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PART V

SUPPLEMENTS TO THE SERIES E RECOMMENDATIONS RELATING TO THE OPERATION OF THE

INTERNATIONAL SERVICE

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Supplement No. 1

LIST OF POSSIBLE SUPPLEMENTARY TELEPHONE SERVICES

WHICH MAY BE OFFERED TO SUBSCRIBERS

The descriptions given here are considered provisional and require further study.

Numbers in parentheses following the designation of most services refer to the CEPT handbook [1] where detailed operational requirements are given.

1 Supplementary services which might have implications for the international service

§§ 1.1 to 1.11 refer to services which might be standardized and which do not require technical studies.

1.1 **absent subscriber service** (4.1)

F: service des abonnes absents

S: servicio de abonado ausente

1) *Definition*

The possibility for a subscriber who cannot answer his calls, because he is absent, to divert these calls to:

— a manual answering service ,

— another subscriber’s number or

— an announcement

2) *Description*

A subscriber who knows he will be absent from his telephone can instruct the exchange to divert his incoming calls to:

— a manual answering service,

— another subscriber’s number or

— an announcement giving appropriate information.

Some forms of the service are available to subscribers without a preliminary agreement with the Administration, but other forms require such an agreement. An indication that the service is in operation should be given to the diverting subscriber. Outgoing calls are available normally.

3) *Remarks*

CCITT should undertake studies on:

— indications given to calling and called subscriber;

— additional charges if any when diverting the call to a distant number.

4) *Market data*

Generally considered of medium interest. Terminating equipment providing diversion to announcements in widespread use in some countries.

5) *General operational requirements*

If diverting a call lengthens the post-dialling delay experienced by a caller, it may be necessary to advise the caller that his call is being diverted.

If diverting a call would result in the caller having to pay additional charges, a warning should be given to the caller before the call is diverted.

To minimize complaints from called subscribers and callers for wrongly programmed call transfers, some check should be provided.

Difficulties may arise if a subscriber receiving diverted calls diverts them again to yet another number.

Some subscribers may, instead of using an absent subscriber service, use answering machines on their own premises. Some Administrations may also decide to provide such facilities at the exchange. The degree of sophistication provided may vary considerably. Some may only give a fixed announcement common to all customers using the service, others may allow messages to be recorded. Which type is used and to what extent may vary from one country to another according to the technological or social situation.

A large majority of customers will accept a reply by a recorded announcement as a satisfactory alternative to an operator.

Certain categories of subscribers (e.g. doctors) have special requirements and prefer a service especially adapted to their professional field. This may be a manual answering service provided by the Administration, or by a private agency or special arrangements for diversion to other numbers.

Calls should only be diverted if the resulting standards of transmission are adequate.

When the service is activated the special dial tone may be given to the controlling subscriber.

6) *Charging principles*

1.2 **do not disturb service** (5.1)

F: service ‘‘ne pas d´eranger’’

S: servicio ‘‘no molestar’’

1) *Definition*

The possibility for a subscriber, who does not wish to answer his telephone during a period of time, to divert incoming calls.

2) *Description*

Do not disturb services are used by subscribers that do not wish to be disturbed by incoming calls for a certain period of time. They can request that incoming calls are diverted to an operator, an answering machine in the exchange, or another telephone number.

The diversion can be switched on and off by an operator (manual) or by the subscriber himself (automatic).

3) *Remarks*

4) *Market data*

A little market information is available but it is considered to be of medium interest only. Nevertheless this is a service which should be available to customers.

5) *General operational requirements*

It is in the interest of the Administration if calling subscribers can leave messages and be informed:

— of the reason for call diversion

— when the number can be reached again

— where more information can be obtained.

In this way incoming calls are answered and can be charged and ineffective new attempts are avoided.

Automatic deactivation is desirable because no indication is given to the called subscriber when incoming calls arrive.

Administrations should provide an attractive form of do not disturb service in order to avoid undesirable subscriber forms of the service.

The time during which a do not disturb service can be activated should be limited.

The automatic forms of the service are preferred.

Outgoing calls should normally be possible.

When the service is activated a special dial tone may be given for outgoing calls reminding the service holder of the special condition of his line.

If during a period when the facility is in operation, the renter requires to know whether a message has been left, a special code may be allocated for this purpose, or a password agreed with the exchange may be used.

6) *Charging principles*

Charging principles should be in accordance with Recommendation E.232.

1.3 **diversion if number busy service** (6.3)

F: service de transfert d'appel en cas de num´ero occup´e

S: servicio de transferencia de llamadas en caso de l´inea ocupada (transferencia por ocupaci´on)

1) *Definition*

The possibility for a subscriber who cannot receive calls, because his number is busy, to have these calls diverted.

2) *Description*

A subscriber who does not wish incoming calls to his number to be unsuccessful because he is busy speaking, can instruct the exchange to immediately divert his incoming calls to either a manual answering service, or another subscriber's number.

Some forms of service are available to subscribers without prearrangement with the Administration but other forms require prearrangement. The other subscriber's number may be one number, one number of a predetermined group or the first available number in a sequence.

3) *Remarks*

CCITT should undertake studies on:

— indication given to calling and called subscriber;

— additional charges, if any, when diversion is to a distant subscriber number.

4) *Market data*

5) *General operational requirements*

As services permit the completion of calls which would otherwise have met busy conditions, increased revenue and a better use of the available equipment may result.

Services may be of value for a subscriber whose line or lines are occasionally overloaded.

