

This electronic version (PDF) was scanned by the International Telecommunication Union (ITU) Library & Archives Service from an original paper document in the ITU Library & Archives collections.

La présente version électronique (PDF) a été numérisée par le Service de la bibliothèque et des archives de l'Union internationale des télécommunications (UIT) à partir d'un document papier original des collections de ce service.

Esta versión electrónica (PDF) ha sido escaneada por el Servicio de Biblioteca y Archivos de la Unión Internacional de Telecomunicaciones (UIT) a partir de un documento impreso original de las colecciones del Servicio de Biblioteca y Archivos de la UIT.

(ITU) للاتصالات الدولي الاتحاد في والمحفوظات المكتبة قسم أجراه الضوئي بالمسح تصوير نتاج (PDF) الإلكترونية النسخة هذه والمحفوظات المكتبة قسم في المتوفرة الوثائق ضمن أصلية ورقية وثيقة من نقلاً

此电子版(PDF版本)由国际电信联盟(ITU)图书馆和档案室利用存于该处的纸质文件扫描提供。

Настоящий электронный вариант (PDF) был подготовлен в библиотечно-архивной службе Международного союза электросвязи путем сканирования исходного документа в бумажной форме из библиотечно-архивной службы МСЭ.

### THE INTERNATIONAL TELEGRAPH AND TELEPHONE CONSULTATIVE COMMITTEE

(C.C.I.T.T.)

# IIIrd PLENARY ASSEMBLY

GENEVA, 25 MAY - 26 JUNE 1964

# **BLUE BOOK**

## **VOLUME II**

General Tariff Principles Costing — Lease of Circuits

**Telephone Operation and Tariffs** 

**Telegraph Operation and Tariffs** 

Published by THE INTERNATIONAL TELECOMMUNICATION UNION 1965

## THE INTERNATIONAL TELEGRAPH AND TELEPHONE CONSULTATIVE COMMITTEE

(C.C.I.T.T.)

# IIIrd PLENARY ASSEMBLY

GENEVA, 25 MAY - 26 JUNE 1964

# **BLUE BOOK**

## **VOLUME II**

General Tariff Principles Costing — Lease of Circuits

**Telephone Operation and Tariffs** 

**Telegraph Operation and Tariffs** 

Published by THE INTERNATIONAL TELECOMMUNICATION UNION



# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

## CONTENTS OF THE C.C.I.T.T. BOOKS STILL APPLICABLE FOLLOWING THE THIRD PLENARY ASSEMBLY (1964)

#### A. RED BOOK

Volume V	- Recommendations (Series P) and Questions (Study Group XII) relative to tel	e-
	phone transmission performance and apparatus	

Volume V bis — Additions and amendments to Volume V following the IIIrd Plenary Assembly.

#### **B. BLUE BOOK**

- Volume I Minutes and reports of the IIIrd 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 Working Groups for the period 1964-1968.
  - Summary Table of questions under study in 1964-1968.
  - Recommendations (Series A) relative to the organization of the work of the  $\prime$  C.C.I.T.T.
  - Recommendations (Series B) and Questions (Study Group VII) relative to means of expression.
- Volume II Recommendations (Series D) and Questions (Study Group III) relative to the lease of circuits.
  - Recommendations (Series E) and Questions (Study Group II) relative to telephone operation and tariffs.
  - Recommendations (Series F) and Questions (Study Group I) relative to telegraph operation and tariffs.
- Volume III Recommendations (Series G, H and J) and Questions (Study Groups XV, XVI and C) relative to line transmission.
- Volume IV Recommendations (Series M and N) and Questions (Study Group IV) relative to transmission maintenance of international lines circuits and chains of circuits.
- 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 and XIV) relative to telegraph technique.
- Volume VIII Recommendations (Series V) and Questions (Study Group A) relative to data transmission.
- Volume IX 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.

\* \*

Each volume contains extracts from contributions received dealing with the subject of the volume concerned and the interest of which is such as to warrant publication.

## PART I

# GENERAL TARIFF PRINCIPLES COSTING STUDIES — LEASE OF CIRCUITS

## 1. Series D Recommendations

2. Questions entrusted to Study Group III

3. Supplements

## SERIES D RECOMMENDATIONS

### LEASE OF CIRCUITS

#### CONTENTS OF SERIES D RECOMMENDATIONS

Recommendation	Title	Pages
D. 1	Lease of international telecommunication circuits for private service	5
D. 2	Leasing of intercontinental circuits for private service	13
D. 3	Lease to Broadcasting Organizations of international circuits for programme transmission	14
D. 5	Costs and value of services rendered as factors in the fixing of rates	14

#### **RECOMMENDATION D.1**

### LEASE OF INTERNATIONAL TELECOMMUNICATION CIRCUITS FOR PRIVATE SERVICE

#### Preamble

This recommendation relates to the international circuit itself (circuit between two international centres, or two centres regarded as such for the purposes of this recommendation). Charging for any extensions of this circuit on the territory of the two terminal countries concerned is, where appropriate, subject to special regulations provided for it by the Administrations \* of those countries.

This recommendation applies to circuits used:

- a) at the same time in both directions;
- b) alternately in either direction,
- c) in a single direction.

<sup>\*</sup> or recognized private operating Agencies.

This recommendation does not apply to unidirectional circuits for programme or television transmission.

Part I — General provisions.

Part II — Conditions of charging for a single lease.

Part III — Multiple-user lease.

### Part I. — GENERAL PROVISIONS

#### 1. Definition — General principles

1.1 The international telecommunication leased circuit service consists in making an international telegraph or telephone type circuit available to a user for his exclusive use.

1.2 When the lease of a circuit has been granted, the connection between the terminal stations is set up once and for all for the period of the lease in such a way that the international centres at the extremities of the leased circuit do not need to intervene. However, arrangements must be such as to enable the appropriate staff at these centres to supervise as freely as is thought necessary.

Moreover, it is desirable that the equipment on which the leased circuits terminate in the user's premises should not allow them to be used in conditions other than those authorized.

1.3 Such a service is normally authorized in international relations only when telecommunication circuits remain available after the needs of the public telephone, telex, or telegraph services have been satisfied.

1.4 Administrations \* reserve the undisputed right to withdraw leased telecommunication circuits if in their opinion this is required in the general interest. If necessary such withdrawal may be made at very short notice, without Administrations \* having to observe the period of notice prescribed in 4.2 below.

#### 2. Conditions of acceptance

2.1 Within the limits fixed by Administrations \* in each case, a leased circuit may be used only to exchange calls or signals relating solely to the interests of the renter or renters; these calls or signals may not originate from third parties, nor shall they be addressed to third parties.

2.2 Except where an Administration \* has decided otherwise, the retransmission of traffic from one leased circuit to another or interconnection of leased circuits is allowed, provided that both the circuits concerned are leased by the same renter.

In the event of an interconnection between leased circuits, Administrations \* are not obliged to guarantee the quality of transmission over such a connection.

<sup>\*</sup> or recognized private operating Agency(ies).

2.3 In principle, the interconnection of a leased circuit with the public network shall not be allowed.

2.4 The apparatus and equipment used for the operation of leased circuits must, if provided by the renters, meet the technical conditions laid down by Administrations \*.

2.5 Administrations \* will take all necessary action to refuse or cancel the lease of telecommunication circuits to agencies or other organizations:

- set up to transmit or receive, on behalf of third parties, messages intended to be sent or received by telephone, telex or the public telegraph service, or
- set up to forward information or messages, on behalf of third parties, so as to evade full payment of the charges due for the complete route.

2.6 Administrations \* shall be entitled to take any steps to ensure that the above provisions are respected.

#### 3. Collection of charges — accounting

3.1 When the leased circuit does not pass through a transit country, two methods shall be permitted:

3.1.1 Each Administration \* of the two terminal countries collects its own share of the international leased circuit rental from the renter resident in its own country. This method has the advantage of avoiding the need to exchange international accounts and to make transfers of foreign currency.

3.1.2 The Administration \* of the country where the renter who applies for the lease resides collects the rental for the whole leased circuit; in this case, this Administration \* credits the other terminal Administration \* through the international accounts with the share due to it.

3.2 If the leased circuit passes through one or more transit countries, the terminal Administrations \* shall agree with the transit Administration(s) \* on the method to be adopted for collecting and international accounting for the charges due to it (them).

#### 4. Duration of the lease, charging, cancellation

4.1 In principle, the lease shall last for at least one month.

4.2 The lease shall be renewable from month to month by tacit agreement. Two weeks, advance notice to terminate the lease must be given by either party.

4.3 The rental shall normally be payable one month in advance.

<sup>\*</sup> or recognized private operating Agency(ies).

4.4 In calculating the duration of the lease, a month shall mean one calendar month. Moreover, the day when the circuit is made available shall not be reckoned, whereas the day when the circuit is withdrawn shall be reckoned as a full day. Thus, a period of lease covering one month or more is reckoned as follows:

- a) count the number of days beginning on the day following the day on which the circuit was set up until the end of the month;
- b) thereafter, count the number of full calendar months, if any;
- c) count the number of days in the last month, including the day on which the circuit was withdrawn.

4.4.1 As regards charging:

- full calendar months are subject to the monthly rental prescribed in Part II of this recommendation;
- fractions of a month are subject to a daily charge equal to 1/30th of the monthly rental.

4.4.2 Examples

Life of a lease from the time of setting up until the day of withdrawal	Chargeable time	Charge
30 October-15 December		
30 October not counted 31 October = 1 day November = 1 month		
1-15 December = 15 days	1 month 16 days	1 monthly rental + $\frac{16}{30}$ of this rental
30 November-15 January		
30 November not counted December = 1 month 1-15 January = 15 days	1 month 15 days	1 monthly rental + $\frac{15}{30}$ of this
		rental
4 January-10 February		
4 January not counted 5 January-31 January = 27 days 1 February-10 February = 10 days	37 days	$\frac{37}{30}$ of monthly rental

4.5 By agreement between the Administrations \* concerned, the lease can be for a period of less than one month.

4.5.1 In calculating the life of a lease of less than one month, one day shall mean a period of 24 consecutive hours. The life of a lease should be reckoned in multiples of

<sup>\*</sup> or recognized private operating Agency(ies).

24 hours, the period starting from the time when the circuit is set up until the time when it is withdrawn. If the number of days thus obtained contains a fraction of 24 hours it should be rounded up to the next whole number.

Examples :

Circuit set up on 1 June, at 09.00 hours, cleared on 5 June at 09.00 hours:

 $4 \times 24$  hours, i.e. 4 chargeable days.

Circuit set up on 1 June, at 09.00 hours, cleared on 5 June at 11.00 hours: (4 days + 2/24 days), i.e. 5 chargeable days.

4.5.2 In this case, the charges shall be calculated as follows:

a) for the first day of lease: 1/10th of the monthly rental,

b) for the second day of lease: 1/10th of the monthly rental,

- c) for the next 8 days of lease: 1/20th of the monthly rental, per day,
- d) after the first 10 days: 1/25th of the monthly rental, per day, the total amount being in no case more than the monthly rental.

4.6 The leases considered in 4.1 and 4.5 above are full-time leases, i.e. for 24 hours per day.

4.6.1 However, the Administrations \* concerned may in some cases permit part-time leases.

4.6.2 The conditions of lease and the charges shall then be fixed by agreement between the Administrations \*.

#### 5. Refunds

5.1 In the event of non-operation of a leased circuit for which an Administration \* is responsible, a refund may be made if there has been non-operation for a period of at least 3 consecutive hours and it has been reported by the renter.

For each period of non-operation of 3 consecutive hours, the amount of the refund should be equivalent to 1/5th of the charge for a day's lease, which is:

- for a lease of more than one month, 1/30th of the monthly rental;
- for a lease of less than one month, the total rental divided by the number of days reckoned in the lease;

with a maximum of one day's rental for any period of 24 consecutive hours.

5.2 In the intercontinental service, the minimum period of interruption qualifying for a refund may be fixed at less than 3 hours. If so, the amount of the refund is decided on by the Administrations \* concerned.

<sup>\*</sup> or recognized private operating Agency(ies).

5.3 However, the Administrations \* need not consider requests for refunds resulting from unfavourable propagation conditions for radio circuits.

5.4 Requests for refund of charges for the use of the public telecommunication (telephone, telegraph or telex) service during the period when the leased circuit is not available shall not be entertained.

5.5 No refund shall be granted when an interruption (regardless of how long it lasts), or the non-operation of the leased circuit, is due to the negligence of the renter or to a fault in the apparatus or equipment belonging to him, and maintained and operated by him.

Part II<sup>1</sup>. — CONDITIONS OF CHARGING FOR A SINGLE USER LEASE <sup>2</sup>

The charges and the principles of application of these charges for leased intercontinental circuits shall be subject to special agreement among the Administrations \* concerned. Therefore the principles mentioned do not apply to intercontinental circuits. The principles here stated are the result of studies carried out on the European network and can serve as a guide as well to other Administrations \* with comparable networks.

1. General principles

1.1 A leased international circuit passing through a transit country will be charged for as if it were *one* circuit if no intermediate station exists in the transit country.

If, however, a station is connected to the circuit in the transit country, the circuit shall be divided into two sections for charging purposes, each section being charged for as a separate circuit.

1.2 The telephone-type circuit shall be taken as the basis for the calculation of charges for leased circuits.

1.3 The rentals are therefore indicated in this recommendation in the following manner:

- a) the rental for the lease of a normal telephone-type circuit in the same relation being taken as the reference unit; and
- b) the multiplication factor shown in the right-hand column being applied to that reference unit.

1.4 By agreement among Administrations \* the lease of international telecommunication circuits may include provisions permitting the renter to put the same telecommunication circuit to various uses.

(D.1)

<sup>\*</sup> or recognized private operating Agencies.

 $<sup>^{1}</sup>$  The lease conditions defined in Part II are not applicable to the intercontinental service. Lease conditions for this service form the subject of Question 3/III.

<sup>&</sup>lt;sup>2</sup> A single user at each end of the circuit.

## 2. Charges for leased telephone-type circuits

2.1 Lease of telephone-type circuit used for the exchange of telephone calls	Multiplication factor
2.1.1 Lease of a telephone-type circuit used <i>solely</i> for the <i>exchange of telephone calls</i> (a single telephone channel) (this rate being the reference unit as mentioned in 1.2 above)	1
2.1.2 Lease of a telephone-type circuit used <i>alternately</i> for the exchange of telephone calls or for telegraph transmission or for any other approved form of telecommunication	4/3
2.1.3 Lease of a telephone-type circuit for the <i>simultaneous</i> exchange of telephone calls, telegraphic transmissions, or any other approved form of telecommunication—(in so far as combinations of these facilities are technically acceptable)	4/3
2.2 Lease of groups of telephone-type circuits No discount is allowed for the lease of a group of telephone-type circuits.	
2.3 Lease of a telephone-type circuit solely for purposes other than the exchange of telephone calls	
2.3.1 Lease of a standardized telephone-type circuit to provide several <i>telegraph-type</i> channels, the equipment for the standardized telephone-type channel division being provided, installed and maintained by the user The lease of a telephone-type circuit for division into telegraph-type channels is not allowed if the main purpose is to obtain some telegraph-type channels when the corresponding needs can be met by leasing a group of telegraph circuits (see point 3.3).	4/3
2.3.2 Lease of a standardized telephone-type circuit for <i>data transmission</i> whatever the speed of modulation (actual or equivalent) with the equipment used	4/3
2.3.3 Lease of a standardized telephone-type circuit for picture trans- mission with the equipment used being provided and maintained by the user	1
3. Charges for leased telegraph-type circuits	
3.1 Lease of a standard (50 bauds) international telegraph-type circuit	0.4

(D.1)

Note 1. — The charge, however, may provisionally remain at up to 50% of the charge for a standardized telephone-type circuit, that is a multiplication factor of 0.5.

Note 2. — The application of the multiplication factors of 0.4 and 0.5 should not involve any increase in the existing charges. If this application would involve an increase, the existing charges shall be maintained.

3.2 Lease of a telegraph-type circuit with a modulation rate (actual or Multiplication factor

 100-baud type	•	•	•	•	•	•	•	•	•	•	•	•	•	•	·	•	•	•		•	•	•	•	•	0.6
 200-baud type	•	•					٠	•		•	•	•	•	•	•	•	• .	•	•					•	0.8

3.3 Lease of groups of telegraph-type circuits

A group of telegraph-type circuits shall be understood to mean an ensemble of two or more telegraph circuits of the same type, requested and operated in the same circumstances by the same renter between the same two terminal points.

If a group of telegraph-type circuits is leased, the following discount coefficients are applied to the existing rental for a single telegraph circuit of the same type:

20% for the 2nd leased telegraph-type circuit;

30% for the 3rd leased telegraph-type circuit;

40% for all other leased telegraph-type circuits.

Note. — The rental for the lease of a telegraph-type circuit of the group should not be lower than 24% of the rental for the lease of a standardized-type telephone circuit. (This could otherwise occur if, to maintain existing liberal rates, the rental for the lease of a single telegraph-type circuit is less than 40% of that for a telephone circuit.)

4. Lease of a telecommunication circuit having special qualities or requiring special maintenance

A surcharge shall be prescribed by the Administrations \* making such circuits available.

#### Part III. — MULTIPLE-USER LEASE

1. General principles

1.1 A "multiple-user lease" may be concluded with a view to enabling an international circuit to be used by more than one customer at either or both ends thereof.

1.2 The general provisions in Part I of this recommendation, relating to ordinary or single lease shall apply to multiple-user leases.

The following special provisions shall also apply to these latter:

2. Conditions governing the grant of multiple-user leases

2.1 Multiple-user lease may be considered only in favour of persons, companies, firms and institutions:

<sup>\*</sup> or recognized private operating Agencies.

- carrying on identical activities, or

- active in the same field.

The grant of multiple-user leases should not lead to the setting-up of a private network for the benefit of separate firms not active in the same field.

Therefore correspondence passed over rented circuits must concern only the undertaking(s) or interest(s) for which the circuits have been rented.

2.2 The Administrations \* concerned will consult each other as to whether, in the light of the above, a multiple-user lease may properly be granted.

2.3 For this purpose, requests for multiple-user lease, addressed to the relevant Administrations \*, must be accompanied by a list of the prospective users and by documentary proof that such users meet the requirements of paragraph 2.1 above.

#### 3. Charges

3.1 The charge for a multiple-user lease shall include a surcharge of 37.5% of the charge for a single lease of an international circuit in the same relation.

3.2 However, an Administration \* shall be free to levy smaller surcharge, or to levy no surcharge at all, for its part of the circuit.

3.3 No discount will be permitted for leasing of a group of (telegraph) circuits provided for multiple users.

#### **RECOMMENDATION D.2**

### LEASING OF INTERCONTINENTAL TELEPHONE CIRCUITS FOR PRIVATE SERVICE

#### (Provisional recommendation as the subject is under study in the second part of Question 3/III)

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.

<sup>\*</sup> or recognized private operating Agency(ies).

3. The conditions of lease should be similar to those specified in Recommendation D.1 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.

#### **RECOMMENDATION D.3**

### LEASING OF INTERNATIONAL CIRCUITS FOR RADIOTELEPHONE TRANSMISSIONS TO BROADCASTING ORGANIZATIONS

#### (See Section IV of Recommendation E.57)

#### **RECOMMENDATION D.5**

### COSTS AND VALUE OF SERVICES RENDERED AS FACTORS IN THE FIXING OF RATES

1. The income from the totality of services provided by a telecommunication organization should cover all the costs incurred by that organization, namely:

- a) operating expenses;
- b) interest on capital involved;
- c) fiscal charges;
- d) depreciation of equipment;
- e) cost of research and development;
- f) capital investment (as required).

For political or social reasons the rates for certain services may be so arranged that they do not cover all the costs involved. In addition, the rates applied should not create harmful competition among the various telecommunication services.

2. The C.C.I.T.T. therefore considers that the rates for the various telecommunication services should be such that they cover the items of expenditure listed above.

However, in view of the difficulty of applying rates based on these criteria, in certain cases, for the political or social reasons mentioned above, the C.C.I.T.T. considers that

<sup>\*</sup> or recognized private operating Agencies.

the over-all balance in the telecommunication services required should be achieved by applying an increase factor to the rates of other telecommunication services in the same telecommunication organization which will compensate for the deficit incurred by services run at a loss.

In determining this increase factor, the value of the service rendered to the user should be taken into consideration.

In any case the rates adopted should be such as to avoid harmful competition among the different types of service provided by the organization concerned.

Recognizing that a telecommunication service is of the greatest importance for the economic and social life of every country, the C.C.I.T.T. recommends that the surplus income from the telecommunication services considered as a whole should not be greater than the amount required for the efficient running of these services.

# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

## GENERAL TARIFF AND LEASE OF CIRCUITS QUESTIONS ENTRUSTED TO STUDY GROUP III FOR THE PERIOD 1964-1968

Summary of questions entrusted to Study Group III (1964-1968)

No.	Brief description	Comments
1/III	One minute of call charge unit for settlement of accounts.	Also Questions 15/I and 1/II
2/III	One minute of call charge unit for assessment of rates.	Also Questions 15bis/I and 2/II
3/III 4/III	Amendments and additions to Recommendation D.1. Sharing of charges for leased international circuits.	Former Question 3/III studied in 1961-1964

#### Question 1/III — Adoption of a charge unit corresponding to one minute of call

(new question)

The adoption, for the settlement of international accounts (between Administrations \*), of a charge unit corresponding to one minute of call (telephone, telex)

Note 1. — Adoption of this unit would entail amendments in:

- Article 26, No. 123, Chapter XIII, of the Telephone Regulations;

- Article 26, Chapter IX, of the Telex Regulations (C.C.I.T.T. Recommendation F.60).

Note 2. — The question must be examined by Study Group III and later by Study Groups I and II to enable the C.C.I.T.T. to submit a proposal to the next Telephone and Telegraph Administrative Conference.<sup>1</sup>

Note 3. — The reasons for changing the present charge unit of 3 minutes are set forth in the annex hereto.

Note 4. — This question also appears as:

- Question 15/I of Study Group I, and

- Question 1/II of Study Group II.

(Question 1/III)

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> At present Recommendation F.70 is a C.C.I.T.T. recommendation only and does not come within the purview of an administrative "telegraph" conference.

#### ANNEX

#### (to Question 1/III)

#### Reasons for changing the charge unit

For telephone calls, telex calls, sound and television transmissions, all the charge shares recommended by the C.C.I.T.T. are fixed on the basis of the unit charge.

In principle, these categories of telecommunication are shown in the accounts by the use of a unit charge after conversion of the number of minutes into 3-minute charge units.

The *historical background* of the 3-minute unit probably lies in the charging of telephone calls per 3-minute period, from which method derives the minimum 3-minute charge for manual and semi-automatic traffic.

There is no special reason nowadays to keep the 3-minute unit; it should be replaced by a 1-minute unit, the application of 1 minute appearing logical both as a unit of time for the user and a basis for the determination of charge shares.

Several Administrations already base their accounts on the number of minutes. Some practical difficulties are caused, however, by this method of accounting as long as all the charge shares are based on the 3-minute unit. For example, different rules are applied for rounding off the decimals and the charge shares must be indicated by Administrations as share per minute as well as per unit.

Question 4/II, which was examined in 1960-1964, proposed a simplification in the preparation of the monthly accounts by entering the total sum of chargeable minutes instead of the unit charges, but it appears preferable to drop the existing unit charge and to introduce a 1-minute unit.

Moreover, the use of unit charges as well as minutes when traffic volume is assessed leads to confusion. Here again it would be best to indicate the number of minutes in all cases.

# <u>Question 2/III</u> — Adoption, for the assessment of rates, of a charge unit corresponding to one minute of call

(new question)

The adoption, for the assessment of rates for users, of a charge unit corresponding to *one minute* of call (telephone, telex)

Note 1. — Reference should be made to Notes 1 to 3 to Question 1/III and to the annex thereto.

Note 2. — This question also appears as:

- Question 15bis/I of Study Group I, and

- Question 2/II of Study Group II.

*Note 3.*— This question is not intended to bring about, in the telephone or telex service, an alteration in the rule whereby a minimum corresponding to a charge for 3 minutes is applied in the manual or semiautomatic service (this rule having its equivalent in the telegraph service in the levying of a charge corresponding to a minimum number of words for a telegram despite the fact that the charge unit in the telegraph service is constituted by one word).

(Question 2/III)

#### Question 3/III — Amendments and additions to Recommendation D.1

(further to the study of Question 3/III carried out in 1960-1964)

#### a) First part of the question

Amendments that might have to be made to the principles of Recommendation D.1 (Parts I, II and III of the recommendation).

#### b) Second part of the question

Addition to Recommendation D.1 as regards charging conditions for single lease in the intercontinental service (Part II of Recommendation D.1, for which it is specified that it is not applicable to intercontinental circuits).

Note. — The question of charging for leased circuits must be regarded as of permanent interest and consequently remains on the programme of Study Group III.

#### Question 4/III — Sharing of the charger applicable to the leasing of international circuits

#### (new question)

How should the charges applicable to leased international telecommunication circuits be shared among the Administrations \* concerned?

#### Reasons having led to the study of this question

According to Recommendation D.1, Part II, the telephone-type circuit is taken as the reference constituent for charges for leased telecommunication circuits. The rental for circuits used for purposes other than the exchange of telephone conversations is fixed by applying a multiplication coefficient to the reference unit. This method has the great advantage of bringing into line the charges imposed on the lessee for circuits used for different telecommunication purposes. Nevertheless, it was not unanimously accepted during the discussions which preceded the preparation of the draft recommendation. In particular, it was pointed out that the quotas attributable to the terminal and transit countries were not always in proportion to one another for the telephone and telegraph services. In fact, for the telex service, the shares fixed according to Recommendation F.66 are relatively higher for the terminal countries and lower for the transit countries than the amounts obtained by applying the telephone charge multiplied by the coefficient prescribed for the telegraph type of circuits.

While the method provided in Recommendation D.1 for fixing the charges for the lessees seems both correct and recommendable, one wonders whether another method should not be foreseen for the distribution of the charge among the Administrations which have taken part in providing a circuit of the telegraph type. To this end, a suggested method might, for instance, be to distribute the total charge prorata to the terminal and transit quotas in force in the given relation in the telex service.

<sup>\*</sup> or recognized private operating Agencies.

# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

## SUPPLEMENTS TO PART I

#### SUMMARY

Supplement No. 1. — Replies to Question 4/III studied in 1960-1964

Proportion of an economic budget (expressed in terms of national revenue) set aside for telecommunications.

- 1. Belgium
- 2. France
- 3. Federal Republic of Germany
- 4. Japan
- 5. Spain
- 6. Sweden
- 7. Extracts from a report by Mr. Breary, I.T.U. Economic Expert
- 8. Union of Soviet Socialist Republics

Supplement No. 2. — Replies to Question 5/III studied in 1960-1964

Co-ordination of telephone and telegraph operation and tariffs in various countries.

- 1. Belgium
- 2. Netherlands
- 3. Sweden
- 4. Switzerland
- 5. United Kingdom
- 6. Union of Soviet Socialist Republics

# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

#### **SUPPLEMENT No. 1**

#### A. REPLIES TO QUESTION 4/III

# Proportion of an economic budget (expressed in terms of national revenue) set aside for telecommunications

#### 1. — BELGIUM

#### (Contribution COM III - No. 11, August 1962)

The information forwarded by the Belgian Administration calls for the following comments:

- The investments referred to in Table 1 are pure telecommunication investments. Hence, account should be taken of this fact if it is desired to compare them with figures supplied by certain countries, where public investments for postal telegraph and telephone investments are merged, or other countries where these investments are given under a single heading "Communications", which might include airlines, inland waterways, ports, railways, telecommunications, etc.

- It has not been possible to determine the share invested in telecommunications by private enterprise.

- The information given in Table 2 has been taken from the "Cahiers économiques de Bruxelles", collected and edited by the Department of Applied Economy of the Free University of Brussels (DULBEA). Investments are entitled "Gross formation of fixed capital".

— Other information which could be of some use to the experts for purposes of comparison, e.g. population figures, area of each country, number of telephone stations, etc., have not been included in the present contribution since these data can easily be found in the statistical documents published by the I.T.U.

#### TABLE 1

Investments made by the Belgian Administration<sup>1</sup> (in billions of Belgian francs)

19480.95519551.36719491.06819561.72919501.25419572.18319512.09719581.90719521.34619592.282				
1952 1.838 1960 2.173 1954 1.341	1948 1949 1950 1951 1952 1953 1954	0.955 1.068 1.254 2.097 1.346 1.838 1.341	1955 1956 1957 1958 1959 1960	1.367 1.729 2.183 1.907 2.282 2.173

<sup>1</sup> Source : BELGIAN T.T. ADMINISTRATION (financial operating reports from 1948 to 1960 inclusive).

## TABLE 2

## Belgium—Gross national yield at current prices (in Belgian francs)

## (billions of francs)

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
<ol> <li>Private consumption</li> <li>Public consumption</li></ol>	48.3 4.7 53.0	50.7 6.6 57.3	54.7 8.6 63.3	53.1 11.8 64.9	57.2 14.4 71.6	60.3 14.5 74.8	67.4 13.8 81.2	70.3 11.8 82.1	79.8 13.4 93.2	87.7 14.3 102.0	84.6 11.9 96.5	91.3 12.7 104.0	100.4 13.4 113.8
7. GROSS NATIONAL YIELD .	344.3	359.1	371.9	428.9	439.2	448.3	471.2	495.7	534.7	571.0	568.5	590.1	625.9

#### 2. — FRANCE

#### (Contribution COM III - No. 14, August 1962)

#### Summary

Limits of the particular field; general scope of the problem;

- 1. The factors affecting the expression of requirements:
  - a) Demography: whether the population is concentrated or scattered.
  - b) Structural and economic development factors; government communications, economic links and individual communications.
- 2. The range of choice in meeting requirements, and the consequences:
  - a) planning is a matter of choice;
  - b) the choice will affect what is achieved.

Conclusion: There is no simple formula to show the relation between telecommunication development and the development of the economy as a whole.

#### INTRODUCTION

#### Limits of the particular field; general scope of the problem

Telecommunications, as the field with which the I.T.U. is concerned, cover a vast range, from closed-circuit television used in checking the working of an atomic pile, to the remote control of a missile or satellite. In what follows, we shall discuss only that fraction of telecommunications with which the French Telecommunication Administration deals. We shall thus exclude such things as broadcasting, as used for education and propaganda, television for cultural or industrial purposes, signalling and remote control. We shall confine ourselves to the problem of making telecommunication media (generally bilateral) available to particular correspondents, in accordance with the most appropriate electrical procedure.

In the section thus defined, it behoves us first of all to observe that for the purposes of comparing different countries, certain indices of activity or equipment are customarily used. But it must not be forgotten that these indices represent national over-all averages, and a more searching analysis will show that, even in the most developed countries, there are big differences between areas. Population, equipment and further prospects may differ very considerably. Thus, one province within a country may be much less developed than another, and this will have its effect on telecommunication policy. In what follows, we have in mind the needs of the under-developed countries. Hence, our comments are very general. They are applicable within any given nation, no matter how far it may have developed. The differences will be differences of degree rather than of kind.

We shall thus try to see whether, in any given country, a general significance can be attributed to certain indices normally used in telecommunication matters, so that they may be used as a guide in drawing up an equipment programme. To this end we shall first

consider a few factors affecting the expression of requirements. We shall then see what choices have to be made to meet these requirements, and how far the choices made will themselves affect what is achieved.

\* \*

#### 1. The factors affecting the expression of requirements

The boost which any given under-developed country will receive from a telecommunication programme will depend on population conditions and the stage of economic development reached.

#### a) Demography

This is something which is too often overlooked, despite the fact that telecommunication becomes pointless if people are missing. Whence a theoretical limit to telecommunication expansion: not everybody can spend a lifetime exchanging information. Indeed, even in the best-equipped countries, stations multiply and traffic increases faster than the population.

But, the apportionment of population is important. Although some under-developed countries are thinly populated while others are packed with people, the path to better telecommunication equipment may vary from country to country.

When the population is scattered, to the point of consisting of nomads, the reason is usually to be found in the scarcity of places suitable for permanent settlement. Such places can be developed only by dint of such things as irrigation or ground-clearance, or by the discovery of riches such as oil or coal. The history of petroleum illustrates this process. In such circumstances, it is certain that a telecommunication network will be based on future requirements, as far as they can be foreseen, rather than on traditional living sites. New traffic currents will spring to life, most of them for long-distance traffic. The best criterion for the development of the country will then be the length of the telecommunication circuits in use.

Entirely otherwise will be the position of a densely populated country, where towns have been established, and regions organized, for many generations. Currents of exchange are already fairly well known and are unlikely to change very much. Here switching problems will be in the forefront, the aim being to enable as many people as possible to take part in these exchanges. The criterion to be adopted for assessing the development of the country will be the number of stations per head of population.

There will be a tendency for these two extremes to draw closer together. In the first instance, the discovery of fresh riches will attract people from outside, while in the second the growth of employment, itself a source of wealth, will mean an increase in the range of calls. The time will come when we shall be unable to say what criterion is most characteristic of a country's telecommunications.

#### b) Structure and economic factors

In all instances, the extent of the investments required will depend on a second factor governing needs, that is to say, the degree of structural and economic development.

In many young countries, where the political structure is of the most rudimentary kind (taking "political" in the broadest sense, as covering the working of government machinery), it may be well to reinforce the central and regional authorities by providing them with liaison media, i.e., for the passing of orders and the dissemination of news. A telecommunication network is a capital means of reinforcing, or even establishing, a central authority, and is frequently pursued as such by governments.

As soon as there is some sort of political structure, and tribal groups cease to live autonomously, the need for exchanges, and the opportunities for them, appear; hence, telecommunication means increased efficiency, by furthering the exchange of information among co-producers, and then between producers and their intermediaries. Since no country can indefinitely remain isolated, the force of competition will oblige the State to acquire telecommunication equipment at least as up-to-date as that used by its competitors.

Lastly, when people reach the stage of wishing to meet their subsidiary needs, they soon discover how very convenient telecommunication facilities are for the individual. Hence the demand grows with the rise in the standard of living.

These three aspects are mingled in infinitely variable proportions, according to the country concerned. In fact, it is impossible to lay down hard-and-fast boundaries between them. Thus, it will be clear that communication media will be a more effective instrument in the hands of authority the more numerous are the people who can be reached thereby, even if the latter have no share in the exercise of authority. Similarly, the distinction between business stations and residential ones is so subtle that the tariffs applied differ in the most arbitrary fashion, generally speaking. Even in the best-equipped countries, no simple fool-proof formula will enable us to find a relationship between telecommunication requirements and the general development of the economy. The most one can say is that both are growing at the same time, and hence telecommunication traffic, like the consumption of power, is one index of the general activity.

#### 2. The range of choice in meeting requirements, and its consequences

The difficulties of which we have spoken as far as the assessment of requirements is concerned become no less-rather the reverse-when we consider how such requirements

can be met. A fully-fledged policy of *laissez-faire* is not possible in an under-developed country, or a country trying to catch up with others. Some degree of planning is imperative.

#### a) Planning is a matter of choice

Planning, of course, involves a choice by the planner, who may be faced with a bewildering array of considerations. We have seen certain countries in which waterways have been created by myriads of men carrying little wicker baskets. Similarly, it might well be that a country would prefer to organize a system of runners to carry messages rather than to have recourse to modern telecommunication equipment. Such a choice has, of course, never in fact been made, and the reason is that, although the multiplying effect of telecommunications is difficult to assess, it is universally recognized.

True it is, nevertheless, that there have been examples of countries preferring to build up a basic heavy industry rather than to lay a transmission network on the same scale. Some have cut down on telecommunications for the benefit of other activities considered to be more valuable. Here a political factor creeps in, with all its attendant uncertainties.

#### b) The choice will affect what is achieved

These political options will have an immediate effect on what is done in the way of creating telecommunication media. More than in most other branches of activity, the search for economy makes for concentration. To achieve a particular end, we shall have to bear in mind what was already there. In this respect the constant progress made, and the very diversity of the technical procedures available, admirably facilitates adaptation to such conditions. A telecommunication network is accordingly very often a faithful record of the options taken. Thus, the organization of a particular area reflects the desire of the authorities to keep a firm hand on a turbulent population, or their preoccupation with national security at the frontiers. Another area, traditionally a place of transit for men and goods, has been confirmed in its commercial importance by draining away the traffic from neighbouring, more recently developed, areas. Still another has emphasized its tourist attractions, setting up a network to meet the luxury requirements of its visitors, rather than the primary needs of the natives.

Thus, decisions in telecommunication matters have to be taken with an eye to future needs, and will themselves be considerably affected by other decisions taken in the past.

#### CONCLUSION

Hence, it would seem that there is no simple rule or magic formula whereby requirements may be assessed and met. All depends, as the operational research experts say, on the model chosen at the outset, the data introduced, and the obligations undertaken.

Thus, the telecommunication experts will be obliged to start their investigations afresh in every particular instance. Their work will not, of course, be diminished thereby; it will not necessarily lose in interest.

#### 3. — GERMANY (F.R.)

(Contributions COM III — No. 20, October, 1962 and COM III — No. 32, January, 1964)

#### I. Contribution COM III --- No. 20

#### Calculable magnitudes

As will be seen from Figure 1 overleaf, there is a clear relationship between the telephone density and the national income per head.

The national income  $w_u$  may, for some countries, be extracted from the United Nations Statistical Handbook for 1961, table 163, National income in local currency, and table 168, Exchange rates. Calculation, particularly into dollars, is not very reliable. In his work Berechenbare Grössen in der Volks- und Verkehrswirtschaft published by R. Oldenbourg in Munich ("Calculable Magnitudes in National Economy and Trade"), A. G. W. Jipp has calculated a national income  $w_j$  from six (and lately ten) well-known economic factors for all countries with more than one million inhabitants. The riches in electricity  $w_e$  also sometimes suffice.

A "decent" telephone density calculated from the national income  $t_j$  will sometimes only be about half of what it actually is in the developed countries. This is a tolerable difference if compared with variations in national income, which range from 1 : 50 (40-2000 dollars a year) and with the telephone density itself, which ranges from 1 : 800 (0.5-400) telephones per 1000 people). The figure 0.5  $t_j$  could be taken as a minimum, 2  $t_j$  as a maximum, and 3  $t_j$  or 4  $t_j$  to provide for ambitious projects and to draw up the budget. These figures are commensurable and also provide an adequate margin to meet individual circumstances, the speed of development, and the means available.

#### II. Contribution COM III – No. 32

# A. The question to be asked : To what extent is telecommunication development affected by economic factors?

The original question was: what proportion of a country's national income should be devoted to telecommunications to ensure efficient service?

If we assume (as is exclusively done hereinafter) the existence of free enterprise, the level of telecommunication investment will vary directly with the demand for telecommunication services.





Telephones per 1000 inhabitants



 $\label{eq:Figure 1. } F_{\text{IGURE 1.}} - \text{Relationship between national income per head (in U.S. dollars)} \\ \text{ and the number of telephones per 1000 inhabitants} \\$ 1 . 14

3

1.1.1.2

Hence the following questions require consideration:

1) Who requires telecommunication services?

2) What kinds of services are demanded?

3) To what extent is this demand governed by existing economic and social conditions?

Only those factors attributable to the economic and social structure of the country should be considered. We shall not consider anything to do with general administrative or fiscal policy, government subsidies, etc., or the effect of such things on the volume of traffic and on investments required.

#### B. How the work should be carried out

This investigation should—quite apart from its theoretical interest—be of practical assistance to the experts called upon to decide how much money will have to be invested in telecommunication projects in the developing countries. The investigations to be under-taken could conveniently be divided into two kinds:

1. A general investigation into the relationship between economic development and telecommunications. Any statistics available should be considered and interpreted. Such an investigation ought to be chiefly based on the data available in the countries where telecommunications are most advanced.

2. A comparative study of the conditions obtaining in the developing countries, because initially the economic and social circumstances in such countries are fundamentally different (see Georg Garbe: *Post and Telecommunication Traffic in the African Countries : Its Structure and Magnitude*, Jahrbuch des Postwesens, 1940).

The experience acquired in advanced countries is not necessarily applicable to the developing ones, nor, from such experience, is it possible to deduce even approximate rules for the guidance of experts called upon to handle telecommunication projects in such countries.

Hence two separate investigations should be recommended.

#### C. General factors

The following factors play an important part in telecommunication development:

a) Industrialization: the transition from an economic structure based on agriculture to an industrial way of life;

b) The extent to which a country constitutes a close-knit economic bloc (transition from a self-sufficient agricultural peasant economy to production to meet regional needs). Commercial relations with the outside world will have to be taken into account here;

c) Specialization of labour within the country concerned;

d) The economic structure: percentage of persons working in agriculture, forestry, industry, commerce, transport, banking and insurance, public services, and services available for hire or reward;

e) The general standard of living and the social structure of the country. The economic background of the nation as a whole, and consumer trends, will have to be considered here, and not only the annual income per head of population;

#### f) Business fluctuations;

g) Variations in the demand for telecommunication services attributable to the introduction of automatic telex and telephony.

#### D. Other working hypotheses

In the light of the views expressed and papers contributed by Administrations,\* the following assumptions would seem to offer a reasonable basis from which a first interpretation of the available data may be attempted. Detailed investigations, however, are needed before they can be considered as proved. The relevant questions to be asked appear in Section E hereinafter.

Assumption 1. — Commerce and transport, insurance and banking, public services and services available for hire or reward are likely to generate a considerable demand for telecommunication facilities.

Agriculture and to some extent industry too are unlikely to give rise to much telephone traffic (see Table 1).

#### TABLE 1

				Share of economic sectors in % in relation						
Activity	Percentag	ge of person	s occupied	to the number telept	to the national revenue from taxation					
v	1925	1950	1962	1928	1950	1950				
Agriculture Industry Commerce and transport Public services and other services offered for hire	30.3 42.3 16.2	24.8 42.6 16.0	12.3 49.0 17.5	6.94 24.70 43.30	7.07 28.79 38.92	3.6 34.4 41.3				
or reward	11.2	16.6	21.2	25.06	25.22	20.7				
Total	100	100	100	100	100	100				

The density of telephones and the yield from tariffs in the Federal Republic of Germany

\* or recognized private operating Agencies.

Assumption 2. — As far as production is concerned, mines and iron or steelworks are clearly unlikely to create much telephone traffic. Thus, for example, in the Federal Republic of Germany, those towns in which a high proportion of the population is engaged in mining or heavy industry come far behind other towns of comparable size in the density of telephones (see Table 2).

#### TABLE 2

			Grade <sup>1</sup> according to					
Local network	Number of inhabitants in thousands	Telephone density per 100 inhabitants	the number of inhabitants	the telephone density				
Essen	731.3	14.99	7	39				
Dortmund	700.3	11.17	9	56				
Duisburg	547.9	11.72	13	53				
Gelsenkirchen	401.1	7.78	15	62				
Bochum	367.6	9.65	16	57				
Oberhausen (Rheinl.)	258.5	7.92	24	61				
Hagen	214.6	11.90	30	51				
Mülheim (Ruhr)	187.6	12.92	32	50				
Hamm	153.9	8.41	39	59				
Recklinghausen	131.9	9.24	46	58				

#### The density of telephones in local networks comprising 100 000 people and above

<sup>1</sup> According to the classification of 65 local networks with more than 100 000 inhabitants each in the Federal Republic of Germany at the end of 1962.

Assumption 3. — But the same data might be interpreted as meaning that public services and private administrative bodies make a heavy demand on telecommunication systems (see Table 3).

#### TABLE 3

#### The density of telephones in local networks with 100 000 persons or more

			Grade <sup>1</sup> according to				
Local network	Number of inhabitants in thousands	Telephone density per 100 inhabitants	the number of inhabitants	the telephone density			
Dusseldorf Frankfurt (Main) Bonn Saarbrücken Hamburg München Wiesbaden Stuttgart Köln Hannover	705.5 812.9 218.1 162.0 2 030.2 1 279.5 231.8 854.3 854.3 849.0 648.7	29.50 28.92 28.48 25.56 24.39 24.20 24.01 22.49 22.36 21.46	8 6 29 36 2 3 28 4 5 10	1 2 3 4 5 6 7 8 9 10			

<sup>1</sup> According to the classification of 65 local networks with more than 100 000 inhabitants each in the Federal Republic of Germany at the end of 1962.

Assumption 4. — Telecommunication traffic with other countries seems to depend very largely on foreign trade. Example: general telegraph traffic and foreign trade in Germany, 1925 to 1937 (see Table 4).

#### TABLE 4

a) General telegraph traffic with foreign countries, and foreign trade (1925-1937 = 100)

	Telegrams handed in for addresses abroad <sup>1</sup>	Telegrams from abroad <sup>1</sup>	Total foreign trade <sup>2</sup>
1925	135.6	127.8	148.4
1926	135.6	138.7	120.0
1927	144.7	135.1	170.8
1928	142.9	136.9	168.1
1929	136.9	132.6	161.4
1930	120.4	121.1	124.8
1931	99.5	101.3	80.7
1932	80.4	81.7	55.9
1933	73.4	75.1	50.5
1934	62.0	64.4	53.4
1935	56.0	60.4	49.8
1936	56.9	63.5	50.6
1937	55.9	61.5	65.7

<sup>1</sup> Zahlenspiegel.

<sup>2</sup> Konjunkturstat. Handbuch, page 90.

	Telegrams handed in for addresses abroad <sup>1</sup>	Telegrams from abroad	Foreign trade	
			Imports	Exports <sup>2</sup>
1950	63.5	59.1	40.5	27.0
1951	74.0	73.1	52.4	47.0
1952	82.3	80.6	57.7	54.5
1953	87.6	85.1	58.0	59.8
1954	90.8	90.4	67.1	71.1
1955	98.8	99.5	97.1	83.0
1956	105.9	106.6	112.8	99.5
1957	106.7	112.4	112.8	116.0
1958	111.0	108.9	127.5	119.3
1959	119.5	117.1	182.5	132.8
1960	123.5	121.6	152.0	154,7
1961	125.8	121.1	157.9	164.4
1962	130.7	123.9	176.1	170.9

b	) General telegraph	traffic with	foreign countries,	and foreign trade	(1950-1962 = 100)

<sup>1</sup> Zahlenspiegel der DBP, 1946-1959, page 182 et seq. and Stat. Jahresheft der DBP, 1962, page 102 et seq. <sup>2</sup> Stat. Jahrbuch, 1962, page 307.

•
Assumption 5. — Variations in business activity will affect the volume of traffic. A fall in national income will mean that telecommunication services are correspondingly less used. A rise will mean an increase in such use. The number of calls per telephone will also vary with the state of the market. That this is so is borne out by observations made during the years 1925 to 1937 (see Table 5).

#### TABLE 5

Telephone traffic and national income, from 1925 to 1937 (1925-1937 = 100)

	Local calls <sup>1</sup>	Trunk calls <sup>2</sup>	National income <sup>3</sup> Price fluctuations eliminated
1925 1926 1927 1928 1929 1930 1931 1932 1933 1933 1934 1935 1936 1937	84.3 85.9 94.6 102.9 110.1 108.3 101.5 92.7 93.1 97.8 103.9 109.2 115.9	103.3 96.7 100.4 104.4 111.1 105.2 97.0 85.2 87.0 93.0 93.0 99.3 105.9 113.3	92.8 96.0 103.7 107.5 106.7 102.6 91.4 81.1 85.3 94.2 103.1 112.9 122.7

<sup>1</sup> Zahlenspiegel, page 240.

<sup>2</sup> Zahlenspiegel, page 242.

<sup>3</sup> Stat. Jahresbuch, 1935, page 485, and from 1935 including the Saar.

Assumption 6. — Between 1953 and 1962, telephone and telex traffic increased faster than did the national income. This does not, however, hold good for the telegram service, which clearly suffered from the rapid growth of telex. For certain years local calls nevertheless multiplied more slowly than the national income (see Table 6).

#### TABLE 6

Year	Gross yield in the Federal Republic (1954 prices)	Telex (internal) <sup>1,2</sup>	Trunk calls 1,2	Local calls <sup>1,2</sup>	Telegrams sent Total <sup>1,2</sup>
1	2	3	4	5	6
1953 1954 1955 1956 1957 1958 1959 1960 1961 1962	7.5 7.4 11.5 6.9 5.4 3.3 6.7 8.8 5.5 <sup>3</sup> 4.1 <sup>3</sup>	$\begin{array}{r} + 29.8 \\ + 20.4 \\ + 17.2 \\ + 19.1 \\ + 10.5 \\ + 8.2 \\ + 16.2 \\ + 12.5 \\ + 3.4 \\ + 8.8 \end{array}$	$\begin{array}{r} + 11.0 \\ + 10.4 \\ + 14.5 \\ + 14.1 \\ + 10.6 \\ + 12.6 \\ + 16.1 \\ + 15.7 \\ + 13.0 \\ + 12.8 \end{array}$	+ 6.7 + 5.9 + 7.1 + 5.8 + 3.1 + 4.0 + 8.7 + 8.3 + 5.1 + 4.4	$ \begin{array}{r} + 2.2 \\ + 0.5 \\ + 3.3 \\ + 2.9 \\ + 5.1 \\ - 2.2 \\ + 4.1 \\ + 0.9 \\ - 0.2 \\ + 1.3 \\ \end{array} $

#### Telecommunication traffic and yield percentage increases in relation to the previous year

<sup>1</sup> Archiv für das Post- und Fernmeldewesen, 1962, page 402 et seq.

<sup>1</sup> Stat. Jahresheft der DBP, 1962, page 102 et seq.

<sup>8</sup> Provisional figures.

Assumption 7. — Where a relatively high proportion of the population is engaged in agriculture and the density of population is low, telephone call density increases in direct proportion to industrialization and integration into the market. This process is faster than in areas where the proportion of city-dwellers is greater and population density is greater (see Table 7).

#### TABLE 7

Industrialization and density of telephones and telephone calls, 1928 to 1962 percentage increases

Postal area	Population per sq. km	Telephones per 100 inhabitants	Local calls per 100 inhabitants	Trunk calls per 100 inhabitants	Total calls per 100 inhabitants
Braunschweig Hannover Dortmund Stuttgart (Tübingen) Speyer (Neustadt) Trier Regensburg (Landshut) Hamburg	+ 76.5 + 93.2 + 34.8 + 65.9 + 36.6 + 15.2 + 35.3 + 34.6	+ 174.0 + 140.4 + 149.4 + 191.7 + 179.3 + 284.4 + 257.6 + 121.8	+ 103.2 + 79.8 + 109.9 + 164.7 + 132.8 + 294.5 + 252.0 + 69.5	+ 404.0 + 130.5 + 116.8 + 461.3 + 448.9 + 609.0 + 533.4 + 272.0	+ 151.8 + 91.2 + 111.4 + 216.3 + 195.3 + 362.8 + 334.5 + 78.4

Assumption 8. — In the highly-developed countries, the number of calls per telephone increases more slowly than the number of telephones per head of population (see Table 8).

#### TABLE 8

Variation of telephone density and number of telephone calls (values estimated for the periods 1951 to 1961 and 1952 to 1962)

	Percentage increase		
Country	Telephones per 100 inhabitants	Calls per inhabitant	
United States	+ 42.7	+ 41.0	
Federal Republic of Germany	+ 107.2	+ 87.0	
France	+ 71.2		
United Kingdom	+ 43.0	+ 35.7	
Spain	+ 146.2	_	
Norway	+ 46.9		
Sweden	+ 52.8	+ 18.7	
Switzerland	+ 60.3	+ 58.6	
The Netherlands	+ 86.3	+ 86.8	

### E. Some points for elucidation

Concerning Assumption 1. — What relationship is there between the density of telephones and telephone calls and the proportion of people engaged in various kinds of activity (agriculture, forestry, industrial production, commerce, transport, banking and insurance, public services and services available for hire or reward)?

Concerning Assumption 2. — In areas where the density of mines and iron or steel-works is high, what is the density of telephones and telephone calls, compared with the proportion of people engaged in such activities?

Concerning Assumption 3. — In areas where public services and services available for hire or reward are well represented, what is the density of telephones and telephone calls, compared with the proportion of persons engaged in such activities?

Concerning Assumption 4. — Is traffic with other countries also strongly influenced by fluctuations in foreign trade, or do other factors (such as tourism) play a greater part? What percentage of the total traffic of the various telecommunication services (telegrams, telephones, telex) is accounted for by traffic with other countries?

Concerning Assumption 5. — How far do market fluctuations affect the traffic of the various services? (Compare the index numbers for several pre- and post-war years.)

Concerning Assumption 6. — a) Does the increase in traffic for the various services keep pace with the growth in national income, or is it proceeding faster? (Compare the percentage increases for several years, for example, 1925 to 1937 and 1953 to 1962.)

b) How far has automatic operation affected traffic volume, in comparison with the growth in the gross national income? (Percentage increases for several years after introduction of automatic working.)

c) What percentage of trunk telephone calls was accounted for by automatic working in the years after introduction of such working?

d) Were the annual increases in automatic telephone traffic and telex traffic greater or less than the increases in gross national income?

Concerning Assumption 7. — Was the increase in the density of telephone calls and telephones faster in rural or in predominantly urban areas?

Concerning Assumption 8. — a) How does it come about that in the developed countries the number of calls per telephone increases more slowly than the number of telephones per head of population?

b) What percentage do branch-line telephones account for in the total number of telephones?

c) Is there an increase in the percentage of branch-line telephones?

## 4. — JAPAN

(Contribution COM III – No. 21, October 1962)

Material 1. — Ratio of State investment domestic telecommunications services to total State investments in Japan.

