A and B:

	A	B	Year to which the figures for A and B relate
— audio-frequency circuit . . . . .	.....	.....	.....
— symmetric pair cable carrier circuit . . . . .	.....	.....	.....
— coaxial-cable carrier circuit . . . . .	.....	.....	.....
— open-wire carrier circuit . . . . .	.....	.....	.....

*Remark.* — What we are asking is the cost of a circuit being used; that is to say, the total circuit costs (including the costs of reserve circuits) must relate to circuits in use.

*Be it particularly observed* that what is wanted here is the actual cost and not the prices used as charging components, such as those mentioned, for telephony, in Recommendation E.51.

2. In 1961, what percentage of voice-frequency circuits (in use and in reserve) were set up

	National system	International system
— on audio-frequency support circuits . . . . .	.....	.....
— on symmetric pair cable carrier circuits . . . . .	.....	.....
— on circuits on coaxial cable systems . . . . .	.....	.....
— on circuits on open-wire carrier systems . . . . .	.....	.....



(You should bear in mind labour, expendable material, and costs of electricity.)

Notes B.I. *a)* and B.I. *b)* apply to this question 8 too.

### Premises

9. What, do you think, is the annual rental for a voice-frequency international telegraph circuit terminal (transmission and reception)? . . . . .

*Remarks.* — You should include:

- capital costs and depreciation of premises,
- upkeep costs,
- cleaning, lighting, heating, watchmen, etc.

Notes B.I. *a)* and B.I. *b)* apply to this question 9 as well.

*Share in the annual cost of the carrier telephone circuit*

10. How many voice-frequency telegraph circuits are there, on the average, per telephone circuit carrying voice-frequency telegraphy, in your national system? . .

*Note.* — You should make allowance here for the total number of channels installed (channels used, service channels, and relief channels).

- 10 bis. Same question, for channels in international<sup>1</sup>  
groups . . . . .

11. What is the average percentage of reserve telegraph channels (including service channels) in the national system? . . . . .

This should be calculated by comparison between the number of reserve channels (including service channels) and the total number of channels.

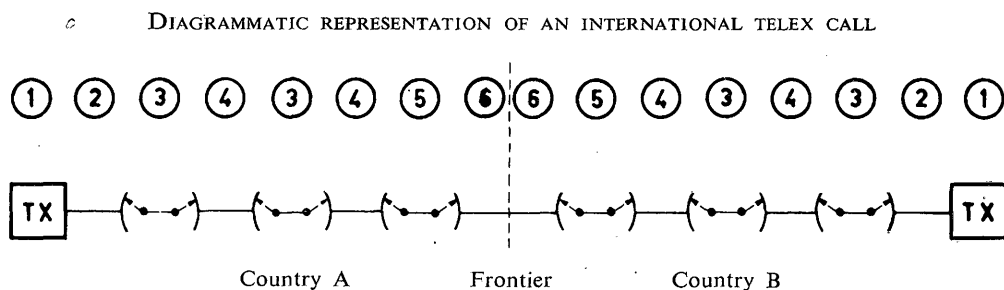
(Thus, as an example, forty reserve and service channels for sixty channels in use represent a reserve of forty per cent in relation to the total number of channels.)

- 11 bis. Same question, for channels in international groups. . . . .

[illegible]

### C. Questions for calculation of the cost of an international telex call

(For terminology, see the following diagram of an international telex call.)



1. Telex subscriber's set
2. Connecting line
3. Telex switching centre in the national system
4. Telex trunk circuit
5. International telex switching centre
6. International telex circuit

#### CA. Investments in switching centres

- Remarks.* — 1. Equipment should be assessed as if new at the present time.
2. You should make allowance for charging devices at telex positions and their teleprinters in switching centres. You should also make allowance for joint equipment (distribution frames, cabling, power sources measurement devices supervisor's desks).
  3. Include overheads.
  4. You can group circuits of different kinds together by giving an average when all these various kinds are similarly equipped.

12. What is the average cost of constructing and installing an equipped trunk circuit in your national system in a *national switching centre* (circuit in use or in reserve) per circuit extremity:

- a) for a circuit manually operated? . . . . .
- b) for a circuit semi-automatically operated? . . .
- c) for a circuit with fully automatic operation? .