Fiscal year	(B) Investment for domestic telephone and telegraph	(A) Total State investment	<b>B/A</b>
196 <b>0</b> 1961 1962	(billion yen) 8.0 5.0 5.8	(billion yen) 632.0 729.2 859.6	% 1.3 0.7 0.7

Sources :

- 1. Page 813 State budget 1961 edition.
- 2. Page 66 Explanations on 1962 budget 1962 edition.
- 3. Reference book for 1962 budget.

*Material 2.* — Certain indices showing the role of telecommunications industry in the field of national economy.

1. Telephone density per 1000 population by urban and rural as at end of March 1961.

Item	Number of telephone lines	Population	Telephone density per 1000 population
Total or average	3 744 231	94 575 715	39.6
Urban (all Shi)	3 038 672	60 093 063	50.6
Rural (all gun)	705 559	34 482 652	20.5

Sources :

1. Page 24-1 "Table of number of telephones, telephone outstanding applications, the population, etc. by urban and rural".

2. Number of telephones involves subscribers' telephones, N.T.T. business use telephones, U.S. Forces telephones, public telephones.

2. Telephone density per sq. km by urban and rural, as at end of March 1961.

Item	Number of telephone lines <sup>1</sup>	Area (km) <sup>2</sup>	Telephone density per sq. km
Total or average	3 744 231	369 662 04	10.12
Urban (all Shi)	3 038 672	82 559.42	36.80
Rural (all gun)	705 559	285 656.28	2.46

<sup>1</sup> Number of telephone lines is same as former 1.

Source : Figures of area: Japan Statistical Year Book 1961.

3. Public telephone density per 1000 population, as at end of March, 1961.

Number of public telephones	Population	Public telephone density per 1000 population
117 678	94 575 715	1.24

4. Telegraph office density per 1000 population, as at end of March 1961.

Number of telegraph offices	Population	Telegraph office density per 1000 population
(107 877) <sup>1</sup> 16 630	94 575 715	(1.14) <sup>1</sup> 0.17

<sup>1</sup> Involves number of public telephones by which telegrams are accepted.

5. Public telephone density per sq. km, as at end of March 1961.

Number of public telephones	Area (km²)	Public telephone density per sq. km.
117 678	369 662.04	2.88

6. Telegraph office density per sq. km.

Number of telegraph offices	Area (km²)	Telegraph office density per sq. km.
(107 877) <sup>1</sup> 16 630	369 662 04	(3.42) <sup>1</sup> 13.88

<sup>1</sup> As to the number of telegraph offices, same as note in former item 4.

7. Length of toll telephone circuits: 6 823 thousand km<sup>2</sup> (as at end of March 1961).

8. Total length of telephone circuits unknown.

9. Total traffic of telegraph: 21 179 million (1961 fiscal year).

10. Total traffic of telegraph: 89 631 thousand.

11. Amount of capital invested in the telecommunications infrastructure: 761 941 million yen (as at end of March 1961).

## 5. — SPAIN

## (Contribution COM III - No. 29, January, 1964)

To begin with, the field of telecommunications dealt with under this question should be defined.

It is considered that, to broach this problem, whatever its scope, the first requirement is some general knowledge of data giving an over-all picture of the state of development of each country. These data include the country's national income, density of population, *per capita* income, the area of the country in square kilometres, the percentage constituted by the working population and its distribution by areas, the agglomeration of population in urban and rural areas, the proportion of national investment in relation to the national income and the annual growth of the income (see Note).

Secondly, within the field of telecommunications embraced by this question, specific data such as net investments in telecommunications, stations, traffic, circuit length in kilometres in each of the services, etc., are of interest.

When general data on the level of a country's economic development and specific data concerning its telecommunications have been obtained, some leading factors may be established and examined and certain possible laws may be determined which, by correlating the available data, could help to clarify the problem. The work entailed is complicated and cannot be carried out in a short space of time.

The leading factors may include:

- net investment in telecommunications in relation to the national investment;
- net investment in telecommunications in relation to the national income;
- stations in service per 1000 inhabitants;
- stations in service per square kilometre;
- circuit-length in kilometres per station in service.

A working group should be set up to carry out this study; its findings would provide an adequate guide for the study of the economic development in telecommunications in different countries. In this way and although, in applying the standards thus obtained, account will have to be taken of many decisive economic, political and social factors inherent in the structure of each country, a step forward will have been made in solving the question, without leaving the problem of economic development in telecommunications in its present vague state, which calls for individual study in each specific case.

The Compañía Telefónica Nacional de España (C.T.N.E.) submits the following data for the study of the question:

a) Percentage represented by the net investment in the installations of the Compañía telefónica in relation to the national income.

Financial year	(A) Investment by the Compañía nacional (in million pesetas)	(B) National income (in million pesetas)	(A/B) %
1958	1 565.4	440 210	0.36
1959	1 903.2	463 387	0.41
1960	1 618.7	469 118	0.35
1961	1 937.4	497 658	0.39

Source :

- C.T.N.E. Memoria for each of the financial years given.
- -- Anuario estadístico de España for 1962, published by the Instituto nacional de Estadística, Chapter VII, page 254.

b) Telephones in service per 1000 inhabitants.

Financial year	(A) Telephones in service	(B) Population	(A/B) º/₀₀
1958	1 477 904	29 923 534	49.4
1959	1 628 429	30 176 182	54.0
1960	1 779 314	30 430 698	58.5
1961	1 930 297	30 687 902	62.9

Source :

- C.T.N.E. Memoria for each of the financial years given.
- Anuario estadístico de España.

## c) Telephones in service per square kilometre.

Financial year	(A) Telephones in service	(B) Coverage in km²	(A/B) %
1958 1959 1960 1961	1 477 904 1 628 429 1 779 314 1 930 297	504 748.2 504 748.2 504 748.2 504 748.2 504 748.2	2.9 3.2 3.5 3.8

Source :

- C.T.N.E. Memoria for each of the financial years given.
- Anuario estadístico de España for 1962, Chapter I, page 7.

(Supp . 1)

Financial year	(A) Telephone circuits in km	(B) Telephones in service	(A/B) %
1958	1 307 889	1 477 904	0.88
1959	1 500 892	1 628 429	0.92
1960	1 671 810	1 779 314	0.94
1961	1 843 870	1 930 297	0.96

d) Length of trunk telephone circuits in kilometres per telephone in service.

Source : - C.T.N.E. Memoria for each of the financial years given.

Note. - The above economic terms are used to express the following concepts:

National income-Net national product at cost price of factors involved;

National investment—Net fixed capital formation—that is, the amount of new capital created, less depreciation.

#### 6. SWEDEN

### (Contribution COM III - No. 9, July, 1962)

To make a proper comparison between the various countries the terms "investment" and "national revenue" should be defined. For this purpose it would seem advisable to take as a basis the definitions supplied by the United Nations contained in the General Statistics published by O.E.E.C. "National revenue" might be understood to mean "gross internal product at the cost of the factors" (line 12) and "Investment" to mean "gross formation of fixed capital" introduced into the assessment of national revenue (line 3).

As a guide, investment by the Swedish Administration in the period 1954-1960 varied between 2.32 and 2.92% of total investments in the country and between 0.51 and 0.66% of national revenue. For 1960 the corresponding figures were 2.41 and 0.59% respectively.

#### 7. — EXTRACTS FROM A REPORT BY Mr. BREARY, I.T.U., ECONOMIC EXPERT

Economic aspects of telecommunications development

(Contribution COM III – No. 19, October, 1962)

#### Notes by the C.C.I.T.T. Secretariat

1. This report was submitted to an I.T.U. Administration by Mr. Breary, I.T.U. Technical Assistance expert, and is published in this documentary section, minus certain paragraphs that apply solely to economic conditions in the country where Mr. Breary was on mission, so that an idea may be got of the type of information likely to interest a developing country.

2. The report was not prepared with an eye to Question 5/III, of which Mr. Breary was unaware when he drafted his report, but it will be noted that it has certain points in common with it.

## Introduction

1. A rapidly developing telephone system is a feature of an expanding economy. The continuous growth of such a system raises economic problems:

a) in obtaining maximum value from money invested;

b) in determining the optimum level of investment.

This report gives a broad appreciation of these economic problems as they affect the telephone service but similar considerations may apply to other telecommunications services.

## Background to economic policy

2. Telecommunications systems in most parts of the world are subject to operating conditions that do not apply to normal business enterprises, and these have to be taken into account when examining the economics of running them. These conditions arise because telephone systems:

- a) provide a public service;
- b) are monopolies, and
- c) are subject to political influences.

Paragraphs 3 to 6 deal with these questions in greater detail.

## 3. Public service

A telephone system provides an essential public service. It is needed for the smooth operation of the many facets of government activity, for the effective conduct of business and commerce, and to provide social contact within and between communities. Therefore, when necessary in the public interest, the telephone authority has to include amongst its activities services that are not commercially profitable, or perhaps yield only a low rate of profit. It may, for example, be expected by the government to give telephone facilities in remote parts of the country even if these are operated at a loss. Allowance has to be made for this when considering the over-all profit made.

#### 4. Monopoly

It is the normal practice to grant a telephone authority a monopoly within its defined field of operation. This is necessary since the duplication of plant by competing authorities would lead to extreme difficulties in operating the system and to a steep rise in costs. Thus a monopoly is in the public interest provided sufficient control is exercised to ensure that the tariffs charged are reasonable and that the system is not being run wastefully. Commonly, the telecommunications service is run as a government department, but it may be run by a statutory authority, as an almost independent government department largely administering its own finances (as in the United Kingdom, India and Pakistan), or by private enterprise under the scrutiny of regulatory commissions (as in the U.S.A.). Any tariff restraints imposed by this control will be reflected into profits.

#### 5. Political influences

It was noted in paragraphs 3 and 4 that some aspects of telecommunications activity are normally subject to government control: hence political factors assume importance, though to a degree that depends on the extent to which the telecommunications authority is identified with the government. The political influence is normally felt most strongly in the field of expenditure, especially capital expenditure, and the modern tendency is to give a measure of freedom, so that finances can be organized on a commercial, rather than a political, basis. Inadequate capital can have an adverse effect on the development of the service along economic lines, and this is dealt with in greater detail in the subsequent paragraphs.

## 6. Summarizing

When judging the economic performance of telecommunications systems it is necessary to make allowances for:

- a) services provided in the public interest at a loss or a low profit;
- b) the extent to which limits on profits are imposed from outside because of the monopoly;
- c) the effect of political controls on capital investment.

## The need for capital expenditure

7. Capital expenditure may be necessary for:

- a) the expansion of the system to include more subscribers, or carry more calls;
- b) the improvement of the service given;
- c) the replacement of existing equipment.

Paragraphs 8 to 12 deal with these aspects in greater detail.

## 8. Expansion

It is a general feature of telephone systems in all parts of the world that they are expand ing. World statistics show that, in general, expansion follows a "compound interest law" under which the number of telephone lines added each year is a constant proportion of the number of telephone lines existing at the beginning of the year. Thus as the system grows, the number of telephone lines added each year grows in proportion. This is illustrated in Figure 1, in which the number of telephone lines in various countries is plotted for 1949 to 1960. The numbers of applications on the waiting lists in these countries are not known and so have not been added in. Since the graph has a logarithmic scale, " compound interest law" growth shows as a straight line, and it will be seen that, especially in the more developed countries in the upper part of the figure, the lines are reasonably straight. Growth may be disturbed by events such as tariff changes or trade recessions, but the effect is usually temporary and later, growth recovers, and in a year or two may even be sufficient to make



FIGURE 1. — Telephone development in various countries (average growth rate for the period 1949-1960)

good the ground lost by the temporary setback. The rate applicable to a given country appears to depend primarily on economic factors, though some (small) influence can be exerted by the policy of the telecommunications authority. Most of the world statistics (for clarity many have been omitted from the figure) refer to the more developed countries, and these have, in general, been experiencing a more or less steady rate of national economic expansion. Growth rates range from 4% to 15%. This is the growth of installed lines; the average growth rate of total demand (i.e. after adding in the waiting list) over the same period was 10%.

9. Figure 2 illustrates the world relationship between the average income per head of population (this is approximately the same as gross national product per head; the main difference is that it omits any allowance for the depreciation of fixed assets) and the telephone penetration (measured by the telephones per hundred population) in the year 1960. The figure illustrates that, throughout the world, the telephone penetration is approximately related to the income per head. Only the situation in 1960 is represented, however, and it is possible that the penetration appropriate to a given income per head increases from year to year; this has not been investigated.



FIGURE 2. — Income per head and telephone penetration

10. It will be deduced from paragraphs 8, 10 and 11 that telephone systems all over the world are growing and that a rapidly expanding telephone system should be considered

47

an inevitable feature of an expanding economy. It will also be seen that telephone expansion and hence expenditure are related to the level of national economy. In years when no economic expansion takes place the demand for new telephones continues, though at a lower rate.

## 11. Improvements

A certain amount of improvement to the system as it grows is inevitable. Increased dialling range, automation of the trunk network, up-to-date telephone instruments, the replacement of overhead trunk routes by more modern plant, etc., all become necessary in the course of time, sometimes because the old equipment is incapable of meeting the increased demands placed upon it, sometimes because subscribers want new services or will not put up with old-fashioned equipment in their homes. Unlike demand, improvements can be held back to a certain extent in times of difficulty. Some improvements, however, result in greater and more efficient use of plant, and in some cases improved service and higher profits can be obtained for a comparatively small capital outlay. This could be the case, for example, if the introduction of S.T.D. resulted in greater use being made of the microwave systems.

## 12. Replacement of existing plant

Old telecommunications plant has to be replaced from time to time. Some items, such as telephone instruments, are replaced as they wear out, but exchange equipment, line plant, and other major items with lives of 25 years or more are likely to be replaced because they become inadequate in some way. For example, a pole route may be incapable of carrying more wires and have to be replaced by a plant with higher capacity (e.g. a carrier cable scheme), or a rural automatic exchange may not have the capacity to carry any more subscribers' lines, and have to be replaced by a larger type of exchange. Such replacements are a normal feature of a developing telephone system, but cases are bound to arise where, due to planning deficiencies or capital restrictions in the past (perhaps 10 or 20 years earlier), replacement becomes necessary after an unreasonably short life. Modern economic planning methods are designed to prevent such situations arising in the future, and to obtain maximum value out of new plant. However, the economic scheme in the long run often cannot be adopted in times of capital shortage, and this is dealt with in greater detail in paragraph 17.

## Balance of expenditure

13. For the purposes of analysis, telephone plant and hence capital expenditure can be divided into a number of categories.

#### Expenditure to meet future needs

14. Telecommunications plant is very expensive and once installed should be expected to last for a large number of years: 20 to 30 years is a typical period. It would clearly be wasteful to buy equipment physically capable of lasting 30 years if it had to be replaced after a short period because it had insufficient capacity for growth. A rather more expensive item of equipment capable of meeting requirements for a long time would be preferable. Although this would result in some increase in immediate capital expenditure, the additional cost would be more than compensated by savings in later years. Fortunately, most types of telecommunications plant are capable of being extended, and the additional cost of buying equipment capable of growing to the required extent is often not great. Not all cases are clear-cut, but careful forecasting of requirements coupled with long-term economic planning methods usually enable a choice of plant to be made that will not lead to expensive waste in the future. For example, when laying ducts (pipes) in the ground to take cables it is customary to lay greater capacity than any foreseeable events would appear to justify, because the cost of the additional material required is negligible compared with the heavy cost that would be incurred in digging the road up again to increase the capacity at a later date. Drawing cable into the duct is a relatively cheap process. The cable itself is expensive, however, and one large cable is considerably cheaper than a number of small ones, so that a size that will last for, say, five to ten years would normally be used in spite of its greater cost, rather than a smaller cable that would have to be supplemented in a year or two by another expensive cable.

15. Thus, it is important that:

- a) proper economic consideration should be given to type and quantity of plant to be purchased;
- b) planning should ensure that plant will remain in use for many years;
- c) it should be recognized that a proportion of the expenditure is for future needs and may not be financially productive for some time.

## Time lag in expenditure

16. When providing telecommunications plant, some time elapses between the date an order is placed and the date the plant is available for use and has to be paid for. Eighteen months is a typical period, though up to three years is quite possible. Thus, when assessing the level of expenditure in any year, the level of orders placed in the previous years has to be taken into consideration, and similarly, when considering the level of ordering to be adopted in a given year the level of expenditure expected to be authorized in subsequent years has to be assessed and taken into account. Substantial changes in the level of expenditure at short

49

notice can therefore lead to difficulties. Furthermore, delays in delivery or installation may result in payments authorized for one year being deferred until the following year, when they have to be reconsidered with that year's budget, and possibly place a strain on the funds available for telecommunications.

## Effects of capital shortage

17. If capital to finance economically compiled development and improvement plans is not available in full, the first effect should be the postponement of the less essential projects. For example, it is possible to slow down replacement schemes (e.g. manual exchanges), and new subscribers' demand can be discouraged to some extent by tariff policy, waiting lists and lack of sales effort. Also, some schemes may be replaced by others marginally less economical in the long run, but requiring less expenditure immediately. The general effect of displacing these schemes would be a rather higher level of running costs (assessed on a commercial basis). If capital still falls short of requirements, the next stage would be the adoption of uneconomic expedients to meet pressing demands. The extent to which this is necessary would depend on the severity of the capital shortage and the extent to which waiting lists could be permitted to grow. These expedients would cost less at the time, but the savings achieved would be exceeded (possibly quite considerably) by increased expenditure in subsequent years. Examples would be, putting up buildings that some years later prove too small, cable schemes that make inadequate allowance for future growth, excessive juggling with existing equipment each year to meet the needs of the moment. Such a situation is undesirable, though it may arise in times of severely restricted national capital expenditure.

## Level of expenditure

- 18. If sufficient capital were available, an ideal level of expenditure would be one that:
- a) allowed schemes catering for growth in demand to be implemented in accordance with economic planning principles;
- b) allowed schemes considered essential to the community (e.g. rural development) to be implemented in accordance with economic planning principles (even if they run at a loss, they should be so planned that, in the long run, the loss is kept to a minimum or ultimately turned into a profit);
- c) allowed supporting services (tools, transport, workshops, etc.) to keep in step with expansion;
- d) allowed some improvements to take place though at a rate depending on the money and effort available after making provision for a), b) and c).

This conception of the provision of capital is idealized and, in practice, there is no easy way to fix an economic al level of expenditure. Such a level would have to be based on the

technical needs of the Department at the time. It is to be hoped that, taking one year with another, the capital available will be sufficient to allow the work undertaken to be carried out in an economical manner. Work could probably be controlled to give a more or less even flow of expenditure, gradually increasing from year to year, and possibly related to future national income (or gross national product), though a working relationship with these statistics may not be easy to establish; it may merit further investigation.

## Revenue and expenditure

19. The Telecommunications Department is responsible for running a commercial enterprise and hence differs from most other Departments of the Government; it is, in fact, more of a nationalized industry than a government department. The type of accounts used for government departments are of little help in assessing the performance of a commercial enterprise, especially in times of rapid expansion. The isolation of an instance may help to illustrate the point. Let us suppose that the number of calls between two exchanges is gradually increasing, so that new circuits are provided to carry the additional traffic. If expenditure and revenue for this transaction were recorded each year, the first year would show a large expenditure due to the purchase and, in comparison, a small increase in revenue. On this basis, the cash accounts would show a heavy loss for that year. Subsequently, for the 20 or so remaining years the plant would be in use, only small running costs would have to be offset against the revenue and there would be a profit year by year that would more than compensate for the initial loss.

20. Thus, if we examined only the figures for the first year or even the first few years, we would get a very false impression of the value of the expenditure. In times of rapid expansion, expenditure of this type is occurring continuously, and in any year it is quite possible for expenditure of the "first year" type to conceal a considerable increase in earnings. The situation can, in this respect (though not in other ways), be compared with that of a man who buys company shares every year: if each year the amount he spent on buying new shares exceeded the revenue he obtained from his total investments, his account would apparently show a loss but, assuming he had invested wisely, this would not alter the fact that he was getting wealthier and increasing his income. Similarly, money invested in telecommunications plant, if spent wisely and in step with expansion, could lead to an increase in earnings and real wealth that might not be apparent in the cash accounts.

#### Summary

21. A rapidly expanding telephone system must be considered to be an inevitable feature of an expanding economy, but even in years when national economic expansion is halted, telephone expansion (or the demand for it) continues, though at a reduced rate. The level of the demand for service is related to the level of the national economy.

22. As the telephone system grows, planning should, as far as money, time and effort permit, ensure that:

- a) all parts of the system grow in step so that a situation does not arise where new plant in one part of the system cannot be used because the plant it should operate with elsewhere is missing.
- b) allowance is made for future growth in accordance with economic planning principles so that expensive telecommunications plant gives many years of service.

It is also desirable that there should be a measure of improvement and replacement, which can vary to some extent with the availability of money and effort, and should aim at cheapening the service.

23. The optimum level of expenditure is difficult to assess but should preferably be based on the requirements described in paragraph 22. The future level of the economy has an important influence on future demand and hence present and future expenditure.

24. If sufficient finance is not available, some immediate savings can be achieved by allowing waiting lists to build up and by postponing improvements and replacements. This has the effect of postponing the expenditure (usually at the expense of higher running costs) but not ultimately avoiding it. If after doing this, finance is still inadequate to allow plant for essential expansion to be installed in an economical manner, uneconomical expedients have to be adopted; these are cheaper initially but could prove expensive in the long run.

## **Recommendations**

25. It is recommended that:

- a) the existing economic machinery and methods should be reviewed and streamlined to permit advances in long-term economic planning techniques;
- b) regular analyses of costs and revenue should be instituted to facilitate the control of expenditure and to detect tariff deficiencies;
- c) cost, commercial and depreciation (and also possibly, cash) accounting procedures should be more closely integrated and dovetailed with engineering economic functions and requirements.

### 8. — U.S.S.R.

## (Contribution COM III - No. 34, February, 1964)

# Proposal of a questionnaire for the purpose of receiving necessary information and materials concerning Question 4/III: studying of conditions of telecommunication economic development in various countries

1. What share do the capital investments in the development of communications constitute in the total volume of capital investments for the country as a whole?

2. What share do the capital investments in the development of telecommunications constitute in the total volume of capital investments in the development of communications for the country as a whole?

3. What is the share of the main communication funds in the total number of the main productive funds of the country?

4. What is the rate of change of capital investments in the communication field and in the telecommunications as well for the country as a whole?

5. What is the share of incomes in the communication field as a whole in the national income of the country?

6. What is the share of telecommunication incomes in the whole sum of communication incomes of the country?

7. What is the share of communication workers in the total number of workers (for the country as a whole)?

8. What is the share of telecommunication workers in the total number of communication workers?

9. What is the level of profitableness (in percentage) of telecommunications in the communication field of the country?

10. What is the level of profitableness (in percentage) of separate services of telecommunications (trunk telephone calls, telegrams, etc.)?

11. What is the amount of communication incomes per unit cost of the main communication facilities in national currency (for instance: incomes per one ruble of the main communication facilities or incomes per one dollar of the main communication facilities)?

12. What are the main principles of drawing up and differentiation of tariffs for telecommunication services?

13. Number of trunk telephone calls per 100 inhabitants.

14. Number of telegrams per 100 inhabitants.

15. Number of telephone sets per 100 inhabitants (separately for urban and rural areas).

Note 1. — Information according to points 1 to 6 of the questionnaire is better to be submitted in dynamic for three to five years.

Note 2. — Taking into consideration the necessity of the uniform interpretation of economic terms it. seems expedient to give definitions for the following terms: "main communication funds", "national income", "profitableness" etc.

## SUPPLEMENT No. 2

## **REPLIES TO QUESTION 5/III**

a) Rules which have been followed or action which has been taken by Administrations to obtain co-ordination of telephone and telegraph (including telex) operation and tariffs in the inland system of a country, and

b) Principles or rules which might be adopted with a view to obtaining good co-ordination of international telephone and telegraph operation and tariffs.

#### 1. – BELGIUM

#### (Extracts from Contribution COM III – No. 15, August, 1962)

a) Under the supervision of the General Directorate, the two services concerned of the central Administration of the Belgian T.T. Department, i.e. the Telephones Directorate and the Telegraphs Directorate, study and establish jointly rules governing all questions of telegraphy, telephony or telex requiring co-ordination of general operating or tariff principles.

b) In fact, the necessary co-ordination of international telegraph and telephone rates and operation is already an appreciable fact within the framework of the C.C.I.T.T.

In addition, a great step would be taken towards closer co-ordination if the Administrations applied the provisions contained in C.C.I.T.T. recommendations to the greatest possible extent, which implies a more world-wide participation in the work of these study groups.

Finally, the officials of the C.C.I.T.T. never fail, at study group meetings, to draw the attention of members of a given study group to any difference in principle that they might introduce into the work of the study group concerned with respect to the related work of another study group.

Apart from the work done by the C.C.I.T.T., very good results can also be obtained in the co-ordination of telecommunication services by the establishment of regional agreements to study questions of common interest, within the framework of C.C.I.T.T. recommendations.

#### 2. — NETHERLANDS

#### (Extracts from Contribution COM III – No. 6, June, 1962)

a) In our Administration, the same department is responsible for the telegraph and telephone services. Problems arising in the various branches are thus always examined by all the experts concerned. There is naturally co-ordination at national level whenever necessary with respect to the main features of any arrangement. We nevertheless consider telegraphy and telephony as separate branches, to be developed independently in accordance with possibilities and technical progress.

(Suppl. 2)

b) We feel that co-ordination is the responsibility of the country concerned and do not believe that the C.C.I.T.T. should issue recommendations on the subject.

#### 3. — SWEDEN

#### (Extracts from Contribution COM III - No. 9, July, 1962)

a) In the Swedish Administration, questions of telephone, telegraph and telex operation are examined at director level by one division (Operations Division) and tariff questions by another (Finance Division). Consequently no demarcation exists between the three abovementioned branches of operation. This does not exclude the possibility of questions regarding these branches being examined in broad outline in each of these divisions by different sections or persons, but these sections or persons are responsible, in this case, to one and the same head of service. As an exception to this rule, questions on the operation of radio stations on the one hand, and on the system of charging for radiotelephone and radiotelegraph calls through coast stations on the other are examined by a third division, the Radiocommunications Division which, when examining such questions, nevertheless keeps in touch with the Operations and Finance Divisions. To avoid any misunderstanding, be it said that the telephone, telegraph and telex exchange services of the Administration which deal with the routing of fixed service radiocommunications (calls, telegrams and telex correspondence) exchanged with other countries are not under the jurisdiction of the Radiocommunications Division mentioned above.

At regional level, the telephone, telegraph and telex services have in common the same regional administrations and the same exchanges; also, in each case there is a common regional head for the three branches of operations. An exception is the Stockholm administrative area, which includes only Stockholm and its suburbs and in which the telephone, telex and telegraph services and the accounting service responsible for collecting charges each have one head. These three heads are, however, responsible to the regional director.

One consequence of the type of organization which exists in Sweden is, of course, that Operations and Finance Divisions must keep in close touch whenever questions of operation or charging have to be discussed. Moreover, it is necessary to maintain such contacts between the services and certain other divisions, e.g. the Technical Division, as solutions to technical problems are sometimes attended by consequences at operations and tariff level. Generally speaking, the efforts of the Director-General's Office are directed towards ensuring that collaboration between the different services becomes a natural part of their work. Such collaboration must also be possible at the preliminary examination of each problem, even before this has reached divisional head level.

Decisions on important questions are taken by the Director-General at weekly meetings attended by all heads of divisions, each of whom in turn makes a report on the situation in his own service. In the intervals between meetings other questions are decided by the Director-General after a report has been made to him by the head of the division concerned. Moreover, the Director-General may delegate the right of decision on certain questions to a head of service. Before a decision is taken it is usual for a written report on the draft decision to be submitted to the other heads of division whom the question may concern, so that they may have an opportunity to raise any objections or signify their approval. If differences of opinion exist between the various heads of division, the matter is referred to the Director-General at the next meeting.

b) In the opinion of the Swedish Administration the organization adopted in Sweden ensures perfect co-ordination between the services in the examination of operations and tariff questions in the context of telephone, telegraph and telex communications.

## 4. — SWITZERLAND

#### (Extracts from Contribution COM III - No. 8, July, 1962)

We consider that this Question is of special importance for Administrations in which telephone and telegraph services are completely separate from each other.

In the Swiss Administration they come under the same authorities, so that no special problems are raised by the co-ordination of operating and tariffs between these services.

#### 5. — UNITED KINGDOM

#### (Extracts from Contribution COM III – No. 13, August, 1962)

a) In the United Kingdom, all inland telecommunication matters are controlled by a single Director of Inland Telecommunications. His functions are divided between branches responsible respectively for operations, planning, subscribers' services and telephone mechanization. Each of these, except the last, is concerned, within its own sphere, with telephones, telex, telegraphs and leased circuits, so that there is full co-ordination between the various classes of telecommunications throughout the headquarters organization. The Inland Telecommunications Department also co-operates closely with the Post Office Engineering Department, which is responsible for all engineering functions including those relating to telecommunications. It maintains similar co-operation with the head-quarters departments concerned with personnel, organization, finance and accounting.

The headquarters organization is reflected in the regional organizations in London and the provinces where the regional director is assisted by a telecommunications controller, responsible for all telecommunications management in his region, a chief regional engineer, a staff controller and finance officer.

Regions are subdivided for telephone purposes into telephone managers' areas and into head postmasters' districts for matters relating to posts and message telegraphs. The telephone managers are, however, responsible for telex and leased lines as well as telephones. Telephone managers' areas are divided into telephone and telex exchange areas as appropriate.

Except at the functional levels, there is thus unity of command over the various aspects of telecommunications as regards tariff, operations and planning. Telephone and telex tariff structures follow approximately similar patterns.

(Suppl. 2)

In the overseas field, telecommunications are controlled by the External Telecommunications Executive which, besides fulfilling functions analogous to those of the Inland Telecommunications Department, also operates the overseas telephone, telex and telegraph exchanges as well as the radio stations. This department therefore combines the functions of administration and management.

b) The British Administration is satisfied that the existing international machinery is adequate to ensure a sufficient degree of co-ordination of international telephone and telegraph operation and tariffs.

## 6. — U.S.S.R.

#### (Extracts from Contribution COM III — No. 18, September, 1962)

The following procedure is used for co-ordination of operations and changing of Soviet telegraph and telephone communications.

In the Soviet Union, a single complex Government telecommunication system has been created and is developing day by day. The separate branches of telecommunication, including telegraphy and telephony, are developed according to plan in perfect harmony and cooperation.

Our communication system is constructed in accordance with a single central plan and represents a synthesis of the advantages of technical and economic peculiarities of each category of telecommunication.

Having a single telecommunication network in the country makes for flexibility, stability, and reliability, and for economy of operation. Duplication of services is avoided, and this makes for more profitable working. Most telecommunication enterprises share the same buildings and staff and come under a joint head.

In the Soviet Union, telecommunication is organized on a regional basis. As far as categories of telecommunication of public interest are concerned, it is the Ministry of Postal and Electrical Communications of the Soviet Union which does the main task of direction from above throughout the country. It is this Ministry which defines the guiding lines for technical policy, organization, and improvement of all national telecommunications have been set up, while in autonomous regions, territories and republics there are local telecommunication enterprises and organizations subject to them.

In the Ministry of Postal and Electrical Communications of the Soviet Union, and in the Communication Ministries of the federated Republics, there are authorities responsible for administering each individual branch of telecommunication. These authorities are directly responsible for the development and operation of the various branches of telecommunication. Thus, throughout the Union of Soviet Socialist Republics, the Department of Longdistance Telegraph and Telephone Communications in the Ministry of Postal and Electrical Communications of the Soviet Union is responsible for long-distance telegraphy and telephony. In the federated Republics, there are telecommunication departments which do this within the local ministries of postal and electrical communications, and these, in general, are responsible for all branches of telecommunication. Thus, in the Soviet Union, all branches of telecommunication are fully co-ordinated, including telegraphy and telephony, from the Ministry of Postal and Electrical Communications of the U.S.S.R. down to the separate telecommunication undertakings.

Telecommunication planning in the Soviet Union goes hand-in-hand with the national economy, and ensures the requisite correlation between the development media and that of other branches of the national economy. This planning also ensures a balanced development within telecommunication itself:

- between the various telecommunication media, including telegraph and telephone communications;
- and between various sub-sections of the same class of telecommunication, for example, between local installations (local and intra-sector) and long-distance installations.

The State lays down the rates for telecommunication services in the Soviet Union. In addition, the requisite co-ordination is provided between telegraph and telephone rates, rates being set at a level such that they contribute to an effective and rapid development of telecommunication media. In general, they include the following two factors: the cost of the services rendered, and profit. However, they do not always represent the cost of particular classes of telecommunication services. Thus, there are special low rates, less than cost price, for reception and transmission of telegrams exchanged by the TASS Agency, for the use of telephones in rural localities, etc.

Financially, the basis of telecommunication tariffs is the cost of the services rendered. Hence, in the U.S.S.R., we periodically assess the cost of the services rendered. The charging system is systematically improved, since charging questions are normally solved in a complex way in all branches of telecommunications.

(Suppl. 2)

## PART II

## **TELEPHONE OPERATION AND TARIFFS**

- 1. Recommendations relating to telephone operation and tariffs (Series E)
- 2. Telephone operation and tariff Questions entrusted to Study Group II
- 3. Supplements

## SUMMARY OF SERIES E RECOMMENDATIONS

.

Contents of Series E Recommendations

Section 1: Telephone operation — General (Recommendations E.1 to E.20)

.

- 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.

## CONTENTS OF SERIES E RECOMMENDATIONS

•

Recommendation	Title	Page
	Storrow 1	
	SECTION 1	
	Telephone operation — General	
E.1	Definition of terms used in international telephone operation	65
E.2	Instructions for operating the international telephone service	71
E.2 bis	Instructions for operating the intercontinental telephone service (new system)	72
E.3	Organization of the international telephone network	72
E.4	Operation of intercontinental telephone services (introduction to Recommendations E.4 <i>bis</i> and E.4 <i>ter</i> )	73
E.4 bis	Operation of intercontinental telephone services (initial system)	73
E.4 ter	Operation of intercontinental telephone services (new system)	80
E.5	Extension of international telephone services	85
E.6	Arrangements to be made for controlling the telephone services between two countries	85
E.7	Directories	86
E.10	Proposed amendments to the Telephone Regulations	87
E.15	Automatic Telephone routing plan	88
	Section 2	
	Telephone operation — Operational characteristics — Operating methods	
E.21	Advantages of semi-automatic operation in the international tele- phone service	93
E.21 bis	Advantages of international automatic working	94
E.22	Demand working of international circuits	94
E.23	Division of circuits into outgoing and incoming circuits	95
E.24	Instruction of staff operating international positions	95
E.25	Time-to-answer of operators	95
E.26	Assessment of the beginning and end of calls	96
E.27	Indication of the chargeable duration of a call, given to the subscriber while the call is in progress	96

Recommendation	Title	Page
E.28	Daily comparison of the number of minutes of call exchanged between international exchanges	97
E.29	Numbering for international working	98
E.30	Manually-operated international transit traffic	107
E.31	Semi-automatic transit traffic	109
E.32	Rules for phototelegraph communications established over circuits normally used for telephone traffic	110
E.33	Speeding up the establishment and clearing of phototelegraph calls	115
E.34	Access to a telephone information operator in a foreign country	116
E.35	Setting up of circuits for special purposes in the international auto- matic service	117
	Section 3	
	Tariffs and charging in the international telephone service	
E.51	International telephone charges (circuits of European continental type)	119
E.52	Charging in a fully automatic international telephone service	126
E.52 bis	Accounting system in the international automatic telephone service	128
E.53	Charging for calls to a subscriber's station temporarily connected to the absent subscribers' service	131
E.54	Charging for calls to a device substituting a subscriber in his absence	132
E.55	Charging in automatic service for calls terminating on special services for suspended, ceased or transferred subscribers	134
E.55 bis	Amendments to the Instructions for the international telephone service—Identification of the called subscriber by the caller	134
E.56	Multiple calls	135
E.57	International programme transmissions	135
E.57 bis	Intercontinental programme transmissions	150
E.58	International television transmissions	152

#### CONTENTS OF SERIES E RECOMMENDATIONS

Recommendation	Title	Page
E.59	Rates for phototelegrams and private phototelegraph calls	164
E.62	Utilization, by public services, of international telephone connec- tions which are their property	169
E.63	Diminishing tariff	170
E.64	Deferred telephone calls	170
E.65	Charges for calls from or to a public call office	171
E.66	Charges for press calls	171
E.67	Standardization of the hours of light traffic for the purpose of application of charges	172
E.68	Charges for calls carried by emergency routes	172
E.69	Minimum remuneration for a transit country	173
E.70	Monthly telephone accounts	174
E.70 bis	Refunds	176
E.71	Defaulting subscribers	176
	Section 4	
	Statistics on international telephony	
E.81	General telephone statistics	177
E.82	Statistics of the international telephone service	179
E.83	Checking the international telephone service	182
E.83 bis	Monitoring of international outgoing telephone circuits; Table I .	182
E.83 ter	Traffic monitoring by operators; Table II	185
E.83 quater	Results of test calls; Table III	189
E.84	Publication by the I.T.U. General Secretariat of the "List of inter- national telephone routes".	191
	Section 5	
	Determination of the number of circuits to be provided	
E.90	Measurement of traffic flow	193
E.91	Determination of the number of circuits necessary to carry a given traffic flow in manual operation	194

## CONTENTS OF SERIES E RECOMMENDATIONS

Recommendation	Title	Page
E.92	Determination of the number of circuits necessary to carry a given traffic flow in semi-automatic operation	196
E.93	Determination of the number of circuits on a group carrying overflow traffic	198
E.93 bis	Theoretical calculation to determine the best arrangement for alternative routing	198
E.95	Determination of the number of circuits necessary to carry a given traffic flow with automatic operation or in the case of automatic and semi-automatic operation of the same group of circuits	203
E.97	Automatic traffic-recording devices	206

.

,

## **SECTION** 1

## TELEPHONE OPERATION GENERAL

## **RECOMMENDATION E.1**

## DEFINITIONS 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

The manual demand 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

The *semi-automatic demand service* 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 1

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

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.

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> Formerly called " auxiliary route ".

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. Successive phases of a call

The characteristic instants in the successive phases of the setting-up of an international telephone call in the manual or semi-automatic service are distinguished as follows:

- $t_0$  the caller has placed his request;
- $t_1$  the outgoing international operator has received all of the call details;
- $t_2$  the outgoing international operator has made the first attempt to set up the call (normally, this is the instant the international circuit is seized);
- $t_3$  the called number has replied or the caller has been informed why the call cannot be connected;
- $t_4$  the called person (or called extension) has been obtained or the caller has been informed why the call cannot be connected (this instant is only significant for personal calls);
- $t_5$  the end of the conversation, generally when the caller replaces the receiver;
- $t_6$  disconnection, normally when the international circuit is released by the operator.

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*.

### 14. 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).

The duration of the call is therefore the interval between the instants:

- a)  $t_5 t_3$  for a station-to-station call;
- b)  $t_5-t_4$  for a personal call or a *préavis* call.

### 15. 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.

## 16. Holding time of an international circuit

The time interval  $t_6-t_1$  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 by switching equipment.

# 17. Answering time of operators ; request transmission time ; delay time ; setting-up times of an international call

1. At the outgoing international exchange, the *answering time of operators* is the interval between the end of the transmission of the calling signal and its answer by an operator at the distant international exchange.

At the incoming international exchange, the *answering time of operators* is the interval between the appearance of a calling signal on a position or group of positions at that exchange and its answer by an operator.

2. The request transmission time over the national network is the time interval  $t_1-t_0$ .

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

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

4. The setting-up time of an international station-to-station call is the time interval  $t_3-t_1$ . This time includes any delay at the outgoing international exchange.

The total setting-up time of an international personal call is the time interval  $t_4-t_1$ . This time includes any delay at the outgoing international exchange.

## 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.

## 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 flow of traffic offered, and of traffic carried, is expressed in erlangs. The amount of traffic offered and of traffic carried is expressed in erlang-hours.

#### 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 at 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 period the representative traffic. The following recommendations relating to the determination of the sample period <sup>1</sup> and of the mean (sometimes called " time-consistent " busy-hour) apply particularly to the second method.

20.2 Mean (i.e. time consistent) 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 a sample is at the maximum.

Note. — If it is not known which 60-minute period constitutes the mean busy hour, a sample measurement taken over 10 days <sup>1</sup> 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 analysing 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.

<sup>&</sup>lt;sup>1</sup> See Recommendation E.90, "Measurement of traffic flow".
#### 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.

#### 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 setting-up 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" (Edition of 1st July, 1965);

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

<sup>\*</sup> or recognized private operating Agencies.

#### **RECOMMENDATION E.2** bis

# INSTRUCTIONS FOR OPERATING THE INTERCONTINENTAL TELEPHONE SERVICE (NEW SYSTEM)

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

#### considering

that the rapid and reliable establishment of telephone connections with the new system of intercontinental service (see Recommendations E.4 and E.4 *ter*) demands perfect coordination 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\* applying the new system of operation in the intercontinental service should respect the "Instructions for the intercontinental telephone service" (Edition of 1st January, 1965);

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 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

- the high cost of the technical equipment required in incoming and outgoing international exchanges for this method of working;
- the linguistic knowledge required of international operators, and
- the need to provide automatic transit in certain exchanges (semi-automatic traffic routing plan).

(E.3)

<sup>\*</sup> or recognized private operating Agencies.

#### **RECOMMENDATION E.4**

# OPERATION OF INTERCONTINENTAL TELEPHONE SERVICES [INTRODUCTION TO RECOMMENDATION E.4 bis (INITIAL SYSTEM) AND E.4 ter (NEW SYSTEM)]

Two methods of operation are recommended by the C.C.I.T.T. for the intercontinental telephone services:

1. The first method of operation—known as the *initial system*—is the conventional operation of intercontinental telephone circuits in relations constituted by radiotelephone circuits and in particular the operation of radiotelephone circuits working on a part-time basis only. The method prescribed by Recommendation E.4 refers exclusively to manual service operation. This method of operation forms the subject of Recommendation E.4 *bis* below, and corresponds to the operation in manual service only.

2. The second method of operation—known as the *new system*—is the operation of high stability circuits, that is essentially of submarine cable circuits, of radio-relay circuits and satellite circuits. This method of operation may, however, be applicable also to relations comprising a fair number of radiotelephone circuits or in which the radiotelephone circuits constitute only a part of all the circuits used in the relation considered. This new system covers, in particular, the case of semi-automatic and automatic intercontinental operation, while being equally compatible in manual operation. This second method of operation is dealt with in Recommendation E.4 *ter*.

#### **RECOMMENDATION E.4** bis

# OPERATION OF INTERCONTINENTAL TELEPHONE SERVICES (INITIAL SYSTEM)

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.

73

<sup>\*</sup> or recognized private operating Agencies.

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 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.

<sup>\*</sup> or recognized private operating Agencies.

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.

#### 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 Remark 1 at the end of this recommendation)

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 Remark 2 at the end of this recommendation)

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.

<sup>\*</sup> or recognized private operating Agencies.

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 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) 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.

<sup>\*</sup> or recognized private operating Agencies.

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

#### 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 minutes 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 Remark 3 at the end of this recommendation)

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:

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.

<sup>\*</sup> or recognized private operating Agency(ies).

#### H. 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.

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 prearranged 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 over-all charges do not prejudice public service tariff scales.

#### I. 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

(E.4 *bis*)

<sup>\*</sup> or recognized private operating Agency(ies).

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.

#### REMARKS

Remark 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 subdivision) is attached to a single charge zone. Of course the majority of countries do not lie entirely within the interior of a single 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.

Distances in miles (1 mile = 1609 metres)	Charge corresponding to the first three chargeable minutes (Unit of charge)		
	Weekdays (dollars)	Nights and Sundays (dollars)	
0 to 500	4.50	3.75	
501—1000	6.00	4.50	
10012000	7.50	6.00	
20013000	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 cases, 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.

<sup>\*</sup> or recognized private operating Agency.

#### Remark 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.

#### Remark 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.

#### **RECOMMENDATION E.4** ter

# OPERATION OF INTERCONTINENTAL TELEPHONE SERVICES (NEW SYSTEM)

The following directives <sup>1</sup> should be followed as far as possible by Administrations \* in the new system to be adopted for the operation of intercontinental services (see definition of the "new system" in Recommendation E.4).

# A. FACILITIES OFFERED TO USERS

1. Distress calls, government calls and private calls,

are accepted in the intercontinental telephone services.

- 2. Collect calls, multiple (or conference) calls,
  - subscription calls and
  - credit-card 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 of call:
- station-to-station calls, and
- personal calls.<sup>2</sup>

(E.4 *ter*)

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> Detailed rules for intercontinental telephone operating (new system) are given in the "Instructions for the Intercontinental Telephone Service" published by the C.C.I.T.T. (see Recommendation E.2 bis).

<sup>&</sup>lt;sup>2</sup> Not to be confused with the "personal calls" facility provided under the old intercontinental system, described in Recommendation E.4 *bis* (E.4 *ter*).

4. Station-to-station calls are those booked to a specified number, the call becoming effective as soon as the subscriber's station responds, regardless of who answers the call.

5. Personal calls are those booked between the caller and another *specified* person (or between one extension and another); the called person must be adequately identified, for example, by his name, position or address or in any other way.

If it is not possible to obtain the called person at a telephone station, it may be necessary to send a messenger to find him.

#### **B.** CALL REQUESTS

1. Requests for calls shall remain valid until midnight (local time at the exchange of origin) of the day indicated below if not cancelled by the caller or refused by the addressee, when all the exchanges concerned are permanently open, and at the daily closing time when they are not permanently open:

a) for station-to-station calls, the second day following the day on which the request was made;

b) for personal calls, the third day following the day on which the request was made.

This period, however, may be prolonged when, because of a shortcoming attributable to the telephone service, it has proved impossible to set up the call.

2. Subject to the provisions governing the validity of requests for calls, the caller, in making his request, may specify:

a) that the call should not be set up until after a particular time, stated by him;

or

b) that the call should not be set up during a given period;

or

c) that the request should be cancelled at a particular time.

3. When a request cannot be satisfied immediately, the caller may, subject to the provisions governing the validity of requests and as long as he has not been told that the call is about to be put through:

a) change the category of the call;

b) change the addressee's number within the limits of the country of destination;

c) in a personal call, change the designation of the addressee or the extension number.

No charge shall be made for such changes.

#### C. ESTABLISHMENT OF CALLS

1. In each intercontinental 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.

<sup>\*</sup> or recognized private operating Agencies.

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

The controlling exchange is responsible for setting up calls and, in advance preparation working, it decides the order in which calls shall be connected.

The Administrations \* concerned shall agree among themselves to designate the controlling exchange.

Generally speaking, they shall select for this purpose:

- a) in demand working:
  - the intercontinental exchange having access to the first outgoing intercontinental circuit;
- b) in advance preparation working:
  - the outgoing intercontinental exchange operating the intercontinental circuit, when but one intercontinental circuit is used;
  - the intercontinental transit exchange, when two or more intercontinental circuits are used, is designated by joint agreement of the Administrations\* concerned.

#### E. TIMING OF INTERCONTINENTAL CALLS

1. When the charge is determined from the ticket prepared by an operator, at the end of each call the operator herself, at the outgoing international exchange, shall record the chargeable duration of that call.

2. When the charge is automatically recorded, the outgoing operator is responsible, at the beginning of each call, for starting the device that automatically records the charge.

3. The chargeable duration of a station-to-station call begins as soon as communication is established between the calling and the called stations and the correspondents at both stations have answered the call, whoever these persons may be.

and the second second

<sup>\*</sup> or recognized private operating Agencies.

4. The chargeable duration of a personal call begins as soon as the caller (or extension) is put in communication with the called person (or called extension).

#### F. CHARGING FOR INTERCONTINENTAL CALLS

1. The unit charge for a particular intercontinental service is the charge for an ordinary private call of three minutes' duration, set up during the period of heavy traffic. The unit charge is fixed by agreement between the Administrations\* concerned.

The unit charge is always the same, whatever the route (primary, secondary or emergency) used between any two countries.

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 (see Remark 1 at the end of this recommendation). However, the Administrations\* concerned may agree to fix a total unit charge less than the sum of the charges.

3. Subject to agreement between Administrations\*, two different rates may be applied to traffic exchanged over their mutual routes:

— one rate during the period of "heavy" traffic;

— the other rate during the period of "light" traffic.

4. The charge for a *personal call* is the same as that for a call in the same class, with the same priority and of the same length, exchanged during the same charge period, plus a surcharge equivalent to the charge for one minute (or approximately one minute) of ordinary private call exchanged during the same charge period.

If transmission of the personal call request is not followed by a telephone call because the called person or extension cannot be obtained, it shall be subject to the personal call surcharge.<sup>1</sup>

Likewise, if either the caller or the called person refuses to talk, the personal call surcharge shall be payable.

When, for recourse to another special facility, the personal call is already liable to a surcharge equivalent to the charge for one minute of ordinary call, one single surcharge shall be levied.

5. Both personal and station-to-station calls may be accepted as collect calls.

Personal collect calls shall be subject only to the surcharge for personal calls.

Station-to-station collect calls are subject to a surcharge to be fixed by agreement between the Administrations\* concerned and this surcharge should not exceed the charge for the minute of conversation.

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> In certain countries, the Administrations and/or recognized private operating Agencies do not levy a surcharge on personal calls when conversation does not take place. In these cases, the surcharges levied on calls not completed in the other countries concerned should not be included in the international accounts.

6. The charge for *subscription calls* shall be decided by agreement between the Administrations \* concerned.

It shall not be less than two-thirds the charge for an ordinary private call lasting the same length of time and made during that particular charging period.

7. The charge for multiple calls is fixed by agreement between the Administrations\* concerned.

8. There is no charge for obtaining a telephone number for a given name and address when this information is associated with the booking of a call. If the attempt to obtain the number results in a report of no telephone listed at that address, no charge shall be made.

#### G. DIVISION OF CHARGES FOR INTERCONTINENTAL CALLS

1. Charges for calls over direct circuits should in principle be divided equally between the terminal Administrations\* unless other arrangements are agreed between them (see Remark 2 at the end of this recommendation).

2. Charges for calls over a chain of intercontinental circuits should in principle be apportioned between the individual circuits according 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 continental landline circuits should in principle be divided as follows:

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

#### H. 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). The Administrations\* 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

<sup>\*</sup> or recognized private operating Agency(ies).

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.

#### REMARKS

Remark 1 (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 the 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.

#### Remark 2 (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.

#### **RECOMMENDATION E.5**

#### EXTENSION OF INTERNATIONAL TELEPHONE SERVICES

Application of that provision of the Telephone Regulations (Geneva Revision, 1958) which enjoins Administrations<sup>\*</sup> 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 Administra-

(E.6)

<sup>\*</sup> or recognized private operating Agency(ies).

tions\* 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).

		Transit countries			Other terminal country		
Names of countries	First terminal country	First transit country	Second transit country	<i>n</i> th transit country	1st zone	2nd zone	3rd zone
QUOTA gold francs	†						
TOTAL CHARGES gold francs	1st zone 2nd zone						
	3rd zone						

#### Table of tariffs

† 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:

<sup>\*</sup> or recognized private operating Agencies.

- 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;
- 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

1. No. 192 of the Telephone Regulations should be amended to read:

"(3) If the call has already been included in international accounts, *and the accounts have already been sent out*, the refund shall be borne by the Administration (or recognized private operating Agency) which levied the charge for the call in question.

"These provisions do not cover ordinary calls, which are converted into collect calls after accounts have been despatched."

#### Reason :

The number of such refunds is relatively small, and this procedure eliminates all formalities and correspondence.

2. The text of number 201 in paragraph 8 of the Telephone Regulations should be amended as follows:

201, paragraph 8 ..., "If the incorrect 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 ter."

#### 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 Administra-

(E.10)

<sup>\*</sup> or recognized private operating Agencies.

tions\* 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 *ter*".

#### **RECOMMENDATION E.15<sup>1</sup>**

### INTERNATIONAL ROUTING PLAN

#### 1. The international routing plan concerns automatic and semi-automatic traffic

#### 1.1 Aim of the plan

The aim of the plan is to obtain satisfactory connection between any two stations in the world with an adequate grade of service and quality of transmission.

#### 1.2 Main reason for the plan

The plan should achieve maximum over-all economy by the most efficient use of long and costly circuits.

#### 1.3 Field of application of the plan

The plan should be able to evolve as a function of traffic streams, the establishment of new routes and new international transit centres. It has thus been established independently of the numbering plan and the rules for charging the calling subscriber and the apportionment of charges.

There is therefore no need to anticipate its application by trying to determine far in advance how it will apply on a route where semi-automatic or automatic operation is not foreseen for a period of about five years.

#### 2. Structure of the network

#### 2.1 *Number of circuits in tandem* (see Recommendation Q.40, Volume VI)

For reasons of transmission quality and the efficient operation of signalling, it is desirable to limit as much as possible the number of circuits connected in tandem.

The apportionment between national and international circuits in such a chain may vary.

The maximum number of circuits to be used for an international call is fixed by the C.C.I.T.T. at 12 with up to a maximum of 6 of the circuits being international.

In exceptional cases and for a low number of calls, the total number of circuits may be 14, but even in this case the maximum number of international circuits is 6.

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> This Recommendation also appears as Recommendation Q.12 in series Q (Telephone Signalling and Switching) of the C.C.I.T.T. Recommendations.

#### 2.2 Transit centres

There are three categories of transit centres, called CT1, CT2 and CT3. Each of these centres can connect international circuits to its national network. The CT1's and CT2's may interconnect international circuits (and act as "international transit exchange" as defined in the C.C.I.T.T. List of Definitions—see definition 17.13).

Each of these centres normally serves its own zone.

2.2.1 The CT1's are connected together two by two by low-loss probability circuit groups. However, in exceptional cases where a significant economy may be made and provided that transmission and other quality of service standards are maintained, two CT1's may be interconnected through an intermediate transit centre of unspecified order (hereinafter called  $CT \times$ ). The intermediate centre then acts as a CT1 for this traffic and must be connected to the other two CT1's by low-loss probability circuit groups, provided for final route grade of service.



FIGURE 1

Final route with low-loss probability

X

———— High-usage route (direct or transverse route)

CT1 First category transit exchange

- CT2 Second category transit exchange
- CT3 Third category transit exchange

Each CT1 is connected by low-loss probability circuit groups to all the CT2's in its zone. The final route for incoming traffic in the zone of a CT1 passes, in principle, through this CT1.

2.2.2 Each CT2 is connected by low-loss probability circuit groups to its homing CT1 and to all the CT3's in its zone. The final route for incoming traffic to one of these CT3's passes, in principle, through the homing CT2.

2.2.3 In a very large country, the zone of a CT2 may be restricted to its own country. Certain very large countries may have several CT2's to cover their territory.

2.2.4 As a general rule, the zone of a CT3 is restricted to its own country.

2.2.5 The world telephone network will have the structural plan shown in Figure 1.

# 3. Routing principles

The division into zones of various classes is to be considered only for incoming traffic and for the theoretical final route.

3.1 For outgoing traffic, the country of origin governs its routing.

3.2 A country may also consider it useful to alter its routing of outgoing traffic according to the time of day or period of the year.

3.3 The agreement of the country situated at the end of the circuit groups concerned should always be obtained in the cases referred to in paragraphs 3.1 and 3.2.

3.4 The traffic between two countries can be routed either by direct groups between these countries or through transit centres.

To obtain a good loading of the long and costly circuits a substantial fraction of the international traffic may be allowed to overflow from a direct circuit group called a high-usage group.

At the same time, for good service the overflow traffic must be capable of being routed over a series of low-loss probability circuit groups, called the final route.

The routing plan specifies the rules to be followed for routing traffic between two countries which are not connected by a low-loss probability circuit group.

3.5 From a CT, the various groups for routing a call are used in the following order:

- a) high-usage direct route, if it exists;
- b) high-usage transversal routes which by-pass a part of the final route. The order of selection of the routes begins with those that end up at the transit centres nearest to the terminal incoming centre (" far-to-near sequence ");
- c) as a last choice, the final route (final groups in tandem) passing through the parent transit centres of increasing category of the outgoing zone and then of decreasing category of the incoming zone, namely:

#### TELEPHONE ROUTING PLAN

#### $\text{CT3} \rightarrow \text{CT2} \rightarrow \text{CT1} \rightarrow \text{CT} \times \rightarrow \text{CT1} \rightarrow \text{CT2} \rightarrow \text{CT3}$

This arrangement illustrates the maximum of six international circuits quoted in 2.1. However, at the outgoing end a route which is not the theoretical final route can be set up with a low-loss probability such that no overflow has to be provided to another route and, in particular, to the theoretical final route (this latter being by-passed, as it were).

3.6 A CT1 must be provided with a direct group of circuits of low-loss probability to each dependent CT2, and to every other CT1 (subject to the exception permissible under paragraph 2.2.1 above). A CT2 must similarly be provided with a direct group of circuits of low-loss probability to each dependent CT3 as well as to its homing CT1. These circuit groups form the final routes which are an essential basis of the Plan for carrying overflow traffic and without which the CT's could not fulfil their proper function.

- 3.7 a) As a general rule, a direct high-usage route is used for traffic to the zone of the CT where this route ends.
  - b) Nevertheless, the same route can be used as a transverse route for traffic to another zone of the same order, on condition that the route between the second and third CT's is of low-loss probability.
  - c) In the case of a direct transversal route between a CT3 and its CT1, the route can be used as a transverse route to reach any centre connected to this CT1, even if the group of circuits connecting the CT1 to the latter centre is not established with a low-loss probability.

3.8 The establishment of the routing plan was based on the desire for maximum over-all economy. Its basic principle is the passage of part of the traffic as overflow through transit centres.

# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

# **SECTION 2**

# GENERAL RECOMMENDATIONS RELATING TO SIGNALLING AND SWITCHING IN THE AUTOMATIC AND SEMI-AUTOMATIC SERVICES

#### **RECOMMENDATION E.21<sup>1</sup>**

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

(Geneva, 1954)

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

considering

1. the large economies in personnel that can result from the introduction of semiautomatic working at the incoming exchange;

2. the very small number of faults due to the equipment used for the international semiautomatic service;

3. the improvement in the "efficiency" (ratio of chargeable time to total holding time) of circuits using semi-automatic working compared with the efficiency of manual circuits operated on a demand basis;

4. the improvement in the quality of the service given to subscribers due to the reduction in the time of setting up a call;

5. the fact that any type of call can be set up without difficulty over semi-automatic circuits, so that semi-automatic circuits can be used exclusively on an international relation,

#### draws the attention of Administrations\*

to the advantages of semi-automatic working from the point of view of economy and of the quality of service given to subscribers.

 $<sup>^1</sup>$  This Recommendation also appears as Recommendation Q.5 in Series Q (Telephone signalling and switching) of the C.C.I.T.T. Recommendations.

<sup>\*</sup> or recognized private operating Agencies.

#### **RECOMMENDATION E.21** bis <sup>1</sup>

#### ADVANTAGES OF INTERNATIONAL AUTOMATIC WORKING

(New Delhi, 1960)

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

considering

1. that the advantages of semi-automatic working, mentioned in Recommendation E.21, apply as well 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 change-over 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 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.

#### **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.

<sup>&</sup>lt;sup>1</sup> This Recommendation also appears as Recommendation Q.6 in Series Q (Telephone signalling and switching) of the C.C.I.T.T. Recommendations.

<sup>\*</sup> or recognized private operating Agencies.

#### **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 extremely 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.

#### **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<sup>1</sup>**

#### 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 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<sup>2</sup>.

#### **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\*.

 <sup>&</sup>lt;sup>1</sup> This Recommendation applies to intercontinental service as well as international continental service.
 <sup>2</sup> 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.

<sup>\*</sup> or recognized private operating Agency(ies).

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;

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.

<sup>\*</sup> or recognized private operating Agency(ies).

#### **RECOMMENDATION E.29**<sup>1</sup>

#### NUMBERING FOR INTERNATIONAL WORKING

#### 1. National numbering plan

1.1 Each telephone Administration \* should give the most careful consideration to the preparation of a national numbering plan<sup>2</sup> for its own network. This plan should be designed so that a subscriber is always called by the same number in the trunk service. It should be applicable to all incoming international calls.

#### 1.2 Number analysis

1.2.1 The national numbering plan of a country should be such that an analysis of a minimum number of digits of the national (significant) number  $^3$ 

- a) gives the most economical routing of incoming international traffic from various other countries;
- b) indicates the charging area in those countries where there are several.

1.2.2 In the case of a country with a two- or three-digit country code, not more than two digits of the national (significant) number should be analysed for these purposes.

In the case of a country with a one-digit country code, not more than three digits of the national (significant) number should be analysed for these purposes.

1.2.3 In the case where an integrated numbering plan covers a group of countries the digit analysis specified in 1.2.2 should also determine the country of destination.

1.2.4 For the requirements relating to frontier traffic see Recommendation Q.35, paragraph 3.

#### 2. Limitation of the number of digits to be dialled by subscribers

#### 2.1 International number

The C.C.I.T.T. recommended in 1964 that the number of digits to be dialled by subscribers in the automatic international service should not be more than 12 (excluding the international prefix). It is emphasized that this is the maximum number of digits and Administrations \* are invited to do their utmost to limit the digits to be dialled to the smallest possible number.

<sup>\*</sup> or recognized private Operating Agency(ies).

<sup>&</sup>lt;sup>1</sup> This Recommendation also appears in the Series Q of C.C.I.T.T. Recommendations (Telephone signalling and switching) as Recommendation Q.11.

<sup>&</sup>lt;sup>2</sup> See the C.C.I.T.T. Manual on National Telephone Networks for the automatic service for a comprehensive study of national numbering plans from the national point of view.

<sup>&</sup>lt;sup>8</sup> See the definitions in Recommendation Q.10 (Volume VI of the *Blue Book*).

#### 2.2 National (significant) number

Noting that:

- a) the international number (excluding the international prefix) consists of the country code followed by the national (significant) number,
- b) the smallest possible number of digits to be dialled in the automatic international service is achieved by limiting the number of digits of the country code and/or of the national (significant) number,
- c) in some countries where telephony is already developed to an advanced stage, the national numbering plans in force enable the number of digits of the international number to be limited to less than 12,
- d) some other countries which drew up their national numbering plans some time ago have taken steps to ensure that the number of digits of the international number will not exceed 12 and may even be less,

the C.C.I.T.T. recommended in 1964 that countries which have not yet established their national numbering plan ensure that, as far as practicable, the maximum number of digits of the international number be 11, at least for a period corresponding approximately to the life of automatic switching equipment (i.e. a minimum of 25 years).

For these countries, the number of digits of the national (significant) number should be equal to a maximum of 11-n (at least for the period of consideration), n being the number of digits of the country code.

#### 3. Digit capacity of international registers

The C.C.I.T.T. considers it advisable to recommend that the digit capacity of registers dealing with international traffic should allow for future conditions that may arise, but not possible to specify at the present time. In this regard, registers dealing with international traffic should have a digit capacity, or a capacity that can be expanded, to cater for more than the maximum 12-digit international number envisaged at present. The increase in the number of digits above 12 is left as a matter of decision to be taken by individual. Administrations\*.

#### 4. Use of figures and letters on dials

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

4.2 For automatic international service, it is preferable that the national numbering. plan 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 plans may, however, be necessary for national reasons. For example, countries using letters in their subscriber numbers will naturally use them in their national numbering.

<sup>\*</sup> or recognized private operating Agencies.

4.3 The dial shown below uses the arrangement of letters and figures employed by some European Administrations. It may be convenient that the dials or key-sets used by international operators for semi-automatic working in Europe have this arrangement of letters and figures.



4.4 For 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 an automatic service is available;
- b) to supply at the time of opening this 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.

4.5 It would also be desirable, in countries with letter dials, that subscribers with considerable international traffic should be asked to show on their letter-heads, next to their telephone number, the international number with figures only (see general recommendation for letter-heads in 5.3.2).

#### 5. Prefixes and codes

#### 5.1 International prefix<sup>1</sup>

International standardization of a code for access to the international network for automatic international operation has not been possible since it was in conflict with national numbering plans already in existence. (Standardization of a code for access to the international automatic network would have been useful to international travellers.)

#### 5.2 Country code<sup>1</sup>

5.2.1 Country 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.

5.2.2 A list of country codes was prepared by the C.C.I.T.T. in 1964 within the framework of a world-wide automatic telephone numbering plan.

This list was set up according to the following principles:

- a) the number of digits of the country code is 1, 2 or 3 according to the foreseeable telephonic and demographic development of the country concerned;
- b) the nine digits from 1 to 9 have been allocated as the country code or as the first digit of the country code. These digits define *world numbering zones*;
- c) in the case of Europe, due to the large number of countries requiring two-digit codes, the two digits 3 and 4 have been allocated as the first digit of the country codes.

5.2.3 The list of country codes  $^2$  is given at the end of this recommendation.

#### 5.3 Trunk prefix<sup>1</sup>

5.3.1 The national (significant) number (see definition 6 of Q.10) does not include the trunk prefix. Accordingly, in the international service, the trunk prefix of the country of destination must not be dialled.

<sup>&</sup>lt;sup>1</sup> See definitions in Recommendation Q.10 of Volume VI of the *Blue Book*.

<sup>&</sup>lt;sup>2</sup> According to a decision of the IIIrd Plenary Assembly:

a) The international numbering plan mentions only codes for countries within the jurisdiction of Members and Associate Members of the Union and the names of those countries should be as they appear in the International Telecommunication Convention.

b) Some changes will have to be made therein and within its general framework at a later C.C.I.T.T. Plenary Assembly further to Document AP III/89 (Hungarian People's Republic) and further to other requests made viva voce in the IIIrd Plenary Meeting.

The Plenary Assembly asked the World Plan Committee and its Regional Committees to study in 1964-1968 what changes might be made in the numbering Plan to meet the requests submitted without infringing the decisions taken by the IIIrd Plenary Assembly.

It should be noted that, in some countries, it is customary to consider *for national purposes* that the trunk prefix is included in the national number (which is then not the national (significant) number). A careful distinction must therefore be made between such national definition or practice and the C.C.I.T.T. definition, which is internationally valid. In order to avoid misunderstanding, the C.C.I.T.T. definition includes the world "significant" between brackets, reading as follows: "national (significant) number".

5.3.2 The C.C.I.T.T. recommends that Administrations\* ask those subscribers likely to receive an appreciable amount of international traffic to indicate on their letterheads, next to their telephone number as dialled in the national service, a second number for the international service in which:

- the trunk prefix does not appear;
- the letters are converted into digits;
- the national (significant) number is preceded by the country code.

# Example :

For a subscriber in London whose subscriber number is MOUntview 1234

national number : 0 1 MOU 1234 international number : 44 1 608 1234

5.3.3 It is recommended by the C.C.I.T.T. that the Administrations \* of countries that have not yet adopted a trunk prefix for access to their national automatic trunk network should adopt a prefix composed of a single digit, preferably 0.

The reasons for this recommendation are

- 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, and
- to minimize the number of digits to be dialled in the national automatic service.

5.3.4 In the automatic international service, following the international prefix and country code of the called country, the caller should dial the national (significant) number of the called subscriber (i.e. without dialling the trunk prefix).

<sup>\*</sup> or recognized private operating Agencies.

LIST OF COUNTRY CODES FOR INTERNATIONAL SEMI-AUTOMATIC AND AUTOMATIC SERVICE

#### Foreword

In accordance with the decision reached by the IIIrd Plenary Assembly of the C.C.I.T.T. (Geneva, 1964), the international telephone numbering plan should mention only the codes of countries within the jurisdiction of the Members and Associate Members of the International Telecommunication Union, and the names of those countries should be as they appear in the International Telecommunication Convention.

In the list hereunder, the countries in each world numbering zone are not arranged in alphabetical order but in the numerical order of their codes, those with two-digit codes preceding those with three-digit codes.

Each "territory" which has been given a country code, but the telecommunications of which come under the international jurisdiction of another State, is listed:

- either immediately after that State when it is in the same numbering zone,
- or at the end of the code list in the relevant numbering zone when the State responsible for its telecommunications is included in a different numbering zone.

Numbering zone 1 is an integrated numbering area covering the North-American continent, and the countries in it are listed in geographical order from North to South, beginning with Canada.

"Territories" the telecommunications of which come under the jurisdiction of other States are listed in the different numbering zones in the order and with the official names used in the "List of countries, territories and groups of territories Members or Associate Members of the International Telecommunication Union", published by the I.T.U. General Secretariat, i.e. in the following order: Group of Territories represented by the French Overseas Post and Telecommunication Agency (No. 35 in the List), Kingdom of the Netherlands (No. 87), Portuguese Oversea Provinces (No. 93), Territories of the United States of America (No. 113), and Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible (No. 114).

#### List of country codes for semi-automatic and automatic international service

World Numbering Zone 1 (Integrated numbering plan)

Canada United States of America Mexico Jamaica Costa Rica El Salvador (Republic of) Guatemala Honduras (Republic of) Nicaragua Panama

Puerto Rico, The Virgin Islands
(Territories of the United States of America)
French Antilles
(France)
Netherlands Antilles
(Kingdom of the Netherlands)
Bermuda, Bahamas, British Honduras
(Overseas Territories for the international relations of which the Government of the United
Kingdom of Great Britain and Northern Ireland are responsible)

World Numbering Zone 2

20	United Arab Republic				
21	Maghreb	Algeria (Democratic and Popular Republic of)			
	(integrated	Morocco (Kingdom of)			
	numbering	Tunisia			
	plan)	Libya (Kingdom of)			
27	Republic of South Africa, and				
	264 Territor	y of South-West Africa			
221	Senegal				
222	Mauritania (Islamic Republic of)				
223	Mali (Republic of)				
224	Guinea (Republic of)				
225	Ivory Coast (Republic of the)				
226	Upper Volta (Republic of)				
227	Niger (Republic of the)				
228	Togolese Republic				
229	Dahomey (Republic of)				
231	Liberia (Republic of)				
232	Sierra Leone				
233	Ghana	•			
234	Nigeria (Federation of)				
235	Chad (Republic of the)				
236	Central African Republic				
237	Cameroon (Federal Republic of)				
241	Gabon (Republic)				
242	Congo (Republic of the) (Brazzaville)				
243	Congo (Republic of the) (Leopoldville)				
249	Sudan (Republic of the)				
250	Rwanda (Republic)				
251	Ethiopia				
252	Somali Republic				
254	Kenya				
255	Tanzania (United Republic of)				
256	Uganda				
257	Burundi (Kingdom of)				
260	Northern Rhodesia				

- 261 Malagasy Republic
- 263 Southern Rhodesia
- 265 Malawi
- 253 French Somaliland (1)
- 262 Reunion (France)
- 269 Comores (1)
- 238 Cape Verde Islands (3)
- 239 St. Thomas and Prince (3)
- 244 Angola (3)
- 245 Portuguese Guinea (3)
- 258 Mozambique (3)
- 220 Gambia (5)
- 266 Basutoland (5)
- 267 Bechuanaland (5)
- 268 Swaziland (5)

Spare codes: 28, 29, 230, 240, 246, 247, 248, 259

World Numbering Zones 3 and 4

- 30\* Greece
- 31 Netherlands (Kingdom of the)
- 32 Belgium
- 33\* France
- 34 Spain
- 36\* Turkey
- 38 Federal Socialist Republic of Yugoslavia
- 39\* Italy
- 41 Switzerland (Confederation)
- 42 Czechoslovak Socialist Republic
- 43 Austria
- 44\* United Kingdom of Great Britain and Northern Ireland
- 45 Denmark
- 46\* Sweden
- 47 Norway
- 48 Poland (People's Republic of)
- 49\* Federal Republic of Germany
- 351 Portugal
- 352 Luxembourg
- 353 Ireland
- 354 Iceland
- 356 Malta
- 357 Cyprus (Republic of)
- 401 Finland
- 402 Hungarian People's Republic
- 403 Bulgaria (People's Republic of)
- 404 Roumanian People's Republic
- 405 Albania (People's Republic of)
  - (1) Group of Territories represented by the French Overseas Post and Telecommunication Agency.
  - (3) Portuguese Oversea Provinces.
- (5) Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible.
  - \* Same as C.C.I.T.T. Volume VI of the Red Book allocation.

105

#### 350 Gibraltar (5)

Spare codes : 37, 355, 358, 359, 400, 406, 407, 408, 409

#### World Numbering Zone 5

- 53 Cuba
- 54 Argentine Republic
- 55 Brazil
- 56 Chile
- 57 Colombia (Republic of)
- 58 Venezuela (Republic of)
- 591 Bolivia
- 593 Ecuador
- 595 Paraguay
- 596 Peru
- 598 Uruguay
- 594 French Guiana (France)
- 597 Surinam (Kingdom of the Netherlands)
- 592 British Guiana (5)

Spare Codes: 51, 52, 500 to 509, 590, 599

World Numbering Zone 6

- 60 Malaysia
- 61 Australia (Commonwealth of), and675 Papua New Guinea
- 62 Indonesia (Republic of)
- 63 Philippines (Republic of the)
- 64 New Zealand, and 685 Cook Isles 688 Niue
- 66 Thailand
- 683 Western Samoa
- 678 New Hebrides (1)
- 687 New Caledonia (1)
- 689 French Polynesia (1)
- 672 Portuguese Timor (3)
- 682 Guam (4)
- 684 American Samoa (4)
- 676 Tonga (5)
- 677 British Solomon Isles (5)
- 679 Fiji Isles (5)

Spare Codes : 65, 69, 670, 671, 673, 674, 680, 681, 686

<sup>(5)</sup> Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible.

<sup>(1)</sup> Group of Territories represented by the French Overseas Post and Telecommunications Agency.

<sup>(3)</sup> Portuguese Oversea Provinces.

<sup>(4)</sup> Territories of the United States of America.
#### World Numbering Zone 7

7 U.S.S.R.

#### World Numbering Zone 8

- 81 Japan
- 82 Korea (Republic of)
- 84 Viet-Nam (Republic of)
- 86 China
- 855 Cambodia
- 856 Laos
- 853 Macao (3)
- 852 Hongkong (5)

Spare Codes: 80, 83, 87, 88, 89, 850, 851, 854, 857, 858, 859

World Numbering Zone 9

- 91 India (Republic of)
- 92 Pakistan
- 93 Afghanistan
- 94 Ceylon
- 95 Burma (Union of)
- 98 Iran
- 961 Lebanon
- 962 Jordan (Hashemite Kingdom of)
- 963 Syrian Arab Republic
- 964 Iraq (Republic of)
- 965 Kuwait (State of)
- 966 Saudi Arabia (Kingdom of)
- 967 Yemen
- 972 Israël
- 977 Nepal
- 969 Aden (5)
- 975 Hadramaut (5)

Spare codes: 90, 99, 960, 968, 970, 971, 973, 974, 976, 978, 979

## **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:

(3) Portuguese Oversea Provinces.

<sup>(5)</sup> Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible.

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.

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.

(E.30

<sup>\*</sup> or recognized private operating Agencies.

## **RECOMMENDATION E.31**

# SEMI-AUTOMATIC TRANSIT TRAFFIC

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

# considering

Recommendations E.92 and E.95, specifying the loss probabilities for calculating the number of circuits in semi-automatic operation (5% for terminal traffic and 3% for transit traffic) or automatic operation (1%);

#### 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 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

<sup>\*</sup> or recognized private operating Agencies.

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<sup>1</sup>

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 settingup, 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\*;

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;

#### 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.)

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> This text is published also as Recommendation 82 in series F (Telegraph operation) of the C.C.I.T.T. Recommendations.

- § 2. These Rules govern international photelegraph 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 R.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 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 four-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 four wire-four 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).

111

<sup>\*</sup> or recognized private operating Agency(ies).

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 COMMUNI-CATIONS
- § 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 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.

<sup>\*</sup> or recognized private operating Agencies.

#### PHOTOTELEGRAPHY

- 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.
- § 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.<sup>1</sup>
  - 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.

<sup>&</sup>lt;sup>1</sup> See Recommendation E.33.

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.
- 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.

<sup>\*</sup> or recognized private operating Agencies.

## 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.<sup>1</sup> If there are calls, the circuit must be blocked as soon as the telephone call is over (preliminary blocking).

<sup>\*</sup> or recognized private operating Agency(ies).

<sup>&</sup>lt;sup>1</sup> At the time agreed upon with the telephone service, if such a previous agreement is considered to be necessary by the telephone operating services.

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 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 A FOREIGN COUNTRY

## 1. In the international automatic service:

1.1 A subscriber desiring to inquire about a subscriber's number, or to make any general telephone inquiry in another country, must appeal to a special service in his own country, which will obtain the information for him if it is not to hand.

1.2 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.

*Note.* — Though it is impossible to prevent subscribers having free access to information operators in a foreign country, there would generally be timing to clear down the call when no answer signal is forth-coming, and the access time to the information service would thus be automatically limited.

1.3 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.

2. In the *semi-automatic* international service: Outgoing operators should be able to get in touch with the information services of foreign countries. It was considered advantageous, and even essential, where big countries were concerned, that an operator should be able to obtain information about subscribers' numbers from the source—that is to say, from any decentralized services there might happen to be in the foreign country, and not just from some single information bureau in that country.

(E.34)

Provision should be made for access to a centralized service in the country of destination, for the purpose of acquiring information about subscribers' numbers, even when direct access to decentralized information services is possible, since the outgoing operator might fear language difficulties, or may not know the number to dial to obtain the regional information service.

3. There are various possible ways whereby operators could be ensured access to the information operators in other countries, and whereby such access could be prohibited to subscribers:

3.1 Automatic calls might be distinguished from semi-automatic ones on arrival. Automatic calls to information services, characterized by the few number of digits in their call numbers, could be blocked.

3.2 Outgoing operators might be told to get in touch with information operators in a foreign country via incoming operators (so called Code 11 operators). Access to information services would then be blocked for all calls coming from international circuits.

## **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.<sup>1</sup> The manual network would be a reserve network but might serve also to constitute circuits occasionally required such as:

- 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:

<sup>&</sup>lt;sup>1</sup> In this text, as usual, automatic circuits comprise both semi-automatic and fully automatic circuits.

- 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 reoccupied 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 pre-ferable 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.

# **SECTION 3**

# TARIFFS AND CHARGING IN THE INTERNATIONAL TELEPHONE SERVICE

# **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.

<sup>\*</sup> 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.)

<sup>\*</sup> 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 crowflight 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.<sup>1</sup> 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 cricuits for 100 circuits);
- interest on capital invested: 6%;
- average life of an underground cable: 35 years;
- average percentage difference between the actual length of international telephone circuits and the crowflight distance: 30%.

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> Succeeded by the C.C.I.T.T. in 1957.

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 <sup>1</sup>;
- 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%.

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

- average traffic per circuit: 113<sup>1</sup>/<sub>3</sub> 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 on page 125.

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.

<sup>&</sup>lt;sup>1</sup> 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.

#### 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):

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 showed that, in short-distance services (up to about 300 kilometres) 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 exchange*: 0.60 gold franc per 3-minute call (both terminal and transit exchanges).

b) Modern conditions. — The great majority of calls are set up over high-speed transmission lines with modern type carrier routes (metallic lines or 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 basic elements of tariff charges to be taken into account for the calculation of international telephone charges should be as follows:

(E.51)

<sup>\*</sup> or recognized private operating Agencies.

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 system

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

- per international manual exchange (whether an internation	al
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 france
. <u> </u>	per incoming international automatic exchange		•	•	0.30 gold franc
—	per transit international automatic exchange <sup>1</sup>		•	•	0.45 gold franc

c) Transitional conditions. — In certain international relations, a transition stage has been reached, in which old and new type circuits co-exist; the amount of 0.25 gold franc per 3-minute call and per 100 kilometres of crowflight distance intended to cover costs of depreciation, interest on capital involved and maintenance of the circuit concerned, should provisionally be increased to 0.40 gold franc, until the route uses modern type circuits. The values, shown in b) above, for the operating expenses of an international exchange are applicable in these transitional conditions.

<sup>1</sup> Remuneration for the use of a transit international automatic exchange

If all the traffic between two terminal countries is routed through a transit country either wholly or partly via a transit international automatic exchange, no remuneration is allowed for the use of the transit exchange.

If, however, only part of the traffic between two terminal countries is routed through a transit country via a transit international automatic exchange, then the remuneration of 0.45 gold franc should be taken into account in fixing the hypothetical charge for the country with a transit international automatic exchange.

# TABULAR SUMMARIES OF THE ELEMENTS OF THE COST TO BE TAKEN INTO CONSIDERATION IN THE CONDITIONS INDICATED

#### TABLE I

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

Tabular Summary of the elements for basis of tariff charges to be taken into account in the conditions indicated

	Old conditions (case a)	Modern conditions (case b)	Transitional conditions (case c)
per 100 km of circuit	0.60	0.25	0.40
— manual	0.60	0.80	0.80
<ul> <li>— outgoing semi-automatic</li> </ul>	_	0.80	0.80
<ul> <li>incoming automatic</li> </ul>	—	0.30	0.30
transit automatic		0.45	0.45

#### TABLE II

Automatic operation : per 3 minutes of actual call duration

	Modern conditions (case b)	Transitional conditions (case c)
per 100 km of circuit per outgoing international automatic exchange <sup>1</sup> per incoming international automatic exchange <sup>1</sup>	0.25 0.50 0.30	0.40 0.50 0.30
per transit international automatic exchange <sup>2</sup>	0.45	0.45

<sup>1</sup> It is to be understood that the elements of calculation applying to outgoing and incoming international exchanges take no account of the use which may be made of any national circuit or exchange to connect the international exchange concerned to the calling or called subscribers.

<sup>2</sup> See footnote on preceding page.

#### NOTE

When Administrations<sup>\*</sup>, 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. It would be advisable for unit quotas (in gold francs) indicated in international accounts and corresponding to 3 chargeable minutes to be exactly divisible by three. This would enable quotas per minute to be expressed without recurring decimals.

<sup>\*</sup> or recognized private operating Agencies.

3. 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.

4. 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.

5. 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.

## **RECOMMENDATION E.52**

# CHARGING IN A FULLY AUTOMATIC INTERNATIONAL TELEPHONE SERVICE<sup>1</sup>

#### I. PRINCIPLES FOR CHARGING

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

considering

1. that, in accordance with the provisions of Article 26 of the International Telephone Regulations (Geneva, 1958), 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;

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> Recommendation E.52 does not apply to the automatic intercontinental service.

- .
- 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:

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 unitinterval 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.

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 <sup>1</sup>

# 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.

128

<sup>\*</sup> or recognized private operating Agency(ies).

<sup>&</sup>lt;sup>1</sup> This Recommendation also appears as Recommendation Q.50 in the Series Q Recommendations (Volume VI of the *Blue Book*).

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 of all call durations measured in the international outgoing exchanges on the appropriate meters. A charge in gold frances per minute of call duration, valid in both directions of the relation and applicable solely for international accounts relating to automatic calls, will be fixed by agreement between Administrations\*.

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 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 call tickets prepared by the outgoing operators. Hence, in the international outgoing exchange equipment, a distinction should be made, in the preparation of international accounts, 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 system of charging for frontier relations (reduced charges between neighbouring frontier zones), special steps will have to be taken to discriminate between automatic calls in frontier relations and other automatic calls. This discrimination will be made every time that frontier traffic is routed wholly or partly (overflow) by long-distance international circuits having devices for measuring call duration.

This discrimination will, in general, necessitate:

<sup>\*</sup> or recognized private operating Agency(cies).

- a) a further analysis of the national (significant) number of the called subscriber than the one which is quoted in Recommendation Q.11, and
- b) the determination of the origin of the calls, since frontier charges depend on the distance between the outgoing and the incoming frontier zones.

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 the 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 by each route is assumed to be proportional to the number of circuits in service on the 15th of each month on each route.

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<sup>\*</sup> 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<sup>\*</sup> 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 six 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 over-all 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 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.

<sup>\*</sup> or recognized private operating Agency(ies).

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.

10. It is not essential that call-duration meters be read at midnight on the last day of the month: it will suffice if they are read on the last day of the month at the most convenient time. Should the last day of the month not be a working day, these meters can be read the day before or the day after.

The monthly account forwarded to the other Administrations shall show the day on which meters were read. It ought to be possible to arrange for all meters in an exchange to be read on the same day, since there are relatively few circuits on which call-duration meters have to be read.

11. The degree of accuracy of the call-duration measurement equipment shall be  $\pm 2\%$  with a confidence limit of 95%, on the understanding that the 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 ove-rall measurements for the 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<sup>1</sup>

## 1. Manual and semi-automatic services

#### a) Calls without préavis

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.

<sup>\*</sup> or recognized private operating Agency.

<sup>&</sup>lt;sup>1</sup> This Recommendation is also applicable in the intercontinental service.

b) Calls with préavis

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 *préavis* charge only is collected.

If the caller accepts the communication, the charge is collected for the duration of the call and the *préavis* 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 <sup>1</sup>

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 ∅;
- 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.

<sup>&</sup>lt;sup>1</sup> This Recommendation applies also to the intercontinental service.

<sup>\*</sup> or recognized private operating Agencies.

#### 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.

- 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 to 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.

# **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. (See Instructions for the International Telephone Service.)

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 con-

<sup>\*</sup> or recognized private operating Agencies.

tinue 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.

## **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 which the Administrations\* have delegated their authority in this matter,

<sup>\*</sup> 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).

Information concerning the names, exact postal address, telegraphic addresses and also telephone numbers of the controlling services to which Broadcasting Organizations in the various countries should apply for circuits appear in the Routine Maintenance Programme (see Rec. M. 15) published by the C.C.I.T.T. Secretariat, Administrations\* undertaking to pass this information 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 event not later than *twenty-four hours before the transmission* is to begin, so that telephone Administrations \* may make the requisite arrangements. 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 with *at least twenty-four hours' notice*, 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 over-all controlling service for the transmission concerned.

The over-all 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

<sup>\*</sup> or recognized private operating Agencies.

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 and 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".<sup>1</sup>

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 distrition 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.

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<sup>\*</sup> concerned in order to determine what control circuits should be insisted upon during the preparatory period<sup>1</sup> 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 remark. — 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

<sup>&</sup>lt;sup>1</sup> The preparatory period is defined under 3.1.2.

<sup>\*</sup> or recognized private operating Agencies.

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 circuit	50 to 10 000 c/s		

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 intead 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.

<sup>\*</sup> or recognized private operating Agencies.

- 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.<sup>1</sup>

3.1.5 A surcharge is applied in respect of each programme transmission<sup>2</sup> 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.

- 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;
- 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  $({}^{3}/_{5})$  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.

<sup>2</sup> Unless otherwise agreed among Administrations or recognized private operating Agencies, the above surcharge shall apply to intercontinental as well as to continental calls.

If, in any particular relation, a single Administration (or Agency) applies the C.C.I.T.T. recommendation and is alone in levying the eight-minute surcharge in the event of tardy cancellation of a transmission, the surcharge would not be shared and would not appear in the international accounts.

(E.57)

<sup>\*</sup> or recognized private operating Agency(ies).

<sup>&</sup>lt;sup>1</sup> 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):

This surcharge is shared between the Administrations<sup>\*</sup> 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.

The *eight-minute* surcharge shall be levied if, for reasons over which Administrations\* have no control, the Broadcasting Organization which has ordered the circuit informs the Centralizing Office to which it had originally applied that a programme transmission is to be cancelled, less than six hours before that transmission was due to begin.<sup>1</sup>

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.

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.

<sup>\*</sup> or recognized private operating Agency(ies).

<sup>&</sup>lt;sup>1</sup> See footnote 2 on page 140.

		Old type circuit (effective bandwidth transmitted: at least 50 to 6400 c/s) <sup>1</sup>	Normal type circuit (effective bandwidth transmitted: at least 50 to 10 000 c/s)	
Charges for 3 minutes of programme trans- mission	per 100 km (crow- flight) of circuit <sup>2, 3</sup>	0.75 gold fr.	0.75 gold fr.	
	for each internatio- nal terminal ex- change (at the extremities of the connection) <sup>4</sup>	0.75 gold fr.	2.40 gold fr.	
Fixed surcharge, independ the programme transmission	ent of the duration of on.	Equal to the charge for 8 minutes of pro- gramme transmission, in the relation in ques- tion and by the circuit in question.		
If, for their own purposes. Administrations * wish to apply tariffs lower than those based on the above				

#### Bases for the calculation of charges applicable to programme circuits

standards, this may be done by special agreement.

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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 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.

<sup>4</sup> 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 programmetransmission

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\*\*.

<sup>\*</sup> or recognized private operating Agencies.

<sup>\*\*</sup> See footnote 1 on page 140.
## 3.4 Charge to be applied when the circuit for a programme transmission is of mixed settingup

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 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 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.

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.

## SPECIMEN OF DAILY REPORT

## International Programme Transmissions completed on

	Circuits or sections of circuits used for the transmission		Type Time of circuits used at which circuit wa		me circuit was	Duration	Number of				Name of Broadcasting Organization which should	
Subject of the programme transmission	from	to **			put at dis- posal of Broadcasting Organization	released by Broadcasting Organization	not counted (faults, interrup- tions, etc.)	chargeable minutes	chargeable units	Unit charge	Amount of charge	pay the charge or the telephone Adminis- tration *** which should collect it
Concert from Lon- don broadcast by Bruxelles, Berlin, København (see following dia- gram) *	London	Bruxelles										

## London Exchange

\* 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.

#### 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".

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 opposite. 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

<sup>\*</sup> or recognized private operating Agency(ies).

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.

## 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;

<sup>\*</sup> or recognized private operating Agency(ies).

- 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 special column for international programme 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.

<sup>\*</sup> or recognized private operating Agencies.

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.

## 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 of 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  $240 \times 11=2460$  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

<sup>\*</sup> or recognized private operating Agency.

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.

#### 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.



\* or recognized private operating Agency.

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 Bruxel- les-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.57** bis

## INTERCONTINENTAL PROGRAMME TRANSMISSIONS

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. (See the note at the end of this Recommendation.) 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. An *eight-minute* surcharge shall be levied if, for reasons over which Administrations\* have no control, the *broadcasting* organization which has ordered the circuit informs the

(E.57 bis)

<sup>\*</sup> or recognized private operating Agencies.

Centralizing Office to which it had originally applied that a *programme transmission* is to be cancelled less than six hours before that transmission was due to begin.

If, in a transmission between two countries, a single Administration<sup>\*</sup> were to apply this Recommendation and were alone in levying the eight-minute surcharge for tardy cancellation, the surcharge would not be shared and would not appear in the intercontinental accounts.

3. If facilities different from those provided for the ordinary telephone service are required, the Administrations\* concerned should agree between themselves the basis of charging.

4. 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.

5. If, in the case mentioned in 4, 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 3 above.

6. 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 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.

*Note.* — 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.

<sup>\*</sup> or recognized private operating Agency(cies).

#### **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 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  $^{1}$ ,

<sup>\*</sup> or recognized private operating Agency(ies).

<sup>&</sup>lt;sup>1</sup> The purpose of this centre is to:

<sup>-</sup> co-ordinate the requirements of the television organizations participating in the transmission in question,

<sup>-</sup> make all necessary enquiries as to the availability of television circuits,

<sup>-</sup> 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.

#### 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):

- 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 of 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.<sup>1</sup>

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

<sup>&</sup>lt;sup>1</sup> 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.

<sup>\*</sup> or recognized private operating Agencies.

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).

#### 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

<sup>\*</sup> or recognized private operating Agencies.

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 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<sup>1</sup>

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.

<sup>\*</sup> or recognized private operating Agency(ies).

<sup>&</sup>lt;sup>1</sup> 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.

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

This over-all 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.

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

<sup>\*</sup> or recognized private operating Agencies.

- 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 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,

<sup>\*</sup> or recognized private operating Agency.

- 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 \*.

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.

<sup>\*</sup> or recognized private operating Agencies.

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;

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 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 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).<sup>1</sup> For each minute, or fraction of a minute, after the first 3 minutes of use, the charge is one third of the above charge.

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> This figure takes into account the costs relating to two terminal stations.

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<sup>1</sup> 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;
- 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<sup>\*</sup>, 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<sup>\*</sup> in extending international television circuits from the international terminal, are also payable.

3.2.4 Any recording of a television programme made by a telecommunication Administration\* or television organization for transmission of that programme at a later date is,

<sup>&</sup>lt;sup>1</sup> The Administrations or recognized private operating Agencies concerned should fix by mutual agreement the points at which each international television circuit begins and ends.

<sup>\*</sup> or recognized private operating Agency(ies).

for charging purposes, treated as though it were an immediate transmission of the programme in question.

## 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.

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 organisation (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,

<sup>\*</sup> or recognized private operating Agency(ies).

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 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);

<sup>\*</sup> or recognized private operating Agency(ies).

- 2.3 Complete programme circuit a circuit carrying mixed effects and commentary.
- 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.

#### 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<sup>1</sup>

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.

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,

<sup>&</sup>lt;sup>1</sup> This text is published also as Recommendation F.83 in series F (Telegraph operation) of the C.C.I.T.T. Recommendations.

namely the one in the same sense as the axis of the cylinder (so long as the other dimension is not greater then 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 <i>y</i>
2.5 D	6 y
3 D	7 1

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:

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

I. Phototelegrams exchanged between public stations

\* or recognized private operating Agencies.

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

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

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 photo-telegrams. 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:

<sup>\*</sup> or recognized private operating Agency(ies).

		Dimensi	ons of phot	otelegram		Share accruing to			
Scale Ist side			Total charge in gold francs (to	Share according to					
rates	66 mm	70 mm	88 mm	2nd side (chargeable length)	be levied at outgoing end)	outgoing Admn.*	transit Admn.*	incoming Admn.*	
1st step				1.5 $D$ or less	20+4 <i>y</i>	10+4 <i>a</i>	4 <i>b</i>	10+4 <i>a</i>	
2nd step	<i>≤</i> 18 cm	<i>≤</i> 20 cm	<i>≤</i> 24 cm	over 1.5 D up to 2 D	2 <b>0</b> +5 <i>y</i>	10+5a	56	10+5 <i>a</i>	
3rd step				over 2 D up to 2.5 2 D	<b>20</b> +6 <i>y</i>	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:

		Dimensi	ons of phot	otelegram		Share accruing to			
Scale	Scale 1st side			Total charge in gold francs (to	Share accluding to				
rates	66 mm	70 mm	88 mm	2nd side (chargeable length)	be levied at outgoing end)	outgoing Admn.*	transit Admn.*	incoming Admn.*	
1st step				1.5 D or less	10+4 <i>y</i>	10+4 <i>a</i>	4 <i>b</i>	4a	
2nd step	<i>≤</i> 18 cm	<i>≤</i> 20 cm	<i>≤</i> 24 cm	over 1.5 <i>D</i> up to 2 <i>D</i>	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.

<sup>\*</sup> or recognized private operating Agency(ies).

#### 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:

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

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.

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.

<sup>\*</sup> 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.

4. The Administrations\* concerned reserve the right to exercise, by any suitable means, all technical or other controls which they consider desirable.

<sup>\*</sup> or recognized private operating Agencies.

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.

#### **RECOMMENDATION E.64**

#### DEFERRED TELEPHONE CALLS

## Le 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;

<sup>\*</sup> or recognized private operating Agency(ies).

that deferred calls would be a source of disappointment to the subscriber owing to 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\* 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

.

<sup>\*</sup> or recognized private operating Agencies.

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).

## **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.

<sup>\*</sup> or recognized private operating Agencies.

#### 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: 2.60

each  $\frac{2.60}{4} = 0.65$  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:

each  $\frac{3.00}{3} = 1.00$  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.

## **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.

<sup>\*</sup> or recognized private operating Agency(ies).

## **RECOMMENDATION E.70**

## MONTHLY TELEPHONE ACCOUNTS

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

#### recommends

the following arrangements for the 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 175.
- 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 three 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.

<sup>\*</sup> or recognized private operating Agency(ies).

#### Specimen form for drawing up monthly international accounts

#### **TELEPHONE ACCOUNT**

Service:

#### Month:

Item	Number	Credit of: B		Credit of:		Credit of: D	
		Quota	Total	Quota	Total	Quota	Total
Minutes full rate Zone I Zone II	4215 <b>*</b> 1422	2.40 2.40	3372.— 1137.60	1.40 1.40	1967.— 663.60	1.20 2.60	1686.— 1232.40
Minutes reduced rate Zone I Zone II	810 246	1.44 1.44	388.80 118.08	0.84 0.84	226.80 68.88	0.72 1.56	199.40 127.92
Report charges Express charges	40 12	0.40 —	16.— —	0.25	10.— —	0.20 2.00	8.— 24.—
		_	5032.48		2936.28	_	3277.72

\* The figures in the table are given as an example.

A =Country of origin; B and C =Transit country; D =Country of destination.

#### Explanatory notes

1. The entry after "Service" should show the countries of origin and destination, the country of origin being shown first.

2. If the account does not relate strictly to a calendar month (e.g. because of the arrangements for reading traffic meters in the automatic service), the period covered by the account should be shown.

3. The form should have a "Credit of " column for each country to be remunerated.

4. The entries in the "Item" column of the account for telephone traffic proper should be limited to "minutes" and to other items such as "Report charges", "Express charges for avis d'appel", etc., which cannot be expressed in terms of minutes. A distinction should be made between "minutes" at full and reduced rates, between "minutes" in the semi-automatic and manual services, and between "minutes" corresponding to different charge zones in the country of destination.

5. The number to be entered in the "Number" column against the "minutes" entry in the "Item" column should include, in addition to chargeable minutes of conversation, supplementary charges which are equivalent to charges for one chargeable minute.

6. The quota to be shown in the "Credit of " column against the "minutes" entry in the "Item" column is the unit (three minutes) quota payable to the Administration concerned; the "Total" to be shown in the "Credit of " column should be obtained by multiplying the quota by the number of minutes and then dividing the figure obtained by three.

7. The account for programme, television and phototelegraph transmissions should contain separate entries for each type of transmission and, in the case of programme transmissions, should, where appropriate, distinguish between transmissions a) over ordinary telephone circuits, b) over old type circuits, c) over normal type circuits, and d) the use of control circuits.

## **RECOMMENDATION E.70**bis

#### REFUNDS

1. The C.C.I.T.T. feels it desirable that rebate practice on the telephone service should be brought into line with that obtaining in the telex service.

There are not very many refunds or rebates which cannot be deducted before telephone accounts are sent out. If their cost is borne by the Administration \* which levied the charge, the formalities and correspondence otherwise required would be very considerably reduced.

2. The procedure whereby refunds and rebates not deducted from international accounts before these latter are sent off have to be borne by the Administration\* which has levied the charge should apply to all telephone services: manual, semi-automatic, and fully automatic.

3. Hence the C.C.I.T.T. recommends that paragraph 192 (Article 37) of the Telephone Regulations be amended to read <sup>1</sup>:

"If the call has already been included in the international accounts, and the accounts have already been sent out, the refund shall be borne by the Administration (or recognized private operating Agency) which levied the charge for the call in question."

These provisions do not cover ordinary calls, which are converted into collect calls after accounts have been despatched.

## **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.

<sup>&</sup>lt;sup>1</sup> See Recommendation E.10.

<sup>\*</sup> or recognized private operating Agency(ies).

## **SECTION 4**

# STATISTICS AND PUBLICATIONS ON INTERNATIONAL TELEPHONY

## **RECOMMENDATION E.81**

## GENERAL TELEPHONE STATISTICS

The C.C.I.T.T.

#### recommends

that the general telephone statistics should be published each year by the I.T.U. General Secretariat 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.

<sup>\*</sup> 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 par 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
	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 <i>fixed-charge system</i>
	Total number of pulses
	Estimate of number of conversations
	e) Total traffic
	Total number of conversations:
	i) national traffic
	ii) international traffic
Expl	anatory 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:

## (E.81)
"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 ",

This definition may cause some confusion, particularly as the French and English versions do not quite correspond.

To overcome this difficulty, and for the purposes of Recommendation E.81, the term "main station" should be interpreted as follows:

"A 'main station 'within the meaning of heading II is a telephone station which has a corresponding number in the telephone exchange equipment. It is understood that:

- "- the line connecting the main station to the telephone exchange may be either an exclusive exchange line or a shared line;
- "— when a subscriber's station has several extensions (private branch exchange), the number of main stations is equal to the number of lines connecting the installation to the telephone exchange, whether these lines are operated in one direction or in both directions.

"Example: A subscriber's station with extensions is served by 50 lines which connect it to the telephone exchange. The installation has 10 operating positions (and, therefore, 10 ' operator's stations') and 500 extensions.

"In accordance with the above definition, this installation must be counted as having 50 main stations (i.e. as many stations as there are subscriber lines connecting the installation to the exchange). It will not, on the other hand, be counted as having:

"- either one main station (which would refer to the installation),

"--- or 10 main stations (which would correspond to the number of stations at operating positions)."

It will thus be seen that according to this definition the number of main stations to be entered under heading II of the Statistics is equal to the number of "exclusive exchange lines".

#### 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.

#### **RECOMMENDATION E.82**

# STATISTICS FOR THE INTERNATIONAL TELEPHONE SERVICE (NUMBER OF CIRCUITS IN OPERATION AND VOLUME OF TRAFFIC)

(statistics exchanged by Administrations\*)

Telephone Administrations\* shall exchange each year, *in February*, statistics showing the number of circuits used and the volume of traffic monitored in the preceding year, as well as estimates of the number of circuits which will be required three years and five years later. These statistics shall be drawn up in the form indicated below.

A copy of the statistics shall be sent to the C.C.I.T.T. Secretariat for information.

<sup>\*</sup> and recognized private operating Agencies.

# INTERNATIONAL TRAFFIC STATISTICS

#### Year:

Group of circuits	Numt circ in se	per of uits rvice	Numl circ requ	per of uits uired	Method of	Destination of	Busy tra	-hour ffic	Start of busy-hour	Annual traffic	Estimated of cir	d number cuits	Observations	
	Out- going	Both- way	Out- going	Both- way	operation	traffic	Month	Erlangs	(GMT)	increase	in 3 years	in 5 years		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
(example)														
Zürich-København	20				SA {	terminal Sweden* Norway Finland <i>Total</i>	X X X X X X	8 4 2 1 15	10.00 10.15 09.45 10.30 10.00	15% 12% 13% 7% 14%	28	32	* overflow traf- fic on Zürich- Stockholm con- nection	
Zürich-Stockholm	10				SA	terminal		5.5	10.15 11.15	12%	13	15		

#### ANNEX

#### (to Recommendation E.82)

#### How to fill in the table on international telephone traffic statistics

- Column 1. Designation of the connection by giving the name of the outgoing exchange first and then the name of the incoming exchange. Two-way connections will be shown in alphabetical order.
- Columns 2 and 3. Number of circuits in operation as on 31 December of the statistical year. The number will be shown in column 2 when it refers to outgoing circuits and in column 3.
- Columns 4 and 5. Number of circuits which would have been required during the statistical year for satisfactory traffic routing.
- Column 6. Method of operation applied to traffic routed over the connection.

The following abbreviations will be used:

- A for automatic,
- SA for semi-automatic,
- M for manual,
- A + SA for connections using both methods of operation.
- Column 7. Destination of traffic.

Each relation accessible to the connection concerned will be shown in this column on a separate line.

In the example given, the traffic routed over the Zürich-København connection is destined for Denmark (terminal), Sweden, Norway and Finland (transit). In this case, the data for each destination will be shown in columns, 8, 9, 10 and 11. The total traffic figure, however, should not be omitted. These data will be bracketed together. If the connection only handles traffic to the country in which the incoming exchange is situated, only the word "terminal" will appear in column 5.

Columns 8 and 9. Busy-hour traffic, expressed in erlangs.

The traffic measured during the busiest month of the statistical year (see Recommendation E.1). For two-way circuit groups, the total amount of incoming and outgoing traffic should be given.

Column 10. Busy hour (GMT).

This refers to the busy hour as defined in Recommendation E.1 in Volume II bis of the Red Book.

- Column 11. Annual increase, in %. Each Administration should insert in this column the annual traffic increase rate with respect of the previous year.
- Columns 12 and 13. Columns 12 and 13 should show the estimated number of circuits required to route traffic in three and five years' time, respectively. For example, if the statistics relating to 1964 are drawn up in February 1965, column 12 will give the estimated number of circuits required in 1968 and column 13 those required in 1970. These circuits should, in principle, be in operation on 31 December 1967 (1 January 1968) and 31 December 1969 (1 January 1970) respectively.

(E.82)

#### **RECOMMENDATION E.83<sup>1</sup>**

#### CHECKING THE INTERNATIONAL TELEPHONE SERVICE

Administrations\* are recommended to draw up a programme for observations and tests designed for assessment of circuits and equipment, supervision of operators and evaluation of the quality of service given to subscribers. It would be desirable if Administrations\* were to exchange statistics on quality of service directly, and immediately after they have been made out, in accordance with Tables I, II and III in Recommendations E.83 *bis*, E.83 *ter*, and E.83 *quater*.

Table I in Recommendation E.83 bis relates to the observations on the outgoing end on the quality of international automatic and semi-automatic service. It provides in particular a check of the percentage of unsuccessful calls due to technical faults (equipment shortages or failures).

Table II in Recommendation E.83 ter relates to observations on traffic set up by operators. It provides, in manual and semi-automatic working, a means of determining the efficiency of international circuits, of assessing the work of operators and the quality of transmission.

Table III in Recommendation E.83 quater is used to record the results of test calls undertaken especially when the observations shown in Table I make it clear the percentage of faults is too high.

#### Notes on Tables I and II

- a) The number of observations to be made on each group of circuits is a point which the outgoing Administration\* is left free to decide.<sup>2</sup> However, observations should be numerous enough to be representative for the traffic concerned, i.e. at least two hundred observations. These statistics should be exchanged between Administrations with all possible speed as soon as it is felt that the observations made are numerous enough to show what the conditions really are.
- b) The frequency of exchange of Tables I and II of Recommendations E.83 *bis* and E.83 *ter* may depend, among other things, on the volume of traffic and on the quality of service observed. Every group of international circuits should be monitored at least once a year, for a suitable period.

#### **RECOMMENDATION E.83** bis

## MONITORING OF INTERNATIONAL OUTGOING TELEPHONE CIRCUITS FOR QUALITY OF SERVICE<sup>3</sup>

(See Table I on opposite page.)

#### Remarks

a) This table summarizes observations made on outgoing automatic and semi-automatic traffic. In general, observations are made on outgoing circuits. If made at another point in the outgoing international exchange at which the international circuits terminate, account will be taken only of calls which have actually caused the international circuit to be seized. These observations will be made only while the call is being set up, and a few seconds after the called subscriber's reply. A separate form will be used for each country of destination, and for each group of circuits. Should certain Administrations\* wish to monitor incoming traffic too, the outcome of such observations could be entered in a similar form.

<sup>\*</sup> or private operating Agency(ies).

<sup>&</sup>lt;sup>1</sup> This Recommendation appears also in Volume VI of the *Blue Book* under the number Q.60.

 $<sup>^{2}</sup>$  Question 13/XII under consideration in 1964-1968 deals with how many observations should be entered in Tables I and II, together with how often such information should be exchanged.

<sup>&</sup>lt;sup>3</sup> Also Recommendation Q.61 in volume VI of the *Blue Book*.