13. What is the average additional cost of construction and installation in an *international telex switching centre*, for an equipped international telex circuit (in use or in reserve), in relation to the corresponding costs in a national switching centre :

National currency	Gold francs

(Question 2/III)

		National currency	Gold francs
a) for an international circuit manually operated?			
b) for an international circuit manually operated at arrival? . . . . .			
c) for a circuit semi-automatically operated at departure? . . . . .			
d) for a circuit semi-automatically operated at arrival? . . . . .			
e) for a circuit operated fully automatically, at departure? . . . . .			
f) for a circuit operated fully automatically, at arrival? . . . . .			
<i>Annual charges for redemption of investments in switching centres</i>			
14. <i>Capital expenses</i>			
What is the average rate of interest you grant on loans? . . . . .	5%		
(give mean for the last three years)			
15. <i>Depreciation</i>			
What do you take to be the average life for:			
a) manual switching equipments? . . . . .	10 years		
b) semi-automatic switching equipments? . . . . .	10 years		
c) fully automatic switching equipment? . . . . .	10 years		
16. If you provide for a residual value in calculating depreciation on equipment, what is the percentage relationship between this residual value and the initial value:			
a) for manual switching equipment? . . . . .	0		
b) for semi-automatic switching equipment? . . . . .	0		
c) for fully automatic switching equipment? . . . . .	0		
17. What is the relation between the number of reserve equipments to the number of equipments installed (in use plus those in reserve):			
a) in a national system manual switching centre?			
b) in a national system automatic switching centre?			
c) in an international manual switching centre? . . . . .			
d) in an international semi-automatic and automatic switching centre? . . . . .			







	National currency	Gold francs
26. Do you consider that the fixed subscription fee meets the cost of the subscriber's branch line and of the equipment installed at his home? . . . . .		
27. How many chargeable minutes of call are there per year, for an international telex circuit:		
a) manual outgoing? . . . . .		
b) manual incoming? . . . . .		
c) semi-automatic outgoing? . . . . .		
d) semi-automatic incoming? . . . . .		
e) fully automatic outgoing? . . . . .		
f) fully automatic, incoming? . . . . .		
<i>Remark:</i>		
1. If you do not possess figures for incoming traffic, you should ask the outgoing Administration for them.		
2. Switched international transit calls will be counted:		
— on departure, in the country of origin,		
— on arrival and departure, in the transit country,		
— on arrival, in the country of destination.		
3. In working out your answer to question 27, you should assume that the number of circuits in use means the average number of circuits in use during the annual period considered for traffic assessment.		
28. How many chargeable minutes are there, on the average, per year and per trunk circuit between switching centres in your <i>national system</i> :		
a) outgoing manual? . . . . .		
b) outgoing semi-automatic? . . . . .		
c) outgoing automatic? . . . . .		
29. How many international telex circuits were there, by the end of 1960, ending in your country? . . . . .		
30. In 1960, how many chargeable outgoing international telex calls left your country? . . . . .		

*Subsidiary question*

31. Supply a chart showing your inland telex rates.

**Question 3/III**

*(This question is a continuation of Question 35 of Sub-Study Group 2/1 and supplementary Question G of Sub-Study Group 2/2 studied in 1958/1960)*

Conditions for the lease of a communication circuit.

**Annex**

(to Question 3/III)

**Questionnaire concerning conditions for the lease of a telecommunication circuit**

What should be the methods of charging for, and making available, telecommunication circuits leased to certain users?

*Remark.* — In view of the close relationships which now exist in the make-up and nature of telecommunication circuits and channels used for the transmission of code signals (standardized or not), pictures, speech, information or programmes for broadcasting, data, etc., it seems indispensable to study simultaneously the conditions under which such telecommunication circuits or channels (hereinafter called "leased circuits") can be withdrawn from the general network of Administrations and Recognized Private Operating Agencies and to be made exclusively available to certain users under lease. The aim of the study of this question is to draw up one or more draft recommendations intended to replace the various recommendations now dealing with the lease of telegraph circuits, telephone circuits, etc. For this purpose, Administrations and Recognized Private Operating Agencies are requested to reply to the following questionnaire:

1. Should the principles governing charging for, and the availability of leased circuits, be the same for all types of telecommunication circuits?

If not, how should leased circuits be separated into categories? What should be their special characteristics and what principles should govern the charges for, and the availability of circuits in each category?

2. Should a leased circuit be used by one user only? If not, what relations should there be between the various parties to the lease contract: partners, with similar or complementary activities, etc.?