Table I. — MONITORING OF INTERNATIONAL OUT CIRCUITS FOR QUALITY OF SERV	GOIN( ICE	G TEI	EPHO	)NE
Outgoing international exchange				
Group of circuits				
Automatic service <sup>a</sup>				
Semi-automatic service $a$				
Pariod from to				
	Nur	mber		%
Category	Sub- total	Total	Sub- total	Total
1. Calls <sup>b</sup> successfully put through				
<ol> <li>Calls <sup>b</sup> which did not lead to a conversation (but failure not due to equipment or incorrect handling by the caller)</li> </ol>				
2.1 No answer				·
2.2 Subscribers ousy <sup>2</sup> 2.3 Subscribers or channels occupied				
3. Unsuccessful calls due to equipment				
3.1 Congestion at the international transit exchange $c$				Į
3.3 Congestion in the incoming international network <sup>c</sup>			•••	
3.4 Wrong number obtained				ĺ
3.6 Reception of answer signal when the called party does not reply				
3.7 Very poor speech transmission			•••	
3.8 No tone, no answer 3.9 Other failures of a technical kind			•••	
<ol> <li>Unsuccessful calls <sup>b</sup> due to incorrect handling by the caller (subscriber or operator)</li> </ol>		 		 
4.1 Wrong number dialled				
4.2 Incomplete number				ł
4.3 Call abandoned prematurely before receipt of a tone 4.4 Call abandoned prematurely within 30 seconds after receipt of the				ł
ringing tone				
4.5 Other failures due to incorrect handling				
5. Unclassified failures		•••		
Total calls <sup>b</sup> monitored				100
<sup>a</sup> Delete whatever is inapplicable. <sup>b</sup> The term " calls " throughout this Table refers to circuit seizure by outgoing	traffic.			

 $^{\rm c}\,$  In so far as a distinction is possible; otherwise, 2.3 will apply.

•

- b) These observations should be spread over the day, the number per hour being roughly proportional to the traffic carried by the group considered, so as to produce a representative sample of the traffic carried.
- c) One and the same attempt to set up a call will be entered under one category only, namely the most appropriate one. In the case of several faults on one attempt, the most significant cause of failure should be entered.
- d) In completing this table, reference should be made to the following explanations:

#### HOW TO FILL IN TABLE I

#### Monitoring of international outgoing telephone circuits for quality of service

Category 1. – Under this category enter calls successfully put through to a conversation without difficulty. If it is observed that the caller has dialled a wrong number, the call will be entered under 4.1. Category 1 will also include calls put through correctly to operator positions, information services, or to machines replying in place of the subscriber.

Category 2. – Enter calls which did not lead to a conversation, provided this fact was not attributable to some equipment failure or to incorrect handling by the caller.

2.1 Calls on which no answer is received after ringing tone has been received for at least 30 seconds.

2.2 Calls which encounter called subscriber busy (see 2.3).

2.3 Every effort should be made to distinguish between the "busy" circumstances under 2.2, 3.1, 3.2 and 3.3. If no complete distinction between these categories can be made, calls encountering a busy indication will be entered here.

Category 3. - Unsuccessful calls due to equipment.

3.1, 3.2, and 3.3 Calls which encounter congestion (see 2.3).

3.4 Wrong number obtained, although the caller has dialled correctly.

3.5 Calls on which the answer signal has not arrived on the called subscriber's reply and speech follows. Do not include calls correctly put through, on which the answer signal is not to be sent (for example, the information services in some countries).

3.6 Calls on which an answer signal has been received although the called subscriber has not answered.

3.7 Calls abandoned by the caller because of very poor speech transmission, although the answer signal has been received.

3.8 Calls on which the digital information has been correctly and completely sent, but the caller receives no tone, although he has waited for at least 15 seconds after the sending of the last digit before abandoning the call.

(E.83 *bis*)

3.9 This covers failures which cannot be classified under 3.1 to 3.8. It will also cover cases of poor speech transmission detected during the period of observation, even though the call was not abandoned.<sup>1</sup>

*Category 4.* – Enter all unsuccessful calls due to incorrect handling by the caller. Calls under this category will be subdivided into:

4.1 Wrong number dialled.<sup>2</sup>

4.2 Incomplete number.<sup>2</sup>

The observer must as far as possible be aware of the number of digits to be dialled for a successful call. Note that in certain circumstances too long a period between the figures dialled may lead to an anomaly which should be included under this category.

 $\cdot$  4.3 Prematurely abandoned calls before receipt of a tone. The caller has hung up without awaiting a tone, before 15 seconds have elapsed since the last digit of the called number was sent over the international circuit.

4.4 Call prematurely abandoned after receipt of the ringing tone. The caller has hung up less than 30 seconds after the ringing tone began.

4.5 All cases of incorrect handling by the caller which cannot be entered in 4.1 to 4.4.<sup>1</sup>

Category 5. – Enter anomalies which cannot be classified under 2 to  $4.^{1}$ 

#### **RECOMMENDATION E.83** ter

# OBSERVATIONS ON TRAFFIC SET UP BY OPERATORS\* (See Table II overleaf)

#### Remarks

- a) This table summarizes observations relating to manual and semi-automatic outgoing traffic originated by operators. These observations will be made, if possible, during the whole call duration.
- b) Administrations\* should, if possible, make a distinction between the different types of call, e.g. station-to-station, personal and collect calls; they should use a separate column for each under the heading " Type of call ".
- c) For collect calls, the times to be recorded will be those observed in the country where the call request was made.
- d) It is recommended that these observations be spread over the whole day, the number in each hour being approximately proportional to the traffic routed in the circuit group concerned, in order to give a representative sample of the traffic routed.
- e) Each outgoing Administration\* will select the international circuit groups on which observations should be carried out.
- f) In completing this table, reference should be made to the following explanations:

<sup>&</sup>lt;sup>1</sup> The monitoring Administration (or private operating Agency) should supply all possible information about the failures observed.

 $<sup>^{2}</sup>$  This applies only to observations where it is possible to determine that the caller has dialled a wrong or incomplete number.

<sup>\*</sup> or recognized private operating Agency(ies).

Table II. — OBSERVA	TIONS ON TRAI	FFIC SET UP BY	OPERATORS					
International outgoing exchange:								
Circuit group:			-					
Service $\begin{cases} semi-automatic ^{a} \\ manual ^{a} \end{cases}$								
Period from	to		-					
Category	Type of call b							
1. Mean call duration – in seconds								
2. Mean chargeable duration – in seconds								
3. Mean holding time of circuits for manœuvres and preparation of calls – in seconds								
4. Number of effective calls observed								
5. Mean number of times the international circuit was seized per effective call			-					
6. Mean number of "attempts" per effective call								
7. Percentage of calls set up at the first "attempt"								

8. Time-to-answer by operators		of calls answered I unanswered	Calls answered					Ca (at	Calls unanswered (abandoned calls)			
	Number	Mean waiting	under 15 seconds		in 15 to 30 seconds		s after 30 second		within nds 30 seconds		after 30 seconds	
Operators:			Number	%	Number	%	Number	%	Number	%	Number	%
- incoming operator (code 11)												
- delay operator (code 12)												
- assistance operator												
- information operator												
<ul> <li>9. Quality of transmission from the subscriber's viewpoint:</li> <li>– good</li> </ul>			Numbe	er	%	, )	-		10. Cor	nmen	ts	
- defective (total - as classified below)					· .				1			
i) calls interrupted while in progress												
<ul><li>ii) bad hearing conditions</li><li>a) circuit over-amplified or under-amplified</li></ul>												
b) noise during call												
c) fading												
- d) crosstalk												
Total:					100	100						

# TRAFFIC SET UP BY OPERATORS

(E.83 ter)

186

TRAFFIC SET UP BY OPERATORS

187

#### HOW TO FILL IN TABLE II

Observations on traffic set up by operators

*Category 1.* – This category should show the mean duration of all calls observed which are successful and have been charged for (" effective " calls).

Category 2. - This category will show the mean chargeable duration of all effective calls observed.

Category 3. – This category will show, for each type of observed call, the average time per effective call during which the international circuit has been occupied for manœuvres or for call preparation.

This average should be based on the time during which the international circuit is held:

- a) to obtain information concerning the called number;
- b) to obtain information about routing and trunk codes;
- c) to call operators, in the incoming international exchange;
- d) to exchange information on how to set up the call;
- e) to (or attempt to) obtain the called number even when it is engaged or does not reply;
- f) to (or attempt to) obtain the called person (in personal calls);
- g) between replacement of the receiver by the called person and release of the circuit;
- h) because the operator is holding the circuit (whether she is on the line or not) and for any other reasons for which the circuit is engaged.

The times listed above, which exclude the conversation time, should be added together. This total should be divided by the number of effective calls observed during the period in question to obtain the value to be entered in Table II.

Category 4. – The number of effective calls observed considered in category 1.

Category 5. – The mean number of times the international circuit was seized per effective call (see category 3). This number is usually obtained by meter recordings.

Category 6. – The mean number of " attempts" (as specifically defined hereafter from the operating point of view) to set up a call. Should the operator try several times to set up a call while continuously occupied on that call, all these operations must be considered as being one " attempt". Similarly, if the operator makes several tries to set up a call and each time encounters a congestion or busy condition and if, after the last try, she informs the caller, only one " attempt" must be entered. Calls to information services or to obtain routing particulars, and all calls not directly related to the establishment of a call or to information required by the caller, should not be considered as attempts and should not be included.

(E.83 *ter*)

The total number of "attempts" during the period of observation should be divided by the number of effective calls observed in the same period to obtain the mean number of "attempts" per call.

The total number of " attempts " is usually determined from markings or notations on call tickets.

*Category* 7. – The data for this category will be taken from call tickets prepared for the relation concerned, during the period of observation or a comparable period.

Category 8. – The mean waiting time for outgoing operators to receive an answer will be indicated in seconds. This average include both answered and unanswered calls.

An outgoing operator waits on the circuit (waiting time) for the period:

a) until the incoming operator answers

b) until she abandons the attempt, should the incoming operator not answer.

Thus while mean waiting time relates to the outgoing operator it is also a measure of the performance of the incoming operators.

Category 9. – It will be difficult to obtain absolutely comparable results from all observers for this category. However, the observer should consider the quality of transmission from the subscribers' viewpoint, taking into account comments made in this respect by subscribers and the number of requests for conversation to be repeated.

*Category 10.* – This category should include any comments likely to explain the probable cause of difficulties frequently noted during the observations.

#### **RECOMMENDATION E.83** quater

## RESULTS OF TEST CALLS<sup>1</sup> (See Table III overleaf)

#### Remarks

a) Table III summarizes tests carried out manually or automatically to assess the functioning of the international circuit or connection.

- b) The tests will be undertaken only after agreement between the Administrations\* directly concerned.
- c) It is essential to indicate clearly the way in which the tests have been carried out and give full information about the testing apparatus used.
- d) Administrations\* may insert additional categories in Table III as they see fit.

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> is also Recommendation Q.63 in volume VI of the *Blue Book*.

Table III. — RESULTS OF TEST CA         International outgoing exchange:	LLS			· · · · · · · · · · · · · · · · · · ·	
Circuit group:					
Service { semi-automatic <sup>a</sup> automatic <sup>a</sup> Period from to					
	Nu	mber	5	%	
Category	Sub- total	Total	Sub- total	Total	
1. Satisfactory tests					
<ol> <li>Signalling and charging faults</li> <li>Wrong number</li> <li>No tone, no answer</li> <li>Absence of a backward line signal</li> <li>Other faults</li> </ol>		••••	  	••••	
<ul> <li>3. Transmission faults</li> <li>3.1 Conversation impossible</li> <li>3.2 Call over-amplified or under-amplified</li> <li>3.3 Noise</li> <li>3.4 Fading</li> <li>3.5 Crosstalk</li> </ul>			  		
4. Congestion					
5. Other faults	· · · · · · ·				
Tests carried out				100	
Test procedure followed : apparatus used, destination of calls, etc.         * Delete whichever is inapplicable.					

#### **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.

(E.84)

<sup>\*</sup> or recognized private operating Agencies.

# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

# **SECTION 5**

# TRAFFIC ENGINEERING : DETERMINATION OF THE NUMBER OF CIRCUITS TO BE PROVIDED

#### **RECOMMENDATION E.90<sup>1</sup>**

## MEASUREMENT OF TRAFFIC FLOW

1. Traffic statistics should be measured for the significant period of each day of the whole year by automatic measuring and recording equipment capable of running continuously.

The recording equipment should make a record of the traffic flow carried during the mean busy hour for at least the 30 days (not necessarily consecutive) of the previous 12 months in which the mean busy-hour traffic flow is the highest. The record should also include the date of such measurements. This method gives traffic information of relatively high accuracy. This method is suitable for circuit groups operated automatically or semi-automatically.

*Note.* — The traffic flow for the busiest days having been recorded in this way, processing means can be employed to calculate values for the average traffic flow for the 30 and the 5 busiest days during periods of 12 consecutive months. Such pairs of values can be calculated for a period of 12 months terminating in December and/or periods of 12 months terminating at other times.

It is recommended that the minimum requirement is an annual series of values terminating at the same time each year.

2. A second method which yields information of a lower degree of accuracy may be used by Administrations\* until they are ready to use the first, which is the preferred method. However, under certain circumstances, for manually operated groups of circuits, the second method is the only one possible.

This second method comprises a measuring period of 10 consecutive normal working days during the busiest season of the year. 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. Since in most cases the busiest season is not clearly defined and varies from year

<sup>&</sup>lt;sup>1</sup> is also Recommendation Q.80 in volume VI of the *Blue Book*.

<sup>\*</sup> or recognized private operating Agencies.

to year, this method may be improved by taking a consecutive 10-day sample from the results of measurements made over a much longer period, for example 13 weeks covering the busy season(s). This extended period of measurement should provide information about the exceptionally busy days.

### 3. 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.

#### **RECOMMENDATION E.91<sup>1</sup>**

## DETERMINATION OF THE NUMBER OF CIRCUITS NECESSARY TO CARRY A GIVEN TRAFFIC FLOW<sup>2</sup> 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.

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> This Recommendation dates from the XIIIth Plenary Assembly of the C.C.I.F. (London, 1946) and has not been revised in substance since. It appears also as Recommendation Q.81 in Volume VI of the *Blue Book*.

 $<sup>^{2}</sup>$  It should be noted that the determination of the total holding time in this Recommendation is not consistent with the measurement of traffic flow as described in Recommendation E.90.

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 manual 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.

<sup>\*</sup> or recognized private operating Agencies.

	Tab	le A	Table B		
Number of circuits	Percentage of cir- cuit usage (defini- tion in Recommen- dation E.1 § 21)	Minutes of circuit usage possible in the busy hour	Percentage of cir- cuit usage (defini- tion in Recommen- dation E.1 § 21)	Minutes of circuit usage possible in the busy hour	
1	65.0	39	_	_	
2	767	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	

#### Capacity tables of circuit groups

*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<sup>1</sup>**

# DETERMINATION OF THE NUMBER OF CIRCUITS NECESSARY TO CARRY A GIVEN TRAFFIC FLOW IN SEMI-AUTOMATIC OPERATION<sup>2</sup>

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.

<sup>&</sup>lt;sup>1</sup> This recommendation dates from the XVIIth Plenary Assembly of the C.C.I.F. (Geneva, 1954) and has not been revised in substance since. In particular, the indications given in the first and second cases may require further consideration. Also both-way working was not considered at that time.

This Recommendation also appears as Recommendation Q.82 in Series Q (Volume VI of the *Blue Book*).

<sup>&</sup>lt;sup>2</sup> For groups of circuits carrying both semi-automatic and automatic traffic see Recommendation E.95.

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 loss formula (Erlang formula =  $E_1$ , n(y), also called Erlang B formula; see in Supplement No. 7 of Volume VI of the *Blue Book*, the table and the two associated graphs giving, for various loss probabilities, the number of circuits corresponding to a given traffic flow according to this formula);

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 loss 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.

*First 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%.

Second 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.

*Third 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 *bis*, Volume II, *Blue Book*. Methods can be used which

<sup>\*</sup> or recognized private operating Agencies.

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).

#### **RECOMMENDATION E.93<sup>1</sup>**

# CALCULATION OF THE NUMBER OF CIRCUITS IN A GROUP CARRYING OVERFLOW TRAFFIC

Calculation of the number of circuits when there are alternative routes could be based on the methods advocated in Recommendation E.93 bis (Volume II of the Blue Book). These methods, which approach the problem from the theoretical and mathematical standpoint, are entirely suitable as the basis for a precise economic study of an entire network and particularly for the determination of the best arrangement. Nevertheless they are not entirely appropriate for current usage, when the problem is merely to determine the number of circuits required for a specific flow of traffic with a given grade of service. In these circumstances the C.C.I.T.T. considers that a simplified method for calculating the number of circuits required on overflow systems could be adopted. This simplified method consists of applying the methods described in Recommendations E.92 and E.95, as appropriate, using for purposes of calculation the overflow traffic values increased by 2% to 4%.

#### **RECOMMENDATION E.93** bis

## THEORETICAL CALCULATION OF THE BEST ARRANGEMENT FOR ALTERNATIVE ROUTING

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

#### considering

- the advantage 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 following two 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,

<sup>&</sup>lt;sup>1</sup> This Recommendation appears also as Recommendation Q.83 in Volume VI of the *Blue Book*.

it is recommended in the first place to proceed with an approximate determination of the most economical arrangement.

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 pages 145 to 155 of Volume II bis of the C.C.I.T.T. Red Book (New Delhi, 1960) together with an application of these two methods to a concrete case (routings between Stockholm, København, Amsterdam and Paris); also given in those pages are the detailed calculations for the two methods.

These calculations show that the numbers of circuits obtained by the two methods are in agreement.

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 require only standard tables and curves derived from the Erlang formula.

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 (Geneva, 1956) 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 <sup>1</sup>, which is designated under the name of "weighted choice method" is simpler to calculate and avoids the use of the special diagrams mentioned 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 operations 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

(E.93 bis)

<sup>&</sup>lt;sup>1</sup> See *Electrical Communication*, article by E.P.G. WRIGHT, March 1947, page 42.

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 E × 4 = 5.64 1.39 E × 7 = 9.73 0.45 E × 10 = 4.5  $\overline{3.25}$  E 19.87: 3.25 = 6.1 choice (i.e. traffic overflowing from 5.1 circuits).

Permitted loss 3.25  $\times \frac{5}{100} = 0.16$  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:

$$\begin{array}{rcl} 1.41 \times & 4 &=& 5.64 \\ 1.39 \times & 7 &=& 9.73 \\ 0.45 \times & 10 &=& 4.5 \\ \hline p &=& 3.25 \times \frac{5}{100} &=& 0.16 \end{array}$$
 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.



Total traffic offered (in erlangs)

#### 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).

(E.93 bis)

Proceeding according to hypothesis A (which seems at first sight the most natural) it is certain that too many circuits will 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.

#### **RECOMMENDATION E.95<sup>1</sup>**

# DETERMINATION OF THE NUMBER OF CIRCUITS NECESSARY TO CARRY A GIVEN TRAFFIC FLOW WITH AUTOMATIC OPERATION OR WITH BOTH SEMI-AUTOMATIC AND AUTOMATIC OPERATION ON THE SAME GROUP OF CIRCUITS

#### 1. General method

The C.C.I.T.T. recommends that the number of circuits needed for a group should be read from tables or curves based on the classical Erlang loss formula (Erlang formula  $E_1$ , n (y), also called Erlang B formula, see Supplement No. 7 in the documentary Part of Volume VI of the *Blue Book*). For automatic operation the loss probability should be based on 1% during the mean busy hour. Recommended methods for traffic determination are indicated in E.90.

In order to provide a satisfactory grade of service both for the mean busy-hour traffic and for the traffic on exceptionally busy days, it is recommended that the proposed number of circuits should, if necessary, be increased to ensure that the loss probability shall not exceed 7% during the mean busy hour for the average traffic estimated for the *five busiest days*. This recommendation applies to all circuit groups and may prevent full advantage being taken of the relaxation concerning the computation of the number of circuits in the case of small intercontinental groups described in Section 3.

#### 2. Groups carrying both automatic and semi-automatic traffic

Semi-automatic traffic using the same circuits as automatic traffic would need to be added to the automatic traffic and the same loss probability should be used for the total traffic.

<sup>&</sup>lt;sup>1</sup> Appears also as Recommendation Q.84 in volume VI of the *Blue Book*.

#### 3. Small intercontinental groups

The C.C.I.T.T. considers that on small groups of long intercontinental circuits some relaxation could be made in respect to loss probability. It is envisaged that such circuits would be operated on a both-way basis and that a reasonable minimum for automatic service would be a group of six circuits. A table providing relaxation is annexed and is based on a loss probability of 3% for six circuits, with a smooth progression to 1% for 20 circuits. The general provision for exceptional days remains unchanged.

For exceptional circumstances in which very small groups (less than six circuits) are used for automatic operation, dimensioning of the group should be based on the loss probability of 3%.

#### 4. Time differences

Time differences at the two terminations of intercontinental circuits are likely to be much more pronounced than those on continental circuits. In order to allow for differences on groups containing both-way circuits it will be desirable to acquire information in respect to traffic flow both during the mean busy hour for both directions and during the mean busy hour for each direction.

It is possible that in some cases overflow traffic can be accepted without any necessity to increase the number of circuits, in spite of the fact that this overflow traffic is of a peaky nature. Such circumstances may arise if there is no traffic overflowing from high-usage groups during the mean busy hour of the final group.

#### 5. Both-way circuits

With the use of both-way circuits there is a danger of simultaneous seizure at both ends; this is particularly the case on circuits with a long propagation time. It is advisable to arrange the sequence of selection at the two ends so that such double seizures can only occur when a single circuit remains free.

When all the circuits of a group are operated on a both-way basis, time differences in the directional mean busy hours may result in a total mean busy hour traffic flow for the group which is not the sum of the mean busy hour traffic loads in each direction. Furthermore, such differences in directional mean busy hour may vary with seasons of the year. However, the available methods of traffic measurement can determine the traffic flow during the mean busy hour for this total traffic.

Some intercontinental groups may include one-way as well as both-way operated circuits. It is recommended that in all cases the one-way circuits should be used, when free, in preference to the both-way circuits. The number of circuits to be provided will depend upon the one-way and total traffic. As the total traffic will need to be determined for its mean busy hour, no time or seasonal differences will be applicable. In the cases where the number of one-way circuits is approximately equal for each direction, no special procedure is necessary, and the calculation can be treated as for a simple two-group grading.<sup>1</sup>

If the number of one-way circuits is quite different for the two directions, some correction may be needed for the difference in randomness of the flow of calls from the two oneway circuit groups to the both-way circuit group. The general techniques for handling cases of this type are quoted in E.93.

#### ANNEX

#### (to Recommendation E.95)

The following table may be applied to small groups of long intercontinental circuits. The values in column 2 are suitable for a random offered traffic with full availability access. The techniques quoted in E.93 are suitable for final groups and can be used in conjunction with the values in the last column.

Number	Traffic flow (in erlangs)						
of circuits	Offered	Carried	Encountering congestion				
(1)	(2)	(3)	(4)				
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	2.54 3.13 3.73 4.35 4.99 5.64 6.31 6.99 7.67 8.37 9.08 9.81 10.54 11.28 12.03	$\begin{array}{c} 2.47\\ 3.05\\ 3.65\\ 4.26\\ 4.90\\ 5.55\\ 6.21\\ 6.88\\ 7.57\\ 8.27\\ 8.96\\ 9.69\\ 10.42\\ 11.16\\ 11.91\end{array}$	0.08 0.09 0.09 0.09 0.10 0.10 0.10 0.10 0.11 0.11				

For groups requiring more than 20 circuits the table quoted in E.92 for loss probability of 1% should be used (See Supplement No. 2 on page 239).

The table is based on 1% loss probability for 20 circuits and increases progressively to a loss probability of 2% at 9 circuits and 3% at 6 circuits (loss probabilities for these three values being based on the Erlang loss formula: see page 239). The traffic flow values obtained from a smoothing curve coincide very nearly with those determined by equal marginal utility theory, i.e. an improvement factor of 0.05 erlang for an additional circuit.

<sup>&</sup>lt;sup>1</sup> See article by I. TAANGE: "Optimal use of both-way circuits in cases of unlimited availability", *TELE*, English Edition, No. 1, 1956.

#### **RECOMMENDATION E.97**<sup>1</sup>

#### AUTOMATIC TRAFFIC RECORDING DEVICES

Greater use should be made of automatic methods of recording and analysing traffic data because it would appear inevitable that more information regarding the traffic will be required as the continental and intercontinental networks are expanded. Therefore automatic methods, in addition to being more efficient, may well be the only economic ones to use. It is emphasized that, whilst any automatic equipment should not be unduly complicated, it should nevertheless be able to provide output information in a form which will be readily acceptable to an automatic data-processing system.

Attention of Administrations\* is drawn to the following features given in the Annex for the design of traffic recording machines; these features cover arrangements which might be made and facilities which might be incorporated.

#### ANNEX

#### (to Recommendation E.97)

#### Features for automatic traffic-recording machines

#### 1. Basic automatic traffic-recording equipment

#### 1.1 Purposes

The equipment is primarily intended for ordinary traffic-engineering purposes, i.e. to collect the traffic data which are generally desired for the continuous supervision of a network and its longterm planning.

It is the main purpose of the equipment that measurements may be made, sometimes over extended periods, with the minimum of maintenance attention. In consequence, it is envisaged that each measurement will be provided as the result of instructions given to the machine in advance. The results of such measurements should be printed out or recorded on tape. A typical instruction would be to measure the traffic on a group of circuits between, say, 10 a.m. and 11 a.m. and to connect an output circuit at 11 a.m. which would print out and/or record the results on a tape.

#### 1.2 Measurement period

It is required that the traffic-recording equipment should be capable of making traffic comparisons either for a single busy hour or for a number of periods during a day.

Until the traffic-characteristics of a group of circuits have been established it will be desirable to make daily measurements throughout the year. Such measurements will indicate the busy seasons and the distribution of the busy days. It is recognized that many of the measurements relating to slack days have no lasting value and it is therefore advantageous to consider whether the trafficrecording equipment cannot be designed with facilities such that the output is inhibited for those days on which the traffic does not exceed some predetermined minimum. As each group would

<sup>&</sup>lt;sup>1</sup> This Recommendation appears also as Recommendation Q.85 in Volume VI of the Blue Book.

<sup>\*</sup> or recognized private operating Agencies.

need to have its own predetermined value, the machine would need to have means for storing the reference value for each group.

#### 1.3 Traffic data necessary to plan for a specified grade of service

The amount of information necessary for planning will not be identical for all groups of circuits and for all relations <sup>1</sup>, as some groups of circuits will provide for several relations whereas the traffic for some relations may be divided between different routes. It is desirable that the traffic machine should be designed to measure:

- a) carried traffic flow,
- b) number of call attempts (including repeated attempts and call attempts not gaining access to a group of international circuits),
- c) Duration of the periods during which no circuits are available,
- d) Number of call attempts experiencing congestion.

It is intended that the holding time when needed could be deduced from items a) and b). For groups with an adequate number of circuits any measurements under c) and d) are likely to be of little value.

As congestion increases, the b), c) and d) measurements become much more important for the following reasons:

- i) Measurements of carried traffic will not include calls experiencing congestion. Repeated attempts may result from such calls.
- ii) Circuits blocked by the maintenance staff may lead to much more serious congestion than might be expected from the carried-traffic flow.
- iii) Although the number of calls experiencing congestion, d), provide more information than the congestion time measurements, c), complications arise in the case of both-way circuits because the d) measurements have to take place in both terminations, and this may result in delay in obtaining access to the full statistics.

#### 1.4 Traffic measurements for different groups of circuits

- a) The traffic-recording machine is required particularly to collect carried-traffic statistics as defined in Recommendation E.90. As a general rule, carried-traffic measurements will refer to the whole of a group of circuits between two centres. Such circuits may carry oneway or both-way traffic.
- b) Measurement of traffic for particular relations (e.g. between two different countries):

#### 1) Direct (point-to-point) circuits

In some cases the traffic for a particular relation will use an independent group of direct circuits (without overflow facilities) and the traffic measurement should be made according to Section 1.3.

#### 2) High-usage and final routes

Some relations will be served by direct high-usage circuits and by overflow facilities. In such cases the direct high-usage group of circuits can be measured according to Section 1.3. Such

207

<sup>&</sup>lt;sup>1</sup> The word " relations " is used to describe the traffic from one particular country to another particular country.

measurements only provide an indication of the traffic flow because the day-to-day fluctuations will be more apparent on the overflow than on the high-usage group.

The arrangement described in the following Section 3 indicates means whereby more detailed information can be collected. It should be observed that holding-time statistics are available on the high-usage group, and the traffic machine should be capable of measuring these values directly or by measuring the traffic flow and the corresponding number of calls.

#### 3) No direct or high-usage circuits

The traffic for many relations may be combined and switched through a transit centre; in such cases the normal form of measurement cannot provide complete information and reference needs to be made to registers or markers which are aware of call destinations. The C.C.I.T.T. No. 4 and No. 5 Signalling Systems do not provide facilities to enable transit or incoming calls to be identified by their country of origin and, for the time being, it is only possible to make measurements at the outgoing international exchange. Such measurements should indicate the number of offered calls and the number of calls experiencing congestion. These measurements will not indicate holding time and it does not seem justified to complicate the equipment in order to allow such measurement to be made. It is thought to be sufficient to provide facilities to measure the mean holding time on each group of circuits serving a number of relations. A check can be made of the holding time for any relation by reference to the statistics collected for international accounting. (See Recommendation E.52 bis.)

It is expected that traffic measurements for particular relations can be taken on a non-continuous basis and that it will be unnecessary to provide facilities for measuring many relations simultaneously. Nevertheless, it must be recognized that the determination of the busy season for a relation may not be easy if the traffic for several relations uses the same group of circuits. Full traffic statistics for a relation can always be measured in special cases by routing the traffic through an edditional switching stage at the outgoing centre so that independent measurements can be made.

In many cases the need for information about relations with a small amount of traffic will be limited to ascertaining the advisability of introducing high-usage (direct) circuits. This situation will become evident from statistics for international accounting.

#### 1.5 Indication of traffic congestion

A traffic machine which runs continuously has the valuable asset of being able to indicate abnormal congestion quickly.

As a consequence it is recommended that, besides measuring traffic carried on a group of circuits, the machine should be able to recognize when there is congestion and indicate this fact so that immediate action can be taken.

#### 1.6 Indication of results

In order that statistics may be collected in respect to both outgoing and incoming calls, and in order to keep the measuring equipment as flexible as possible, the indications to the measuring equipment from the circuits under measurement should be given in the same way for both types of call.

In applications in which it is desired to separate the semi-automatic and automatic call statistics, separate indications must be given by the circuits to the measuring equipment.

Facilities should be provided for simultaneous measurement of the four traffic characteristics listed in Section 1.3 on any specified group of circuits. It should be possible to give varying instruc-

tions to the machine indicating when to make measurements. The individual results should be printed out or recorded on tape.

It should be possible to make measurements on a specified number of routes. As a general rule, traffic carried and congestion time will always be referred to the whole of the circuit group, while the total number of calls and the number of calls experiencing congestion may also be referred to one of several relations served by a circuit group or to a relation served by a number of routes.

The indications for the traffic characteristics in Section 1.3 may be given from the individual circuit equipments and/or from common equipment such as markers or registers. It is desirable that the indications follow a given standard.

The number of groups of circuits for which simultaneous measurements are required should be specified separately.

#### 1.7 Examples of measurements which may be provided by the automatic measuring equipment

Examples of measurements that may be desired are shown below in Section 1.8. In order to indicate the importance these different measurements may be expected to have, the different items have been given the signs I or II having the following meanings:

- (I) Measurements expected to be made on all routes for supervision of the network, including its long-term planning.
- (II) Measurements expected to be made occasionally on a few routes at the same time, provided that the inclusion of the facilities does not noticeably increase the cost of the equipment.

#### 1.8 Facilities

- a) Facilities should be provided for measuring the carried traffic flow for a group for any specified period. (I).
- b) Facilities should be provided for measuring the congestion time and/or the number of calls experiencing a congestion condition. It is required that the equipment should allow measurement totals to be made available daily on either a busy-hour, a 2-hour or a 24-hour basis. Facilities should be provided for giving an alarm if the congestion exceeds a specified limit. (I).
- c) Facilities should be provided for measuring and for printing out or recording on tape the total traffic carried during each 15-minute period, so that the mean busy hour may be determined. (I).

*Note.* — As an example, the facilities can be provided by causing the machine to produce an output total at 15-minute intervals from any starting hour to any finishing hour.

d) Facilities should be provided for measuring both the traffic and the number of call attempts and for printing out or recording on tape the totals for a specified hour or for 24 hours. (II).

Note. — The results can be used for the calculation of holding times.

- e) Facilities should be provided for counting call attempts in common circuits (such as registers, markers, etc.) for the following purposes:
  - i) To identify the sample busy hour by periodically printing out or recording on tape the totals as in c). (II);

- ii) To determine the number of call attempts to a specified country during the sample busy hour. (I);
- iii) To determine the number of call attempts switched over a direct route to a specified country. (I or II);
- iv) To determine the number of call attempts switched over one or more overflow routes to a specified country. (I or II);
- v) To determine the number of call attempts to a specified country which are ineffective due to equipment or signalling failures. Such failures might upset the accuracy of traffic measurement in a similar way to congestion. (I or II);
- vi) To determine the number of call attempts to a specified country which are ineffective due to all direct and overflow circuits being in use. (I);
- vii) To determine the number of operator-handled call attempts on a route. (II);
- viii) To determine the number of subscriber-dialled call attempts on a route. (II).

#### 1.9 Control

It is intended that in principle the recording equipment should be operated in response to processed instructions, for example a message on tape. It is desirable that the arrangement should be of such a form that remote control can easily be arranged.

#### 2. Supplementary traffic-recording equipment

#### 2.1 Purpose

The equipment is primarily intended for ordinary traffic-engineering purposes, i.e. to collect the traffic data which are generally desired for the continuous supervision of a network and its long-term planning.

Whereas the features listed in Section 1 are generally needed for this equipment also, there is a basic difference. For the supplementary equipment a typical instruction will be to measure whether the traffic characteristics on a group of circuits between, say, 10 a.m. and 11 a.m. exceeds a predetermined value. If there should be an excess, it is required that an output equipment should be connected at 11 a.m. and that this equipment shall then print out and/or record the resulting information.

#### 2.2 Traffic characteristics to be recorded

These requirements are similar to those in Section 1 but differ because an average traffic-flow value is not required for every sample period but the value should be passed to output equipment when it exceeds a predetermined figure.

#### 2.3 Output recording equipment

This equipment forms the subject of Section 3. If a common output is used, then the route must be recorded. It is sufficient to insert the date only once per day.

#### 2.4 Measurement period

Traffic-recording equipment should be capable of making traffic comparisons either for a single busy hour or for a number of periods during a day.

#### 3. Central analysing equipment

Central analysing equipment is required to examine the traffic records which have been accumulated. It is assumed that the necessary measurement statistics have been recorded on some medium which can be read by machine (e.g. paper tape).

For these purposes it is desirable that the analysing equipment should be capable of identifying the busiest season, the traffic flow at the busiest season, the annual growth of the traffic flow, and the extent to which the busiest season exceeds other seasons.

Furthermore the equipment should be capable of receiving data in respect to both the present number of circuits in operation and the dates on which it is planned that the present facilities will be extended. With this information it should be possible for the machine to estimate when the amount of disturbed traffic may be expected to exceed a specified grade of service.

It is expected that, in addition to the analysis which will be needed when planning an extension period, reviews will be advisable to check the rate of growth; such checks may be satisfied by extracting the busiest season and the mean busy-hour traffic for the 5 and 30 highest days. For a more complete analysis it would be interesting to extract such averages for each month and to establish any relationship between these averages.

## 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-ofservice 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 *préavis* call.

There is no reason to change the simple charging principle now applied, according to which one surcharge only is payable, irrespective of the number of special facilities requested.

#### Reference

Recommendation 12 ter, Green Book <sup>1</sup>, 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.

Conclusion from the study of Supplementary Question D, examined in 1958-1960.

<sup>\*</sup> or recognized private operating Agency.

<sup>&</sup>lt;sup>1</sup> Volume VI of the *Green Book* is the outcome of the XVIIth Plenary Assembly of the C.C.I.F., Geneva, 1954.

It would not be advisable to examine tariff standards for the intercontinental service on the basis of the principles mentioned in Recommendation E.51, as the tariffs in that service are not at present established according to distance.

The European International Telephone Traffic Statistics published by virtue of Recommendation E.82 (see Volume II *bis* of the *Red Book*) should no longer appear but should be replaced by the world-wide statistics defined in new Recommendation E.82. Conclusion from the study of Question H/XIII, examined in 1960-1964.

Conclusion from the study of Question 5/XIII, examined in 1960-1964.

# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

# TELEPHONE OPERATION AND TARIFF QUESTIONS ENTRUSTED TO STUDY GROUP II FOR THE PERIOD 1964-1968

Question No.	Brief description	Comments
1/11	One-minute of call charge unit for settlement of accounts	Is Question 15/I and Question 1/III
2/II	One-minute of call charge unit for assessment of rates	Is Question 15 bis/I and Question 2/III
3/II	Credit cards	
4/II	Accounts in semi-automatic and automatic operation	
5/II	Action to increase efficiency of world telephone net- work	
6/II	Accounts and tariffs in intercontinental automatic service	Former Question 1/L/ XIII studied in 1961-
7/II	Routing data for international operators	1964
8/11	Unpaid bills	
9/II	Calls booked to two or more persons	
10/II	Revision of the International Service	Former Question D/II
11/II	Radio-circuits held in reserve	studied in 1901-1904
12/II	Numbering arrangements to avoid inappropriate routings	In collaboration with S.G. II and XIII (88)
13/II	Language difficulties in the international semi- automatic and automatic telephone service	To be studied first by S.G. II; then by S.G. XIII

ш. З.
## Question 1/II --- Adoption of a charge unit corresponding to one minute of call

#### (New question)

Adoption, for the settlement of international accounts (between Administrations\*), of a charge unit corresponding to one minute of call (telephone, telex).

Note 1. - Adoption of this unit would entail amendments in:

- Article 26, No. 123, Chapter XIII, of the Telephone Regulations;

- Article 26, Chapter IX, of the Telex Regulations (C.C.I.T.T. Recommendation F.60).

*Note 2.*— The Question must be examined by Study Group III and later by Study Groups I and II to enable the C.C.I.T.T. to submit a proposal to the next Telephone and Telegraph Administrative Conference <sup>1</sup>.

Note 3. — The reasons for changing the present charge unit of 3 minutes are set forth in the Annex hereto.

#### Note 4. — This question also appears as:

- Question 15/I of Study Group I, and

- Question 1/II of Study Group II.

## ANNEX

#### (to Question 1/II)

#### Reasons for changing the charge unit

For telephone calls, telex calls, sound and television transmissions, all the charge shares recommended by the C.C.I.T.T. are calculated in accordance with the unit charge.

In principle, these categories of telecommunication are debited to account by the use of a unit charge, after conversion of the number of minutes into 3-minute charge units.

*Historically* the 3-minute unit is probably to be explained by the practice of charging telephone calls per 3-minute period, from which method derives the minimum 3-minute charge for manual and semi-automatic traffic.

There is no special reason, nowadays, to keep the 3-minute unit. It should be replaced by a 1-minute unit, which seems more suitable for the user and a more suitable basis for the determination of charge shares.

Several Administrations \* already base their accounts on the number of minutes. Some practical difficulties are caused, however, by this method of accounting, as long as all the charge shares are based on the 3-minute unit. For example, different rules are applied for rounding off the decimals and the charge shares must be indicated by Administrations as share per minute as well as per unit.

Question 4/II, examined in 1960-1964, proposed a simplification in the preparation of the monthly accounts by entering the total sum of chargeable minutes instead of the unit charges, but it might be better to drop the existing unit charge and to introduce a 1-minute unit.

Moreover, the use of unit charges as well as minutes when traffic volume is assessed leads to confusion. Here again it would be best always to indicate the number of minutes.

<sup>\*</sup> or recognized private operating Agencies.

<sup>&</sup>lt;sup>1</sup> At present Recommendation F.70 is a C.C.I.T.T. Recommendation only and does not come within the purview of an administrative "telegraph" conference.

# <u>Question 2/II</u> — Adoption, for the assessment of rates, of a charge unit corresponding to one minute of call

(New question)

The adoption, for the assessment of rates for users, of a charge unit corresponding to *one minute* of call (telephone, telex).

Note 1. — Reference should be made to Notes 1 to 3 to Question 1/II and to the Annex to Question 1/II.

Note 2. — This question also constitutes:

--- Question 15 bis/I of Study Group I;

- Question 2/III of Study Group III.

*Note 3.* — This question is not designed to change the rule for telephone and telex charging (manual or semi-automatic), whereby the minimum levied is equivalent to the charge for three chargeable minutes (in telegraphy, this is equivalent to levying a charge for a minimum number of words in a telegram, even though the charge unit in telegraphy is the word).

## Question 3/II — Credit cards

(former Question 3/II considered by Study Group II between 1961 and 1964)

The credit-card system is already working in some national services and has recently been adopted, by mutual agreement, in a number of international relations. Would it not be well to include credit-card calls among the special facilities granted to users in the international telephone service? If so, what operating and tariff rules should be laid down?

## ANNEX 1

#### (to Question 3/II)

#### Conclusions reached by Study Group II in 1964, after consideration of Question 3/II

1. It would be well to extend the system whereby calls can be made to other countries on the basis of credit cards issued by those countries, for international use. At the international level, however, the credit-card system should be used only for calls to the country in which the credit card has been issued.

2. If the holder of a credit card is to derive the maximum benefit from it, he should not be required to show the card at a telephone office; he should be able to make his calls over the telephone, simply quoting the card number to the operator. The number on the card should provide sufficient guarantee of the card's validity, so that no international standardization of credit cards would be called for.

3. Nevertheless, there might be certain advantages in standardization. It would, for instance, facilitate recognition of such cards in hotels, etc.

Furthermore, international rules should be laid down for the numbering of cards, so that their validity may be checked.

Recommendations about how the form and numbering of credit cards might be standardized appear in Annex 2 hereinafter.

4. In discussions during the years 1961 to 1964, the question was raised of whether there should be a separate credit card for domestic services, and another for international and intercontinental services, or whether one card would do for them all. The issue of a separate card for domestic use is a national matter. But if it is desired to use one card but to have different numbering systems, both numbers could be shown on the card, with the international number appropriately designated.

5. Reference should be made to the procedure for collect calls, as far as the procedure for booking credit-card calls is concerned.

6. When, for collect calls, a procedure is used whereby the outgoing operator supplies the incoming international exchange with full particulars of such a booking, then the operator at the international or intercontinental incoming exchange should check the validity of the credit card (when a credit-card call is booked) from the number it bears. It follows that this check will usually be performed in the card-holder's country, that is to say, in the country responsible for payment if use of the card is queried.

7. When the procedure for collect calls is for a charging ticket to be made out at the outgoing international or intercontinental exchange, for onward transmission to the Administration responsible for the person who is to pay for the call, the credit card's validity should be checked at the point where the ticket is made out (this will usually be the outgoing intercontinental exchange). Hence the data required for the check must then be available at that point.

### ANNEX 2

#### (to Question 3/II)

#### Standard size and numbering procedure for telephone credit cards

#### Size

The credit card should be designed to fit easily into a wallet or bill-fold. Although bank notes vary in size from one country to another, and this may affect the size of wallets and bill-folds, there seems so far to be a certain uniformity in the dimensions of the credit cards issued by various organizations: namely, about  $3\frac{1}{2} \times 2\frac{1}{4}$  inches (9 cm  $\times$  5.7 cm), and it is suggested that any cards issued by Administrations\* should have roughly these dimensions.

#### Colour and general format

The card itself should be white, with a green band, about 1 cm wide, across the top edge, which bears the words: "International Telephone Credit Card". The word "International" does not exclude use of the card within the country of issue.

Information given on the front of the card:

- 1. country of issue and, where appropriate, the name of the Administration or telephone operating Agency;
- 2. holder's name and signature;
- 3. the card number;
- 4. the date of expiry.

<sup>\*</sup> or recognized private operating Agencies.

In addition, instructions on how the card should be used and on call booking procedures may be given on the back of the card. However, some Administrations \* may prefer to issue instructions separately, and to include, on the front or the back of the card, only the briefest instructions to prevent use by unauthorized persons if the card is lost.

#### Numbering system

Whether the subscriber's telephone number should be entered on the credit card, or some other number which, in effect, codifies the telephone number, together with a number or letter identifying the accounting office, are matters for national decision. For international purposes, it is important only that the first group should include a code to indicate the country of origin (to which the request for a call should be made by the customer), and a letter indicating the year of validity. As the card number may have to be passed to the operator in the country of destination, it should be kept short, to reduce the chance of error in transmission.

To indicate the country of issue in credit-card numbers, the country codes given in Recommendation E.29 should be used. This code should constitute the first part of the number. Operators have ready access to a table of these codes, and hence there is no need for a separate list of credit-card codes.

What organization should be responsible for choosing the letter code for each year of validity, and for acquainting Administrations\* with its choice, is something which remains to be decided. For ready recognition of validity by operators, it is important that all Administrations and agencies should use the same code.

For security reasons, the letter chosen should be notified not more than three to four months before the end of the current period (this will allow time for cards to be printed and despatched to customers).

## ANNEX 3

#### (to Question 3/II)

#### Points for special attention in considering Question 3/II between 1964 and 1968

1. In Annex 2, it is suggested that a letter be assigned every year to denote the period of validity of a credit card.

How should it be assigned? By whom? Should there be some other method of indicating the period of validity?

2. In the course of discussions between 1961 and 1964, there was a difference of opinion as to charges for credit-card calls:

- some advocated no charge at all;
- others felt that there should be a flat charge for issue of the card itself; while
- yet others considered that there should be a surcharge per call (station-to-station calls only).
- 3. Are paragraphs 6 and 7 of Annex 1 suitable? Do they need amplification in any way?

<sup>\*</sup> or recognized private operating Agencies.

## Question 4/II — Accounts in semi-automatic and automatic operation

## (New question)

The rapid growth of semi-automatic and automatic operation in continental networks and the extension of these services to intercontinental relations are leading to routing methods entailing alternative and overflow routings to such an extent that the path followed by a given call cannot be known in every case without technical complication.

Meanwhile, the existing recommendations require that the path followed by a communication should, in every case, be known at the outgoing exchange. This is why the question arises whether—in order to avoid complicating too much the technical equipment required and thereby raising its cost—it might not be possible to discontinue the use of the path followed by each communication as the normal basis for the establishment of international accounts.

What other methods could be accepted within the C.C.I.T.T. plan for the establishment of accounts (statistical studies, traffic sampling, distribution according to the number of circuits corresponding to the various outgoing links, leasing or purchase of circuits)?

Study of this question should be made:

- a) for the semi-automatic continental service;
- b) for the automatic continental service;
- c) for the intercontinental semi-automatic service;
- d) for the intercontinental automatic service.

The following cases should be considered:

- 1) Traffic between two countries effected exclusively through direct circuits all crossing the same country (or countries).
- 2) Traffic between two countries effected exclusively through direct circuits, not all of which cross the same country (countries).
- 3) Traffic effected partly through direct circuits (cases 1 and 2) and then as overflow towards a transit exchange; the transit centre may lie:
  - i) in the country through which the direct circuits pass; or
  - ii) in a country other than those through which the direct circuits pass.
- 4) Traffic effected partially through direct circuits (cases 1 and 2) and then as overflow towards several transit exchanges; the transit may lie:
  - i) in the country through which the direct circuits pass; or
  - ii) in a country other than those through which the direct circuits pass.
- 5) No direct circuits are used and all traffic is effected through a transit exchange.
- 6) No direct circuits are used and all traffic is effected through several transit exchanges.

(Question 4/II)

When studying this question, the Administrations\* are invited to bear in mind that in intercontinental relations, the Administrations\* are lessors or owners of the circuits which they operate, sometimes in common.

It will be necessary to ascertain whether, and to what extent, this fact has a bearing on the establishment of accounts as compared with the present system whereby the accounts are based on actual traffic.

It will also be necessary to bear in mind that in some intercontinental relations the circuits are operated in both directions with automatic access.

#### Question 5/II — Increased efficiency of world telephone network

#### (New question)

By what non-technical action can the efficiency of the world telephone network be increased?

For instance:

- a) what should be done to ensure that direct circuits are not disproportionate to the traffic, and
- b) what should be done to ensure adequate overflow facilities?

#### ANNEX

#### (to Question 5/II)

#### Reasons for study of this question

The C.C.I.T.T. advances the following comments about the world telecommunication network provided in the World Routing Plan examined by Study Group XIII in the study period 1961 to 1964.

In most instances, the countries through which direct transit circuits pass receive a rate for transit traffic proportional to the volume (paid time, or length of call), so that the transit charges to be paid by the terminal countries depend not on how many circuits are available, but on the traffic carried on them. Hence, there may be a tendency when the world telecommunication network is being set up, to overestimate the number of direct circuits required for efficiency. This will mean that overflow traffic via the transit exchanges will be relatively slight, and will last for a *few hours only* every day.

Hence the transit countries concerned will gain relatively little from such switched traffic, whence a tendency to keep smaller groups of circuits between transit exchanges than would be desirable in the interests of efficiency. This would doubtless give a further boost to the tendency to use direct circuits.

The result would be a world network of excessive intricacy, and therefore less economical.

In view of the above, the following action is suggested:

<sup>\*</sup> or recognized private operating Agencies.

- a) A fixed monthly rental, regardless of the volume of traffic, might be paid to the transit countries for making transit circuits available.
- b) The countries concerned might jointly pay for an overflow route (or direct and overflow route combined), possibly in proportion to the traffic routed by each of the countries, and expressed, for example, as occupation time during the busy hour.

The first of these procedures a) corresponds to a principle which is expressed in Recommendation E.69 "Minimum remuneration for a transit country" although it appears that these provisions are seldom used.

The arrangement mentioned in b) is applied, for example, on the joint route between Frankfurton-Main and New York; the Federal Republic of Germany, the United States, Belgium, the Netherlands and Switzerland all take part.

# Question 6/II — International tariff and accounting methods for the intercontinental automatic service

(This question is a continuation of Question 1/L/XIII of Study Group XIII, studied in 1960-1964)

What methods should be adopted:

- for the establishment of international accounts,
- for charging subscribers,

in the intercontinental automatic service?

#### ANNEX

#### (to Question 6/II)

#### Reply by Study Group XIII to Question 1/L/XIII in 1964

1. From the user's point of view, it would obviously be desirable—in view of the high charges in the intercontinental service—if the charge for each intercontinental call could be notified to the subscriber in a separate account. This is emphasized in the majority of the replies received by Study Group XIII regarding Question 1/L/XIII. Many Administrations \* even feel that they have an obligation to the subscriber in the matter.

2. Some Administrations \* which use periodical pulse metering in their national and international automatic services are considering the use of ticket-printing or similar devices for the intercontinental automatic service, which means that the calling subscriber must be identified and it may necessitate connecting subscribers who regularly use the intercontinental service to special equipment.

3. However, certain other Administrations which use the meter-charging system in their international and national automatic services do not intend, a priori, to exclude its use in the intercontinental automatic service.

From the technical angle with the subscribers' meters used by the Administrations \* it is possible to record the high level of intercontinental charges; this is particularly the case when amount of the charge per pulse is relatively high in the country in question.

From the psychological angle, the experience acquired by these Administrations in the longdistance and international automatic service shows that they could charge for intercontinental calls by meter without too great a fear of their subscribers' reactions, particularly if the charges in the intercontinental automatic service are to be lower than at present when this service is opened.

(6/II, Ann.)

<sup>\*</sup> or recognized private operating Agencies.

It must also be remembered that most of the intercontinental automatic calls will come from large business subscribers, whose installations will generally be equipped with apparatus for registering the charges.

4. Study Group XIII considers that the method of collecting charges from subscribers (by metering or by ticket) must be regarded as a purely national matter. As long as a few Administrations \* make reservations regarding the use of ticket-printing or similar devices, it does not seem possible for Study Group XIII to give an opinion on standardizing this method.

5. Recommendation E.52, in the *Red Book*, Volume II *bis*, shows that charging in fully-automatic international working must be based on one or the other of the following:

- a) minute-by-minute charging;
- b) a type of periodical pulse metering, used for national automatic working.

6. The reason behind this recommendation is that many Administrations \* will use method b) in the European automatic service. Another reason is to reduce dissymmetry between the outgoing charges levied in countries A and B for calls of equivalent duration.

7. Intercontinental automatic operation is in this respect entirely different from international automatic working, for most countries seem to want ticket-charging: periodical-pulse metering appears to be rather an exception.

Study Group XIII observes that Recommendation E.52 cannot, accordingly, be considered applicable to the intercontinental automatic service. The Recommendation should include a note to that effect.

8. Study Group XIII discussed the question of whether a charging procedure could be recommended for intercontinental automatic working, but felt that the time was not yet ripe to issue a recommendation on the point, which actually falls within the competence of Study Group II.

# Question 7/II — Uniform presentation of routing data to be made available to international operators

## (New question)

The operator at an international exchange, if she is to perform her duties satisfactorily, must have certain information, to be supplied by the telecommunication Administrations\* of the countries to and from which she routes telephone traffic:

- a) To route telephone traffic to a non-automatic network, she may need to know through which international exchange in the country of destination she can reach the network desired.
- b) To route telephone traffic to a semi-automatic network, she must know the trunk code appropriate to whatever information the caller has supplied about where the called subscriber is.
- c) Moreover, she may have to know the codes and indicators whereby deferred traffic may be routed.

<sup>\*</sup> or recognized private operating Agencies.

Countries exchange such information in booklets and on cards which vary considerably as to format, although composed with the same end in view, to such an extent, indeed, that the reference documents dealing with international traffic and available in operators' rooms are heterogeneous and difficult to consult.

Consideration should be given to the following points:

- a) which of the data mentioned above should be exchanged between countries?
- b) to what extent should uniformity of lay-out be introduced?
- c) how should such uniformity be brought about?

## <u>Question 8/II</u> — Minimum amount of unpaid telephone bills for the recovery of which Administrations \* should collaborate

## (New question)

Under Recommendation E.71, a number of Administrations\* help each other to recover the amounts involved in unpaid telephone bills owed by persons who have gone to live abroad.

It sometimes costs quite a lot of money to get such bills paid. Hence it may be questioned whether it would not be well to appeal for international assistance of this kind only when the amounts to be recovered really justify the costs involved. What should be the minimum amount per bill?

## Question 9/II — Calls booked to two or more persons

#### (New question)

Should call bookings requiring the presence at the receiving end of two or more specified persons be admitted and put through?

If so, what are the operational rules and tariffs to be applied?

This question concerns:

- préavis calls in the "international" telephone service,
- and personal calls in the intercontinental telephone service.

The following Annex explains why the Swedish Administration submitted this question in 1964 so far as *préavis* calls are concerned.

## ANNEX

#### (to Question 9/II)

#### Call bookings with préavis for several persons, recorded in Sweden

In booking a telephone call, the calling party sometimes expresses the wish that two or more persons should be present simultaneously while the conversation is exchanged; in other words, he asks for a call including a *préavis* to two or more persons. It must be recognized that calls of this

9/II, Ann.)

<sup>\*</sup> or recognized private operating Agencies.

kind arise mainly from the increasing use made of telephone apparatus with amplified reception. As the demand for this type of call may be expected to become more widespread in the future, it would seem advisable to decide whether such a facility should be made available to users and, if so, which provisions as regards operations and tariffs should be applied. These provisions should specify the maximum number of persons to be advised.

From 1 December, 1962, to 31 July, 1963, the international exchange at Stockholm received the following call bookings with *préavis* for two or more persons:

December	1962	28 calls for 2 persons, 1 call for 3 persons
January	1963	24 calls for 2 persons
February	1963	19 calls for 2 persons
March	1963	17 calls for 2 persons
April	1963	16 calls for 2 persons
May	1963	14 calls for 2 persons
June	1963	17 calls for 2 persons
July	1963	22 calls for 2 persons

These requests were accepted, despite the fact that this class of call is not mentioned in the Instructions for the International Telephone Service, and the results completely satisfied the correspondents concerned. A *préavis* charge was made for each person requested.

#### Question 10/II — Revision of the Instructions for the International Service

(Continuation of Supplementary Question D/II, studied in 1961-1964)

Critical examination of the methods of operation defined in the *Instructions for the International Service* and thorough overhaul of these Instructions, as well as eventual modification of the Instructions for the Intercontinental Service.

*Note 1.*— This revision should, as far as possible, co-ordinate the rules governing the intercontinental and international services and should also serve as the basis for revision of the Telephone Regulations (classification of calls, charge unit, surcharges, etc.).

Note 2. — At an early stage, Administrations\* should state how, in their view, the present Instructions for the International Service might be rearranged. As the Instructions to be drafted at the conclusion of the study of Question 10/II should be of general application, it is desirable that the preliminary survey should be comprehensive and that non-European countries should make proposals for simplifications and adaptations, in line with the practice followed in their respective areas.

# Question 11/II — Radio circuits held in reserve in intercontinental relations normally using submarine cable circuits

## (New question)

In both telegraphy and telephony, less use is now made of HF radio-circuits, thanks to developments in submarine cables.

<sup>\*</sup> and recognized private operating Agencies.

There are some services in which, ordinarily, cable circuits are almost exclusively used. However, a number of radiotelephone circuits are kept in reserve:

- a) in case there should be a break in the cable circuits;
- b) for reasons of reliability;
- c) because it is desired to keep the frequencies assigned.

The result is a heavy financial burden on Administrations<sup>\*</sup>, which have to maintain a good deal of sending and receiving equipment, even though it is not effectively used and could usefully be employed to communicate with other countries.

The problem of radiotelephone channels held in reserve for cable circuits should be investigated, in agreement with Study Group I and the other study groups concerned. A solution might be sought through regional arrangements, or possibly an emergency network might be set up, so that countries could cut down on their reserve radio equipment while keeping their frequencies.

## Question 12/II — Numbering arrangements to avoid inappropriate routings

(New question)

Considering

that regulations for the analysis of a number dialled by a telephone caller have been established, from the routing, charging and accounting standpoint by the C.C.I.T.T.,

that these regulations make it possible to ensure a good flow of international traffic in most cases,

that, nevertheless, difficulties may arise in two cases,

what arrangements should be made:

a) to ensure a good flow of international traffic to a (relatively small) independent country with no country code of its own, but whose telephone network is a part of the telephone system:

- of a large neighbouring country? or,

- of a network of that country?

b) to prevent the flow of international traffic to a country with a country code of its own, via another country, by dialling the country code of the latter?

## ANNEX

#### (to Question 12/II)

1. The requirements concerning the analysis of the number dialled for an international connection in order to determine:

- the required routing;

(12/II, Ann.)

<sup>\*</sup> and recognized private operating Agencies.

- the rate chargeable to the caller and
- the data for international accounting,

are laid down in the following rules:

1.1 Recommendation Q.11 (or E.29 of Volume II bis of the Red Book) para. 1.2, page 24 of the Red Book, Volume VI

Analysis of the first or the first two digits of the national (significant) number should be sufficient to determine the routing and the charging area.

1.2 Recommendation Q.35 (or E.52 bis of Volume II bis of the Red Book) para. 3, page 61 of the Red Book, Volume VI

In some cases more than two digits must be analysed and the source of the call must be determined to distinguish between frontier automatic calls and the other automatic calls.

1.3 Minutes of Study Group XIII meeting (Geneva, December 1961) (COM XIII-No. 46, page 41)

When an integrated national numbering scheme covers all the countries of a continent, analysis of the three digits of the national (significant) number will determine the routing, the charging area and/or the country of destination.

1.4 Minutes of Study Group XI Working Party No. 3 meeting (Geneva, March 1964) (COM XI-No. 144)

In System No. 4 the following requirements are made with regard to the analysis of the number in:

- a) the outgoing exchange in behalf of routing, charging and international accounting;
- b) a transit exchange in behalf of routing.

#### **Requirements**:

- analysis of three digits of the national (significant) number, only when the country code consists of one digit;
- analysis of two digits when the country code consists of two digits;
- analysis of one (if required, two digits) when the country code consists of three digits;
- distinguishing between the language digit and the discriminating digit zero, to enable semiautomatic calls to be routed in another manner than automatic calls, if required.

2. The requirements mentioned under 1.1-1.4 form a well coherent whole and are not contradictory to each other. Owing to this the demands to be made on the manufacturing of the equipment are clearly defined, demands which are quite reasonable.

3. Nevertheless, difficulties may arise, viz. when traffic is possible from an outgoing country (to be indicated further by country A) via another country B to a third country or territory (country C in the first case; D in the second case), while this traffic is not official international transit traffic. This situation can or could occur in two cases, viz.:

*First Case:* The national numbering scheme of a country B also comprises a country C which does not belong to the area of jurisdiction of B. Then the country C has no separate country code and must be reached in international traffic via B and by means of the country code of B. In this

(12/II, Ann.)

case it is possible that at present in an outgoing country A other requirements with regard to charging or international accounting are made for the traffic to C than for the traffic to B.

*Examples:* The Liechtenstein telephone numbers are included in the National Swiss numbering scheme, the Vatican State telephone numbers in the Italian numbering scheme and the Monegasque telephone numbers in the French numbering scheme.

*Note.* — Of course, the case mentioned in the aforegoing paragraph is not relating to the situation in which various countries are equivalently integrated with their numbering scheme in one continental plan.

Second Case: The national numbering scheme of a country B enables a caller to get access to a country D by dialling a combination of digits resembling a normal national number, though D has a country code of its own. In this case measures must, of course, be taken to prevent a caller from doing so from a country A, so that by dialling the country code of B plus the combination of digits mentioned above he could establish a call to country D.

*Examples:* Luxemburg is accessible from Germany by means of a national number. Luxemburg is (at least partly) accessible from Belgium by means of a national number.

4. To overcome the difficulties stated in para. 3 it might be possible to consider taking measures either in an outgoing country A or in the intermediate country B.

4.1 The measures to be taken in an outgoing country A would have to be far-reaching and would in general require an analysis of the dialled number, which exceeds the requirements described in para. 1 by far. Moreover, these measures would have to be taken in a large number of countries and these countries would have to be kept informed of changes in the national numbering scheme of country B.

4.2 The measures to be taken in country B, which enables calls to be routed to a country C or a country D, are less drastic and more obvious, because this country B is responsible for this routing facility.

5. If the solution specified in paragraph 4.2, which would appear to be both logical and feasible, were adopted the following set of three measures might be taken:

- 5.1 a) From country A the rate to a country C, which from a numbering point of view belongs to a country B and is internationally accessible by means of the country code of B, must be the same as the rate to country B itself or as the rate to the relevant charging area of country B.
  - b) A country B of which the national numbering scheme also comprises a country C which does not belong to the area of jurisdiction of B must itself take measures, if required, to fix the volume of the traffic of the international traffic to such a country C. The outgoing countries A can settle international traffic accounts with country B only (both semi-automatic and automatic traffic) without the countries A collecting accounting-data concerning the traffic to a country C and supplying them to B.

5.2 A country B of which the national numbering scheme enables calls to be routed by means of national numbers to a country D (though this country has a country code of its own) must itself take measures to prevent that this possibility is used for international transit traffic, so for calls made from a country A, via country B, to country D.

6. It might be noted that in many European countries and relations, the arrangements specified in paragraph 5 are already in force by bilateral agreement; however, it would be better if the C.C.I.T.T. were to issue an official regulation to that effect.

(12/II, Ann.)

# <u>Question 13/II</u> — Language difficulties in the international semi-automatic and automatic telephone service

#### (New question; is also Question 3/XIII of Study Group XIII)

Does experience with semi-automatic service reveal a need for any changes in operating methods to reduce difficulties arising from language differences? Would such changes require any modification of semi-automatic operating facilities, such as the forward transfer signal, which might entail alterations in C.C.I.T.T. signalling systems?

*Note 1.*— It would be interesting to have information, obtained from service observations for example, about the type of difficulty encountered, the class of call and the relations on which it arises, and the proportion of calls seriously hindered by an unsuccessful first attempt.

Note 2. — The conditions governing identification of the called person (possibility of identification by the caller) are set forth in Recommendation E.55 bis, Volume II bis of the Red Book) and are also included in the relevant articles of:

- a) the Instructions for the Intercontinental Service (edition of 1 January 1965);
- b) the Instructions for the International Service (revised by Mr. del Riego's Working Party in November 1964).

Note 3. — Mr. del Riego's Working Party had been instructed by the Plenary Assembly to submit comments so as to define the scope of the question and inaugurate its study. These comments are given hereafter in the Annex.

## ANNEX

## (to Question 13/II)

## Comments made by Mr. del Riego's Working Party at its meeting in Madrid (2-7 november 1964)

1. Question 13/II is concerned with the experience acquired in making use of the services of the assistance operator in the *semi-automatic* service. Before it can give a valid answer to this question, Study Group II must have certain statistics.

In setting up international and intercontinental calls, when the national networks of the calling and the called parties use different languages, it may be necessary for the outgoing operator to call upon the services of the assistance operator (language assistance operator):

- a) to identify the called number or person, or
- b) to obtain information connected with identification or with the meaning of tones or recorded verbal announcements.

*Note.* — In relations where identification of the called person is left to the caller and in which the outgoing operator does not supervise the start of conversation, the intervention of the assistance operator may, in some cases, be indirectly brought about by the calling subscriber himself manipulating the switch hook to recall the outgoing operator.

- 2. No statistics are available at present on:
- a) traffic passing through language assistance operators, or
- b) traffic which should have been put through to such operators but which was handled in a different way, e.g. switched to Code 11 operators.

(13/II, Ann.)

It appears that, in some relations, the outgoing operator refrains from calling in the assistance operator because the latter takes too long to answer (perhaps because of many false signals, due to equipment faults appearing on the language assistance answering circuits).

It would be useful, moreover, to know how the called person reacts—for how long does he hold the line, and after what period does he hang up before the assistance operator has intervened.

Statistics according to Table 2 in C.C.I.T.T. Recommendation E.83 *ter*, which includes a heading on the assistance operator's time-to-answer, are exchanged by Administrations\*, but these data refer to the very small volume of traffic of this kind which is included in the sample of traffic observed.

3. In view of the foregoing, a special study should be undertaken of the situation. As a new signalling system (C.C.I.T.T. System No. 6) is in preparation, this study should be made immediately to ascertain whether the assistance operator facility is justified or whether it should be abandoned. For this purpose, a series of tests should be carried out of sufficient scope to provide Study Group II with all the information it requires to inform Study Groups XIII and XI on this matter.

4. The tests should cover a period of three months, beginning on 1 February 1965. Results should be notified to the C.C.I.T.T. Secretariat by 1 June 1965 for immediate distribution to the members of Study Group II. A meeting of a special working party of that Study Group would be convened by the Chairman, Mr. Rutschi, should the conclusions drawn from the tests by Administrations\* so justify. This special working party should meet before the 2nd meeting (Stockholm, 1965) of Working Party XI/I which is examining System No. 6 (Chairman: Mr. C. M. McGuire).

5. The information to be supplied to the C.C.I.T.T. should be based on a sufficient number of observations for it to have statistical value. Some observations might be carried out by specially instructing operators to mark their tickets when language difficulties occur or when an assistance operator has to be called in, but any other method can also be employed.

6. Each Administration\* may submit the information in whatever form seems most appropriate. The following points, however, are considered to be essential:

- 1) approximate total number of calls per day using the services of an assistance operator and the percentage of total traffic this represents,
- 2) approximate total number of calls per day which *would have required* the services of an assistance operator and the percentage of total traffic this represents,
- 3) assistance operator's average time-to-answer,
- 4) number of spurious signals received on assistance operator circuits.

7. The results should distinguish between each relation observed and should specify how the called person was identified in each of these relations:

- 1) by the outgoing operator;
- 2) by the caller:
  - a) the outgoing operator remaining on the line,
  - b) without the outgoing operator supervising the start of conversation.

(13/II, Ann.)

<sup>\*</sup> or recognized private operating Agency(ies).

## SUPPLEMENTS TO PART II

## SUMMARY

## SUPPLEMENT No. 1

Difference between:

- "avis d'appel" and "préavis" calls
- person-to-person calls
- a) Australia
- b) Canada
- c) East African Posts and Telecommunications Administration
- d) India

- e) Mexico
- f) Pakistan
- g) Republic of South Africa
- h) United States of America (A.T.T.)

SUPPLEMENT No. 2

Table and curves for Erlang formula

## SUPPLEMENT No. 1

## **DIFFERENCE BETWEEN:**

## - "AVIS D'APPEL " AND "PRÉAVIS " CALLS,

## — PERSON-TO-PERSON CALLS

## 1st Part. — General — Reply of Study Groups II to Question 1/II studied in 1960-1964

1.1 Question 1/II was raised at New Delhi by extra-European countries which use the person-to-person call system in their national services and, by extension, in their international service, outside the intercontinental system.

The inquiry dealt with in Question 1/II related to:

- 1) facilities offered to users, and
- 2) charging

in the person-to-person call system *outside the intercontinental system* defined by Recommendation E.4.

The interesting replies to this inquiry were obviously those from countries outside Europe. In fact, the European Administrations confirmed that they only had the European system, with *préavis* and *avis d'appel*. It should, however, be noted that the *British Administration* said that it used a system of " personal calls " in its inland service; the difference in charge between such a call and a *préavis* call was that the surcharge was fixed and independent of the call unit amount (see COM II-No. 6, p. 3).

Moreover, the Danish Administration has announced that in its national service it is using a "personal call" system identical to the one mentioned by the United Kingdom Administration, i.e. with a fixed surcharge independent of the amount of the call unit.

## 1.2 Replies by countries outside Europe

The replies by countries outside Europe which use a system of the person-to-person type (outside the intercontinental system) are contained in document COM II-No. 4, and were submitted by:

- a) Australia
- b) Canada
- c) East African Posts and Telecommunications Administration
- d) India
- e) Mexico
- f) Pakistan
- g) Republic of South Africa
- h) United States of America (A.T.T.)

## 1.3 Conclusions

Study Group II notes that there are only very minor differences between the facilities offered to users in:

- the system of préavis and avis d'appel calls

— the system of person-to-person calls.

The methods of charging are not identical, but are fairly similar.

# 2nd Part. — Replies about the utilization of person-to-person calls in the national services of different countries

#### 2.1 Person-to-person calls in the United Kingdom

The British Administration admits a form of person-to-person call in its national system. These calls are described as and published as "personal" calls. In booking such a call the caller can:

a) quote the name of the person to whom he wishes to speak and the names of any acceptable substitutes and the telephone number or address where all or any of them may be found;

b) specify the person to whom he wishes to speak by a reference code, title, department or extension number.

c) arrange to speak only if two named persons are both available at one particular . number.

The majority of these "personal" calls are successfully completed on demand, the person requiring the call making the booking and remaining in circuit during the settingup transaction. If the call is not connected on demand and the calling number has to be recalled to establish the call, timing does not commence until the calling party is available. These features of the personal call service are identifiable with the person-to-person facility.

A fixed supplementary charge is made for this facility irrespective of the charge of the call. This charge is reduced during the period of reduced call charges at night and weekends. Only one supplementary charge is however raised irrespective of the number of names or telephone numbers quoted by the caller or the number of attempts that have to be made to establish the call.

## 2.2 PARTICULAR PERSON SERVICE IN AUSTRALIA

A particular person facility is available which enables a caller, when booking a trunk call, to specify a particular person (with or without an alternative person), extension number or ... department, etc., to whom he wishes to speak at the called number. If he is unable to furnish precise details, he may supply brief particulars of the business to be transacted, or any other information, which will enable the call to be directed to the right quarter. The facility does not provide for a particular person to be specified at the calling

station, it being the responsibility of the caller to be available to take the call when offered, if the call is not connected on demand. If the call is offered but the caller is not available, the call is cancelled, the special fee only is charged and the caller is required to book another call when he requires it.

The scale of trunk call charges and of the special fee payable for the particular person facility in each mileage category is as follows:

Chargeable distance	Unit call charge (day rate)	Particular person fee
Not exceeding 25 miles Exceeding 25 but not 30 miles Exceeding 30 but not 50 miles Exceeding 50 but not 100 miles Exceeding 100 but not 200 miles Exceeding 200 but not 300 miles	s. d. 1 4 1 8 2 0 4 0 6 0 10 0	s. d. 1 0 1 0 2 0 3 0 4 0
Exceeding 300 but not 400 miles Exceeding 400 miles	12 0 15 0	50 60

The particular person fee is chargeable in all cases where a reply is received from the wanted number, irrespective of the success or failure of the attempt or attempts to obtain the person required, even if the caller elects to speak to the person answering in the absence of the wanted person. Only one special fee is chargeable on a call, irrespective of the number of attempts made to secure the wanted party.

An extra fee of sixpence is charged when it is necessary and possible to send a messenger to secure the attendance at a telephone of a person residing within the free delivery radius for telegrams. If the wanted party lives beyond the free delivery radius, the usual porterage fees are payable in addition to the basic fee of sixpence. For these calls, the particular person and messenger fees are chargeable, irrespective of whether or not the call is effective.

### 2.3 Person-to-person calls in Canada

The Canadian telephone systems provide a person-to-person service in addition to the station-to-station service. Rates are established for each service on the basis of a separate three-minute unit charge for person-to-person and station-to-station respectively. The difference between the unit charges for the two services varies with the mileage and is not a fixed surcharge. However, there is a common per minute rate for either service beyond the initial three-minute period and this corresponds to the station-to-station rate.

In the international service between Canada and the United States, the unit rate for person-to-person exceeds that for station-to-station (equivalent surcharge) by amounts which vary from one third of the station-to-station unit to two thirds of this unit charge.

In the national service the unit rate for person-to-person exceeds that for station-tostation by amounts which vary from two thirds of the station-to-station unit to one and one third times this unit charge.

In both cases the higher equivalent surcharge is placed on the short-haul services which have low unit charges. There is no report charge when the call is cancelled due to the non-availability of the called party in the person-to-person service.

## 2.4 The East African Posts and Telecommunications Administration

a) A person-to-person call facility is available in the national system serving the East African Territories of Kenya, Uganda and Tanganyika.

b) In East Africa the person-to-person call facility is known as the personal call service.

c) An additional charge (personal call fee) is made equal to one third of the charge for a three-minute call. It therefore varies in accordance with the call charge which in turn varies in accordance with distance and the time of day. The personal call fee is subject to a minimum of 1.2 East African shillings (i.e. 0.515 gold franc).

d) The caller may nominate a particular person or substitute at the distant telephoneor a particular person at two alternative distant numbers.

e) The name of the person booking the call is passed to the called number unless the caller has specified that he does not wish this to be done.

f) For one personal call fee up to three calls may be made to try to obtain the required person and these calls may be to different exchanges.

g) When on a first attempt to set up a personal call the required person is not available the following three alternatives are offered to the caller:

- i) The controlling operator can leave a message asking the called number to ring the personal call operator at the originating exchange when the required person becomes available. This is known as the "leave word " facility.
- ii) The caller can suggest a time when the call can be tried again. (See f) above.)
- iii) A message can be left by the controlling operator with the called number for the required person, when he becomes available, to make a call direct to the calling person. This is known as the "call direct" facility. In this case the original call is regarded as ineffective and the personal fee only is charged. When the required person eventually makes a call in response to the message he is charged at the normal tariff, that is, without reference to the original personal call.

h) In the first instance personal calls are set up and controlled by the booking operator, but in the event of the "leave word" facility being used the ticket prepared by the booking operator is passed to the personal call operator in that exchange who sets up and controls the call when the required person, for whom word was left, later contacts her.

j) When the caller is a PBX operator, timing of the call is not delayed until the extension user takes up the call, even if his name was quoted when the call was booked. In cases of re-call (i.e. when the call was not successfully completed on demand), where an extension number or name has been given timing does not commence until connection to that extension or person if effected.

### 2.5 Person-to-person call in India

There is a "person-to-person" call service in the Indian domestic system. The facilities offered are the equivalent of those offered with *préavis* or *avis d'appel* calls. The surcharge depends on the distance and varies between 25% and 50% of the call unit.

## 2.6 Person-to-person calls in Mexico

The Mexican national long-distance telephone system provides for person-to-person calls at a surcharge of 25% over the rate for ordinary calls. However, since there is a reduction for telephone calls at night, the cost of a person-to-person night call is almost the same as that of a station-to-station day call.

## 2.7 "PARTICULAR PERSON" IN PAKISTAN

There is a "particular person" call service in use in the Pakistan inland system. The specified person is tried and called at the distant end. If he is available in the first attempt the call is put through and 25% of the three-minute station-to-station charge is additionally charged. If the specified person is not available, the party who answers the telephone is requested to call him and make him available within half-an-hour. A second attempt is made to call the specified person after half-an-hour. If the specified person is available the call is put through at 25% additional charge. If the specified person is not available, the call is considered as ineffective and 25% charge only is made.

The service is very popular especially during busy-hour on congested routes.

## 2.8 PERSONAL SERVICE IN THE REPUBLIC OF SOUTH AFRICA

The South African Administration, in its national services, provides facilities for the handling of "personal service" calls, which are similar to "préavis" calls. For each "personal service" call an additional charge of 20 cents (South African) is raised. This surcharge is independent of the call rate, the value of which may attain 150 cents (South African).

2.9 Person-to-person calls in the United States of America

1. There do not appear to be significant differences in the services offered the customer between person-to-person calls and the group of *préavis* and *avis d'appel* calls.

2. Telephone Companies in the United States offer two basic types of message telephone service:

Station-to-station service — that service where the person originating the call:

- a) Dials the telephone number desired, or
- b) Gives to the Telephone Company operator the telephone number of the desired telephone, branch exchange system, or branch exchange station which is reached directly rather than through a branch exchange attendant, or gives only the name and address under which the number of the desired telephone or branch exchange system is listed, and does not specify a particular person to be reached, nor a particular station, department or office to be reached through a branch exchange attendant.

*Person-to-person service* — that service where the person originating the call specifies to the Telephone Company operator a particular person to be reached, or particular station, department or office to be reached through a branch exchange attendant.

When, after the telephone or branch exchange system called has been reached and while the connection remains established, the person originating the call requests or agrees to talk to any person other than the person specified, or to any other station, department or office to be reached through a branch exchange attendant, the classification of the call remains person-to-person.

When the person originating the call wishes arrangement made in advance with a particular party or station for the establishment of a connection at a specified time (appointment call), the call is classified as person-to-person.

The Telephone Company does not undertake in connection with person-to-person service to bring to a telephone a called person who cannot be reached at a telephone connected to the Bell System. However, at the request of the calling party, the Telephone Company, when possible, will arrange on behalf of the calling party for messenger service; that is a messenger or other means to notify the called party of the call.

3. With regard to charging there is no important difference either, as far as the service offered to users is concerned, between:

a) the charging system used in the United States for person-to-person calls and

b) the charging system used in Europe for *préavis* and *avis d'appel* calls, as may be seen in the following table.

Item	United States Person-to-person rates	Europe Avis d'appel or préavis rates
Amount above ordi- nary (station-to-sta- tion) call	Specific amount for each rate step	Additional minute
Charge for uncom- pleted calls	None	Charge for one min- ute
Messenger service	Cost of messenger	Charge for one min- ute plus "express" charge "if outside of "free" area

9

In both cases charging is based on the existence of a surcharge applied solely to the first call unit. The main differences lie:

- a) in the rate of the surcharge, which is  $33 \frac{1}{3}\%$  (one minute) in the European system, while in the United States it varies with the call unit charge between roughly 40% and 60%;
- b) in the fact that, in the European system, the *préavis* or *avis d'appel* surcharge is made if the request for a call is unsuccessful (for example, because of the absence of the person called), whereas in the United States the person-to-person surcharge is not made unless the call takes place.

4. Person-to-person calls as described above are used not only in the United States but also in international relations between the United States and Canada or Mexico.

SUPPLEMENT No. 2

## TABLE AND CURVES FOR ERLANG FORMULA

## Table of Erlang loss formula (Erlang No. 1 formula, also called Erlang B formula)

Loss probabilities: 1%, 3%, 5%, 7%.

Formula :

let p = the loss probability

- p = the loss probability y = the traffic offered (in erlangs)  $E_1, n(y) = p = \frac{\frac{y^n}{n!}}{1 + \frac{y}{1} + \frac{y^2}{2!} + \dots + \frac{n^n}{n!}}$

п	<i>p</i> = 1%	p = 3%	<i>p</i> = 5%	<i>p</i> = 7%	n	p = 1%	p = 3%	p = 5%	p = 7%
1	0.01	0.03	0.05	0.08	51	20.00	42.90	45.52	47.72
$\frac{1}{2}$	0.01	0.03	0.05	0.08	51	30.00	42.89	45.55	41.12
23	0.15	0.28	0.38	1.06	53	39.70 40.60	45.65	40.55	40.70
4	0.40	1.26	1 53	1.00	54	41.50	44.01	47.55	50.83
5	1.36	1.88	2.22	2.50	55	42 41	46 74	49.54	51.86
6	1.91	2.54	2.96	3.30	56	43 31	47 70	50.54	52.90
7	2.50	3.25	3.74	4.14	57	44.22	48 67	51 55	53.94
8	3.13	3.99	4.54	5.00	58	45.13	49.63	52.55	54.98
9	3.78	4.75	5.37	5.88	59	46.04	50.60	53.56	56.02
10	4.46	5.53	6.22	6.78	60	46.95	51.57	54.57	57.06
11	5.16	6.33	7.08	7.69	61	47.86	52.54	55.57	58.10
12	5.88	7.14	7.95	8.61	62	48.77	53.51	56.58	59.14
13	6.61	7.97	8.84	9.54	63	49.69	54.48	57.59	60.18
14	7.35	8.80	9.73	10.48	64	50.60	55.45	58.60	61.22
15	8.11	9.65	10.63	11.43	65	51.52	56.42	59.61	62.27
16	8.88	10.51	11.54	12.39	66	52.44	57.39	60.62	63.31
17	9.65	11.37	12.46	13.35	67	53.35	58.37	61.63	64.35
18	10.44	12.24	13.39	14.32	68	54.27	59.34	62.64	65.40
19	11.23	13.11	14.31	15.29	69	55.19	60.32	63.65	66.44
20	12.03	14.00	15.25	16.27	70	56.11	61.29	64.67	67.49
21	12.84	14.89	16.19	17.25		57.03	62.27	65.68	68.53
22	13.65	15.78	1/.13	18.24		57.96	63.24	66.69	69.58
23	14.47	17.50	10.03	19.23	73	50.88	64.22	67.71	70.62
24	15.29	19.49	19.03	20.22	74	59.80	65.20	68.72	/1.6/
25	16.15	10.40	20.04	21.21	76	61.65	67.16	09.74	12.12
20	17.80	20.31	20.94	22.21	70	62.58	68 14	71 77	74.91
28	18.64	21.22	22.87	24 22	78	63 51	69.12	72 70	75.86
29	19.49	22.14	23.83	25.22	79	64 43	70.10	73.80	76.91
30	20.34	23.06	24.80	26.23	80	65.36	71.08	74.82	77.96
31	21.19	23.99	25.77	27.24	81	66.29	72.06	75.84	79.01
32	22.05	24.91	26.75	28.25	82	67.22	73.04	76.86	80.06
33	22.91	25.84	27.72	29.26	83	68.15	74.02	77.87	81.11
34	23.77	26.78	28.70	30.28	84	69.08	75.01	78.89	82.16
35	24.64	27.71	29.68	31.29	85	70.02	75.99	79.91	83.21
36	25.51	28.65	30.66	32.31	86	70.95	76.97	80.93	84.26
37	26.38	29.59	31.64	33.33	87	71.88	77.96	81.95	85.31
38	27.25	30.53	32.62	34.35	88	72.81	78.94	82.97	86.36
39	28.13	31.47	33.61	35.37	89	73.75	79.93	83.99	87.41
40	29.01	32.41	34.60	36.40	90	74.68	80.91	85.01	88.46
41	29.89	33.36	35.58	37.42	91	75.62	81.90	86.04	89.52
42	30.77	34.30	36.57	38.45	92	76.56	82.89	87.06	90.57
43	31.66	35.25	37.57	39.47	93	77.49	83.87	88.08	91.62
44	32.54	36.20	38.56	40.50	94	78.43	84.86	89.10	92.67
45	33.43	3/.10	39.55	41.53	95	79.37	85.85	90.12	93.73
40	34.32	38.11	40.54	42.56	96	80.31	86.84	91.15	94.78
4/	35.22	39.00	41.54	43.39	9/	81.24	87.83	92.17	95.83
4ð 40	30.11	40.02	42.54	44.02	98	82.18	88.82	93.19	96.89
49 50	37.00	40.96	43.33	43.03	100	83.12	00.70	94.22	97.94
50	37.90	41.73	44.55	40.09	100	04.00	90.79	93.24	90.99

(Suppl. 2)



Relation between the traffic (in erlangs) offered and the number of circuits required in the case of:

- the C.C.I.T.T. Tables A and B (Recommendation Q.81 (E.91))
- the Erlang formula (p = 1%, 3%, 5% and 7%)
- the curve for small groups of automatic circuits (annex to Recommendation E.95, (Q.84))

Figure 1. — Number of circuits between 1 and 20

(Suppl. 2)



Relation between the traffic (in erlangs) offered and the number of circuits required in the case of: the Erlang formula for (p = 1%, 3%, 5% and 7%)

FIGURE 2. --- Number of circuits between 1 and 100

(Suppl. 2)

## PART III

## **TELEGRAPH OPERATION AND TARIFFS**

## Proposals to the next Administrative Telegraph and Telephone Conference

Recommendations relating to Telegraph Operation and Tariffs (Series F)

Questions of Telegraph Operation and Tariffs entrusted to Study Group I

Contributions considered worth publishing

## PROPOSALS TO THE NEXT ADMINISTRATIVE TELEGRAPH AND TELEPHONE CONFERENCE

## PROPOSAL No. 1

(Reply to Resolution No. 3 of the Administrative Telegraph and Telephone Conference, Geneva, 1958)

TEXT OF RESOLUTION NO. 3

The ordinary 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.

The IIIrd Plenary Assembly of the C.C.I.T.T. submits the following proposal to the next Telegraph and Telephone Conference on modification of the Telegraph Regulations (Geneva Revision, 1958):

1. Article 19, No. 147

PRESENT TEXT

147 c) abbreviated denominations ......
...... in the form of initial letters combined as one group ......
..... by the country of origin of the telegram;

#### PROPOSED TEXT

147 c) abbreviated denominations ...... ..... in the form of initial letters or syllables combined as one group ..... by the country of origin of the telegram; *Reason*: Appendix No. 1 to the Telegraph Regulations gives examples showing where the grouping of syllables is permissible; Article 19 should conform strictly with the Appendix.

## 2. In Article 29, add a No. 272 bis after No. 272

PRESENT TEXT

PROPOSED TEXT

272 bis

"Proper names, abbreviated denominations of international or national organizations, including business undertakings in the form of initial letters or the *letters and/or syllables* of their names, combined as one group."

#### PROPOSAL No. 2

## (Reply to Resolution No. 2 of the Administrative Telegraph and Telephone Conference, Geneva, 1958)

TEXT OF RESOLUTION NO. 2

The ordinary Administrative Telegraph and Telephone Conference, Geneva, 1958,

#### considering

1. that the reservation of the "figures" position in combinations Nos. 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;

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.

In response to Resolution No. 2, the C.C.I.T.T. proposes :

1. that the figure position of signal No. 3 (the colon sign) be dropped;

2. that the figure position of signal No. 11 (the left-hand bracket) be dropped;

3. that the right-hand bracket sign, appearing in the figure position of signal No. 12, be replaced by )(.

The following modifications, thereby, will be introduced to the Telegraph Regulations (Geneva Revision, 1958):

1. Article 16, § 5

#### 102

## PRESENT TEXT

Punctuation marks and miscellaneous signs :

Full stop		•	•	•	•
Comma					,
Colon or division sign					:
Question mark					?
Apostrophe					,
Cross or addition sign					+
Hyphen or dash or subtraction sig	ŋn				—
Fraction bar or division sign .					1
Multiplication sign					×
Double hyphen					=
Left-hand bracket (parenthesis)					(
Right-hand bracket (parenthesis)					Ì

## 2. Article 16, § 5

(Table on page 17)

PRESENT TEXT

No. of signal	Letter case	Figure case
3	С	:
11	К	(
12	L	)

#### PROPOSED TEXT

Punctuation marks and miscellaneous signs :

Full stop														_	
Comme	•		•	•	•	•	•	·	·	•	•	·	•	•	
Comma	•	٠	•	·	·	٠	•	·	٠	·	٠	٠	·	·	,
Question	m	ark	2	•		•									?
Apostrop	he	•													,
Cross or	ad	dit	io	n s	sig	n									+
Hyphen o	or e	das	sh	01	s	ub	tra	ict	io	n s	sig	n			
Fraction	ba	r o	r (	div	/is	ioı	1 s	ig	n	•			•	•	- /
Multiplic	ati	on	si	gn	L		•	•	•		•	•	•	•	×
Double h	yp	hei	n	•	•	•	•	•	•	•	•	•	•	•	=
Left-hand	d o	r 1	rig	ht	-h	an	d	br	acl	ke	t (	pa	re	n-	
thesis	5)				•										(or)

#### PROPOSED TEXT

No. of signal	Letter case	Figure case
3	С	1)
		•••
11	K	1)
12	L	)(

<sup>103</sup> 

3. Article 16, § 5

**PROPOSED TEXT** (addition)

#### 113 bis

To transmit the left-hand bracket or the righthand bracket, the sign )( (the figure case of combination No.11 – secondary of K) is used.

4. Article 21, § 1

163 PRESENT TEXT

PROPOSED TEXT

Delete this line.

## 5. Article 21

#### **PROPOSED TEXT** (addition)

## 170 bis

163

The signs of left-hand bracket and right-hand bracket might be replaced by the unique sign )( for the transmission.

## PROPOSAL No. 3

Reply to Resolution No. 1 of the Administrative Telegraph and Telephone Conference (Geneva, 1958)

TEXT OF RESOLUTION NO. 1

The Ordinary 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.

As a first stage in reply to Resolution No. 1, the IIIrd Plenary Assembly of the C.C.I.T.T. has issued Recommendation F.84:

RULES FOR PHOTOTELEGRAPH COMMUNICATIONS ESTABLISHED OVER RADIO CIRCUITS OR COMBINED RADIO AND METALLIC CIRCUITS.

(The text of this Recommendation appears on page 389 of Volume II of the Blue Book.)

# SERIES F RECOMMENDATIONS RELATING TO TELEGRAPH OPERATION AND TARIFFS

## 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.29).

SECTION 3: Operating methods for the message retransmission network (F.30 to F.39).

SECTION 4: Tariffs and accounting methods for the international general telegraph service (F.40 to F.59).

SECTION 5: Telex service (F.60 to F.69).

SECTION 6: Operating methods for facsimile and phototelegraph service (F.80 to F.89).

SECTION 7: Statistics and publications on international telegraphy (F.90 to F.99).

## PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

#### Recommendation Page Title SECTION 1 Operating methods for the international general telegraph service F.1 Transmission of telegrams in the international service . . . . . . . . 253 **F.2** Action to be taken in case of interruption of telegraph circuits. Possible 277 Maximum tolerable error rate for land-line telegraph communications F.10 277 F.11 Maximum tolerable error rate for radiotelegraph communications using five-unit start-stop apparatus (including mixed communications consist-278 F.11bis Some further data about the efficiency factor in time. Application to the 279 F.12 Page-reception of telegrams in point-to-point telegraph communications with an agreed lay-out and without errors 281 SECTION 2 Switching network for the general public service Gentex network Constitution of the European switching network for the general public F.20 283 Composition of the answer-back code for the international gentex service F.21 285 F.22 290 Grade of service for long-distance international circuits used in the gentex F.23 306 306 **F.24** Average grade of service from country to country in the gentex service . . SECTION 3 Operating methods for the message retransmission network 307 Use of various sequences of combinations for special purposes . . . . . F.30 Message retransmission network 309 F.31

## INDEX OF SERIES F RECOMMENDATIONS

Recommendation	Title	Page
	SECTION 4	
	Tariffs and accounting methods for the international general telegraph service	* *
F.40	Counting of words — Preparation of a vocabulary	325
F.45	Determination of terminal rates in the European system	326
F.50	Accounting in the public telegraph service	327
F.51	Accounting procedure to be applied when a circuit carrying V.F. telegraphy is replaced by another having a different routing	327
	Section 5	
	Telex service	l
F.60	Draft regulations for the subscribers' telegraph service by start-stop apparatus (telex service)	. 331
<b>F.6</b> 1	Use of tape-printing teleprinters in the telex service	354
F.62	Duplex operation in the telex service	354
F.63	Conference and broadcast calls in the international telex service	355
F.64	Determination of the number of international telex circuits required to carry a given volume of traffic	356
F.65	Time-to-answer by operators at international telex positions	359
F.66	Rates for telex calls	359
F.67	Accounting in the fully automatic international telex service	361
F.68	Establishment of the automatic intercontinental telex network	363
F.69	Plan for telex destination codes	369
	SECTION 6	
	Operating methods for fascimile and phototelegraph service	
	- Forming monoto and supported with portion	
F.80	Provisions about phototelegrams	375
F.81	Phototelegrams	379

## INDEX OF SERIES F RECOMMENDATIONS

Recommendation	Title	Page
F.82	Rules for phototelegraph communications established over circuits nor- mally used for telephone traffic	379
F.83	Rates for phototelegrams and private phototelegraph calls	385
F.84	Rules for phototelegraph communications established over radio circuits or combined radio and metallic circuits	389
	SECTION 7	
	Statistics and publications on international telegraphy	
F.90	Speed of transmission of international telegrams (under suspension)	397
F.91	General telegraph statistics	397
F.92	Service codes	407
F.93	Routing table for offices connected to the gentex service	411
F.94	Tables of international telex traffic (under suspension)	411
F.95	Table of international telex relations         .	411
F.96	List of destination indicators	413
# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

## **SECTION 1**

## OPERATING METHODS FOR THE INTERNATIONAL GENERAL TELEGRAPH SERVICE

#### **RECOMMENDATION F.1**

## TRANSMISSION OF TELEGRAMS IN THE INTERNATIONAL SERVICE<sup>1</sup> (Geneva, 1958, amended at New Delhi, 1960 and at Geneva, 1964)

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

considering 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 declares the view

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

INDEX

Section A. — General rules

- A.1 Order of transmission of telegrams
- A.2 Beginning of transmission
- A.3 Order of transmission of the parts of a telegram
- A.4 Transmission of the preamble
- A.5 Transmission of the other parts of a telegram
- A.6 Transmission of signs for which there is no corresponding signal in the telegraph alphabet
- A.7 Transmission of groups of figures and letters or of ordinal numbers and fractions
- A.8 Signs not transmitted
- A.9 End indications
- A.10 Transmission irregularities
- A.11 Reception
- A.12 Routine repetition Collation

<sup>&</sup>lt;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).

- A.13 Acknowledgement of receipt
- A.14 Misprints and interruptions

Section B. — Special rules for connections not put through by switching

- **B.1** Daily closing
- B.2 Calling
- B.3 Alternate transmission of telegrams
- B.4 Series transmission, alternate working and continuous working
- B.5 Transmission with a continuous series of numbers
- B.6 Acknowledgement of receipt
- B.7 Abbreviating the name of the office of destination

Section C. — Special rules for switched connections (gentex calls)

- C.1 Routing
- C.2 Answer-back codes
- C.3 Setting-up of calls
- C.4 Transmission procedure
- C.5 Receiving procedure
- C.6 Acknowledgement of receipt
- C.7 Irregularities
- C.8 Service notes and advices
- C.9 Prohibitions

Annex : Service codes and abbreviations

#### 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,  $\S$  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;
  - 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).

(Art. 36, § 2)	§ 2. Every office which receives, through an international communication chan- nel 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		
	§ 1. All correspondence between two offices shall begin with the call signal.		
(Art. 37, §§ 1 and 2)	§ 2. A transmission, once begun, may not be interrupted to give place to a com- munication of higher priority except in a case of absolute urgency.		
	§ 3. The office called must reply immediately.		
ADTICLE A 2	Order of transmission of the parts of a talagram		
ARTICLE A.J.	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 <sup>1</sup> 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		
	§ 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;		
(Art. 41, § 1)	b) the letter X, in the cases mentioned in Article B.5, § 4;		
	<ul><li>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;</li></ul>		
	d) the nature of the telegram, by means of the regulation abbreviations (Regulations, Article 41), if necessary;		

<sup>&</sup>lt;sup>1</sup> For reception on a page-printing teleprinter, see Recommendation F.12.

- e) the name of the office of destination, but only in a 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 subdivision, 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).

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.

(Art. 41, § 1)

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.

§ 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)

(Art. 16,

§§ 4 and 5)

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 :

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 ( $\times$ ): Transmit the letter X.

Division sign (:): Transmit the colon (:).

Division sign (/): Transmit the fraction bar (/).

Percentage sign (%):

a) When Alphabet 1 is used, transmit the signal %.

(Art. 16, 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 be the % sign by a dash.

*Examples* : for 2%, transmit 2-0/0 and not 20/0.

Per thousand sign  $(^{o}/_{oo})$ :

Successively transmit the figure 0, the fraction bar, the figure 0 and the figure 0.

(Art. 16, A whole number, a fractional number, or a fraction, followed by  $a^{\circ}/_{00}$  sign, §§ 4, 5, 6) shall be transmitted by joining up the whole number, the fractional number, or the fraction to the  $^{\circ}/_{00}$  sign by a dash.

> *Examples* : for  $2^{\circ}/_{\circ\circ}$ , transmit 2—0/00 and not 20/00 for  $4^{1}/_{2}^{\circ}/_{\circ\circ}$ , transmit 4—1/2—0/00 and not 41/20/00.

Inverted commas (quotation mark):

- (Art. 16, *a)* When Alphabet 1 or 2 is used, transmit: §§ 4 and 5) the apostrophe (') twice at the beginnin
  - 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.

Accentuated letters ä or æ, à or å, 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, *a)* When Alphabet No. 1 or No. 2 is used, transmit them in accordance §§ 4 and 5) 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 fraction.		
	§ 1. Ordinal numbers composed of figures and letters: $30^{me}$ , $25^{th}$ , etc. shall be transmitted in the form 30me, 25th, etc.		
(Art. 21, § 7)	<ul> <li>§ 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<i>bis</i>, 30<i>ter</i>, etc., 30 I, 30 II, etc., 30<sup>1</sup> 30<sup>2</sup> etc., 30 A, 30 B, etc., indicating a house number annear in the address</li> </ul>		
(Art. 21, § 7)	so , so , so , etc., so A, so B, etc., indicating a noise 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. 16,	§ 3. Except as provided in § 2 above, groups consisting of figures and letters must be transmitted as set forth in the telegram.		
§§ 5 and 6)	Examples: 3B is transmitted as 3B AG 25 is transmitted as AG 25.		
(Art. 16, § 4)	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.		
	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 $1\frac{3}{4}$ , transmit 1—3/4, and not 13/4 for $\frac{3}{4}$ 8, transmit 3/4—8, and not 3/48 for $363\frac{1}{2}$ 4 5642 transmit $363$ —1/2 4 5642, and not 3631/2 4 5642.		
(Art. 16, § 6)	§ 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. 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.		

Arti	CLE A.9.	End indications
		§ 1. Every telegram shall be terminated by the cross signal preceded by a space.
(A)	(Art. 16,	2. The end of transmission shall be indicated by the cross and question mark signals, preceded by a space.
22.	+ and 5)	§ 3. The end of work shall be shown by a double transmission of the plus $(+)$ sign if Alphabet No. 1 or No. 2 is used, or the "end of work" signal in Morse Code.
Arti	cle A.10.	Transmission irregularities
(Aı	rt. 16, § 4)	§ 1. To indicate "wait", MOM shall be transmitted if Alphabet No. 1 or 2 is used, or the "wait" signal in Morse Code.
		§ 2. To show an error, the following shall be transmitted:
(A) (A)	rt. 16, § 4) rt. 16, § 5)	With Alphabet No. 1, the "error" signal (X); 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.
(Aı	rt. 16, § 5)	§ 3. If Alphabet No. 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.
Artic	cle A.11.	Reception
(AI	t. 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.
(Ar	t. 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.
(Ar	t. 37, § 5)	§ 3. When the receiving telegraphist finds reception unintelligible, he shall inter- rupt 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.
(Ar	(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:
\$§ 5		<ul> <li>a) Morse simplex: transmit a series of dots.</li> <li>b) Morse duplex and Wheatstone duplex: transmit the letters "BK ".</li> </ul>
(F 1)		
(1.1)		

TRANSMISSION OF TELEGRAMS

260

- c) Multiplex, simplex and duplex instruments: transmit a succession of letters " P " or signs " %". (Art. 37, §§ 5 and 12) d) Start-stop instruments: transmit a succession of letters "P" or figures "0".

(Art. 43, § 1)

(Art. 43, § 2)

§ 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.

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.

§ 7. The information given in the preamble which reaches the office of destination (Art. 41, § 2) 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).

On Morse and sound-reading instruments, the receiving telegraphist shall (Art. 37, § 8) 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

§ 1. When telegraphists are in doubt as to the accuracy of the transmission or (Art. 44, reception, they shall give or demand the partial or complete repetition of tele-§§ 2 to 5) grams 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.

§ 3. For Government telegrams in plain language and for service telegrams,
 Art. 44, 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.

§ 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 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)
 (Art. 44, §7)

- 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 the 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).

(Art. 46, § 2)	§ 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 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).
(Art. 46, § 3)	§ 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 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.
(Art. 46, § 4)	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, or if not, by an urgent service advice (A Urgent) forwarded by whatever means are available.
(Art. 46, § 5)	§ 5. The cancellation of a telegram transmission of which has already begun must always be asked for or notified by urgent service advice (A Urgent).
(Art. 46, § 6)	§ 6. When the transmission of a telegram has not been completed or the ac- knowledgement of receipt is not received within a reasonable time, the telegram shall 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.
	8.7 In service correspondence relative to the working of communications, it is

§ 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.

§ 2. In relations between offices which are not permanently open, a terminal office may not close before having exchanged all outstanding international tele-(Art. 4, § 4) grams with an office which is open later and before having received confirmation that all these telegrams have been received.

§ 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 (Art. 4, § 5) 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

- § 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.
- § 2. However, when Alphabet No. 1 is used, the word "ohe" 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").
- § 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.

§ 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

(Art. 37, § 2) 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".

§ 5. The office called must reply immediately, except in the case of start-stop correspondence, subject to  $\S 4$  above.

(Art. 37,  $\S$  2) In Morse working, the office called shall reply by transmitting its answerback signal followed by the signal — - —.

§ 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)
 (Art. 38, §1)
 (Art. 36, §1)
 (Art. 36, §1)
 (Art. 36, §1)
 (Art. 36, §1)
 (Art. 37, §1)
 (Art. 38, §1)
 (Art. 38

- (Art. 38, § 2) § 2. A telegram having priority in transmission shall not count in the alternate order.
- § 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.
- § 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 the Regulations, Art. 37, § 1.

264

#### TRANSMISSION OF TELEGRAMS

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 understanding between the offices in communication.
(Art. 39, § 2)	§ 2. Telegrams of the same series shall be considered as forming a single trans- mission, 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 tele- gram 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
(Art. 40, § 1)	§ 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. 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,

(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.

•

(Art. 40, § 2) Solution (Art. 40, § 2) § 2. The serial number shall be transmitted at the beginning of the preamble. 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.

§ 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 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 trans-

(Art. 40, § 5) 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.

In all other cases, telegrams which are to be diverted shall be given new serial numbers.

- (Art. 40, § 6) § 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, § 7) § 8. When a serial number already used has to be struck out, the transmitting office shall inform the receiving office by service advice.
- 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 ".

(Art. 40, § 4)

§ 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 of work.

(Art. 40, § 8) c

(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 received (683), the number 680 missing and the number 665 retained.)<sup>1</sup>

(3) The sending telegraphist must request the acknowledgement of receipt immediately after the transmission of an SVH telegram, a Government telegram with priority, a money order or postal cheque telegram, or a series of money 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 " <sup>1</sup>

(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 "<sup>1</sup> 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) concerned, in the case of a well-known place in one of the countries concerned.

(Art. 42, § 2)

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.

(Art. 40, § 9)

<sup>&</sup>lt;sup>1</sup> 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 (375);

b) xq to Paris = 180415 gmt Etat 683 mdts 681 682 rcdok = NY (377);

c) 15 A Paris de Moscow 28 0010 = closing 27/5 LR 701 missing 689 LS 816 blank 782 TUHRU (378).

§ 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 codes

§ 1. The answer-back code used in the gentex service is made up of 20 signals.

§ 2. The series of 20 signals in the answer-back code 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 code of special positions dealing with service notes and advices, when they exist, includes the group of letters  $INQ^{1}$  after the name of the office.

§ 4. The answer-back code of specialized incoming positions for overflow traffic includes the group of letters  $DEB^2$  after the name of the office.

§ 5. The characteristic letters of the names of countries are as follows:

Α	Austria	I	Italy
В	Belgium	L	Luxembourg
BG	Bulgaria	MC	Monaco
CH	Switzerland	Ν	Norway
CS	Czechoslovakia	NL	Netherlands
D	Germany	Р	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
н	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.

<sup>&</sup>lt;sup>1</sup> INQ standing for "inquiries".

<sup>&</sup>lt;sup>2</sup> 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 code he obtains against that of the required office and if they correspond he then begins to transmit the telegram.

§ 4. If the answer-back code received comes from an overflow position, transmission can begin.

§ 5. If the answer-back code 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 code 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 code, 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 code of the called station and then sends his own answer-back code.

§ 6. If, after the exchange of answer-back codes 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 codes 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 codes, transmit the time of end-of-transmission in the form of 4 figures, unless it is sent automatically. The time is not forwarded by the operator if it is automatically transmitted before or after sending the telegram.

§ 8. Following the exchange of answer-back codes, the operator of the calling stations 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 codes 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 codes 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 ampliation 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 codes; he then transmits MOM, checks the text received, obtains the answer-back code 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 ampliation 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 — category 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 codes, transmits MOM, checks the text received, obtains the answer-back code 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 30 minutes 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 — category 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 code be received, or should there be no answer-back code 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 code 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 code 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 space 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 code 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) time at which transmission of the telegram has finished (or time at which the call given by the automatic switching equipment was put through);
- d) 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);
- e) the request or reply itself:
  - *Examples*: for RQ: RQ LYON 1030 17/385/TC 9W = CFLAM-8A-BH+ for BQ: BQ AMSTERDAM 1030 17/385/TC 9W OK + for RQ (in the case mentioned in No. 403 of the Telegraph Regulations): RQ LYON 1030 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, and also the 5-letter codes from the Book of "*Codes and Abbreviations for the use of the international telecommunication services* (second issue)".