Is it permissible for a leased circuit to be used by third parties outside the contract (either for direct transmission or for the handing-in of messages for transmission)?

3. Is it permissible for a leased circuit to be used for various categories of traffic, for instance, telegraphy and telephony; if so, what categories do you propose?

Can such use be simultaneous or must it be alternative?

4. What charging principles do you propose? (lump sum based on the charge for a similar public service, lump sum based on distance, lump sum based on cost, lump sum based on the frequency band available, charging in accordance with traffic metering, combination of these principles or any other principle)?

For a given type of circuit, should the charges vary with the nature of the traffic?

(Question 3/III)

5. Should consideration be given only to the international part of the circuit, i.e. the path connecting the international exchanges of the two terminal countries?

If not, on what should the charges be based for the extension circuits beyond the international exchange in the national network of each terminal country?

6. a) Is there a need for a special definition of a leased transit circuit? If so, what should it be?

b) On what principles should transit charges be based?

7. Should provision be made for:

a) a lease on the basis of permanent circuit availability limited to a short period (less than a month, for instance)?

b) lease with restricted use (part of a day only)?

If the reply to a) and b) is affirmative, what bases do you propose for calculating the rental and to what special conditions, if any, should such a lease be subject (e.g., minimum lease period, special rates for busy or slack periods, surcharge for connection)?

8. Should special conditions be laid down for the manual or automatic transmission of the traffic of one or more leased circuits towards one or more other leased circuits or towards public networks, and vice versa?

9. Should there be reduced charges for the lease of a group of circuits? Should there be a definition of "group of circuits" (for instance, two or more circuits operated between the same terminal points; two or more circuits with common terminals but operated in different relations)?

10. Should special conditions be laid down for circuits on which the information is transmitted in one direction only?

11. What conditions should be laid down when a circuit has to have special qualities or needs special maintenance?

12. What should be the rules for:

a) collecting charges from users,

b) preparing accounts between Administrations and or Recognized Private Operating Agencies.

13. What compensation do you propose for faults or interruptions on circuits?

N.B. — In their replies to the above questions, Administrations and Recognized Private Operating Agencies are requested to say whether the views expressed apply to:

— a continental (or regional) system,

— a world-wide (or intercontinental) system,

— certain special types of circuit (radio links, submarine cables, underground cables, etc.).

**Question 4/III**

*(New question)*

Study of the economic development conditions for telecommunications in different countries of the world.

*Note.* — This is a background question designed to provide Administrations and Recognized Private Operating Agencies with detailed information about the conditions in various countries as regards, for example, the proportion of a national investment plan or of an economic budget expressed in terms of national revenue set aside for telecommunications. This study should in particular save the experts of the United Nations Expanded Programme of Technical Assistance the trouble of recommencing this study every time they examine the conditions existing in a given country and try to compare them with the conditions existing in countries in which telecommunications are more developed.

**Question 5/III**

*(Former Question 36 of Study Group 2, studied in 1956/1960)*

What rules have been followed or what action has been taken by your Administration to obtain co-ordination of telephone and telegraph (including telex) operation and tariffs in the *inland system of your country*?

What principles or rules might, in your opinion, be adopted with a view to obtaining *good co-ordination of international telephone and telegraph operation and tariffs*?

*Note.* — This question was raised by the Ist Plenary Assembly of the C.C.I.T.T. with a view to obtaining as much information as possible about the co-ordination of operation and tariffs between telegraph and telephone services in a given country, and to provide documentation giving:

- the opinion or position of each Administration with regard to such co-ordination;
- the experience each Administration may have gained in its own national service with regard to co-ordination.

**SUMMARY**  
**of the questions entrusted to Study Group III**

No.	Brief description	Comments
1/III	Costs and services offered when rates are fixed.	Preliminary study by the "Costing" Working Party.
2/III	Costing of international telex calls.	
3/III	Conditions for the lease of a telecommunication circuit.	Continuation of Question 35 of Sub-Study Group 2/1 and supplementary Question G of Sub-Study Group 2/2 studied in 1958-1960.
4/III	Proportion of an economic budget (expressed in terms of national revenue) set aside for telecommunications.	
5/III	Co-ordination of international telephone and telegraph operation and tariffs in the different countries.	Continuation of Question 36 of Study Group 2 in 1956-1960.