#### 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 $\label{eq:rescale} \text{ in the international service}$

Service codes and abbreviations to be used in gentex operation

Abbreviation	Meaning
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

## TRANSMISSION OF TELEGRAMS

Abbreviation	Meaning
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	Please re-route to / Alternative route?
DIF	Different
DTE	Date of handing-in
BEE	Error signal
FIG	Figure(s)
GA	You may transmit
IND	Answer-back code
INO	Position specializing in the handling of service
	notes and advices
I TR	Letter(s)
MIN	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
0/0	Telegraph office of handing in
P (repeated)	Stop your transmission
PBL	Preamble of telegram
PPR	Paper
OGA	May I transmit?
OOK	Do you agree?
R	Received
RAFSO	Second application
RAP	I shall 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
REF	With reference to
ROUTE	Route to / I am routing to / Route?

(F.1)

**9**-

Abbreviation		Meaning	
RPFR		Please prepare your reperforator	
	ΤΜ	Prepare your reperforator because of telegram with multiple addresses	
	TXT	Prepare your reperforator because of long or difficult text, or because of telegrams having the same text	
RPT		Repeat please / I repeat	
RPT	ΑΑ	Repeat all after	
	AB	, all before	
	ALL	,, the whole telegram	
	BN	, all between and	
	SRL NR	,, reference number given by the transmitting	
	TG NR	telegram number	
	TXT	. text	
	WA	word after	
	WB	word before	
RQ		Announcement of a request	
SIG		Signature	
SRL N	IR	Reference number given by a gentex transmitting office	
SVIN		Service indication	
SVP		Please	
TCHN		Technical service / I shall advise the technical ser-	
TEST	MSG	Please send a test message	
TG		Telegram	
TG NI	ξ	Telegram number given by the handing-in	
TPLE		Triple word(s)	
TPR		Teleprinter	
TXT		Text	
UTCO	D	Use the gentex code	
W		Word(s)	
WEFX	U	Waiting reply to our service advice	
WTG		We are waiting / I am waiting	
+?		I have finished my transmission / Do you wish to transmit?	
Figure (	0 (repeated)	Stop your transmission	

#### **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 presentday 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;

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 recognized

private operating Agencies concerned should reach 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

## SOME FURTHER DATA ABOUT THE EFFICIENCY FACTOR IN TIME. APPLICATION TO THE CASE OF A TELEPRINTER CIRCUIT WITH ARQ SYSTEMS

(New Delhi, 1960, amended at Geneva, 1964)

The efficiency factor in time (No. 33.23 of the List of Definitions) is defined as follows:

efficiency factor in time (of a telegraph communication with automatic repetition for the correction of errors):

"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."

Note 1. — The whole of the apparatus comprising the communication is assumed to be in the normal conditions of adjustment and operation.

*Note 2.*— A telegraph communication may have a different efficiency factor in time for the two directions of transmission.

Note 3. — The actual conditions in which the measurement is made should be specified, in particular the duration of the measurement.

To avoid different ways of interpreting this definition (and these differences could lead to practical consequences since the efficiency factor is going to be used for automatic switched operation on radio circuits), the C.C.I.T.T.

unanimously declares the following view :

A. — that the definition be amended as follows:

1. The time *T* actually taken to transmit a text (or any series of signals included in a message) is the sum of the time  $T_U$  taken by the automatic transmission of the message signals and the time  $T_R$  taken for the repetitions that are necessary for error correction:  $T = T_U + T_R$ .

The time that would be required to transmit the text in the case of automatic transmission in perfect transmission conditions that do not require repetitions for error correction is  $T_{U}$ .

The efficiency factor in time is  $\frac{T_U}{T}$  or again  $\frac{T - T_R}{T}$  or again  $1 - \frac{T_R}{T}$ .

2. In the case of radio circuits using error correction devices with automatic repetition (known as ARQ) where all the signals are transmitted at the same modulation rate (and without loss of time when the repeated signals are sent) a definition like the preceding one can be used, but in terms of the number of signals.

If  $N_U$  is the number of signals in the message and  $N_R$  the number of signals in the repetition cycles during measurement time T (which is the time actually taken for the transmission),  $N = N_U + N_R$  is the number of signals which, during time T, have been transmitted; it is also the number of message signals which could have been transmitted during time Tif the transmission had been made without repetitions.

Time  $T_R$  corresponds to the transmission of the signals in the repetition cycles, i.e. to the transmission of  $N_R$  signals.

The efficiency factor  $\frac{T - T_R}{T}$  can then be written  $\frac{N - N_R}{N}$  because T and N, and  $T_R$  and  $N_R$  are proportional.

If R is the number of repetition cycles during this time T and k the number of signals per repetition, the efficiency factor becomes  $\frac{N-kR}{N}$  and may be defined as follows:

Ratio of the number of signals usefully transmitted (at a given modulation rate and received with a given residual error rate) during a given interval of time to the number of signals that could be transmitted if transmission is correct during this same interval of time.

3. In the case of a 4-character repetition cycle, N being the maximum number of characters that can be transmitted during the observation period, the efficiency factor is N - 4R.

With an eight-character repetition cycle, the efficiency factor is:  $\frac{N-8R}{N}$ ;

B. — that the efficiency factor in time be measured as follows, for a *point-to-point* call using a radio circuit with ARQ:

traffic is observed for twenty-four hours, divided into periods of fifteen minutes;

N being the maximum number of characters which can be transmitted on the circuit during a period of fifteen minutes, in other words, the "maximum circuit operating rate";

the number R of repetition cycles is counted during each fifteen minute period, and the maximum reached by  $R(R_{max})$  is observed;

the efficiency factor has, as its minimum  $\frac{N-4 R_{\text{max}}}{N}$  or  $\frac{N-8 R_{\text{max}}}{N}$ , according to whether the cycle comprises four or eight characters;

the number of uncorrected errors during each period of fifteen minutes will be indicated.

(**F**.11*bis*)

*Note.* — The study of the measurement of the efficiency factor in time for a fully-automatic connection over a circuit with ARQ is the subject of Question 6/X (Volume VII of the *Blue Book*).

## PAGE-RECEPTION OF TELEGRAMS IN POINT-TO-POINT TELEGRAPH COMMUNICATIONS WITH AN AGREED LAY-OUT AND WITHOUT ERRORS

(Geneva, 1956, amended at New Delhi, 1960 and Geneva, 1964)

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 offices, and this leads to difficulties in the sending offices.

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 office or offices should transmit traffic to that office without error, according to the following layout:

" Number of sig line feed " (see note a)	nals :
1 1	sdz202 sz ur 287 rcb90 <sup>1</sup> indiana harborind 29 2 1638 <sup>2</sup>
3	
1	lt fs missgisella cohen, grand hotel eden geneva
3	
1 1	1000 francs cabled to lucerne july 28 through swiss bank corporation stop please cable if not received love <sup>3</sup> daddy
3	
10	col lt fs 1000 28
	(10 "letter-shift" signals) (see note b)

<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.

Note a). — 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.

*Note b*). — It is considered that 10 "letter-shift" signals can usefully be inserted after the 10 line spaces separating telegrams, to provide for cases in which the receiving office uses perforated-tape retransmission.

2. Each line of the address must consist of not more than 43 characters (including spaces). The address may appear as one or two lines (and in exceptional cases as three lines).

Example:

LT

#### MR FRANK CONTI US DELEGATION ILO CONFERENCE

## EUROPEAN UNO HEAD OFFICE GENEVA

3. The sending office should eliminate errors before transmission.

4. 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.

## **SECTION 2**

# SWITCHING NETWORK FOR THE GENERAL PUBLIC SERVICE GENTEX NETWORK

## **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;

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;

(F.20)

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;

(F.20)

that, to offset the diversity of operating conditions and technical equipement 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 and Geneva, 1964)

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 code as clearly and completely as possible.

Furthermore, inclusion of the call-numbers of the connected offices in the answerback code has the advantage of immediately indicating to the receiving operator the callnumber 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
- Five 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
- Seven or eight letters indicating as explicitly as possible the name of the office
- Space
- Two or one 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 five figures, the number of letters used to denote the name of the office should then be reduced, if necessary, but not to less than five;
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 answerback codes of a specialized incoming position;

(F.21)

6. the specialization letter T should be preferred to the letter S, and the letter R to the letter Q; the 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 code should be as follows:

— Carriage return

- Line feed
- Figure-shift

- Five figures of the call-number of the specialized position or group of positions

- Letter-shift
- Space
- $\rightarrow$  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
- Position identification letter(s)
- Space
- Letters of the name of the office (as complete as possible)
- 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:

Α	Austria	I	Italy
В	Belgium	L	Luxembourg
BG	Bulgaria	MC	Monaco
CH	Switzerland	Ν	Norway
CS	Czechoslovakia	NL	Netherlands
D	Germany .	Р	Portugal
DK	Denmark	PL	Poland
Ε	Spain	R	Roumania
EI	Ireland	S	Sweden
F	France	SF	Finland
GB	United Kingdom	SU	U.S.S.R.
GR	Greece	TR	Turkey
Η	Hungary	YU	Yugoslavia

Hungary

289

#### **RECOMMENDATION F.22**

## GENTEX REGULATIONS

(Geneva, 1958, amended at New Delhi, 1960 and Geneva, 1964)

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.T. Recommendations relative to the technique of telegraph switching.

#### ARTICLE 2. Call-numbers and answer-back codes

§ 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 codes 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 signals in the answer-back codes shall, in principle, be as follows:

- Carriage return
- Line feed
- Figure-shift
- Five 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.)
- Letter-shift

(F.22)

- Seven or eight 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 five figures, the number of letters used for the name of the office shall be reduced, if necessary, but may not be less than five.

§ 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 offices 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 office equipment.

§ 3. For the positions specializing in the handling of service notes and advices, the series of 20 signals in the answer-back codes shall be as follows:

- Carriage return
- Line feed
- Figure-shift
- Five 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 signals in the answer-back codes shall be as follows:

- Carriage return
- Line feed
- Letter-shift
- Position identification letter(s)
- Space
- Letters of the name of the office (as complete as possible)
- Space
- Letters DEB
- Letter-shift.

§ 5. Should the answer-back codes not fill the 14 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 codes:

Austria	I	Italy
Belgium	L	Luxembourg
Bulgaria	MC	Monaco
Switzerland	Ν	Norway
Czechoslovakia	NL	Netherlands
Germany	Р	Portugal
Denmark	PL	Poland
Spain	R	Roumania
Ireland	S	Sweden
France	SF	Finland
United Kingdom	SU	U.S.S.R.
Greece	TR	Turkey
Hungary	YU	Yugoslavia
	Austria Belgium Bulgaria Switzerland Czechoslovakia Germany Denmark Spain Ireland France United Kingdom Greece Hungary	AustriaIBelgiumLBulgariaMCSwitzerlandNCzechoslovakiaNLGermanyPDenmarkPLSpainRIrelandSFranceSFUnited KingdomSUGreeceTRHungaryYU

## 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 codes, 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 code 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 code 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 code 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.

#### GENTEX NETWORK

§ 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 code, 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.

Furthermore, the operator of the receiving station shall eliminate the erroneous passages requiring correction which are noticed 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 office 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 code 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 code obtained against that of the required office and if they correspond he then begins to transmit the telegram.

§ 4.1. If the answer-back code received is not from the required office, the reason may be one of the following:

- the answer-back code 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 code 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 code 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).

§ 6.1. 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.

§ 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 code of the called station and then transmits his own.

§ 3. If, after the exchange of answer-back codes 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 codes 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 codes, transmit the time of end-of-transmission in the form of four figures.

The time is not forwarded by the operator if it is automatically transmitted before or after sending the telegram.

§ 2. Following the exchange of answer-back codes, 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 only request the answer-back code of the called station 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 codes 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 request 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 ampliation 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 codes, transmit MOM, check the text received, obtain the answer-back code 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 code be received, or should there be no answer-back code 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 code of the calling station, an operator noticing this before the call

(F.22)

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 code 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 spaces. 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 code 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 enquiry 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 or on overflow position.

§ 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, and shall supply copies to all the countries concerned.

This list shall comprise:

- a) the telegraph offices connected to the gentex service. The sign \$ shall precede the name of every office taking part in telegram transmission only, but available for a direct call when service correspondence (RQ.BQ) has to be exchanged;
- b) offices which, while not connected, normally deal with a fair amount of international traffic.

§ 2. Routing lists should be of the A4 size  $(210 \times 297 \text{ mm})$  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 appear in heavy type);
- 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, with no restriction sign (a space will be left in this column for inserting the prefix or prefixes to obtain access to the country concerned);
- in the third column, the answer-back codes 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 network or of the gentex office serving an unconnected office (see Article 15, § 2), or the indication " office which merely transmits ";
- 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 codes of such positions shall appear in an annex to the routing list.

§ 4.2. If a gentex exchange 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.

1		2	3	4	5 Alternative routing
Telegraph office	Prefix	National call No.	Answer-back code of the gentex office serving the office	Service hours	when the gentex office is closed, engaged or out of order
A 9 m 9 1		5	5 Zuerich CH	N	
Adelboden		2	3 Bern CH		
Altdorf Uri		5	5 Zuerich CH		
Altatötten St. Gellen	[	5	5 Zuerich CH	1 1	
Arbon		5	5 Zuerich CH		
Arlochoim		S C	6 Pagel CH		
Ariesheim		6	6 Basel CH		
Arosa		5	5 Zuerich CH		
Ascona		2	5 Zuerich CH		
D. I.D.		~			
Bad Ragaz		5	5 Zuerich CH		
Baden		2	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
	1		1	1	[

## ANNEX

## Call-numbers of specialized positions in Switzerland

Service	Call-numbers	Text of answer-back codes
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 restrictedservice 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 code of the office required or the answer-back code 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.

(F.22)

§ 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) office to which the RQ or BQ note is being sent;
- c) time at which transmission of the telegram has finished (or time at which the call given by the automatic switching equipment was put through);
- d) designation of the telegram in question by the handing-in number (and, eventually, 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);
- e) the request or reply itself.

Examples :

for RQ:

RQ LYON 1030 17/385/TC 9 W = CFLAM-8A-BH +

for BQ:

BQ AMSTERDAM 1030 17/385/TC 9 W OK +

for RQ (in the case mentioned in No. 403 of the Telegraph Regulations): RQ LYON 1030 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 office 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 and also the five-letter codes from the Book of "Codes and Abbreviations for the use of international telecommunication services (second issue)" according to the Rules under 345 of the Telegraph Regulations (Geneva Revision, 1958).

Note. — No. 345 of the Telegraph Regulations appears in 7 of Article A.14 of Recommendation F.1 of this Volume.

The codes listed in the annex to these Regulations 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.

#### GENTEX NETWORK

#### 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—category 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 codes, transmits MOM, checks the text received, obtains the answer-back code 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 30 minutes 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—category 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 93 of the Telegraph Regulations (Geneva, 1958).

§ 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.

(F.22)

#### 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 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

Abbreviation	Meaning
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
СК	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

(F.22)

GENTEX NETWORK

Abbreviation	Meaning
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
DIF	Different
DTE	Date of handing-in
ЕЕЕ	Error signal
FIG	Figure(s)
GA	You may transmit
IND	Answer-back code
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
NCH	Number changed
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	Second application
RAP	I shall call you again
RECT	Correct please / I am correcting / correction?
RECT AA	Correct all after
AB	" all before
ALL	, the whole telegram
	,,

(F.22)

.

## GENTEX NETWORK

Abbr	eviation	Meaning
	BN	Correct all between and
	SRL NR	" reference number
	TG NR	,, telegram number
	TXT	,, text
	WA	,, word after
	WB	, word before
REF		With reference to
ROU	JTE	Route to / I am routing to / Route?
RPF	R .	Please prepare your reperforator
	ТМ	Prepare your reperforator because of telegram with multiple addresses
	TXT	Prepare your reperforator because of long or difficult text or because of telegrams having the same 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	NL	Reference number given by a gentex transmitting office
SVIN	ł	Service indication
SVP		Please
TCH	ÎN .	Technical service / I shall advise the technical service
TES	ГMSG	Please send a test message
TG		Telegram
TG	NR	Telegram number given by the handing-in office
TPL	Е	Triple word(s)
TPR		Teleprinter
TXT	1	Text
UTC	COD	Use the gentex code
W		Word(s)
WEF	TXU	Waiting reply to our service advice
WTC	3	We are waiting / I am waiting
+?		I have finished my transmission. Do you wish to trans- mit?
Figure 0 (re	epeated)	Stop your transmission.

•

.

(F.22)

## **RECOMMENDATION F.23**

# GRADE OF SERVICE FOR LONG-DISTANCE INTERNATIONAL CIRCUITS USED IN THE GENTEX SERVICE

(formerly C.C.I.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 longdistance 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 longdistance 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.

# **SECTION 3**

# OPERATING METHODS FOR THE MESSAGE RETRANSMISSION NETWORK

## **RECOMMENDATION F.30**

# USE OF VARIOUS SEQUENCES OF COMBINATIONS FOR SPECIAL PURPOSES

(New Delhi, 1960, amended at Geneva, 1964)

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 four signals corresponding to combination No. 14 of Alphabet No. 2 (NNNN or ,,,,).

Note. — 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 messageseparation 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.

4. From other sequences of combinations for special purposes comprised in Recommendations S.4 (Volume VII of the *Blue Book*), F.31 (Volume II of the *Blue Book*) and V.10 (Volume VIII of the *Blue Book*), a table which recapitulates sequences concerned would be compiled.

(The table is annexed to this Recommendation.)

(F.30)

# ANNEX

# (to Recommendation F.30)

# Table illustrating the use of various sequences of combinations for special purposes

Burness of secures	Sequence	Method of operation			
in S.4		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	
Suppression of delay signals	нннн	Not required (delay signal not envisaged)	Required for some types of message (e.g. cypher) when routed over synchronous error-corrected ra- diotelegraph channels	Not required on public systems (delay signal not envisaged)	
End of telegram $\begin{cases} ++++ \\ ZZZZ \end{cases}$		Could be useful in special cases	Could be useful in special cases	Not ordinarily required	
End of message	NNNN	Essential in most systems to sepa- rate 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 sup- pression of delay signals facility	Not ordinarily required	
Connection of reperforator (or equivalent device) Disconnection of reperfora- tor (or equivalent device)	CCCC } FFFF }	Not normally used (as storage is incorporated in the system) Could be used for connection and disconnection of a supplemen- tary storage device	Could be useful for special pur- poses; requires special equip- ment at point of reception	Could be useful for spe- cial purposes; requires special equipment at point of reception	
Connection of data equip- ment	SSSS	Not normally used	Used for switching-in the data equipment in association with telex network	Could be useful for special purposes	

## **RECOMMENDATION F.31**

## MESSAGE RETRANSMISSION NETWORK

## (Geneva, 1964)

For the routing of telegraph traffic the Administrations and recognized private operating Agencies can use the so-called "message retransmission system".

This system makes use of a network with switching and retransmission in the so-called message retransmission centres; the message retransmission centres are equipped with "memory" facilities. A message entering a retransmission centre is registered on one of these memory instruments; it waits in this instrument until a channel capable of effecting its further routing is available. The message is then retransmitted on this channel.

The indications needed to route the message are issued when the message enters the system; they are registered in the memory in the retransmission centres and retransmitted from one centre to the following one until the message reaches the outlet point.

The reading of these routing indications determines the selection of the outgoing channels in a retransmission centre.

This system is sometimes described as a message switching system (by contrast with the direct switching system, the so-called circuit switching system, used more particularly in telex and gentex networks).

The offices where the messages enter the system or leave it are linked electrically to at least one retransmission centre; such offices are described as "linked" offices; in the case of a particular message, the linked office through which the message enters the system is known as the linked entry office; the linked office through which the message leaves the system is known as the linked exit office. These offices must be distinguished from the office of origin or destination of the telegram, as defined in the Telegraph Regulations, from which they may be separate.

The present recommendation has been drawn up for *fully automatic switching* conditions, but it is easy to adapt them for semi-automatic working and manual transit by perforated tape.

To facilitate world-wide operation of the message retransmission network, simplify the transfer of messages of this kind to other telegraph networks and enable the registration, switching and accounting equipment needed for the retransmission centres to be designed, the C.C.I.T.T.

#### unanimously declares the following view :

1. Each telegram must be treated as an independent message, even if several telegrams arrive in series at the same linked entry office.

#### 2. Message format

Messages are to be made up as follows:

#### 2.1 In the first line, known as the numbering line :

2.1.1 Start-of-message signal

This signal is made up by the sequence of combinations Nos. 26 - 3 - 26 - 3 of International Telegraph Alphabet No. 2 (ZCZC).

## 2.1.2 Channel sequence number

Messages transmitted over a channel should be numbered according to a series of numbers for each channel. The channel sequence number will therefore be composed of a characteristic of the channel used (channel indicator) followed by a number showing the order of this message in the series of messages sent over this channel.

A channel sequence number is composed of:

- a space signal,
- three letters constituting the indicator of the channel,
- a "figures-shift" signal,
- three figures constituting the number in the series on the channel,
- a "letters-shift" signal.

Service advices, including XQ, BQ, RQ, will be numbered like the messages unless agreed otherwise, by the Administrations concerned.

If several channels are used in tandem in a message relay system, the channel sequence number for each preceding channel is transmitted over the following channel; the new channel sequence number for the following channel will precede the channel sequence number for each preceding channel; the channel sequence numbers will therefore be in the opposite order to their order of transmission.

The channel sequence numbers will be produced and examined automatically; the channel sequence numbers will be in sequence from 001 to 999 and change automatically from 999 to 001 at the end of a numbering cycle.

## 2.1.3 Telegram identification group

A telegram identification group intended to enable the office of origin mentioned by the origin indicator to recognize the telegram. This group will be transmitted by the linked entry office into the message retransmission network, after the channel sequence number.

A telegram identification group is composed of:

- a space
- if necessary, "figures-shift "

— not more than 12 printable characters, which may be figures or letters, as desired by the Administrations. (The necessary shifts must of course be added to the 12-character group, but no "space" signal must be introduced in the 12-character group, as the presence of a space is liable to cause only the part of the group following this space to be regarded as the telegram identification group.)

2.1.4 End of line

- carriage return

— line-feed

which will mark the end of the first line (numbering line).

2.2 In the second line, known as the pilot line

- " letters-shift "

## 2.2.1 Destination indicator

This indicator extracted from the list issued by the I.T.U. will be composed of four letters; the first two characterize, in standard fashion, the country of destination (or a network in country of destination) and the following two letters characterize the office of destination in the country or the network.

(For the drawing up of the List of Destination Indicators, see Recommendation F.96.) (For the selection and role of destination indicators, see Section 5 of this recommendation.)

— Space.

## 2.2.2 Priority and tariff indicator

It will be composed of two letters. The first letter will designate priority according to the following code:

Α	·	SVH telegrams
(Nos. 308, 309,		Government telegrams Priorité Nations
310 of the TgR) <sup>1</sup>		Service advices relating to serious interruption of channels of telecommunication.
B (No. 211 212		Government telegrams for which the sender has requested priority
(INOS. 511, 512,		of transmission
313, 314 of the		Meteorological telegrams
TgR)		Urgent service telegrams, urgent service advices and paid service advices
		Urgent private telegrams, urgent RCT telegrams and urgent press telegrams.
С		Non-urgent service telegrams, non-urgent service advices and
(Nos. 315 and 316		acknowledgements of receipt.
of the TgR)		Government telegrams other than those indicated under A or B, ordinary private telegrams, ordinary RCT telegrams and ordinary press telegrams.
н		Letter telegrams (ELT, ELTF, LT and LTF).

(No. 317 of the TgR)

This classification respects the order of transmission given in Article 36 of the Regulations, while making use of the tolerances admitted in No. 320 of the Regulations to arrive at solutions that would be feasible in practice.

A telegram that has been abnormally delayed can be upgraded to a higher priority group. Such promotion can be effected only in the office of entry into the message retransmission system; in this case, a category H message could be marked C and a category C message marked B, but a telegram can never be promoted to category A.

<sup>&</sup>lt;sup>1</sup> TgR: Telegraph Regulations (Geneva edition, 1958).

The second letter will designate the tariff class of the message, according to the following code:

- N = non-chargeable telegram
- O = ordinary telegram
- P = press telegram
- L = letter telegram of the Extra-European system
- M = meteorological telegram
- U = urgent telegram
- D = urgent press telegram
- I == letter telegram of the European system
- Q = divided telegrams as in Section 4.2 and telegrams involving special features as regards accounting.

The priority letters of the indicator have been chosen in such a way that they will differ from each other in at least two unit elements, so as to reduce possibilities of error. The same letter does not appear twice in the same indicator, so as to prevent keying of a lettersshift from having a serious effect on the priorities.

Administrations may agree mutually to accept additional tariff indicators such as for GLT and EFM telegrams.

- Space.

2.2.3 Origin indicator

The origin indicator will comprise four letters; the first two will be the same as those used in the destination indicator for the originating Administration or network; the third and fourth will represent the office or department to which service correspondence should be addressed.

In most cases the origin indicator will be the same as the destination indicator, but Administrations may select special designations at the last two letters in order to satisfy the requirements of their internal organization. Administrations with a single route from a transit Administration will be free to select which letter combinations they wish. Where there is more than one entry point to a country from any transit station, the choice of letter combinations will need to be negotiated with the transit Administration if they differ from the destination indicator for the office in question.

— Space

- Figures-shift.

2.2.4 Number of chargeable words in the form of a 3-figure number, starting from 001 (in this respect, see point 3.4): for a non-chargeable message the number 000 will be shown.
— Space.

2.2.5 (Optional): a *customer identification group*, characterizing the customer for accounting purposes.

This group could be composed of letters or figures or of letters and figures. It will not be transmitted over the international network.

- Carriage return
- Line-feed

which will mark the end of the second line (pilot line).

2.3 In the third line, known as the preamble line :

— The preamble, in accordance with the Regulations Nos. 383 to 395 where applicable,

- Carriage return
- Three line-feeds
- Letter-shift, which will mark the end of the third line (Preamble line).

2.4 Any paid service indications. If there are several of them, they will be separated by a space.

- Carriage return

- Line-feed.

2.5 The address (so that this may be readily recognizable, the sign — will be put at the beginning and end of the address. This corresponds to combination No. 1, upper case);

- Carriage return
- Three line-feeds.

*Note.* — The signs — at the beginning and end of the address are provisional, pending a study on the possibility of deleting them.

## 2.6 The text

- Carriage return
- Line-feed.

2.7 Five spaces at least, and signature

- Carriage return<sup>1</sup>
- Three line-feeds.
- 2.8 The collation
- Carriage return<sup>1</sup>
- Ten line-feeds.

2.9 The end-of-message signal, made up of:

- Letter-shift
- NNNN
- Ten letter-shift signals.

Note. — It is considered that ten letter-shift signals can usefully be inserted after the end of message signal, to provide for cases in which the receiving office uses perforated-tape retransmission (see Note b) of Recommendation F.12).

2.10 An example of the recommended format is shown in Annex 1.

<sup>&</sup>lt;sup>1</sup> Where no collatable matter appears in the message ten line-feeds will be signalled after the signature instead of the three line-feeds quoted in paragraph 2.7.

#### 3. Handling of telegrams of more than 300 words

3.1 Telegrams of more than 300 actual words—regardless of their class of priority, A, B, C or H—shall be divided and transmitted in several messages, at the rate of one message per group of 300 actual words, plus one message for the remainder, unless this remainder is less than 10 words, in which case it will be incorporated in the last message.

This division shall be made by the operators; it shall not be the sender's responsibility.

3.2 Messages in the form of a divided telegram shall bear the letter Q as the tariff indicator; in such cases this letter will replace the letter which would have appeared as the tariff indicator if the telegram had not been divided.

3.3 In each message, the text shall itself be divided into groups of 50 actual words, called pages; these pages shall be numbered in a continuous series for the whole of the telegram; the last page may consist of less than 50 words.

3.4 Messages relating to one and the same telegram shall bear the same identification group and the same preamble line; the number of chargeable words shown in the pilot line shall be the number for that message. The paging procedure in No. 339 of the Regulations shall be followed, four "line-feed " signals being added between each " page " of a message and ending each message according to the procedure outlined in paragraphs 2.8 and 2.9.

3.5 For the first page of each of the messages making up the telegram, three line-feeds will be put between the address and the beginning of the text, as in the ordinary format.

For the other pages, the text will begin on the line immediately following the reference line on which the identification number and addressee's name of the telegram are repeated.

3.6 Collation shall take place for each page.

3.7 Annex 2 gives an example for treatment of a long telegram: it represents a letter telegram of 438 chargeable words, 436 actual words.

#### 4. Choice of destination indicator

4.1 The linked entry office of the retransmission network selects the destination indicator to be entered in the pilot line of a message, from the List of Destination Indicators published by the I.T.U. (see Recommendation F.96), subject to the exceptions given in 4.5.

4.2 Apart from the exceptions given in paragraphs 4.3, 4.4 and 4.5 below, the destination indicator shall be selected as follows:

4.3 As an exception to the rule that for traffic to an office appearing in the list of indicators, but not directly connected to the message retransmission network, the destination indicator of this office must be used, Administrations and private operating Agencies wishing to do so may use the destination indicator " all others " (or one of the " all others " indicators) of the country of the office concerned.

4.4 By private agreement between the Administrations concerned, the destination indicator to be used for each town of a country may be selected from any destination indicators of the country according to the internal routing of the country.

	A	B C Several networks in country of destination		
	of destination	Telegram showing routing	Telegram not showing routing	
1. Destination town directly connected with message re- transmission system, or to which a destination indica- tor is allocated	Use destination indicator given in "List" against the town con- cerned	Use destination indicator with the two letters for the network in the List followed by the two let- ters for the town in the List	Use destination indicator with the two letters for unrouted for the country concerned followed by the two letters for the town in the List	
2. Other destinations	Use destination indicator "all others" given in "List" for des- tination country	Use destination indicator with two letters for the network in the List, followed by the two letters corresponding to "all others" for the country concerned	Use destination indicator with the two letters for unrouted for the country concerned, followed by two letters for "all others" for the country	

For example, the United Kingdom and Canada might come to such an agreement, taking into account automatic routing on the United Kingdom internal network; a telegram for Exeter for example, which town is not given in the List of Destination Indicators, would be given the destination indicator for BRISTOL (GBBS), instead of the indicator for "all others" (GBLX).

4.5 For return service messages, service advices, etc. relating to a telegram, the destination indicator shall be the indicator of origin given in the telegram.

## 5. Routing

a) Within a message retransmission centre, a message shall be directed to the following channel in the chain of connections by the destination indicator shown on the pilot line of the message, in accordance with the traffic circulation scheme of the message retransmission centre.

b) If the appropriate subsequent route for the message is not connected with the message retransmission equipment, the destination indicator shall direct the message to a place in the centre where it can be handled and re-forwarded.

## 6. Tolerances as to the format and checking of format

6.1 Switching equipment shall allow of:

- a) A "space" and "letter-shift" transposition or a "space" and "figure-shift" transposition in a sequence normally prescribed as having to be "space" followed by a "shift".
- b) The repetition of a function signal, except for the space between the destination indicator and the priority indicator.
   If there is a repetition of the "space" signal between the destination indicator and the priority indicator, the message will be directed towards a manual service position.
- c) The reception of characters between successive end-of-message and start-of-message signals (for example: spurious signals, letter-shifts or other functional signals) without affecting the proper functioning of the equipment. (Any transmission from the sending end of a channel between an end-of-message signal and the subsequent start-of-message signal should be limited to those characters which have a function at the receiving end of the channel.)

6.2 If a repetition or a transposition in the sequence "carriage return", "line-feed", "letter-shift" separating the numbering line from the pilot line cannot be tolerated by the switching equipment, the message affected by such a defect will be directed towards a manual service position.

6.3 Any deviation from the format which might be recognized by a centre and which goes beyond the acceptable tolerances should cause the message to be directed to a manual service position.

6.4 If the operator in preparing a message detects an error in the set-up of the numbering: line of the pilot line, he must destroy the part already set up and start his message again.

But if the transmission of these two lines has already started, the operator will have to send a code expression for example ANUL, then the end-of-message signal.

#### 7. Protection against loss of messages

7.1 Whenever a retransmission is made, a channel sequence number is sent, showing the channel used for retransmission and the order of the message on that channel.

7.2 A check is made to verify the regular sequence of the channel numbers of messages received on each incoming channel. Should there be any irregularity, an alarm will warn the supervisory staff.

7.3 A check must be made in every retransmission centre, either automatically or by an operator, to see that one message goes out for every message received. Provided the technical difficulties entailed be not too great, a check should be made to ensure that the route by which a message leaves is in accordance with the destination indicator.

## 8. Treatment of service correspondence, re-runs, etc.

## 8.1 Definitions

## 8.1.1 End-to-end servicing

Mode of operation in which the service traffic is passed between offices indicated by the origin and destination indicators without interception at transit offices for the purposes of adding the channel sequence numbers of the original message as references.

#### 8.1.2 Telegram identification group

The group of letters and/or figures by which the office designated by the origin indicator recognizes a telegram. (See para. 2.1.3.)

## 8.1.3 Put-back

Stopping a transmission on a channel, recommencing at a particular message previously transmitted, and continuing from there.

#### 8.1.4 Re-run

The repetition of transmission of one or more telegrams that have previously been sent.

## 8.1.5 Follow-on service correspondence

A follow-on service message is a voluntary correction or enquiry initiated by the office of origin or the sender of the original paid telegram.

#### 8.2 Procedures to be followed

#### 8.2.1 *Return service messages*

End-to-end servicing is desirable in principle, and for this purpose only the telegram identification group would need to be quoted.

The telegram identification group should include sufficient information for the service message to be effective even if the origin office is closed. The precise requirements will depend on the tracing and padding arrangements adopted by Administrations. Each Administration would quote the references and indicators it wished to be used in service messages and other Administrations would use these references in return service messages.

## 8.2.2 Follow-on service messages

Follow-on service messages should contain all the information necessary for immediate handling of the amendment—i.e. full particulars of the message to the end of the address and signature (if any), and the correction required.

## 8.2.3 Message copies

A copy of an individual message should be requested under service procedure from the station sending the series and the copy should be embodied in the text of the reply service except for the original start of message and end-of-message signals. The reply service message should carry its own indicators.

## 8.2.4 Re-runs and put-backs

Re-runs and put-backs should comprise only matter that was originally transmitted. In the event of a put-back or a re-run, the question arises of what channel sequence numbers should be allocated to telegrams so repeated.

Two methods are possible:

- a) Telegrams so repeated to be transmitted with their original channel sequence numbers;
- b) Telegrams so repeated to take as their channel sequence numbers new numbers in the sequence following the last allotted channel sequence number; in this case a service message should indicate the original numbers which have been cancelled.

The following table shows the difference as regards numbering between the two methods in the case of a re-run:

	Method a)	Method b)	
	14	14	
	15	15	
	[ 16	[ 16	
Telegrams to be re-ru	ın { 17	{ 17	
-	18	18	
	<b>`</b> 19	<u></u> 19	
	20	20	
		21 (serv	ice indicating that Nos. 16, 17,
Repetition	17	18 ai	re cancelled)
-	18	22 (text	of 16)
		23 (text	of 17)
		24 (text	of 18)

Method b leads to more simple equipment for automatic numbering apparatus and automatic number-checking machines. Method a accords with existing operational practice.

Method a) is preferable although any Administrations which may wish to employ method b) may do so by mutual agreement.

- 8.3 In the case of mutilation of a telegram, the procedure would be as follows:
  - a) If there is a mutilation to the text of a message, the incident will be dealt with by end-to-end servicing since the alteration will be noted in practice only at the linked exit office.
  - b) If there is a mutilation to a channel sequence number, which may be noted automatically when entering an office, a request for repetition (RQ) or a service advice, as applicable, indicating the queried sequence number will be sent to the preceding office on the channel chain, which will investigate in its memories and then retransmit the telegram in question (including its original number).
  - c) For enquiries about a telegram whose identification group has been mutilated, investigations will be made by going back along the route from office to office and by identifying the telegram by means of operating information (channel sequence numbers, number of words, etc.).

#### 9. Starting of motors

In general, the motors of terminal equipment will always be on, at least in intercontinental circuits.

However, the two Administrations concerned could agree to operate a channel with terminal equipment fitted with time-delay devices to start and stop the motor; they will agree mutually on arrangements for controlling the start of the motor; the provisions of Recommendation S.7 seem to be the most applicable.

#### 10. Use of tape-printing apparatus

C.C.I.T.T. Recommendation S.5 should be followed with regard to the use of tapeprinting apparatus on the message retransmission network.

# 11. Transfer of traffic from the message retransmission system to another system (station-to-station or gentex system) and vice versa <sup>1</sup>

11.1 To facilitate transfer operations, the message retransmission centre can use the destination indicator to ensure local distribution of traffic to be re-forwarded over another system.

11.2 For transmission from the message retransmission system to gentex offices, the message retransmission centre shall comply with the conditions laid down for gentex operation.

<sup>&</sup>lt;sup>1</sup> See Question 10/I = 10/X.

By mutual agreement of the concerned Administrations, the "gentex" call number of the office of destination may be entered into the pilot line, at the place of the customer identification group.

11.3 From the gentex to the message retransmission system, the national gentex exchanges authorized to conduct exchanges with the message retransmission system shall transmit telegrams in accordance with standards making allowance for the peculiarities of both systems.

#### 12. Offices operated semi-automatically or manually

For those offices which are connected to fully automatic systems, Administrations and recognized private operating Agencies should follow the recommended format by mutual agreement to the maximum possible extent and arrange to adopt it in its entirety as soon as possible.

# ANNEX 1

## (to Recommendation F.31)

## Example of the recommended format

ZCZC GEBO99 WY79<sup>1</sup> GBLD HL URWA 013 57825<sup>2</sup> WASHINGTON 13/12 13 1205

3

LT — MIDBANK LONDON —

3

FORWARD SOONEST PRESENT ACCOUNT BALANCE JONES NUMBER 78A765 <sup>2</sup> JOHNSON

3

COL LT 78A765

10

NNNN 10 " letter-shift " signals

<sup>&</sup>lt;sup>1</sup> Not more than 12 printed characters.

<sup>&</sup>lt;sup>2</sup> The customer identification group will not be transmitted beyond the first retransmission centre.

<sup>&</sup>lt;sup>3</sup> Minimum five spaces before the signature.

# ANNEX 2

## (to Recommendation F.31)

## Example for a long telegram divided into two messages

First page

ZCZC GEBO99 WY79 GBLD HQ URWA 302 57825<sup>1</sup> WASHINGTON 438/436 13 1205 page 1/50

## 3

LT - MIDBANK LONDON -

100	-	70	
<i>(</i>	ЪΟ	K'I	1.1
ιı	1.12	71	

3

COL

4

Second page

WY79

MIDBANK PAGE 2/50

(TEXT)

3

3

COL

4

<sup>&</sup>lt;sup>1</sup> The customer identification group will not be transmitted beyond the first retransmission centre.

Third page		
	WY79	MIDBANK PAGE 3/50
3		
		(TEXT)
3		
	COL	
4		
Sixth page		
	WY79	MIDBANK PAGE 6/50
3		
		(TEXT)
3		
	COL	
10		

NNNN 10 " letter-shift " signals
Seventh page ZCZC GEB102 WY79 GBLD HQ URWA 136 WASHINGTON 438/436 13 1205 PAGE 7/50 3 LT - MIDBANK LONDON -3 (TEXT) 3 COL 4 Eighth page WY79 MIDBANK PAGE 8/50 3 (TEXT) 3 COL 4 Ninth page WY79 MIDBANK PAGE 9/36 3 (TEXT) 3 COL 10 NNNN 10 " letter-shift " signals

(F.31)

# **SECTION 4**

# TARIFFS AND ACCOUNTING METHODS FOR THE INTERNATIONAL GENERAL TELEGRAPH SERVICE

### **RECOMMENDATION F.40**

## COUNTING OF WORDS PREPARATION OF A VOCABULARY

(formerly C.C.I.T. Recommendation G.8, Geneva, 1956, amended at Geneva, 1964)

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 § 288 of the Regulations (Geneva Revision, 1958) 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,

### 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 to 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, amended at Geneva, 1964)

### 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 § 952 of the Telegraph Regulations (Geneva Revision, 1958) 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 is dis-

-

regarded. 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 (Geneva Revision, 1958) the Administration to which 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 (Geneva Revision, 1958), 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

(F.51)

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 voicefrequency 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.

# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

### **SECTION 5**

# **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, New Delhi, 1960 and Geneva, 1964)

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**

### TABLE OF CONTENTS

C	HA	PTER I. — Scope of the regulations — Definitions	Page
Art. Art.	1 2	General provisions	333 333
C	HAI	PTER II. — International telex network — Duration of the telex service	
Art. Art. Art.	3 4 5	Constitution of international telex circuits — Routes	333 334 334
C	HA	pter III. — Classes of telex call	
Art. Art. Art. Art. Art. Art. Art.	6 7 9 10 11 12	Classes of telex call	335 335 335 335 336 336 336 337

Сна	PTER IV Operation of the telex service	Page
Art. 13	Operating systems	337
Art. 14	Establishment and disconnection of telex calls	338
Art. 15	Limitation of the duration of telex calls	339
Art. 16	Operating procedure on international telex positions	339
Art. 17	Code expressions used in the international telex service	341
Art. 18	Priority of telex calls	342
Сна	PTER V. — Booking of telex calls	
Art 19	Way of booking teley calls	342
Art $20$	Validity of telex bookings	342
Art. 21	Modifications of telex bookings	343
Сна	pter VI. — Subscribers' equipment	
A =+ 22	Characteristics of subceribers' equipment	3/3
An. 22		343
Сна	PTER VII. — General provisions relating to telex correspondence	
Art. 23	Restriction on the use of a telex station	343
Сна	DTED VIII — Directories	
CHA	rick vill. — Directories	
Art. 24	Compilation of directories	344
Art. 25	Supply of directories	345
Сна	PTER IX. — Tariffs and charging — Adjustment of charges and reimbursements	
Art. 26	Telex rates	345
Art. 27	Chargeable duration of a telex call	346
Art. 28	Composition of the tariff	346
Art. 29	Charging during periods of light traffic	347
Art. 30	Charges for Government and SVH telex calls	347
Art. 31	Charges for subscription telex calls	347
Art. 32	Charges for requests for information	348
Art. 33	Right to round on charges	340
Art. 34	Charges in particular cases — Adjustment of charges and reimbursements	349
0		
Сна	PTER X. — Accounting	250
Art. 36	Accounting	350
Сна	PTER XI. — Directives for subscribers	
Art. 37	Operating procedure for a telex call	350
	ANNEX 1	351
	Operating procedure for a telex call:	
	I. Setting-out of the text	351
	I Operating procedure	252
		352
	ANNEX 2	353
	Use of emergency routes	353

### 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 uses International Alphabet No. 2 (50 bauds).

- S.5 Standardization of page-printing start-stop apparatus and co-operation between pageprinting and tape-printing start-stop apparatus.
- S.6 Characteristics of answer-back units for start-stop apparatus of 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 " and the "1st Supplement to Part 1 of the List ", 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 by using 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.

ŝ

(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 definitely 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:

- a) 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;
- b) 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 semiautomatic 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 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 and access to the second link is obtained manually in the transit country concerned, control of the call will be exercised by the operator in the transit country in the following circumstances:
- a) if the first link is provided by land line or submarine cable and the second or subsequent link by radio;
- b) if the call is booked with the operator in the transit country, and connection with the subscriber in the country of origin is established semi-automatically.

### 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 calls 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 calls 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 inter-

national 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) 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) If the called subscriber can be obtained directly by the controlling international telex operator, this operator:
  - a) holds the calling subscriber and selects a free circuit;
  - b) selects the called subscriber;
  - c) 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;
  - d) obtains the answer-back of the calling subscriber which must also be received by the called subscriber;
  - e) operates the timing equipment;
  - f) 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:
  - 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 the abbreviated name of his telex exchange<sup>1</sup>;
  - c) The controlling international telex operator sends his own answer-back code and 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 answerback 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;

<sup>&</sup>lt;sup>1</sup> 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.

- *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,
  - 3) obtains the answer-back of the calling subscriber, which must also be received by the 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. It is not possible to recall the operator of a telex position to a connection already set up, except when applying C.C.I.T.T. Recommendation U.21 by agreement between Administrations (and/or recognized private operating Agencies). The operator-recall signal shall be acted upon by the controlling operator only. In the event of the assistance of any other operator being required, it will be obtained by the controlling operator.
- § 5. All instructions necessary for the efficient handling of a subscriber's international telex traffic may be given to that subscriber only 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
EEE	Error
GA	You may transmit / may I transmit?
INF	Subscriber temporarily unobtainable, call the information service
MNS	Minutes
МОМ	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 <sup>1</sup>	Stop your transmission
(or figure $0^{1}$ )	

<sup>&</sup>lt;sup>1</sup> To be repeated until the transmission is brought to a stop.

TELEX SERVICE

PPR	Paper
R	Received
RAP	I shall call you back
RPT	Repeat / I repeat
SVP	Please
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

 Administrations reserve the right to suspend the telex service in the cases mentioned in Articles 31 and 32 of the Convention (Geneva, 1959).

### TELEX SERVICE

- § 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 not be larger than  $210 \times 297$  mm (A4).
  - 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 <sup>1</sup>	Call number	Answer- back code
I			1		

(4) The list of answer-back codes shall be compiled in alphabetical order as follows:

Answer-	Subscriber's name and place	Subscriber's	Call
back code		exchange <sup>1</sup>	number

§ 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.

344

<sup>&</sup>lt;sup>1</sup> If necessary.

#### TELEX SERVICE

(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) concerned.

§ 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  $\S$  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. An Administration (or recognized private operating Agency) which has supplied directories of its country intended for sale to another Administration (or recognized private operating Agency) shall indicate the equivalent in gold francs of the sale price of the directories applied in the country of origin plus any postal charges.

### 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 3 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 3 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.

#### TELEX SERVICE

(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 mone-tary 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

- § 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.

<sup>&</sup>lt;sup>1</sup> 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 or 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  $\binom{1}{25}$  or one thirtieth  $\binom{1}{30}$  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  $\binom{1}{7}$  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. This charge shall not be posted in the international accounts.

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 debitor 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, paragraph 4, 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 draw up a special account for the amounts due to it for such directory supplies, including postage and/or freight, and send it to the latter Administration (or recognized private operating Agency) for settlement.

### 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": 1-3/4for "three quarters" followed by "eight": 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 comma (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 % or  $0/_{00}$ , the figure 0, the fraction bar, and the figures 0 or 00 shall be transmitted successively.
- § 3*bis*. A whole number, a fractional number, or a fraction followed by a % or  $0_{00}$  sign, shall be transmitted by joining up the whole number, the fractional number of the fraction to the % or  $0_{00}$  sign by a dash.

Examples :

for 2%, transmit 2—0/0 and not 20/0 for  $41/2^{0}/_{00}$ , transmit 4—1/2—0/00 and not 41/20/00.

§ 4. When the accent on a letter is 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 following two 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 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 pageprinters 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 tapeprinters to ensure 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, amended at Geneva, 1964)

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 answerback procedure recommended by the C.C.I.T.T. (cf. Recommendation F.60, Art. 22);

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;

*Note.* — Telex connections used *exclusively for data transmission* for the purpose of checking errors need not be considered as "duplex operations" as regards the possible surcharge for duplex operation provided for by the present paragraph.

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. 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, 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.

#### 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 and unidirectional components, the division and number of circuits in each component will be agreed between Administrations.

(F.64)

### TELEX SERVICE

#### TABLE A

lumber circuits	Average intensity for tra	affic carried in the busy hour, expresse of service (probability of loss) of:	d in erlangs, for a grade
(a)	1 in 10 (b)	1 in 30 (c) (Note 3)	1 in 50 (d) (Note 3)
1	0.2	0.066	0.034
$\overline{2}$	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
0		6.47	5.93
11		7.39	6.79
12		8.31	7.67
13		9.24	8.57
4		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

### Traffic capacity table for telex manually selected circuits (Note 1)

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

1 2 3 4 5 6 7 8 9 10	1/30 0.034 0.289 0.73 1.27 1.88 2.53 3.23 3.95	1/50 0.020 0.22 0.59 1.07 1.63 2.33 2.87
1 2 3 4 5 6 7 8 9 10	0.034 0.289 0.73 1.27 1.88 2.53 3.23 3.95	0.020 0.22 0.59 1.07 1.63 2.33 2.87
2 3 4 5 6 7 8 9 10	0.289 0.73 1.27 1.88 2.53 3.23 3.95	0.22 0.59 1.07 1.63 2.33 2.87
3 4 5 6 7 8 9 10	0.73 1.27 1.88 2.53 3.23 3.95	0.59 1.07 1.63 2.33
4 5 6 7 8 9 10	1.27 1.88 2.53 3.23 3.95	1.07 1.63 2.33
5 6 7 8 9 10	1.88 2.53 3.23 3.95	1.63 2.33 2.87
6 7 8 9 10	2.53 3.23 3.95	2.33
7 8 9 10	3.23 3.95	201
8 9 10	3.95	2.0/
9 10		3.56
10	4.70	4.26
11 1	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	25.57	24.13
25	20.27	25.01
33	27.18	25.90
27	20.09	26.79
37	29.0	27.69
30	29.92	28.38
40	30.04	27.40

# Traffic capacity table for automatically selected circuits (Note 4)

(F.64)

### 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 and Geneva, 1964)

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

#### considering

a) the results of the enquiry made to determine the net cost of an international telex call in the "European System";

b) the desirability of recommending uniform standards which countries might use in fixing the various component parts of telex charges (allowance being made for the switching system used),

### 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 information contained in the following table;

that transit Administrations which wish to use a uniform method for calculating their quotas for direct transit and transit with repetition, may adopt a quota of 0.09 gold franc per 100 kilometres of crow-flight distance;

that Administrations may add the charge they consider appropriate for the extension of the call on their national network; it is noted, however, on the basis of information received, that the amount to be added should not in general be more than 0.36 gold franc per 3-minute unit.

Terminal traffic <sup>1</sup> (international section of the route)			Transit	traffic <sup>1</sup>	
Operational method	Fixed circuit cost and switching cost for each international telex centre (gold fr.)	Circuit cost for 100 km crowflight distance <sup>2</sup> (gold fr.)	Operational method	Fixed cost (gold fr.)	Cost for 100 km crowflight distance <sup>2</sup> (gold fr.)
Manual service Semi-automatic out- going service	0.84 0.84	0.06 0.06	<ul> <li>Direct transit <sup>3</sup></li> <li>a) manual operation</li> <li>b) semi-automatic operation</li> <li>c) automatic operation</li> </ul>	-	0.06 0.06 0.05
Semi-automatic in- coming service	0.21	0.06	Transit with interconnect- ed VF telegraph cir- cuits: <sup>3</sup>		
Fully automatic out- going service	0.43	0.05	<ul><li>a) manual operation</li><li>b) semi-automatic</li><li>operation</li></ul>	0.21	0.06
Fully automatic in- coming service	0.20	0.05	c) automatic operation Transit switching	0.16 to be determ ing to swit depending used.	0.05 ined accord- ching costs, on system

Guidance on the establishment of rates for 3-minute telex calls in the European system

<sup>1</sup> The relevant cost studies were undertaken in the years 1960 and 1961.

 $<sup>^{2}</sup>$  For the calculation of charges in respect of circuit distances, any fraction less than 50 km may be rounded up to a maximum of 50 km, and any fraction between 50 and 100 km may be rounded up to 100 km.

<sup>&</sup>lt;sup>8</sup> Transit Administrations which wish to use a uniform method for calculating their quotas for direct transit and transit with repetition may adopt a quota of 0.09 gold franc per 100 km of crow-flight distance.

#### **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. 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 over-all 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 over-all 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).

(F.67)

## ESTABLISHMENT OF THE AUTOMATIC INTERCONTINENTAL TELEX NETWORK (Geneva, 1964)

#### PREAMBLE. — DEFINITIONS CONNECTED WITH THE NUMBERING OF TELEX SUBSCRIBERS AND THE ROUTING OF TELEX AND GENTEX CALLS IN INTERCONTINENTAL SERVICE

These definitions are proposed to facilitate the reading of recommendations and surveys on the question of intercontinental telex and gentex traffic; they have been derived to a large extent from the definitions submitted by telephone experts for studying the analogous problem in intercontinental telephone operation and adapted to the special features of the telex and gentex services.

*Preliminary Note.* — The word "continent" is not necessarily used in its geographical sense: traffic characteristics may cause countries of geographically different continents to be included in one continent (within the meaning of these definitions).

#### A. Circuits

A national circuit is one connecting two exchanges in the same country.

An *international* circuit is one connecting two exchanges in different countries, whether or not they are in different continents.

A continental circuit is one established between two exchanges in the same continent.

An *intercontinental* circuit is one connecting two exchanges situated in different countries in different continents.

An *intercontinental transit* circuit is an intercontinental circuit used primarily for routing intercontinental transit traffic.

#### **B.** Exchanges

A national exchange is the termination centre for national circuits only.

An *international* exchange is a centre where international circuits, and in general national circuits, terminate.

A continental exchange is an international centre where the international circuits terminating there are solely continental circuits.

Intercontinental transit exchange : An exchange of this type would be directly connected to intercontinental transit circuits and would provide facilities to interconnect intercontinental transit circuits and trunks to terminal exchanges. It would also provide facilities for the interconnection of intercontinental transit circuits.

*Terminal international exchange :* An international exchange of this type would not be connected directly to intercontinental transit circuits, but would gain access to the intercontinental transit network through one (or more) intercontinental transit exchanges.

#### C. Connections

International connection : any connection between two stations situated in different countries, whether established between different continents or one continent.

Continental connection : connection established between stations within the same continent.

Intercontinental connection: connection established between two different continents.

#### **D.** Numbering

Subscriber's national telex number : Set of figures to be dialled by a caller in the same country to obtain this subscriber.

In national telex networks, when abridged call numbers are used for local or shortdistance traffic, the abridged number is called the *local number*.

*Prefix giving access to the long-distance automatic telex network :* In national telex networks, when abridged call numbers are used for local or short-distance traffic, an access prefix should be selected to give access to the higher level network (long-distance level).

*Prefix giving access to the international automatic telex network*: This expression is taken to mean the digit or digits which a subscriber must dial (if necessary after the prefix giving access to the automatic long-distance telex network) to obtain access to the automatic switched telegraph equipment for international telex traffic.

Prefix giving access to the intercontinental automatic telex network: This expression is taken to mean the digit or digits which a subscriber must dial (if necessary after the prefix giving access to the international telex network) to obtain access to automatic switched telegraph equipment for intercontinental transit telex traffic.

The country of origin is free to use only a common "access prefix to the international network" instead of two different prefixes for access to the international network and the intercontinental network.

*Identification code* : A group of characters serving to identify the subscribers or stations of a country, or of a network in a country.

*Telex destination code* : A group of digits characterizing, for routing purposes, the subscribers or stations of a country, or of a network in a country.

#### E. Routing

*Normal route* : A normal route between two given international exchanges comprises all these circuits used without distinction as first-choice circuits.

Alternative route : A route used when all the circuits over the normal route happen to be fully occupied.

Overflow  $^1$  (or automatic diversion): In the case of a call which cannot find a free circuit on the normal route at an outgoing international or transit exchange, there is a provision of overflow so that the call can be automatically routed through an alternative route from the exchange where the congestion of the normal route was recognized.

<sup>&</sup>lt;sup>1</sup> The term "overflow " also designates an operation different from automatic diversion (see definition 35.10 in the List of Definitions).

*Re-routing*: For congestion occurring at an intermediate transit exchange, *re-routing* will serve so that a call be re-made through an alternative route from the outgoing international exchange.

*Emergency route*: A route used in case of complete interruption or major breakdown of the normal and alternative routes.

#### Recommendation for the establishment of the automatic intercontinental telex Network

Intercontinental telex traffic is rapidly growing; in particular, the development of automatic subscriber dialling in intercontinental relations has been made possible by the provision of intercontinental coaxial cable systems. The time differences between terminal countries in such relations and the consequent differences in the hours of peak traffic loading may make it economical to employ tandem transit routing to a much greater extent than has been necessary in the European network. The development of a comprehensive plan for the economical employment of tandem routing depends, amongst other considerations, on agreement on numbering and routing plans.

A world-wide service includes countries which are served by several telex networks; a telex subscriber's call number in a world-wide service must contain all the digits to be transmitted by the caller in order to establish the connection, irrespective of the routing channel.

To facilitate automatic routing and charging for calls, the number of digits to be examined by the charging equipment must be limited.

For these reasons, the C.C.I.T.T.

unanimously declares the following view:

General characteristics of the network :

- 1. It must be possible to establish the intercontinental network by means of:
- submarine or underground cable telegraph circuits,
- telegraph circuits on radio channels,
- and, in future, telegraph circuits via telecommunication satellites.

2. When cable circuits and radio circuits exist between two intercontinental transit exchanges, all such circuits must, for automatic selection purposes, be regarded as included in a single system.

3. In principle, the circuits will be operated in both directions.

4. The traffic to be routed over these circuits may be either telex or gentex traffic; it may be either transit or terminal traffic.

5. a) Countries (or networks) should be connected by direct circuits where this can be justified taking into account the relative economics of transit switching and both-way working where the time difference between the terminal centres makes this a significant factor.

b) Where it is not practicable to provide direct circuits, the number of transit exchanges involved in a normally routed call should be reduced in so far as possible.

c) Where the same group of circuits carries traffic originated by subscribers in the country providing facilities and transit traffic originated by another country, the Administration providing the transit exchange shall ensure that the transit calls receive a grade of service not inferior to that given to their own subscribers.

#### 6. Identification of telex subscribers

a) For international purposes, a subscriber's national number should be accompanied by one or two letters, called the telex *identification code*, characterizing:

- either the subscriber's country, if in that country there is only one telex network, or
- the telex network to which the subscriber belongs in a country where there are several networks operated by different agencies.

An identification code is especially valuable for countries possessing several telex networks operated by different companies and when national numbers do not clearly distinguish between such networks. In such circumstances, it is recommended that the identification code should be clearly published in national directories. Furthermore, Administrations and private Agencies shall ask subscribers to give every possible publicity to their telex identification letters (by including them in the letter-heads of their correspondence for example).

b) In case the answer-back codes of telex apparatus used in the intercontinental services comprise one or two characteristic letters of the name of the country, these letters must be the same as the telex identification code of the country concerned.

c) For Administrations using two-character telex identification codes these codes should be the same as the identification codes of their country (or network) for the message retransmission system.<sup>1</sup>.

d) The list of identification codes will be issued by the C.C.I.T.T.

*Note.* — If in any country the telex and gentex networks are separate, two identification codes might be necessary, one for telex and the other for gentex.

#### 7. Routing

- a) On international circuits digits only will be transmitted for selection control.
- b) For each country, or for each network in countries possessing several telex networks, a group of two or three digits — the telex routing code — will uniformly characterize each country or network for the purposes of selection in intercontinental transit circuits. (See Recommendation F.69 for list of telex destination codes.)
- c) The access prefix to be dialled in an outgoing country by a subscriber wanting to put through a call to another country via the intercontinental transit network shall be decided on by the Administration responsible for the calling subscriber. This is a matter for internal regulation.
- d) There are two possibilities in relations between the international exchange of the outgoing country and an intercontinental exchange:

(F.68)

<sup>&</sup>lt;sup>1</sup> See Recommendations F.31 and F.96.

d.1) There are direct trunk circuits between the international exchange in the outgoing country and the intercontinental exchange. On these circuits, it should suffice to transmit the routing code of the country required, followed by the national number of the subscriber required.



d.2) There are no such direct trunk circuits. There are then direct circuits between the international exchange in the outgoing country and the international continental exchange in the transit country, adjacent to the intercontinental exchange. Hence this adjacent exchange will have to be traversed to reach the intercontinental network.



Code "00" should be used as the standard access prefix for traversing a continental exchange; a country which might experience difficulty in accepting this "00" code may choose another code for traversing its continental exchange, subject to a bilateral agreement with the other Administration concerned.

#### 8. Overflow

Provision must be made for the possibility of using overflow; the putting into operation of overflow is a question of the network situation, as it will often be preferable to create new telegraph circuits on a congested route rather than to bring overflow into service. Be it noted that the overflow method should be considered only if the peak hours at CD are different from those at CF and FD; otherwise, it is to be feared that change-over switching equipment F will become saturated.



(F.68)

#### 9. Automatic re-routing

The complications resulting from automatic re-routing would be out of all proportion to the benefits to be expected therefrom.

#### 10. Charging

Charging should be done at the outgoing network. It should be independent of route.

The responsibility of an intercontinental transit exchange should be limited to providing connection between the calling exchange or subscriber and the required exchange or number. Any requirements for timing, booking calls, repeated attempts, etc., should, in principle, be the responsibility of the originating exchange.

Since charging, applied by the outgoing network, has to be independent of the routing, this means that the charging system used for some radio circuits (i.e. charging based on the number of characters actually transmitted) might not be applicable and that charging of telex calls would have to be based on call duration, regardless of whether they are set up over radiotelegraph or cable circuits.

#### 11. Quality of service

The following standards are suggested:

- a) Direct intercontinental circuits—cable
  - i) 1 lost call in 20 for manual or semi-automatic service with 30 seconds operator search.
  - ii) 1 lost call in 30 for fully automatic service.
- b) Circuits between transit exchanges on transit routes, i.e. where the transit traffic amounts to at least 20% of the traffic on the route
  - i) Continental routes—1 lost call in 50.
  - ii) Intercontinental cable routes—1 lost call in 30 for manual or semi-automatic service with 30 seconds operator search.
  - iii) Intercontinental routes, fully automatic-1 lost call in 50.

c) Intercontinental radio routes

These do not usually consist of a large number of circuits and in some cases the traffic justifies only one circuit. In other cases, however, they comprise a significant number of circuits and in such cases Administrations should endeavour to ensure that circuits are provided on the same basis as for cable circuits.

(F.68)

#### **RECOMMENDATION F.69**

# PLAN FOR TELEX DESTINATION CODES (Geneva, 1964)

Recommendation F.68 (paragraph 7b) recommends that, for each country (or for each telex network in countries with several telex networks) a group of digits—called a telex destination code—should be used to identify each country (or network) in a uniform manner for controlling the selection of intercontinental transit circuits.

The C.C.I.T.T. therefore has to set up a world-wide list of telex destination codes; for this purpose it has been necessary to decide whether such codes should comprise always three digits or whether they should be made up of one, two or three digits.

The advantages of uniform three-digit codes are :

1) By allocating the same size code to all countries difficulties would not arise as to the relative importance of the various countries with regard to the telex service.

2) Uniform codes afford some simplification of the design of register-particularly transit registers.

3) For the European system a uniform three-digit system could be readily compiled by adding a uniform digit to the range of two-digit codes already in use by a number of European Administrations.

The advantages of a mixed one, two, three, digit arrangement are:

1) The use of shorter length codes reduces the risk of errors by calling subscribers.

2) The storage capacity of registers can be kept to a minimum by allocating shorter codes to systems having long subscribers' numbers.

3) The holding time of circuits could be kept to a minimum.

4) The maximum number of digits to be examined for routing and other purposes could be kept to a minimum by allocating shorter codes to systems in which the first two digits of the subscriber's number have to be examined in accordance with Recommendation U.7. Similarly, where a country has more than one intercontinental exchange the allocation of a shorter code would enable the routing of traffic to be controlled by the examination of a minimum number of digits.

Mixed two-digit and three-digit destination codes have most advantages.

For these reasons, the C.C.I.T.T.

unanimously declares the following view :

1. that telex destination codes shall comprise two or three digits.

*Note.* — In examining the North American position, it was not possible to allocate a single-digit code which would have satisfied access to both the telex (RCA, ACR, WUI and WU domestic) networks and the TWX network in the United States. Therefore it was decided to allocate the first digit 2 to a series of two-digit and three-digit codes serving the whole of the American area north of Panama.

2. With regard to the allocation of the first digit:

- 0 not to be used as first digit
- 1 reserved for possible use for special services
- 2 North America and adjacent areas
- 3 South America and adjacent areas
- 5 Europe, U.S.S.R. and adjacent areas
- 6

4

7 — Pacific and adjacent areas

- 8 Middle East, Far East and adjacent areas
- 9 Africa, Near East and adjacent areas.

*Notes.* — a) In the proposed allocation, first digit 1 is reserved for possible use for special services, e.g., for generating a series of codes for routing calls to destinations over circuits permitting the use of telegraph signals other than conventional telex.

b) The geographical boundaries of the continents have not been rigidly followed to permit maximum flexibility within the code system.

3. A second digit in the range 1 to 6 indicates a two-digit code, while a second digit of 7, 8, 9 or 0 indicates either a two- *or* a three-digit code. (This arrangement allows a high degree of flexibility in code allocation together with the shortest discrimination time for determining whether a two- or a three-digit code is involved, on most calls.)

4. The number of two-digit codes available is rather restricted. It is undesirable to allocate these to serve individual networks, in particular countries where several networks exist but do not have a co-ordinated internal numbering scheme.

5. It is not advisable to allocate all possible two-digit codes, so as to maintain some flexibility to allow future development in world telex traffic to be taken into account.

6. The preliminary list of telex destination codes (which may yet need a slight modification) is annexed to this recommendation.

7. a) The Member and Associate Member countries of the Union, not mentioned in this list, which wish to take part in the intercontinental automatic telex service should ask the Director of the C.C.I.T.T. for the assignment of an *available* three-digit destination code; in their request they may indicate the available three-digit code preferred.

The attention of these countries is drawn to the fact that, apart from the codes already assigned, only three-digit codes in which the second digit is 0, 7, 8 or 9 can be assigned to them.

b) If the requests submitted by Member and Associate Member countries of the Union involve a change in the telex destination codes already assigned to them, or if requests for two-digit codes are made, or if the Director of the C.C.I.T.T. finds difficulty in satisfying a request submitted in accordance with 7 a), these requests will be referred to the Plan Committee.

c) Additions and changes which are accepted will be published in a notification of the I.T.U. General Secretariat.

(F.69)

#### ANNEX

#### (to Recommendation F.69)

#### First list of telex destination codes

(See, in fine, the explanation of the notes and abbreviations)

200 Cuba 201 Dominican Republic (RCA network) 202 idem (AACR network) 203 Haiti (Republic of) 204 Available 205 Puerto Rico (4) (RCAC network) 206 (AACR network) idem 207 idem (C and W network) 208 Available 209 Available 21 Canada (except TWX network) 22 Mexico 23 United States of America (except TWX network) 24 Available 25 United States of America (TWX network) 26 Canada (TWX network) 270 Available 271 Guatemala 272 Honduras (Republic of) 273 Nicaragua 274 El Salvador (Republic of) 275 British Honduras (5) 276 Costa Rica 277 Available 278 Panama (Republic of) (TROPICAL network) 279 idem (AACR network) 28\* 290 Bermuda (5) 291 Jamaica 292 Virgin Islands (5) 293 to 299 Available 300 Available 301 Chile (TRANSRADIO network) idem (CIRSA network) 302 303 Available 304 Surinam (Kingdom of the Netherlands) 305 Paraguay 306 Available 307 Bolivia (WCA network) 308 Ecuador (PTT network) 309 idem (AACR network) 31 Venezuela (Republic of) 32 Uruguay (Oriental Republic of) 33 Available 34 Available

35	Colombia (Republic of)
36	Peru
37*	
380*	Available
381	Brazil (RADIO BRAZIL network)
382	idem (RADIONAL network)
383	idem (PTT network)
384	Available
385	Available
386	Argentine Republic (TRANSRADIO network)
387	idem (CIDRA network)
388	idem (PTT network)
389	Available
390	Netherlands Antilles (Kingdom of the Netherlands)
391	Available
392	Barbados (5) (C and W network)
393 to	399 Available
400	Canary Islands (Spain)
401	Available
402	Luxembourg
403	Spain
404	Portugal
405	Gibraltar (5)
406	Malta (5)
407	Morocco (Kingdom of)
408	Algeria (Democratic and Popular Republic of)
409	Tunisia
41	Federal Republic of Germany
42	France
43	Italy
44	Netherlands (Kingdom of the)
45	Switzerland (Confederation)
46	Belgium
47	Austria
48*	
490	Available
491	Iraq (Republic of)
492	Syrian Arab Republic
493	Jordan (Hasnemite Kingdom of)
494	Lebanon Saudi Arabia (Kinadam af)
495	Saudi Arabia (Kiliguolii ol)
490 407 to	August (State of)
497 IU 500	Ireland
501	Iceland
502	Ferce Islands (Denmark)
502 to	500 Available
505 10	Just Available
51	Available
52 52	Available
53	Avallaulo Sweden
55	Denmark
55	Loumary

372

(F.69)

~

56	Norway	
57	Finland	
58*		
59*		
600	Available	
601	Greece	
602	Available	
603	Bulgaria (People's Republic of)	
604	Albania (People's Republic of)	
605	Cyprus (Republic of)	
606	Israel (State of)	
607	Turkey	
608	Available	
600	Available	
607 61	Hungarian Baanla's Banublia	
61	Foderal Socialist Depublic of Vugosly	
62	Peleral Socialist Republic of Tugosia	avia
03	Poland (People's Republic of)	
64	Union of Soviet Socialist Republics	
65	Roumanian People's Republic	
66	Czechoslovak Socialist Republic	
6/*		
68*		
<b>69</b> *		
700	Available	
701	Fiji Islands (5)	
702	Available	
703	New Guinea and Papua (Australia)	
704	Hawaii (United States of America)	(RCA network)
705	idem	(ACR network)
706 to	709 Available	
71	Australia (Commonwealth of)	
72	Japan	
73	Indonesia (Republic of)	
74	New Zealand	
75	Philippines (Republic of the)	
76	Available	
77*		
78*		
79*		
800	Available	
801	Korea (Republic of)	
802	Hong Kong (5)	
803	Ceylon	
804	Available	
805	Available	
806	Aden (5)	
807 to	809 Available	
81	India (Republic of)	
82	Pakistan	
83	Burma (Union of)	
04	Buillia (Union of)	
ð4	Malaysia	
84 85	Malaysia China	

86 87*	Thailand	
88	Iran	
80*	<u>Man</u>	
900	Somali Republic	
901	Libya (Kingdom of)	
902	Zambia (Republic of)	
903	Burundi (Kingdom of)	
904	Malawi	
905	Nigeria (Federation of)	
906	Senegal (Republic of the)	
907	Rhodesia	
908	Territory of South-West Africa	
909	Rwanda (Republic of)	
91	United Arab Republic	
92	Available	
93	Available	
94	Ghana	
95	South Africa (Republic of)	
96	Available	
970	Cameroon (Federal Republic of)	
971	Central African Republic	
972	Dahomey (Republic of)	
973	Gabon Republic	
974	Mauritania (Islamic Republic of)	
975	Niger (Republic of the)	
976	Chad (Republic of the)	
977	Togolese Republic	
978	Upper Volta (Republic of)	
979	Available	
980	Ethiopia	
981	Republic of the Congo (Brazzaville)	
982	Congo (Democratic Republic of the)	(Léopoldville)
983	Ivory Coast (Republic of the)	
984	Sudan (Republic of the)	
985	Mali (Republic of)	
986	Malagasy Republic	
987	Kenya	
988	Uganda	
989	Tanzania (United Republic of)	
99 <b>0</b>	Available	
991	Angola (3)	
992	Mozambique (3)	
993	Cape Verde Islands (3)	

994 to 999 Available

<sup>\*</sup> May be allocated to a 2-digit code or broken down into ten 3-digit codes.

## **SECTION 6**

# OPERATING METHODS FOR FACSIMILE AND PHOTOTELEGRAPH SERVICE

#### **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.
- 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.

(F.80)

- 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. 13×18 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=

(F.80)

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.
- 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.

(F.80)

#### **RECOMMENDATION F.81**

#### PHOTOTELEGRAMS

(formerly C.C.I.T. Recommendation G.11, Geneva, 1956, amended at Geneva, 1964)

#### 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. 776 of the Telegraph Regulations (Geneva Revision, 1958) lays down that anything capable of satisfactory phototelegraphic transmission shall be accepted as a phototelegram,

#### 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<sup>1</sup> (Geneva, 1958, amended at New Delhi, 1960, and Geneva, 1964)

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 photo-telegraph call;

b) that this drawback results *in part* from the inadequacy of existing rules on the settingup, 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;

<sup>&</sup>lt;sup>1</sup> This text is published also as Recommendation E.32 in Series E (Telephone Operation) of the C.C.I.T.T. Recommendations.

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.

#### ANNEX

(to Recommendation F.82)

#### **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 (Geneva Revision, 1958) 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.

(F.82)

#### 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 four-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 four-wirefour-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.

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 straightaway 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 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.

382

(F.82)

§ 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 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 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.

384

(F.82)

#### **RECOMMENDATION F.83**

## RATES FOR PHOTOTELEGRAMS AND PRIVATE PHOTOTELEGRAPH CALLS<sup>1</sup> (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 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 <i>y</i>
2.5 D	6у
3 D	7 <i>y</i>

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.

<sup>&</sup>lt;sup>1</sup> This text is published also as Recommendation E.59 in Series E (Telephone Operation) of the C.C.I.T.T. Recommendations.

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:

#### Total charge Scale of rates Chargeable length of phototelegram (in gold francs) 1st step 1.5 D or less56 + 4y2nd step over 1.5 D up to 2 D56 + 5yNote : increased by 1y per step for each extra 0.5D3rd step over 2 D up to 2.5 D 56 + 6yover 2.5 D up to 3 D4th step 56 + 7y

#### I. Phototelegrams exchanged between public stations

#### 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 <i>D</i> or less	28+4y	(same remark as in I above)
2nd step	over 1.5 <i>D</i> up to 2 <i>D</i>	28+5y	
3rd step	over 2 <i>D</i> up to 2.5 <i>D</i>	28+6y	
4th step	over 2.5 <i>D</i> up to 3 <i>D</i>	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 photo-telegrams. It feels able to recommend only a reasonable increase.

(F.83)

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:

Dimensions of ph				otelegram	Total charge	Share accruing to		
Scale of rates	for the fol	1st side lowing drur	n diameters	2nd side at c	in gold francs (to be levied at outgoing end)			
	66 mm	70 mm	88 mm	(chargeable length)		Admin.	dmin.	Admin.
1st step				1.5 D or less	20+4 <i>y</i>	10+4 <i>a</i>	46	10+4 <i>a</i>
2nd step	$\leq$ 18 cm	$\leq$ 20 cm	$\leq$ 24 cm	over 1.5 $D$ up to 2 $D$	20+5 <i>y</i>	10+5 <i>a</i>	5 <i>b</i>	10+5a
3rd step				over 2 <i>D</i> up to 2.5 <i>D</i>	20+6y	10+6a	65	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:

	Dimensions of phototelegram				Total charge	Share accruing to		
Scale of rates	for the fol	lst side lowing drui	n diameters	2nd side	ide e length) in gold francs (to be levied at outgoing end)	outooing	transit	incoming
	66 mm	70 mm	88 mm	(chargeable length)		Admin.	Admin.	Admin.
1st step				1.5 D or less	10+4 <i>y</i>	10+4 <i>a</i>	4b	4 <i>a</i>
2nd step	$\leq$ 18 cm	<b>≤</b> 20 cm	<i>≤</i> 24 cm	over 1.5 $D$ up to 2 $D$	10+5 <i>y</i>	10+5a	5b	5a
3rd step				over 2 D up to 2.5 D	10+6y	10+6a	6 <i>b</i>	6 <i>a</i>

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:

	· · · · · · · · · · · · · · · · · · ·		Share accruing to the			
Charge	in gold francs Admin. of the country of the private station		transit Administration	Admin. to 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)	Share accruing to the				
at the outgoing end	outgoing Administration	transit Administration	incoming Administration		
$(C+4)\frac{y}{3}$	$(C+4)\frac{a}{3}$	$(C+4)\frac{b}{3}$	$(C+4)\frac{a}{3}$		

(F.83)

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

1) 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.

Notes. — 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.

#### **RECOMMENDATION F.84**

## RULES FOR PHOTOTELEGRAPH COMMUNICATIONS ESTABLISHED OVER RADIO CIRCUITS OR COMBINED RADIO AND METALLIC CIRCUITS

(Geneva, 1964)

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

#### considering

a) that the phototelegraph service is steadily developing in the extra-European system;

b) that the provisions regarding phototelegraph calls set up over circuits normally used for telephone traffic (Recommendation F.82) differ considerably from the procedures to be applied when radio paths are used:

c) that, moreover, world-wide phototelegraph transmissions often entail the interconnection of radio and metallic circuits;

d) that it may take an excessively long time to provide the combined radio and metallic circuits when the metallic section and the radio section are not available at the same time,

## unanimously declares the view

that the provisions annexed hereto should be regarded as provisional rules for phototelegraph communications established over radio circuits.

#### ANNEX

#### (to Recommendation F.84)

#### Rules for phototelegraph communications on radio or combined radio and metallic circuits

- A. APPLICATION
- §1. The following Rules supplement the Telegraph Regulations, Telephone Regulations, and Radio Regulations in so far as these deal with phototelegraph communications by radio.
- § 2. These Rules apply to international phototelegraph calls between public stations.
  - Private phototelegraph stations shall not be allowed to exchange phototelegraph communications on circuits making use of radio. But Administrations (or recognized private operating Agencies) may allow a public station in the outgoing country to arrange, subject to its supervision, for a phototelegraph transmission from a private station to pass directly to the radio circuit, or a public station in the incoming country to forward, subject to its supervision, a phototelegram addressed to a private station to that private station, without retransmission, providing for this purpose (if necessary) a national circuit extension of the international phototelegraph link.
- § 3. The following Rules do not concern phototelegraph transmissions on leased radio circuits or by broadcasting.
- B. CONDITIONS OF ACCEPTANCE
- § 4. The conditions of acceptance of phototelegrams between public stations in the extra-European system are the same as for phototelegrams in the European system. They are governed by Recommendation F.80, Section B.
- § 5. A phototelegram received from a private station by a public station for retransmission, or one which has been routed by a public station directly to the radio circuit, is considered as having been handed in at the public station (handing-in by phototelegraphy).

*Note.* — In the case of retransmission, the handing-in time is the time of arrival at the public station, whereas for ordinary direct transmission it is the time when the transmission begins.

§ 6. A phototelegram received on the radio circuit by a public station and retransmitted by the latter to a private station, or one which has been directed without retransmission to a private station, is considered as having been delivered to the addressee (delivery by phototelegraphy).

Note. — The time of delivery is the time at which the retransmission or direct transmission ends.

- C. SPECIAL SERVICES
- § 7. Except where Administrations have laid down restrictions, the categories of phototelegrams in the extra-European and the special services related thereto are the same as for phototelegrams in the European systems. They are governed by Recommendation F.80, Section D.

(F.84)

- § 8. However, the surcharges for special services requested in respect of phototelegrams from a private station are collected from the sender.
- D. GENERAL PROVISIONS
- § 9. When no metallic circuit can be made available for phototelegraphy, the Administrations (or recognized private operating Agencies) concerned may agree to allocate certain radio circuits for phototelegraph transmissions, and may allocate frequencies to these circuits, making due allowance for the normal requirements of phototelegraphy.
- § 10. The radio circuits designated for phototelegraph communications should be both-way channels, so that the phototelegraph stations may exchange service information about the transmission.

If the direction of phototelegraph transmission does not suit speech transmission (communication by Morse code only for example, F4 emission), the reverse direction should as far as possible be a telephone channel.

§ 11. Since every retransmission unduly delays the phototelegram and may make for poor picture reproduction, a combined metallic and radio circuit should as far as possible be made available for the phototelegraph transmission if the terminal phototelegraph station is not at the same place as the radio service office.

In practice, undue delay will arise in setting up such joint circuits when the metallic and radio sections are not available at the same time. Every effort should be made to avoid any waiting by the radio section for interconnection with the metallic section. Hence the metallic section should be available a reasonable time in advance, before the radio circuit becomes available.

- § 12. If it is impossible to set up the second section of a mixed phototelegraph circuit within a reasonable time after the first section has been set up, the phototelegraph station at the point of interconnection receives the phototelegram and retransmits it as soon as the circuit in the direction of destination is available. To maintain transmission performance, storage equipment should as far as possible be used to this end.
- § 13. However, if several pictures are to be transmitted in series, the interconnection between the metallic and radio sections should in any event be prepared beforehand.
- § 14. With mixed phototelegraph circuits, the public phototelegraph station in the place where the radio terminal office is shall be responsible for effecting the junction between the international radio circuit and the telephone circuit (national or international), and shall supervise the procedures governing phototelegraph transmission (control station).

The public station which operates the radio circuit shall be responsible for the same duties if there are direct junction lines between it and some private stations.

- § 15. To ensure smooth co-operation between public phototelegraph stations at the ends of the radio circuit, the personnel there employed should, if possible, have an adequate grounding in English and French. They should in any event be thoroughly familiar with the Morse code and the international abbreviations laid down for phototelegraph service calls (see Codes and Abbreviations for the Use of the International Telecommunication Services, published by the I.T.U. General Secretariat).
- § 16. Administrations are recommended to make a number of direct four-wire circuits available between the radio office and the public phototelegraph station, and to make them on the terminal switching panel, with a view to protecting the phototelegraph transmissions.

- § 17. The public phototelegraph stations at the ends of the radio path must send, if necessary, the call sign laid down by the Radio Regulations (Chap. V, Art. 19, Nos. 735-742, Geneva, 1959). This call sign must be sent over the outgoing circuit during intervals between phototelegraph transmissions, and on the return circuit during intervals between service messages.
- E. ESTABLISHMENT, SUPERVISION AND CLEARING OF A PHOTOTELEGRAPH COMMUNICATION ON A RADIO CIRCUIT
- § 18. The public phototelegraph stations at the ends of the radio route shall proceed as follows in setting up an international communication:
  - a) After having consulted the radio authorities, the outgoing public station at the end of the radio circuit should at once transmit a service advice (a numbered message) to the incoming public station, giving the following data:
    - Name of the transmitting station,
    - Name of the station of destination,
    - The category of phototelegram to be transmitted,
    - The date and time of handing-in,
    - Name of the addressee,
    - Special service instructions such as Kx, TMx, etc., if any,
    - Number of phototelegrams on hand,
    - Frequency allocated for the phototelegraph communication in the direction from the outgoing country,
    - Time at which the phototelegraph communication will probably take place.
  - b) After consulting its radio authorities, the incoming public station urgently transmits a reply in the form of a service advice with the following data:
    - agreement on the time proposed, *or*, nominating the time at which the transmission must take place,
    - the frequency allocated to the return channel, i.e., in the direction from the incoming country.
  - c) The outgoing phototelegraph station shall then inform the radio office of the above particulars.
  - d) At the time agreed upon, the two phototelegraph stations shall take action to set up the communications, in co-operation with the radio offices concerned.
  - e) The Administrations (or recognized private operating Agencies) concerned must take care to see that XQ service advices are transmitted and delivered to the public stations of destination with all possible speed.
- § 19. The radio offices at the two ends of the radio route shall supervise the transmission:
  - a) on the outgoing transmission, by a device which makes it possible to ascertain, without risk of disturbance, whether a transmission is proceeding;
  - b) on the return channel, by a device enabling the service information sent from the receiving phototelegraph station to be heard.

After the call has been set up nobody should break into the circuits, unless asked to do so by one of the phototelegraph stations concerned.

392

(F.84)

- § 20. By agreement, the two phototelegraph stations shall inform their particular radio authorities of the end of the communication. These latter shall take immediate steps to break off the communication.
- § 21. The outgoing public station notes the number of phototelegrams transmitted, the relevant reference numbers and the charging scale, together with the time at which each transmission has started and finished.
- F. ESTABLISHMENT, SUPERVISION AND CLEARING OF A PHOTOTELEGRAPH COMMUNICATION ON A COMBINED WIRE AND RADIO CIRCUIT

§ 22.

- a) Extension of the radio circuit on the sending side.
  - aa) Extension in the country where the radio circuit terminates
    - Any national public station or a private station wishing to transmit a phototelegram to a country with which such communications take place by radio, shall so inform the international public station providing the radio circuit in question.

#### Extension to another country

The public stations of countries for which a transit service has been arranged shall get into touch via international phototelegraph positions (IPPs) with the international public station serving the radio circuit in question.

- *ab*) In setting up the radio circuit, the public stations at the ends of the radio path shall proceed as described in E above.
- ac) Once agreement has been reached on the time of transmission, the international public station at the outgoing side of the radio circuit shall inform the transmitting station either direct or via the IPPs.
- ad) At the same time, it shall ask the IPP to set up a connection (national or international) with the terminal station in question, at the same time saying when this circuit will have to be available.The IPP shall proceed as described in Recommendation F.82 in making the wire section available at the right time.
- *ae*) When the radio section has been set up, the outgoing international public station shall be responsible for interconnection and shall become the controlling station for the mixed circuit.
- b) Extension of the radio circuit on the receiving side.
  - ba) Extension in the country where the radio circuit terminates

If, when the radio circuit is set up, it appears that the phototelegram is to be routed towards another public station or a private station the international public station operating the radio circuit on the receiving side shall communicate with the receiving station in question, to inform it of this and of the time at which the transmission will probably take place.

Extension to another country

In this case, the international public station operating the radio circuit on the incoming side sends this information to the public station of the country of destination, via the IPPs.

- *bb)* At the same time, it shall arrange for the national (or international) circuit to be made available at the right time, as in *ad*) above.
- *bc)* When the radio section is ready, the incoming international public station shall take over the interconnection and become control station for the mixed circuit.

- *bd)* For the transmission of a series of phototelegrams which have to be routed to different receiving stations, the outgoing international public station must warn the public station at the other end of the radio circuit in time, so that the latter may arrange for provision of the metallic circuit to the new station of destination during the preceding phototelegraph transmission.
- c) Extension of the radio circuit on both sides.

The provisions given under a) and b) above shall apply simultaneously.

The two public stations at the ends of the radio section shall become control stations.

§ 23. The controlling station shall direct operations in connection with the phototelegraph transmission and shall invite the transmitting station to comply with the receiving station's instructions.

When there are two control stations, the outgoing one shall repeat the service communications towards the control transmitting station.

- § 24. The control stations shall make one copy of every phototelegram transmitted over the mixed circuit. If the phototelegram received by the station of destination is unsatisfactory, whereas that received by a control station is satisfactory, repetition of the transmission may be limited to the second (or even third) section of the full circuit, if this section has proved faulty.
- § 25. The radio offices and PPs taking part in setting up the call shall supervise transmission as described in paragraph 19 above and in paragraph 13 of Recommendation F.82.
- § 26. After the transmitting station has indicated the end of transmission and the station of destination has notified agreement, the two public stations at the ends of the radio section shall announce the end of the communication to their own radio authorities and to any PP which may have made a wire circuit available.

The first-named shall take immediate action to release the radio circuit, while the latter shall release the wire circuit as soon as possible.

- § 27. The public stations in the originating and transit countries shall note the number of phototelegrams transmitted, the relevant reference numbers and the charging scale, together with the times when each transmission has started and finished.
- G. Special procedures for phototelegraph stations
- § 28. 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.

- § 29. If the phototelegram is to be transmitted by a private station, the public station in the country of origin which provides the extension to the sending private station shall draw the attention of the private station to the fact that it must prepare for transmission a narrow tape as prescribed in § 28 above.
- § 30. 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, the transmission speed and the direction of traverse;

394

(F.84)

- b) adjustment of the white signal;
- c) adjustment of the black signal;
- d) phasing of drums;
- e) start;
- f) transmission.

#### H. FAULTY TRANSMISSIONS

- § 31. In the event of faults, the public control station shall immediately take all the necessary steps to ascertain which section of the whole link is affected. Depending on the circumstances, it shall accordingly warn the radio service office or the IPP so that they may take the necessary action to clear the fault or make another circuit available, if possible.
- § 32. When, after a break in the call, it is apparent that the transmission was defective, the incoming control station at the end of the radio circuit must be informed. This control station will retransmit the phototelegram with the aid of the copy taken during the first transmission, when the latter has been satisfactory.
- § 33. Otherwise, it shall ask for a new phototelegraph call with the control station at the other end of the radio path or with the transmitting station, as the case may be. A private station which has received a faulty picture must, in any case, ask the relevant public station in its country for a repetition of the phototelegraph transmission. The public station must point out that the new call will be chargeable if the faults in the picture are not the responsibility of the telephone or telegraph service.

#### I. CHARGING

§ 34. The charges for phototelegrams in the extra-European system, and the apportionment thereof, shall be the subject of direct Agreements between the Administrations and recognized private operating Agencies concerned.

Charging is based on the area of the phototelegrams, the first charging step being equal to an area of  $150 \text{ cm}^2$  or part thereof and each subsequent charging step being equal to  $100 \text{ cm}^2$  or part thereof.

§ 35. The dimension of phototelegrams is measured in centimetres, any fraction of a centimetre counting as a whole centimetre.

For divided phototelegrams, the charge shall be calculated according to the over-all area of the phototelegram.

- § 36. The charges for phototelegrams in the extra-European system and the surcharges relating to the special services requested shall be levied by the Administration of the country of origin.
- § 37. In relations where reversed-charge for phototelegrams is allowed, the rules governing such calls should be agreed upon by the Administrations (or recognized private operating Agencies) concerned.
- J. REFUNDS AND REBATES
- § 38. When a phototelegram is cancelled at the sender's request before transmission begins, the charge shall be refunded, but the Administration concerned may retain a cancellation fee from the amount paid by the sender.
#### PHOTOTELEGRAPHY

- § 39. If the cancellation is requested after transmission has begun, no refund of charges will be made.
- § 40. If, in the event of retransmission by an intermediate station, the cancellation is requested before the next section is available, but after the phototelegram has been received by the public station responsible for the proposed retransmission, the sender shall pay at least the charge normally applicable to terminal phototelegraph traffic over the distance covered.
- § 41. The provisions of Section E, §§ 2 to 5, of Recommendation F.80 are also applicable to the extra-European service. However, the time-limit for claiming a refund of the charge paid in accordance with §§ 4 and 5 is 20 hours in the extra-European service.
- § 42. In the case of direct transmission requested by a private station, no rebate can be made if, as a result of defects in the private station's equipment, the transmission could not be made or was defective.

#### K. ACCOUNTS

- § 43. Accounting methods for charges levied for phototelegrams in the extra-European system shall be the same as for telegraph charges. These accounts shall constitute a special section in the telegraph accounts.
- § 44. The supplementary charges for the special services indicated in Section D of Recommendation F.80 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=).



Phototelegraph transmission over a radio circuit or combined wire and radio circuits

(F.84)

# **SECTION 7**

# STATISTICS AND PUBLICATIONS ON INTERNATIONAL TELEGRAPHY

# **RECOMMENDATION F.90**

# SPEED OF TRANSMISSION OF INTERNATIONAL TELEGRAMS

(formerly C.C.I.T. Recommendation F.1, Geneva, 1956) (amended, Geneva, 1958)

The application of this Recommendation has been suspended by the IIIrd Plenary Assembly of the C.C.I.T.T., pending the conclusion of the study of Question 20/I.

# **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 the 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

#### (to Recommendation F.91)

#### **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

Continents :	For statistical purposes, continents are delimited as follows (this delimination, in accordance with the desire expressed by the Telegraph Regulations Committee at the Madrid Conference (1932) has been maintained by later conferences):
Africa :	North Africa (including the Azores, Madeira, the Canaries, Cape Verde Islands); West Africa; East Africa (including the Seychelles, Madagascar, Reunion, Mauri- tius); 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, Cam- bodia, 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. 26 of the International Telegraph Regulations, Geneva revision, 1958).

# TELEGRAPH STATISTICS

Comprises all countries other than those in the European system. Extra-European system : Facsimile telegraphy : A system of telegraphy providing reproduction in the form of fixed images (photographic or otherwise), of the figure 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. A facsimile telegram which must be transmitted by phototelegraphy. **Phototelegram**: **Phototelegraphy**: A system of facsimile having special regard to tone reproduction, in which the reception involves photographic processes. A circuit permanently established between specific stations. Point-to-point (telegraph circuit) : Public phototelegraph A phototelegraph station set up in a telegraph centre, and used for the public phototelegraph service. station : A network set up to provide a telegraph service for the public and Public telegraph network : 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. A telegraph office in direct contact with users for the handing-in or Public (telegraph) office : delivery of telegrams. A combination of transmitters and receivers, including the accessory Radio station : equipment required for carrying on a definite radiocommunication service. Service (telegraph) circuit: A special circuit used for communications in connection with the management of the telegraph service. Subscriber's line Permanent circuit between a subscriber's telegraph station or a tele-(or station line) : graph post and the switching centre which serves it. A centre with equipment for switching. Switching centre : An installation in which the switching manœuvres are carried out by Switching centre electrically-controlled apparatus without the intervention of an (automatic): operator. Switching centre An installation in which the switching manœuvres are carried out by (manual): an operator. Telegraph centre : A place in which the necessary resources in material and personnel are assembled to fulfil a specific function in operating a telegraph service.

400

Telegraph circuit :	A permanent connection between two instrument rooms or switching centres, without intermediate switching.
Telegraph network :	A group of stations, installations, centres and lines, co-ordinated for the purpose of providing a telegraph service.
(Telegraph) office :	A centre equipped with telegraph apparatus for the transmission or reception of telegrams.
Telegraph service :	Any service for the transmission of telegrams.
(Telegraph) station :	An installation operated by a telegraphist or a user, comprising a transmitting (or receiving) apparatus, and the necessary auxiliary equipment.
Telex communication :	The effect given to the booking of a telex call when it has been estab- lished between the calling and called stations.
Telex service :	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.
Transit telegram :	A telegram routed across one or more transit countries.
Trunk circuit :	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) $\ldots$ .	•	•	•		•	•	•	•	•	•	•	•	•	
III. Public telegraph network (wire) (1)														

A.	Number of point-to-point telegraph circuits used in the general tele- graph 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.	Cir	cuits 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)	

# TELEGRAPH STATISTICS

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. N	umber of subscribers' (or station) lines to switching centres	
1.	Telex subscribers' lines	
2	Lines from stations in telegraph centres and offices	
۷.	Lines from stations in telegraph centres and onices	
D. A	umber 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)	
Е. Л рі	umber of circuits used exclusively for facsimile telegraphy (or ototelegraphy)	
a)	internal	•••••••
b	international, between countries in the European system	
c)	international, in the extra-European system (3)	
IV. Publi	c telegraph network of the fixed radio service (1)	
A.Λ te	umber of point-to-point telegraph circuits used in the general legraph service (2 bis)	
a)	internal	
· b)	international, between countries in the European system	·····
c)	international, in the extra-European system (3)	<b></b>
B. N	umber of trunk telegraph circuits	
1	Circuits used exclusively by the general telegraph service (2 big)	
1.	a) internal	
	a) international between countries in the European system	
	) international, between countries in the European system	
	c) international, in the extra-European system $(3)$	

(F.91)

.

	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	<i>,.</i>
		c) international, in the extra-European system (3)	
C	Nu	mber of telegraph circuits permanently leased to users	
	a)	internal	
	b)	international, between countries in the European system	<b></b>
	c)	international, in the extra-European system (3)	
D	. Nu pho	mber of circuits used exclusively for facsimile telegraphy (or ototelegraphy)	
	a)	internal	······
	b)	international, between countries in the European system	
	c)	international, in the extra-European system (3)	
V. Eq	quipn 1d IV	nents for the circuits and station lines mentioned in Sections III	
N	umb	er of equipments (5) (6)	
a)	fo	r within-band telegraphy	
b)	fo	or sub-audio telegraphy	
c)	fo	r supra-audio telegraphy	
d)	fo	or telegraphy on phantom or super-phantom circuits	
e)	fo	r 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	

403

	B.	Nur and	mber of radio stations in the fixed service (general telegraphy l/or telex)	
		1.	transmitting	•
		2.	receiving	
	C.	Nur	mber 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.	Nur	mber 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.	Nun phoi	mber of switching centres serving exclusively the facsimile (or totelegraph) service	
	F.	Sem	naphore stations with a public telegraph service	
VII.	Tei and	legra 1 tele	uph apparatus in telegraph centres (or offices) used in the general ex networks (including service apparatus)	
	1.	Ty	pe of apparatus used (4)	
		a)	Morse (or sounder or buzzer)	••••••
		b)	Wheatstone, Creed-Wheatstone	
		c)	Hughes	
		d)	Baudot	
		e)	Siemens (rapid printers)	

# TELEGRAPH STATISTICS

	f)	Siemens-Hell	
	g)	Murray	•••••
	h)	start-stop	
	i)	facsimile	••••••
2.	Nu	mber of start-stop machines in service	
	a)	standardized in accordance with C.C.I.T.T. Recommenda- tions	
		1. tape-printing	•••••
		2. page-printing	
	b)	not in accordance with C.C.I.T.T. Recommendations	
		1. tape-printing	
		2. page-printing	
3.	Nu and	mber of facsimile telegraph machines used by Administrations I recognized private operating Agencies	
	a)	direct-recording facsimile apparatus	
	b)	phototelegraph apparatus	

# VIII. Telegraph traffic

A. Traffic of countries in the European system
--

1.	Interna	al traffic of the country	
	a) to	tal number of outward telegrams	
	b) nu	mber of outward phototelegrams	•••••
2.	Interna	ational traffic in the European system	
	a) nu nu	mber of full-rate and urgent telegrams, outward	
	b) nu nu	Imber of letter-telegrams, outward	
	c) nu nu	Imber of press telegrams, outward	
	d) nu on	imber of transit telegrams (each telegram counted once    ily)	
	e) nu	mber of outward, inward and transit phototelegrams	
3.	Interna	ational traffic in the extra-European system	
	a) nu nu	umber of full-rate and urgent telegrams, outward     umber of full-rate and urgent telegrams, inward	
	b) nu nu	Imber of letter-telegrams, outward	
	c) nu	mber of press telegrams, outward	
	110		

#### d) number of transit telegrams (each telegram counted once ...... number of outward, inward and transit phototelegrams e) ..... 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 number of full-rate and urgent telegrams, outward . . . a) ----number of full-rate and urgent telegrams, inward . . . . number of letter-telegrams, outward . . . . . . . b) number of letter-telegrams, inward . . . . . . . . . number of press telegrams, outward . . . . . . . . . . c) ..... number of transit telegrams (each telegram counted once d) number of outward, inward and transit phototelegrams e) 3. Traffic with Europe number of full-rate and urgent telegrams, outward . . . . a) number of full-rate and urgent telegrams, inward. . . . ..... number of letter-telegrams, outward . . . . . . . b) number of letter-telegrams, inward . . . . . . . . . . ..... c) ..... number of transit telegrams (each telegram counted once d) ...... number of outward, inward and transit phototelegrams e) ..... Traffic with other continents 4 number of full-rate and urgent telegrams, outward . . . a) ..... number of full-rate and urgent telegrams, inward . . . . ..... number of letter-telegrams, outward . . . . . . . . . b) ..... ..... c) ..... number of transit telegrams (each telegram counted once d) only) number of outward, inward, and transit phototelegrams e)

**TELEGRAPH STATISTICS** 

# IX. Telex service traffic

A. Inland traffic of the country

	1.	Number of chargeable calls (irrespective of duration) ex- changed 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.	Inte	rnational traffic with countries in the European system	
	1.	Number of chargeable calls (irrespective of duration), out- ward, inward and transit (9)	
	2.	Total number of chargeable minutes (9)	
		a) outward	
		b) inward	
		c) transit	
C.	Inte	ernational 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 cation 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. (Paris Revision, 1949)
- II. Radio Regulations (Atlantic City, 1947), Appendix 9, Section I The "Q" Code as a whole see page 251 et seq.
- III. Radio Regulations (Atlantic City, 1947), Appendix 9, Section II Miscellaneous abbreviations and signals — see page 270 et seq.
- IV. Radio Regulations (Atlantic City, 1947), 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 (London, 1953).
- 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.

(F.92)

- 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 (*Paris Revision*, 1949), 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 basis 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

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;

Note. — The second edition of the book of Codes and Abbreviations for the use of the international telecommunication services was published in 1963.

(F.92)

# **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 application of this Recommendation has been suspended by the IIIrd Plenary Assembly of the C.C.I.T.T., pending the conclusion of the study of Question 20/I

# **RECOMMENDATION F.95**

# TABLE OF INTERNATIONAL TELEX RELATIONS (formerly C.C.I.T. Recommendation H.12, 1954, amended at Geneva, 1964)

Recommendation F.60, Article 3, paragraph 8, lays down that the General Secretariat should publish each year a list of telex circuits and a list of telex routes.

It would be of interest to indicate the following particulars for each telex relation in one and the same list: routing, number of circuits available on the relation for direct routing (i.e. without switching in a transit country), type of circuits and traffic in the relation.

# For this purpose, the C.C.I.T.T.

# unanimously declares the view:

1. that all Administrations of countries taking part in the international telex service should submit, between 1 January and 30 April of each year, a list describing the telex circuits, telex routes and telex traffic for each telex relation with the country concerned, based on the position on 31 December of the preceding year;

2. that this list should relate to outgoing traffic that has originated in the country responsible for the list. It should indicate normal routing for outgoing calls, the number of telex circuits that could be used by traffic from that country, and annual outgoing traffic, in chargeable minutes, for the relation under consideration;

3. that this list should be prepared on the basis of the following table (in which figures are given purely by way of example):

Year<sup>4</sup>

# OUTGOING TELEX TRAFFIC RELATIVE TO THE U.S.A. 1,2

1	2	3				4	5
	1	N	lumber of	circuits 7	, 8		
Relation to <sup>5</sup>	Normal routing <sup>6</sup>	Speci outg	alized oing	M	ixed	Chargeable outgoing minutes in	Comments <sup>9</sup>
		Cable	Radio	Cable	Radio		
						0.000	
Austria	Direct	8	0	6	4	8 000	
Belgium	Direct	10	0	12	8	100 000	
Hong Kong	Direct	0	0	0	4	3 000	
	Brussels						
Luxembourg	Paris Frankfurt					4 000	
United Kingdom	Direct	10	0	30	20	600 000	

# Number of telex attachment lines <sup>3</sup> on 31 December <sup>4</sup> ....

<sup>1</sup> The list should be prepared by and for every country (in the sense of a geographical entity) which provides outgoing international telex traffic (e.g. Algeria, Netherlands Antilles, Argentina, Australia, Austria, Belgium, Bermudas, etc.).

<sup>2</sup> If there are several telex networks in one country, a single list should be prepared for that country. Similarly, in column 1, such a country should be described under a single relation and the traffic figures and number of circuits should be given as global. figures.

<sup>3</sup> Lines giving rise to the payment of international calls only.

<sup>4</sup> Year of the statistics; the list should be sent to the I.T.U. General Secretariat between 1 January and 30 April of the following: vear.

<sup>5</sup> The relations should be listed in French alphabetical order (reference should be made to the annex to the notification issued on 1 January each year by the General Secretariat).

<sup>6</sup> If the normal route involves 2 (or more) international transit centres, the first transit centre traversed after leaving the outgoing country should be given.

<sup>7</sup> Mention the number only in respect of a direct relation (i.e. without switching in any other countries that may be crossed). <sup>8</sup> In the "cable " column, indicate the number of circuits set up on cables, overhead lines, radio relay links, etc., i.e. by any means other than HF radio. In the "radio " column, indicate the number of circuits making use of an HF radio path.

<sup>9</sup> If the circuits are used both for the telex service and for gentex operation, insert "GX" in this column.

4. that the General Secretariat should assemble these lists in a document to be published. each year, with the title: Table of international telex relations.

(F.95)

# **RECOMMENDATION F.96**

# LIST OF DESTINATION INDICATORS (Geneva, 1964)

To facilitate the operation of a message retransmission system in accordance with Recommendation F.31, destination indicators must be established uniformly and a list of them placed at the disposal of the offices engaged in this operation.

For these reasons the C.C.I.T.T.

#### unanimously declares the following view :

1. Each office directly connected with the message retransmission centre must be equipped with a destination indicator; towns handling a large international traffic should also be equipped with a destination indicator; at least one destination indicator must be chosen in each country for offices not equipped with their own destination indicator (a so-called " all others " indicator).

2. A destination indicator will consist of four letters; the first two letters will characterize, in standard fashion, a particular country of destination (or a particular network therein), and the following two letters will characterize the office of destination in the country or network.

Should there be several competing networks in a country, and should the office of origin have no special preference for routing the telegram over a specific network, an additional 2-letters indicator for the whole country is envisaged.

The last letter of an "all others" indicator will always be the letter X.

3. A list of destination indicators will be drawn up by the C.C.I.T.T. secretariat in consultation with the Administrations and recognized private operating Agencies.

As far as possible the whole of the 4-letter destination indicators should be such that any indicator differs in at least two letters from any other  $^{1}$ .

Offices connected directly with the message retransmission network will be specially identified in this list.

4. The list will be issued and sold through the General Secretariat of the Union.

Any subsequent alterations to this list will be published by way of the Notifications.

Note 1. — For the choice of the destination indicator shown in the list to be introduced in the pilot line of a message, see Recommendation F.31.

Note 2. — The two letters which characterize a country (or network) in the list of destination indicators will, in general, also be the identification letters existing for the intercontinental telex service (see Recommendation F.68).

<sup>&</sup>lt;sup>1</sup> The R.C.A. Company has offered its help in supervising the application of this rule.

# PAGE INTENTIONALLY LEFT BLANK

# PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

# LIST OF QUESTIONS APPLYING TO TELEGRAPH OPERATION AND TARIFFS ENTRUSTED TO STUDY GROUP I FOR THE PERIOD 1964-1968

Question No.	Brief description	Other Study Groups or organizations co-operating in the study	Text, page
	÷		
1/I	Counting of words.	—	416
2/I	New principles for telegraph tariffs.		417
3/I	Page reception of telegrams.		417
4/I	" Collect/transferred accounts " service.		417
6/I*	New telegraph alphabet.	VIII, SpA.	418
8/I*	World-wide routing plan for telex and gentex services.	IX, X	418
9/I	Revision of rules for the gentex service.	—	418
10/I*	Retransmission of messages.	VIII, X	419
11/I	Observations on the grade of service in telex traffic.	x	419
13/I*	Charging of telex calls making use of two or more radio- telegraph channels with automatic error-correction.	VIII, X	419
14/I	Revision of the Telex Regulations.		419
15/I	Unit for international accounts.	II, III	420
15bis/I	Unit charge for one minute of call.	II, III	421
16/I	Revision of Recommendations F.82 and F.84 for photo- telegraphy.		421
17/I	Simultaneous phototelegraph transmission to multiple destinations.		421
18/I	Unification of service codes.	C.C.J.R.	421
20/I	Lists and charts published for telegraphy.		421
21/I	Intercontinental telex rates.		427
22/I	Revision of the List of telegraph offices.		428
		l	

\* Study to be prepared by a joint Working Party.

# 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,

# instr**u**cts

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

# (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 (CD)			
4	China	VP 4			
1111	Spain	VP 22.1			
158	Sweden	VP 72			
172	Yugoslavia	VP 75			
184	Italy	<b>VP</b> 78			
185	Italy	VP 79			
187	C.C.I.T.T. (16 Administrations)	VP 80			
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			
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			

(Question 1/I)

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 1.* — 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.

*Note 2.* — The IIIrd Plenary Assembly has specially replied to Question 1/I by means of Proposal No. 1 to be submitted to the Administrative Telegraph and Telephone Conference (see page 243).

# 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".

# Question 3/I — Page reception of telegrams

(continuation of Question 3/I, 1961-1964, amended)

Study of operational rules to be recommended for applying Recommendation F.12 as regards the layout of the address on page-printed telegrams.

Note. — The study should be pursued in particular for:

- completion of Recommendation F.12, extending its application to service telegrams, service advices and money-order telegrams;
- study of Recommendation F.12 in the case of the switched traffic.

In principle the possible use of page-printing equipment in the gentex network is acceptable.

As to the interwork between tape-printing and page-printing apparatus,

1. the message format should follow the principles laid down in Recommendation F.12;

2. technical co-operation between page-printing and tape-printing apparatus has already been laid down in Recommendation S.5.

# Question 4/I — « Collect/transferred accounts » service

1. Standardized rules in the international "collect/transferred accounts" service for the settlement of telegram charges.

2. Introduction of a standard credit card, in several languages, and valid internationally for the "collect/transferred accounts" service.

# Question 6/I — New Telegraph Alphabet

(former Question 22/21, 1957-1960, and points C and D of Question I/A, 1960-1964, Point C of Question 8/VIII of Study Group VIII and point C of Question I/A of Special Study Group A. Study to be prepared by the Joint Working Party "New Alphabet" of Study Groups I, VIII and Special A)

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.

3. Study of an international alphabet for telegraphy and data transmission.

*Note 1.*— This alphabet will be for general (though not exclusive) use in data transmission and it will be usable by Administrations and private operating Agencies where needs cannot be met by Alphabet No. 2.

Note 2. — The study of an alphabet for data transmission by telephone subscribers is included in this study, since only one alphabet has to be proposed.

Note 3. — The study should also include the character structure (bit-order of transmission, etc.) for transmission of the new alphabet in both synchronous and asynchronous operation.

See Supplements to Volume VIII of the Blue Book.

#### Question 8/I — World-wide routing plan for telex and gentex services

(continuation of Question 8/I, 1961-1964, amended; Question 8/X of Study Group X; concerns Study Group IX; study to be prepared by the Joint Working Party "World-wide telex and gentex plan" of Study Groups I, IX and X)

Continuation of the study of the world-wide routing of telex and gentex traffic. The particular object of the study will concern:

— amendments to Recommendations F.68, F.69 and U.11 which may be warranted by the experience gained in intercontinental operation for the telex service;

- charging for calls in case of automatic service on radiocircuits operated by ARQ equipment;

- routing of gentex traffic over intercontinental circuits;

— transmission problems arising in the intercontinental service (see Recommendation R.58).

#### Question 9/I — Revision of Rules for the Gentex Service

(continuation of Question 9/I, 1961-1964, amended)

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 the results of its development.

In particular, the study of modifications to be made to Recommendation F.22 so as to facilitate the interworking between gentex and message retransmission networks.

(Question 9/I)

# Question 10/I — Retransmission of messages

(continuation of Question 10/I, 1961-1964, amended; Question 10/X of Study Group X; also concerns Study Group VIII; study to be prepared by the Joint Working Party " Retransmission of messages" of Study Groups I, VIII and X)

Supplement to the study of international telegraph systems using message relay techniques with automatic or semi-automatic switching of messages and storage.

# **Comments**

The study should take special account of

- amendments to Recommendation F.31 the value of which was shown by experience of the operation of message retransmission systems;
- problems of traffic transfer between this system and other general public telegraph systems, such as the gentex system, and vice versa.

See Supplements, page 433 et seq.

# 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 13/I — Charging of telex calls making use of two or more radiotelegraph channels with automatic error-correction

(continuation of Question 13/I, 1961-1964)

- (This question is also dealt with in Question 4/X (Volume VII) of Study Group X: "Telex signalling over radio circuits". It may also concern Study Group VIII.)
- (Study to be prepared by the Joint Working Party "Efficiency factor" of Study Groups I, VIII and X.)

# Question 14/I — Revision of the Telex Regulations

(continuation of Question 24/21, 1957-1960, amended)

Study of possible amendments to the Telex Regulations:

- a) with regard to the actual regulations,
- b) with regard to rates.

*Note.* — Several Administrations operating intercontinental telex services did not interpret Section 4 (2) (a) of Article 26 of the lelex Regulations (F.60) as requiring the abandonment of the three-minute minimum charge with fully-automatic operation of telex circuits as instituted.

See Supplements, page 447 et seq.

# Question 15/I — Unit for international accounts

(Study in co-operation with Study Groups II and III)

The adoption, for the settlement of international accounts (between Administrations and recognized private operating Agencies), of a charge unit corresponding to one minute of call (telephone, telex).

Note 1. — Adoption of this unit would entail amendments in:

- Article 26, No. 123, Chapter XIII, of the Telephone Regulations (Geneva revision, 1958):

- Article 26, Chapter IX, of the Telex Regulations (C.C.I.T.T. Recommendation F.60).

*Note 2.* — The Question must be examined by Study Group III (Question 1/III) and later by Study Groups I and II (Question 1/II) to enable the C.C.I.T.T. to submit a proposal to the next Administrative Telegraph and Telephone Conference.

Note 3. — The reasons for changing the present charge unit of three minutes are set forth in the Annex hereto.

#### ANNEX

# (to Question 15/I)

For telephone calls, telex calls, sound and television transmissions, all charge shares recommended by the C.C.I.T.T. are based on the unit charge.

In theory, these categories of communication are shown in accounts by the use of a unit charge, after conversion of the number of minutes into three-minute charge units.

*Historically*, the three-minute unit was probably derived from the practice of charging for telephone calls per three-minute period. Whence the minimum three-minute charge for manual and semi-automatic traffic.

There is no special reason nowadays for keeping a three-minute unit. It would seem more natural for the user to compute his expenses by minute of call. The minute, too, seems a more natural basis for the calculation of charge shares.

Already, several Administrations use the minute as the charge unit for accounting purposes, but as long as charge shares are based on the three-minute unit, this practice is bound to run into difficulties of a practical kind. For instance, there is no uniformity in the rules for rounding off fractions, and charge shares must be indicated by Administrations as share per minute as well as per unit.

Question 4/II, studied between 1960 and 1964, suggested a simplification in accounting practice, the total chargeable minutes being entered in monthly accounts instead of unit charges. It would, nevertheless, seem better to drop the existing charge unit altogether and to introduce the minute as the unit.

Furthermore, use of unit charges as well as minutes when traffic volume is assessed leads to confusion. Here again, it would be best invariably to indicate the number of minutes.

(15/I Ann.)

# Question 15 bis/I — Unit charge for one minute of call

(study in co-operation with Study Groups II and III)

One minute of call (by telephone or telex) as the unit for calculation of charges levied on users.

Note. — Refer to Notes 1 to 3 appended to Question 15/I, and to the annex to the question itself.

# Question 16/I — Revision of Recommendations F.82 and F.84 for phototelegraphy

Study of the conditions of acceptance, operational procedures and technical means likely to lead to the rapid and economical development of the phototelegraphic service.

This study should pay particular attention to the fact that phototelegraphic 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.

Note. — This question is of a world-wide basis.

# Question 17/1 — Simultaneous phototelegraph transmission to multiple destinations

(continuation of Question 17/I, 1961-1964)

Should simultaneous phototelegraph transmission to multiple destinations be envisaged in the international service?

If so, what operating and tariff methods should be used for these calls? See Supplements, page 446 et seq.

# 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 20/I — Lists and charts published for telegraphy

(continuation of Question 20/I, 1961-1964, amended)

Study of lists and charts published by the C.C.I.T.T. or the General Secretariat for telegraph traffic with a view to

- eliminating information devoid of practical use,
- avoiding repetition of information.

# ANNEX 1

#### (to Question 20/I)

The tables, lists and statistics published for the telegraph service and dealing with traffic and channels are as follows:

- Statistics for the speed of transmission of international telegrams (compiled on the basis of C.C.I.T.T. Recommendation F.90),
- General Telegraph Statistics (compiled on the basis of C.C.I.T.T. Recommendation F.91),
- Routing tables for offices connected to the gentex service (drawn up on the basis of C.C.I.T.T. Recommendation F.93),
- Three tables of international telex traffic (drawn up on the basis of C.C.I.T.T. Recommendation F.94),
- List of telex circuits (compiled on the basis of C.C.I.T.T. Recommendation F.95),
- List of telex circuits and routes (compiled on the basis of C.C.I.T.T. Recommendation F.95).
- In addition to these documents dealing specifically with telegraphy, the Secretariat publishes:
- official maps of international telecommunication channels (number 1015 of the Telegraph Regulations) (practically discontinued since 1952),
- a list of point-to-point radiocommunication channels (number 1018 of the Telegraph Regulations) (latest edition 1962, but kept up to date by supplements),
- a list of cables forming the world submarine network (number 1024 of the Telegraph Regulations) (latest edition 1961),
- a list of international telecommunication channels (number 1025 of the Telegraph Regulations) (practically discontinued since 1952).

The C.C.I.T.T. Secretariat also used to publish:

 a list of international voice-frequency telegraph systems (on the basis of its Recommendation R.91).

In addition, the Plan Committee and its Regional Committees compile periodically particulars of traffic and maps of international arteries.

As an example of what might be done, the C.C.I.T.T. Secretariat would cite:

a) Statistics for the speed of transmission of international telegrams; are these statistics of any real interest and have they contributed towards the practical improvement of the telegraph service? Perhaps they could be discontinued.

b) General telegraph statistics; these statistics contain information on the number of circuits, the number of transmission equipment, the number of switchboards, information which is not provided in the general statistics for telephony which merely indicate the number of subscribers and the volume of traffic. Could not the telegraph statistics be subjected to some weeding out?

c) Tables of international telex traffic: the publication of these tables called for by Recommendation F.94 was perhaps justified at the beginning of the telex service. This service has now attained majority and there is certainly no need to publish these tables the compilation of which imposes a heavy burden. In any event, their publication in the *Telecommunication Journal*—which constitutes an onerous task—can no longer be justified.

d) A new version of the lists of international telecommunication routes and of telex circuits was the subject of the study prescribed by former Question  $20/I^{1}$ ; the new list should include point-to-point radiocommunication channels. This leads one to wonder whether the lists are not a duplication of similar lists contained in the Plan Committees' documents.

<sup>&</sup>lt;sup>1</sup> See below the proposals by Study Group I in this connection.

e) The list of cables forming the world submarine network is inclined to duplicate a similar list given in the Plan Book.

Note 1. — Pending the conclusion of this general study on lists and statistics for telegraphy, the application of:

i) Recommendation F.90 — Speed of transmission of international telegrams

ii) Recommendation F.94 — Tables of international telex traffic

has been suspended by the IIIrd Plenary Assembly.

Note 2. — A new text of Recommendation F.95 was adopted by the IIIrd Plenary Assembly.

# ANNEX 2

# (to Question 20/I)

#### Report of Study Group I on revision of the list of international telegraph routes

The new list should include:

- telex circuits between international exchanges,

- gentex circuits between international exchanges,

- station-to-station telegraph circuits,

whether by wire or radio.

The list of telex routes would be maintained, but the List of International Telex Circuits, published once a year by the General Secretariat as an annex to the General Telegraph Statistics (Recommendation F.95) will probably become pointless. The question will then arise: should any change be made in Recommendation F.95?<sup>1</sup>

The Study Group was in favour of a single list for all circuits, with a double entry for every country in which an international circuit ends. Although this would mean a bulkier list, this procedure, already used in the List of Point-to-Point Radiotelegraph Channels, would seem to make for greater ease of consultation.

The Study Group then considered questions of layout, the code for showing the kind of circuit involved and how circuits are operated, together with arrangements for bringing the document up to date at intervals. Its report reads as follows:

#### 1. Division of the list into several parts

Having regard to the narrow majority of members of the Study Group who had expressed themselves in favour of recommending a single list of telegraph and telex circuits, the Study Group reviewed the arguments for and against this view but concluded that there was no need to re-examine this question. It further considered whether it would be advisable to include with the list the Routing Table for offices connected to the gentex service (Recommendation F.93), thus including in one volume all three of the C.C.I.T.T. publications to which Question 20/I relates. Such a course was, however, not recommended as it was considered that this would make the publication unnecessarily complicated and cumbersome.

#### 2. Circuits of more than 50 bauds

It is recommended that details of any such circuits coming into existence should be included in the same way as details of 50-baud circuits and that an index number or asterisk in the column headed "Number of circuits" should refer to a note giving particulars in the Remarks column.

<sup>&</sup>lt;sup>1</sup> This modification was made by the Plenary Assembly in 1964.

#### 3. Routing of telex circuits

It is recommended that a column showing routing of telex circuits should be inserted in the group of columns relating to telex circuits. (See Appendix 2.)

#### 4. Part-time circuits

It is recommended that circuits not permanently open should be underlined in the appropriate "Number of circuits " column. The opening hours of part-time circuits should not be specified.

#### 5. Abbreviations

The Study Group recommends the adoption of the abbreviations given in Appendix 1.

# 6. Format

#### 6.1 Layout of information

It is recommended that information should be shown under the headings given in Appendix 2.

#### 6.2 Spacing of information

At least one separate page should be devoted to each Administration or recognized private operating Agency and the information should be widely spaced in the vertical plane so as to facilitate the insertion of amendments.

#### 6.3 Form and size of publication

A specimen of the layout envisaged is shown in Appendix 2.

The list should be of A4 size  $(210 \times 297 \text{ mm})$  and should be bound with stiff covers in looseleaf form with fasteners along the short edge and at right angles to the printed information. The headings of the column should be printed only on the first and last pages of the publication, the columns in the other pages being numbered only. The headings on the first and last pages should be so contrived as to be visible above the interior pages as for example in the C.C.I.T.T. "Red table ".

#### 7. Procedure to keep the list up to date

#### 7.1 *Form*

It is suggested that the Secretariat of the I.T.U. should normally publish in the fortnightly *I.T.U. Circular* amendments individually for insertion by Administrations/recognized private operating Agencies, but that when a page has become heavily amended, it should be reprinted to replace the existing page.

It should thus rarely, if ever, become necessary to reprint the whole publication.

#### 7.2 Procedure to ensure notification of changes

The Study Group considered the possibility of inviting the General Secretariat to circulate Administrations/recognized private operating Agencies calling for amendments at specified intervals.

(20/I, Ann. 2)

It was recommended that the views of the Secretariat should be sought on the advisability of such a procedure, and on the frequency with which amendments should be sought.

Recommendations F.60 and F.95 should be amended to accord with any decision reached on this point.

# **APPENDIX 1**

# (to Question 20/I)

# List of abbreviations

- B/W Circuits over which directional selection is possible
- C Submarine cable
- F Fil (landline wire)
- R Radio
- MUX Multiplex
- TGX International gentex circuit
- TGA Gentex station line circuit
- TX Telex circuit
- TGX/TX Gentex-telex-circuit
- TG Telegraph circuit
- TPR Teleprinter termination
- DP Direct printer termination
- DX Duplex
- AI Subscribers of one country can select subscribers in the other direction
- SA The manual operator of A (or of B) selects the subscribers of country B (or of A) directly
- ML Intervention by a manual operator is necessary in each office A and B
- P Protected radio circuit
- REC Recorder
- VF Voice frequency

# APPENDIX 2 (to Question 20/I) List of public telegraph and telex circuits

	Terminal		Circuits for general telegraphy							- Talay circuits													
		C	Gentex (TGX, TGA, TGX/TX					s	tation to	station (T	'G)	i elex circuits											
Country and terminal		Terminal	Terminal	Terminal	Nı	imbe ircui	r of ts				its					Nu	inber	of s		nks	Oper met	ating hod	
exchange A	exchange B	A - B	B - A	both ways	Bearer circuit	Nature	Operators	Number of circu	Bearer circuit	Operating method	Operators	Routing	A - B	B-A	both ways	Bearer circuit	Number of VF li	A - B	B-A	Operators			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Federal German Republic Frankfurt (Main)	New York Roma	11	3		R MUX	TGA	(1) (2) (1) (3)	2	RR MUX R MUX	TPR DX TPR DX	(1) (2) (1) (3)		8 10	3	5	R F VF	1	ML SA	ML SA SA	(1) (2)	, 1		
	London							$\frac{2}{1}$	F VF F F	TPR DX TPR TPR	(1) (4) (1) (1)	Amsterdam Bruxelles	-	6		F VF	2		SA	(1) (4)			

The Administrations and private operating Agencies operating the circuits are shown in Columns 8, 12 and 21. The first digit stands for the operator of the terminal exchange A, while the second represents that of terminal exchange B.

The circuit numbers, when underlined, represent circuits not in permanent use.

1. Deutsche Bundespost

2. Radio Corporation of America

3. Italcable

4. British Administration.

# Question 21/I — Intercontinental telex rates

(continuation of Question 21/I, 1961-1964)

Now that an increasing number of intercontinental telex services are being carried in whole or in part in submarine cables, what principles should be applied for the assessment and division of intercontinental telex rates?

# ANNEX

# (to Question 21/I)

#### Comments by Study Group I

Hitherto, the C.C.I.T.T. has always urged Administrations and recognized private operating Agencies to reach agreement among themselves on rates for intercontinental telex calls.

As a result of such agreements, a charging procedure has grown up. The charge for a threeminute call is 9 dollars (direct intercontinental telex call) and 12 dollars when there is switched transit through a third continent.

Of the 9-dollar charge, the intercontinental extremity in Europe gets 4.5 dollars. The 12-dollar charge is apportioned as follows: 4.5; 3; 4.5.

If the call originates in a country other than the European intercontinental terminal country, the intercontinental terminal country keeps 2.5 dollars, while 2 dollars go to the terminal country of origin (less the amount due to a transit country, if any).

We are at present witnessing an increase in intercontinental transoceanic routes by cable, and the above procedure, some Administrations think, is out of date. They favour the introduction of distance as one of the factors in working out the charge.

The following are the provisional conclusions reached by the Study Group:

#### A. Intercontinental telex charges via direct routes

1. Where telex calls can be carried on cables or by wireless, the charge should be independent of the kind of circuit used.

2. Distance is one of the factors which should be taken into consideration when telex rates are determined.

3. For the time being, the Study Group can go no further in giving rules for direct-route charging.

#### **B.** Charge apportionment

#### Cases of direct intercontinental calls

The charge for a telex call between Europe and other continents is 9 dollars, of which 4.5 go to the intercontinental terminal countries (each receiving 4.5 dollars). If the call is to be extended to another European country, the European intercontinental terminal country keeps 2.5 dollars and gives 2 dollars to the terminal country (less the amount due to a transit country, if any); in the case of a call with the U.S.A., the charge of 4.5 dollars is for services throughout the entire U.S.A.

In telephony, the principle is different. The basic rate, in the case of calls extended beyond the European intercontinental terminal country, is maintained, but all the countries concerned accept a *pro rata* reduction of their normal quotas.

(21/I, Ann.)

The Study Group, having sounded the Administrations on this point, is definitely in favour of keeping the present system of apportionment for intercontinental telex calls.

#### Transit

When a continent A has direct relations with a continent B, but none with continent C (basic charge: 12 dollars), the charge for a telex call between continent A and continent C is 4.50 dollars for A, 3 for B, and 4.50 for C. This is in accordance with the wishes of Study Group I.

Should continent A have direct relations with continent B (basic charge: 9 dollars), but uses the routes A-C and C-B for a telex call, it has been suggested that A should receive 1.50 dollars, C 3 dollars and B 4.50, instead of 3, 3 and 3, as at present. The Study Group recommends that things should be left as they are at present.

If there be two connected intercontinental circuits, the existing apportionment (4.5, 3 and 4.5 dollars) would be maintained.

#### **Observations**

Since Study Group I has decided, as mentioned above, not to change the existing apportionment of intercontinental telex charges for the time being, Italcable trusts that the matter will shortly be reconsidered.

The Delegation of the United Kingdom of Great Britain and Northern Ireland: "did not consider that the present rate division of  $4\frac{1}{2}$ : 3:  $4\frac{1}{2}$  dollars for two interconnected links was an equitable one from the point of view of the country providing the interconnection. It pointed out that, under the rate division arrangements applied in similar circumstances in the intercontinental telephone field, the intermediate country received 40% of the total rate ".

The question will have to be studied further.

# Question 22/I — Revision of the List of Telegraph Offices

Examination of amendments to be made in the official List of Telegraph Offices, particularly in view of the expansion of the gentex and message retransmission networks.

Note. — As information, Circular No. 1400 (3 June, 1964) of the General Secretariat of the Union which concerns the preparation of the 22nd edition of this List is to be noted.

# SUPPLEMENTS TO PART III

# CONTRIBUTIONS RECEIVED DURING THE PERIOD 1961-1964 CONSIDERED WORTH PUBLISHING

Supplement No.	Source	Title	Question to which the Supplement relates				
1	Fed. Rep. of Germany	Fed. Rep. of Germany Gentex and message retransmission networks					
2	Idem	Idem	Idem				
3	Study Group X	Chargeable duration in automatic telex service	16/I				
4	Fed. Rep. of Germany	Phototelegraph transmission to multiple destinations	17/I				

# Supplement No. 1

# FEDERAL REPUBLIC OF GERMANY - (Extract from Contribution COM I - No. 115)

# REVISION OF RULES FOR THE GENTEX SERVICE

# Characteristics of the new gentex transmission standards ; how and where they would apply

# I. GENERAL

- 1. The common basis for the gentex transmission standards hereinafter described comprises:
- a modified layout, based on International Telegraph and Telephone Consultative Committee Recommendation F.12, for direct transmission of telegrams from a gentex exchange to another gentex exchange;

.

(Suppl. 1)

— a layout based on Recommendation F.31, but amended for telegram transmission between gentex exchanges and message-retransmission centres (semi-automatic or fully automatic).

2. The chief changes in layout for page-printing teleprinters, described in Recommendation F.12 concern:

- a) the exchange of the two answer-back codes before and after transmission of the telegram,
- b) use of the gentex transmission serial number instead of the serial number in channel,
- c) abolition of the limit restricting the address to not more than three lines, each with not more than 43 signals,
- d) announcement of the correction of any errors immediately on discovery, by a new error signal "XXXXX" (instead of "EEE" or deletion), thus affording the possibility of direct (manual) transmission instead of indirect transmission with a corrected tape,
- e) announcement of the correction of mistakes in writing or in transmission observed later, by the signal "RECT" after the telegram has been sent,
- f) if necessary, deletion of the 10 " line-feed " signals and of the 10 " letter-shift " signals at the end of the telegram,
- g) sending of the transmission time (four digits) after the routine repetition (COL).

3. Modifications of the format for page-printing equipment in message-retransmission systems mainly in respect of:

- a) the exchange of two answer-back codes after and before the transmission of the telegram,
- b) the numbering line, particularly with a view to eliminating the serial number in the channel and the special form of the telegram identification number,
- c) the pilot line, as regards the use of the "origin indicator",
- d) the elimination of the rule restricting the address to 3 lines at most with each line consisting of not more than 43 signals,
- e) possibly, the announcement of the correction of printing or transmission errors noticed subsequently, by means of the "RECT" signal at the end of the transmission of the telegram after the end-of-message signal (NNNN),
- f) the transmission of the time of transmission (four digits) after the end-of-message signal (NNN).

#### II. NEW GENTEX TRANSMISSION STANDARDS

- 1. Gentex A1 transmission standards
  - 1.1. Characteristics
  - a) Separation of the different parts of the telegram by a double hyphen (=) transmitted once or several times for reception with page-printing equipment of the B1 format in conformity with the format of the amended Recommendation F.12;
  - b) announcement of the correction of printing errors noticed immediately, by the new error signal XXXXX;
  - c) announcement of the correction of printing or transmission errors noticed subsequently, by means of the "RECT" signal at the end of the transmission of the telegram;

(Suppl. 1)

d) the gentex A1 transmission standard can, whenever necessary, be transformed by means of a format converter (with error suppression) into the gentex B1 transmission standard.

# 1.2. Equipment

- a) At the gentex exchange: tape-printing teleprinter (without a counter or with the counter disconnected and, if necessary, with the CR and LF keys blocked) with operator's desk;
- b) at the gentex switching centre: format converter with error suppression for gentex traffic relations intended for "error-free" page-printing teleprinter reception.

## 1.3. Field of application

- a) Direct (manual) transmission with tape-printing teleprinter reception. At the reception end the wrong passages (XXXXX, RECT) are obliterated by oversticking;
- b) Direct (manual) transmission by means of tape-printing teleprinters and format converters (with error suppression) makes it possible to receive the exact format with a page-printing teleprinter. With this method, the printing errors characterized by the error signal XXXXX are eliminated and thus become invisible.

The Federal Republic of Germany intends to use the gentex A1 transmission standard for the transmission of telegrams

- in the *gentex service* of its (265) gentex exchanges with gentex exchanges abroad receiving with tape- or page-printing teleprinter (approximately 3.5 million gentex telegrams a year);
- in the *domestic service by switching* with tape-teleprinters, between its (approximately) 700 terminal telegraph exchanges, for more than 20 million telegrams a year.

## 2. Gentex A2 transmission standard

#### 2.1. Characteristics

- a) Separation of the different parts of the telegram as with the gentex A1 standard, namely by the transmission once or several times of the double hyphen (=), but so that the B2 format on the receiving page-printing teleprinter corresponds to the "format for the transmission of telegrams between the gentex network and the message retransmission system";
- b) Announcement of the correction of printing errors noticed immediately, by the new error signal XXXXX;
- c) Announcement of the correction of printing or transmission errors noticed subsequently, by means of the "RECT" signal after the end-of-message signal (NNNN);
- d) The gentex A2 transmission standard *must* be transformed into the gentex B2 transmission standard by means of a format converter with error suppression.

## 2.2. Equipment

- a) At the gentex exchange: tape-printing teleprinter (without a counter or with the counter disconnected, and if necessary, with the CR and LF keys blocked) with operator's desk;
- b) At the gentex switching centre: format converter with error suppression.
## 2.3. Field of application

- a) Direct (manual) transmission from the gentex exchange to the receiving equipment of a message retransmission centre by means of a tape-printing teleprinter of gentex traffic relations with format converters (with error suppression);
- b) The Federal Republic of Germany intends to use this gentex A2 conversion standard only in conjunction with format converters (with error suppression) for its (265) gentex exchanges transmitting to message retransmission centres (estimated volume of traffic: up to 1 million telegrams a year).

### 3. Gentex B1 transmission standard

- 3.1. Characteristics
- a) Separation of the different parts of the telegram by the "carriage return" and "line-feed" signals in accordance with the modified format specified in Recommendation F.12;
- b) Correction of printing errors noticed immediately by obliteration (run-back of the perforated tape and reperforation of the incorrect signals by the "letter-shift" signal);
- c) Announcement of the correction of printing or transmission errors noticed subsequently, by means of the "RECT" signal at the end of the transmission of the telegram;
- d) Preparation for each telegram of a perforated tape in off-line operation and, immediately following, transmission (indirect) of that tape by means of a tape transmitter.

## 3.2. Equipment

In addition to the operator's desk, the gentex exchange should be equipped with:

- a) a page-teleprinter with a separate perforator and tape transmitter, or
- b) a tape-teleprinter (with a signal-counting device) with a separate perforator and tape transmitter, or
- c) a manual perforator (with or without check printing), band transmitter or page-printing teleprinter or, in some cases, tape-printing teleprinter (with signal-counter).

### 3.3. Field of application

Indirect transmission with perforated tape corrected by the gentex exchange is envisaged for reception "without errors" on page-printing teleprinters. Telegrams sent with the B1 standard may be received without further ado also by tape-printing teleprinters, but the B1 transmission standard is too costly and not the best for this purpose. The same effect will be obtained more practically and cheaply if the gentex A1 transmission standard is transformed into gentex B1 transmission standard by a format converter with error-suppression.

(Suppl. 1)

### 4. Gentex B2 transmission standard

### 4.1 Characteristics

- a) Separation of the various parts of the telegram by the "Carriage return" and "Line-feed" signals after the amended "format for retransmission of messages".
- b) Correction of errors immediately noticed by obliteration (turning back of the perforated tape and reperforation of the wrong signals by the signal "letter-shift").
- c) Announcement of the correction of written or transmitted errors noticed later by means of the signal "RECT" after the end-of-message signal (NNNN).
- d) Preparation for each telegram of a corrected perforated tape in off-line operation and, immediately after, transmission (indirect) by a tape transmitter.

### 4.2 Apparatus

In addition to the operator's desk, gentex exchanges should be equipped with:

- a) Page-printing teleprinter with a separate perforator and tape transmitter, or
- b) Tape-printing teleprinter (with signal-counting device) with a separate perforator and tape transmitter, or
- c) Manual perforator (without/with check printing), tape transmitter and page-printing teleprinter or, if necessary, tape-printing teleprinter (with signal-counting device).

## 4.3. Field of application

Indirect transmission with perforated tape corrected by the gentex exchange is envisaged for reception "without errors" at retransmitting exchanges. The gentex B2 transmission standard may be obtained more practically and cheaply by transforming the gentex A2 transmission standard into gentex B2 transmission standard by a format converter with error-suppression.

## 5. Gentex B3 transmission standard

### 5.1. Characteristics

- a) Separation of the various parts of the telegram by the "Carriage return" and "Line-feed" signals in the modified format of Recommendation F.12.
- b) Announcement of the correction of errors immediately noticed by the new error signal XXXXX.
- c) Announcement of the correction of errors noticed later by the signal "RECT" at the end of the transmission.
- d) The gentex B3 transmission standard may be transformed into gentex B1 transmission standard by means of automatic suppression of written errors designated by the error signal XXXXX.

### 5.2. Apparatus

It is necessary to have:

- a) in the gentex exchanges, in addition to the operator's desk
  - a page-printing teleprinter or
  - a tape-printing teleprinter (with signal-counting device);
- b) in the gentex switching centres, error-suppression equipment if reception "without errors" by page teleprinter is necessary.

### 5.3. Field of application

The gentex B3 transmission standard provides for the direct transmission of telegrams by pageprinting teleprinter (or, as the case may be, tape-printing teleprinter) by the gentex exchange. This is suitable for reception with tape-printing teleprinters, but it is suitable for reception with pageprinting teleprinters only when the printing of wrong passages denoted by the error signal (XXXXX) is accepted. If, on the other hand, reception "without errors" on page-printing teleprinters is essential, an error-suppression device can be provided to suppress the errors. If tape-printing teleprinters are used for gentex B3 transmission standard, it should be borne in mind that the signalcounting device included makes it essential to transmit " Carriage return" and " Line-feed " and it cannot be disconnected without further ado if, for example, the A1 transmission standard has to be used for the next telegram.

6. Gentex B4 transmission standard

### 6.1. Characteristics

- a) Separation of the various parts of the telegram by the "Carriage return" and "Line-feed" signals in accordance with the amended "format for retransmission of messages".
- b) Announcement of the correction of written errors immediately noticed by the new error signal XXXXX.
- c) Announcement of written or transmitted errors noticed later by the signal "RECT" at the end of the transmission, i.e. after the end-of-message signal (NNNN).
- d) The gentex B4 transmission standard *must* be transformed into the B2 gentex transmission standard by error-suppression devices.

### 6.2 Apparatus

It is necessary to have

- a) in the gentex exchanges, in addition to the operator's desk, either
  - page-printing teleprinters or
  - tape-printing teleprinters (with signal-counting device);
- b) in gentex switching centres, error-suppression equipment.

### 6.3. Field of application

Direct transmission (manual) from the gentex exchange to the receiving equipment of a messageretransmission centre by page-printing teleprinter or tape-printing teleprinter (with signal-counting device) in gentex traffic relations (with error-suppression devices).

(Suppl. 1)

III. REQUISITE TRANSMISSION STANDARDS FOR THE DIFFERENT TYPES OF RECEIVING EQUIPMENT

### 1. The correct standards

a) for reception with *tape-printing teleprinters* are: A1, B1, B3 and B2 transmission standards (from message retransmission centres); reception of B4 standard would be possible also but in practice the question does not arise;

b) for reception with *page-printing teleprinters* are: only B1 and B2 transmission standards (from message retransmission centres); standard B3 only when the printing of wrong passages is accepted unreservedly;

- c) for reception of messages at message retransmission centres, only B2 transmission standard.
- 2. By inserting format converters with error-suppression it is also possible to produce
- Bl transmission standard from A1 and B3 standards and
- B2 transmission standard from A2 and B4 standards.

### IV. RESULTS

Bearing in mind these conditions, the Federal Republic of Germany considers it wiser to use:

a) for *transmitting*, in the national switched telegraph service and the gentex service to all other countries with the gentex service, the gentex A1 transmission standard uniformly in accordance with C.C.I.T.T. Recommendation F.22 and, where necessary, to transform this standard into gentex B1 standard by means of a format converter with error-suppression if the country of destination wishes to receive on page teleprinters;

b) for *transmitting* telegrams to message retransmission centres in the gentex service, gentex A2 transmission standard, and to transform it into B2 standard by a format converter with error-suppression;

c) for *receiving* in the gentex service (and also in the national switched telegraph service) tape-printing teleprinters only and, for this reason, to allow also, for receiving, all the gentex transmission standards in question (A1, B1, B2, B3).

The insertion of format converters with error-suppression in the corresponding gentex traffic relations (outgoing) is also advantageous in that the gentex traffic relations remain " capable of ensuring transit " and can be used jointly by other countries which may have other gentex transmission standards.

The diagram on the next page summarizes all the possibilities for applying the various gentex transmission standards and their effects at the receiving end.



## Supplement No. 2

## FEDERAL REPUBLIC OF GERMANY. -- (Extract from Contribution COM I/No. 116)

# PROPOSAL FOR CO-OPERATION BETWEEN A MESSAGE-RETRANSMISSION SYSTEM AND A GENTEX SYSTEM

### 1. General principles

1.1 A message-retransmission exchange has connections to the gentex system, over which incoming and outgoing traffic is routed in accordance with the usual principles applied in switched networks (setting-up and release of calls, exchange of answer-back codes).

1.2 It will be for the Administration or agency concerned operating the message-retransmission exchange to decide on the kind of transfer (manual, semi-automatic, automatic) between these connections and the exchange properly so called. In the first stages, at least, it would seem that an operator is required.

1.3 The message-retransmission exchange sends the telegrams in the form standardized for the message-retransmission systems; this can be received on tape-printing as well as on page-printing teleprinters.

1.4 The gentex exchanges transmit the telegrams to the connections of the message-retransmission exchanges in accordance with a transmission procedure (see paragraph 2) adapted to the characteristics of automatically-switched networks, but including the information and characteristics required for telegram transmission within the message-retransmission system.

1.5 The main characteristics and information in connection with the transmission procedure to be used by the gentex exchanges are as follows:

- format peculiar to the page-printing teleprinter;
- numbering line and pilot line before the telegram preamble properly so called;
- error-free transmission; possibility of using the letter-shift combination to do away with errors in the writing, but *not* in the pilot line.

1.6 It may be that difficulties experienced in preparing the lay-out, in running the service and in examining the telegrams received from message-retransmission systems, together with the extra expense of the technical equipment in the gentex exchanges, and the extra time required for transmission, will limit the number of gentex exchanges authorized to handle traffic to and from message-retransmission exchanges. This, however, is a matter for the Administration concerned.

1.7 Format-converters with a device for error-suppression may be used to reduce difficulties during interwork on traffic from a gentex system to a message-retransmission system.

## 2. Transmission procedure for traffic from a gentex to a message-retransmission system

The new transmission procedure is described in detail below, but without operating signals. Furthermore it is compared with the format described in Recommendation F.31 and any differences are accompanied by the reasons for them. From a gentex to a message-retransmission system

(Example for a telegram sent by the gentex exchange at Darmstadt, Federal Republic of Germany, to the message-retransmission exchange run by the Mackay Radio and Telegraph Co., New York, United States.)

Putting-through the gentex call.

- 1. Lines X1, X2 and X3 are set aside for exchange of answer-back codes.
- 2. Numbering line (first line).
  - 2.1 ZCZC (start-of-message).
  - 2.2 Does not exist, since the gentex exchanges do not transmit serial number channel. Also the message-retransmission exchange can include the serial-number in channel in the incoming message, if necessary for the system.
  - 2.3 D4144A1541 (telegram identification number).

Format used by the message-retransmission system

(Example in Recommendation F.31)

Does not exist.

Does not exist, because a station-to-station service.

Numbering line.

ZCZC (start-of-message).

GEB099 (group of channel serial numbers).

WY79 (telegram identification number).

This number may take whatever form the sending Administration desires, but must not comprise more than 12 printable signals.

D = country code.

- 4144 = national call number of the gentex exchange transmitting to the message-retransmission exchange.
- A = the letter characterizing the transmission or perforation position.
- 1541 = telegram serial number at the transmission or perforation position.
- 3. Pilot line (second line).
  - 3.1 UANY (destination indicator).
  - 3.2 HL (priority and tariff indicator).
  - 3.3 DPDA (origin indicator). As an indication of origin, the code of the gentex exchange transmitting the telegram to the message-retransmission system is always used. The various possibilities of codes of origin are set forth in Annex 3.

Pilot line.

GBLD (destination indicator).

HL (priority and tariff indicator).

URWA (origin indicator).

438

(Suppl. 2)

	3.4 Does not exist, because comprised in the preamble to the telegram.	013 (number of chargeable words).
	3.5 Does not exist.	57825 (customer identification group), usable at will, not sent over the international network.
4.	Preamble to the telegram (third line).	Preamble line of the telegram.
	The preamble is sent in accordance with the T	elegraph Regulations (Nos. 383 to 395). JUGEN-

The preamble is sent in accordance with the Telegraph Regulations (Nos. 383 to 395). JUGEN-HEIMBERGSTR 25 12 1826 VIA MACKAY WASHINGTON 13/12 13 1205.

5.	Paid service indications (sixth line).	Paid service indications.
	LT RP20,00	LT
6.	Address (seventh line).	Address.

Dashes are transmitted before and after the address, thus: — MISS GISELA COHEN 67 BROADSTREET NEWYORK — / — MIDBANK LONDON —

Technical difficulties are liable to arise in converting tape-printing teleprinter format to page-printing teleprinter format by automatic means (in case of 43 signals per line, no endof-line check is feasible). Hence Recommendation F.12 would seem to require some revision (maximum of 43 printable characters per line for the address).

7. Text (tenth and eleventh lines).	Text.
1000 DOLLARS CABLE TO NEW	FORWARD SOONEST PRESENT AC-
YORK THROUGH SWISS BANK CORPO-	COUNT BALANCE JONES NUMBER
RATION STOP PLEASE CABLE IF NOT	78A765
RECEIVED LOVE	

8. Signature (twelfth line).

Signature.

Before the signature, a space is transmitted at least five times, so that the signature stands out clearly.

	DADDY	JOHNSON	
9.	Collating (if required) (fifteenth line).	Collating.	
	COL LT RP20,00 67 1000	COL LT 78A765	
10. Line Y1			
	10.1 NNNN (end-of-message).	NNNN (end-of-message).	
	10.2 Ten letter-shift signals (end of tape).	Ten letter-shift signals (end of tape).	
	10.3 Time of transmission 1840.	Does not exist.	

(Suppl. 2)

Does not exist.

11. Lines Y2 and Y3 are set aside for the exchange of answer-back codes.

Does not exist, because station-to-station service.

Release of gentex communication.

# ANNEX 1

# Specimen text with operating signals shown by symbols

(Paper shift: 1.5 lines)

Line	Contents
X1	↑ ▷☆ <=
X2	$\uparrow$ 94 ↓ RA→NY→MRT→USA ↓ <=
X3	$\uparrow 4144 \downarrow A \rightarrow DARMST \rightarrow D \rightarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow = =$
1	↓ ZCZC→D ↑ 4144 ↓ A ↑ 1541 < ==
2	↓ UANY→HL→DPDA<≡
3	↓ JUGENHEIMBERGSTR→ $\uparrow$ 25→12→1826→ ↓ VIA→MACKAY→ < = = =
4	
5	
6	$\downarrow$ LT $\rightarrow$ RP $\uparrow$ 20,00 $\rightarrow$ $<$ $\equiv$
7	$\uparrow \rightarrow \downarrow MISS \rightarrow GISELA \rightarrow COHEN \rightarrow \uparrow 67 \rightarrow \downarrow BROADSTREET \rightarrow NEWYORK \rightarrow \uparrow \rightarrow < \equiv \equiv \equiv$
8	
9	
10	$\rightarrow$ 1000 $\rightarrow$ $\downarrow$ DOLLARS $\rightarrow$ CABLED $\rightarrow$ TO $\rightarrow$ NEWYORK $\rightarrow$ THROUGH $\rightarrow$ SWISS $\rightarrow$ BANK $\rightarrow$ < $\equiv$
11	$CORPORATION \rightarrow STOP \rightarrow PLEASE \rightarrow CABLE \rightarrow IF \rightarrow NOT \rightarrow RECEIVED \rightarrow LOVE \rightarrow < \equiv$
12	$\rightarrow \rightarrow \rightarrow \rightarrow \rightarrow DADDY \rightarrow < \equiv \equiv \equiv$
13	
14	
15	$COL \rightarrow LT \rightarrow RP \uparrow 20,00 \rightarrow 67 \rightarrow 1000 \rightarrow < \equiv \equiv$
16	
17	
18	
19	
20	
21	
22	
23	
24	
Y1	$\downarrow NNNN \rightarrow \downarrow \uparrow \uparrow 1840 \rightarrow \uparrow [2] \leq \equiv$
Y2	$\begin{array}{c} \uparrow \forall 4 \downarrow KA \rightarrow INI \rightarrow IIKI \rightarrow OSA \downarrow < \equiv \\ \land 4444 \downarrow A \downarrow DABMST \downarrow D \downarrow \downarrow \end{array}$
¥3	↑ 4144 ↓ A→DAKIYS I→D→ ↓

(Suppl. 2)

## ANNEX 2

# Specimen text without symbols for operating signals

(Paper shift: 1.5 lines)

▷☆
94RA NY MRT USA
4144A DARMST D
ZCZC D144A1541
UANY HL DPDA
JUGENHEIMBERGSTR 25 12 1826 VIA MACKAY

LT RP20,00

- MISS GISELA COHEN 67 BROADSTREET NEWYORK -

1000 DOLLARS CABLED TO NEWYORK THROUGH SWISS BANK CORPORATION STOP PLEASE CABLE IF NOT RECEIVED LOVE DADDY

.

COL LT RP20.00 67 1000

NNNN 1840 译的 94RA NY MRT USA 4144A DARMST D 441



ANNEX 3

.

Retransmission centre.

**T** 1 **O** 

Telegraph office not authorized for traffic Gentex to Retransmission System.

*Remarks.* — In case No. 4 the origin indicator of the telegram corresponds to that of the Gentex office which transmits directly to the Retransmission System. The tariff indicator "Q" (particular for accounting) must be used.

Scheme of the various origin indicators for telegrams transmitted in the direction Gentex-Retransmission System

### Supplement No. 3

STUDY GROUP X. — (Extract from Contribution COM I — No. 80)

# REPORT BY STUDY GROUP X ON THE QUESTION OF CHARGING FOR FULLY AUTOMATIC TELEX SERVICE

1. Recommendation U.1 (Red Book, Volume VII, page 117) states that:

"A 'call-connected' signal shall be returned over the backward signalling path to indicate that the call has been extended to a called subscriber. In the case of fully automatic switching between subscribers, this signal will start the equipment for determining the charge for the call."

However, the "call-connected" signal may be of long duration and this duration may vary according to the networks.

Furthermore, some networks delay the start of metering in order to avoid charging ineffective calls when preceded by a " call-connected " signal.

For these reasons, the start of charging for calling subscribers may differ considerably from one network to another; it has been possible to note differences of 15 seconds between these starts for different networks.

2. Study Group X considers that subscriber charging is an internal question: determination of the duration on which the charge levied from subscribers is to be based is a purely national matter. This is true also of the method for calculating this charge. International standardization is out of the question in view of the considerable expense which would be needed to convert equipment.

3. As regards international accounts, Recommendation F.67 gives Administrations a choice between three methods:

a) accounts based on the chargeable durations recorded for subscribers,

b) accounts based on the duration of calls measured on international circuits,

c) no accounting, or a lump-sum settlement.

4. For the more general case, which is when accounts are established by metering on international circuits (case 1b of Recommendation F.67), the following conditions are necessary:

- agreement on the start of the chargeable duration to be shown in the accounts,

- agreement on the end of the chargeable duration to be shown in the accounts,

- treatment of unsuccessful calls.

Study Group X limited its study to continental traffic.

5. Fixing of the start of the chargeable duration to be considered for the purposes of international accounting (continental traffic).

Study Group X proposes to fix the conventional start of the chargeable duration at 1.5 seconds after the start of the call-connected signal.

Note. — This interval of 1.5 seconds is allowed to enable the call-connected signal to be recognized.

If the outgoing country's metering equipment on international circuits starts working x seconds after this conventional start, it will be necessary to make an administrative adjustment to the accounts established according to meter readings, and the total duration read on the meters, in seconds, will be prolonged by the number of chargeable calls multiplied by x.

(Suppl. 3)

If the outgoing country's metering equipment on the international circuits starts working x seconds before this conventional start, it will be necessary to make an administrative adjustment to the accounts established according to meter readings, and the total durations read on the meters, in seconds, will be shortened by the number of chargeable calls multiplied by x.



The calls recognized as ineffective during this time x will be deducted from the international accounts.

This conventional start is valid both for calls charged on a minute-by-minute basis and for those charged by periodic pulse metering.

6. End of the chargeable duration to be considered for the purposes of international accounts

This will be situated between 300 and 1000 milliseconds after the start of the clearing signal. Study Group X is of opinion that administrative adjustments to cover this tolerance are not required.

## 7. Ineffective calls

A distinction should be made between:

- a) ineffective calls which have been recognized as such before the call has been put through (busy line, subscriber absent),
- b) unsuccessful connections in cases where the call has already been put through but subsequently the connection proves to be unsuccessful (no answer-back returned, poor transmission quality).

Study Group I has requested that networks built in future and those which are liable to be radically altered should be so designed as completely to avoid the charging of ineffective telex calls and unsuccessful telex connections.

8. In case a) (ineffective calls), the difficulties arise from the fact that some Administrations which use printed signal sequences to show unsuccessful conditions precede these sequences with the call-connected signal; they do this because they need the call-connected signal to control the starting of the motor of the calling apparatus (in some networks with type B signalling).

The United Kingdom had proposed (*Red Book*, Volume VII, page 119) that service sequences should be preceded by a special connection signal which would not entail charging. Unfortunately, several networks cannot accept this signal.

Hence, Study Group X is able to propose a formal recommendation to the effect that the service sequences sent during ineffective call conditions should never be preceded by a call-connection signal. It recognizes that this recommendation might not be followed for several years by one Administration which will have to await a reorganization of its telex network before being in a position to apply it.

9. As regards case b), unsuccessful connection, it must be assumed that this case corresponds to a faulty condition; if the call-connected signal has been sent correctly, automatic charging may be inevitable.

### Supplement No. 4

## FEDERAL REPUBLIC OF GERMANY. — (Extract from Contribution COM I — No. 28)

# SIMULTANEOUS PHOTOTELEGRAPH TRANSMISSION TO MULTIPLE DESTINATIONS

### 1. General principles

A special characteristic of the phototelegraph service is that phototelegraph transmissions are nearly always concentrated in a very limited time period, on the occasion of special events. The transmissions are often of the same pictures, which are sent by phototelegraphy from the place where a particular event takes place to press agencies located in various countries, so that these agencies may then distribute them to the newspapers which are their clients.

An international photo report is possible at present in practice only if the original pictures are sent to the agencies by a phototelegraph transmitter which makes a simultaneous transmission to the agencies; these in turn redirect them—without retransmission—to the interested destinations (newspapers) by means of other distributing devices (see Annex hereto). Retransmission by the agencies would mean not only an intolerable loss of time, but also an appreciable reduction in picture quality. Moreover, retransmission is impossible if the receiving apparatus does not work on the photographic principle.

Hence, the Federal German Administration feels that there is a real need to admit phototelegraph transmissions to multiple destinations, in which all the receiving stations concerned can receive the same picture at the same time, and that international regulations should be drafted to cover this point.

### 2. Routing of traffic

Experience in recent years has shown

— that by having phototelegraph transmissions to multiple destinations, a growing number of users are served (simultaneous transmission to more than 100 destinations located in different countries has been carried out on several occasions);

- that in such cases, two or more distribution points are connected in series;

- that such collective links often exist for hours on end;

— that the international portion of collective links, the destinations being above all press agencies, remains unchanged in general;

— that the national portion of such collective links are, on the other hand, frequently changed between the various phototelegraph transmissions because certain receiving stations are disconnected or have been newly added (the decision in this respect affects in each case the agency whose clients are the owners of the receiving stations concerned).

The Federal German Administration considers that international transmissions to multiple destinations should always be effected via distribution equipment served by Administrations or recognized private operating Agencies, and that the public phototelegraph stations and press agencies concerned of the country in question should be connected to it. As regards private phototelegraph stations, the Federal German Administration notes that bridging towards such stations is effected in different ways according to the country. In some countries, private phototelegraph stations are connected to distribution equipment established by the Administration (see Annex, Country A)—as in the case with the area under the jurisdiction of the Federal German Administration. Some other Administrations allow press agencies to distribute the phototelegraph transmissions they receive by means of their own junction devices (see Annex, country B). The Federal German Administration considers that the question of distribution in the various countries is not a purely national question, for the method of transmission entailing transmission to multiple destinations depends on it absolutely. Reliable routing of traffic can be obtained only if all the countries concerned apply a standard operating system.

The Federal German Administration is fully aware of certain operating advantages to be gained from the installation of distribution equipment in agencies:

- the activity of the Administration is limited, in such cases, to making individual communications available;
- there is no loss of time to the Administration for making available distribution circuits, since individual calls are set up successively towards the agency and are charged for from that moment;
- the agency commits itself to looking after operation in its sector; its clients are not known to the transmitting station. If several agencies are interested, the direction of operation is distributed among them by groups;
- the transmitting station has only to check whether all the agencies, and public phototelegraph stations (if the latter are involved) concerned, announce themselves as being ready for service.

Despite these advantages, the Federal German Administration hesitates to let the agencies themselves use private equipment to ensure interconnection of the transmission paths requested for the following reasons:

- distribution equipment served by the subscriber makes it possible for inadmissible connections to be set up at any time;
- this equipment implies the risk that the quality of transmission on the public network may be reduced;
- in particular, it is impossible to prevent calls set up on the public network from being interconnected with leased circuits if private distribution equipment is allowed.

Hence, the Federal German Administration is in favour of the operating method shown in the Annex under countries A and C. With this method, the sending station alone is the controlling station. The agencies are connected here—only for check reception—like any other subscriber. There is no possibility of direct communication between the agency and its clients. If changes have to be made in the national part of the collective link, the agencies must request them at the competent phototelegraph position. In view of the large number of subscribers, it is not possible—owing to lack of time and to language difficulties—to request all the subscribers whether they are ready for service. Moreover, these subscribers are generally unknown to the sending station. The latter must, at the start of the transmission to multiple destinations, limit itself to checking the availability for service of the direct connection fed by it towards the nodal points at the end of the international circuits leaving the country of origin. Moreover, the service may be carried out in one direction only, a procedure which is applied successfully also in the radio service. It should only be admitted that agencies and public phototelegraph stations be able, in the case of irregularities, to call the sending station on the call to multiple destinations.

The sending station should request from the Administration of the country of origin the international call with the incoming country or an international call to multiple destinations if several incoming countries are concerned, and mention in the request of press agencies and public photo-

(Suppl. 4)

telegraph stations which will take part in the collective reception. It should be left to the Administration of the country of origin to decide, when an international call is put through to multiple destinations, whether bridging towards the various incoming countries should be established by direct connections or whether it should make use of a transit country (see Annex, country C). If additional bridging is required in an incoming country, the agency concerned should request it of the Administration of this incoming country.

### 3. Charges

If a phototelegraph transmission is carried out on an international trunk circuit and if there is a bridging towards several private phototelegraph stations in the sector of the incoming Administration, the transmission operation should be considered as being in two sections. Transmission over the international section should be considered as being concluded by the reception in the agency designated by the sending station. For the national call to multiple destinations requested by the agency towards its clients, the agency must defray the charges since it has requested the calls. The charges for provision of an international trunk circuit should be doubled in the incoming country if, in addition to the agency, a public phototelegraph station takes part in the call in the incoming country.

The same procedure should be followed when a collective link is made available towards several incoming countries. It should make no difference if a direct trunk circuit or transit across a country A is used to reach a country C (see Annex). For each direction of distribution, the charge for provision of the international call should be multiplied by the number of phototelegraph stations connected direct in the incoming countries (i.e. agencies and public phototelegraph stations). Thus, for the calls shown in the upper part of the Annex below, twice the charge should be collected for the phototelegraph transmission towards country A and once the charge for a call towards country C when the caller wishes to have a simultaneous call with the agency and the public phototelegraph station in country A, and with the agency in country C.



= Receiver

ANNEX

(Suppl. 4)

The Federal German Administration considers that, with such regulations, the higher cost in time involved by the provision of a phototelegraph call to multiple destinations may be considered as compensated. The sending station has the same costs as if the picture were transmitted successively to the required destinations. Hence, it benefits from the saving in time due to the simultaneous transmission to a large number of receiving stations.

The Federal German Administration considers the charging procedure for the addition of one or more calls to multiple destinations in the country of destination to be a purely national question for the incoming Administration. It does not consider it necessary to have a supplementary category charge for phototelegraph transmissions to multiple destinations.

Printed in Switzerland

.

ø .0

2