In conventional switching systems it is not possible to change the routing of a call in the switching network itself. It is therefore necessary in those circumstances to divert it from the diverting number. If limitations of transmission or charging justify it, it may be necessary to refuse a diversion request to a nominated number too far from the diverting exchange, and possibly divert the call to the operator, or a recorded announcement.

While a service is activated under subscriber's control it may be desirable to return a warning indication to the diverting termination.

The number to which the incoming call is diverted need not belong to the controlling subscriber.

It may be necessary to advise the caller that his call is being diverted if the post-dialling delay is lengthened by diversion.

From the Administration’s point of view use of a service should not be allowed to perpetuate the unsatisfactory situation where a subscriber has basically an inadequate incoming traffic capacity.

An appropriate indication should be returned to the caller if diversion causes call charges greater than those that would have applied if the call had been connected normally to the diverting number.

6) *Charging principles* .bp

1.4 **customer dialled operator assisted call**

F: communication ´etablie par l’abonn´e et assist´ee par une op´eratrice

S: asistencia de operadora en comunicaciones establecidas por el abonado

1) *Definition*

With prior indication from a subscriber, an operator may be associated with an automatically dialled call at the appropriate stage to determine if the wanted person is available.

The subscriber gives this indication as part of his call set-up procedure

Implementation requires special equipment in the long-distance switching equipment and associated operator positions.

2) *Description*

3) *Remarks*

4) *Market data*

Of low interest to customers. However, some Administrations are introducing this service to increase operator productivity.

5) *General operational requirements*

6) *Charging principles*

1.5 **freephone service** (7.5)

F: service ‘‘libre-appel’’

S: servicio de cobro revertido autom´atico

1) *Definition*

A subscriber can be allocated a special (freephone) number and the charge for all calls to this number are paid by him instead of by the callers.

2) *Description*

Subscribers who wish to pay for calls made to them can rent a special freephone number. Calls made to this freephone number are routed either to the subscriber’s existing telephone number or on to access lines specifically provided for the purpose of receiving freephone calls.

3) *Remarks*

A freephone service can be provided across international boundaries. CCITT recommendations regarding billing and accounting arrangements may be required.

Where an international freephone service is provided i.e. where callers in one country can, by dialling a freephone number in that country, gain access to a destination address (service provider) in another country, international requirements dictate that the called number must return an answer signal over the international network to the freephone network of the originating country.

Many networks are protected by a ‘‘time-out’’ where calls are cleared if the answer signal is not received within a pre-determined time. Depending on the arrangements by which freephone service is provided the ‘‘time-out’’ condition may need to be removed from the part of the network between the caller and the equipment offering the basic freephone facility in his country. Basic freephone facilities can be provided by a freephone exchange or network of exchanges to provide freephone number translation and call routing, absorption of answer billing/accounting information and network management statistics. These facilities may be provided as an integral part of modern digital networks.

Freephone subscribers may place particular value on numbers which are easy to remember. However, this may entail the allocation of hypothetical numbers and the provision of translation facilities which may only prove economic when sited at nodal centres

4) *Market data*

Already exists in some countries and is becoming increasingly popular.

5) *General operational requirements*

The freephone number format should be consistent with the national number format of the country. The freephone code should be standard for the whole of the country (e.g. 800 in USA) and where possible the same code should be used to provide national and international freephone service.

Network management arrangements should pay particular attention to the need to prevent congestion in the network, particularly in relation to applications involving response to television quiz games or advertising campaigns, etc.

Subscribers should be required to rent adequate access lines to meet demand and minimize ineffective attempts. The freephone service is liable to misuse and subscribers should be warned of this liability and expect to bear any resulting call charges. Regards should be made to the limitation of payphones in the various systems.

6) *Charging principles*

6.1) National charging arrangements will depend on the limitations of the arrangements used to provide the freephone facilities. A single freephone centre may for example use path of entry to determine the area from which the call originated and charge accordingly.

A freephone network may determine charging on the basis of distance between the node at which the freephone call enters the network and the node in which the freephone service is connected. There are other alternatives.

6.2) International charging arrangements require a method of billing a service provider in another country and may also require special accounting arrangements. There are 3 basic methods:

a) The originating Administration provides the destination Administration with the billing information relating to freephone calls to service providers in the destination country. The destination Administration would then bill the service provider for call charges and account the calls as if they were originated in the destination country, (a procedure similar to the billing and accounting

of collect calls). A special accounting rate might be required to reimburse the country of origin for the cost of providing the freephone facility.

b) The originating Administration would require the service provider in the destination country to provide a legal representative in the country of origin to which the bill for call charges could be sent. The calls would be accounted as ordinary outgoing international direct dialling (IDD) calls.

c) The originating Administration would send the bill directly to the service provider’s address in the destination country. The calls will be accounted as ordinary IDD calls.

1.6 **wide area telephone service** (7.6)

F: service t´el´ephonique à l’int´erieur d’une zone d´etermin´ee

S: servicio telef´onico concertado en grandes zonas

1) *Definition*

For a flat rate charge, a subscriber may make an unlimited number of calls within a prescribed area from a particular telephone termination without the registration of call charges.

2) *Description*

3) *Remarks*

4) *Market data*

Already exists and very popular in some countries. Appears to be of interest also in other countries.

5) *General operational requirements*

6) *Charging principles* .bp

1.7 **automatic transferred debiting of charges** (7.4)

F: service de transfert automatique d'imputation de taxes

S: servicio de transferencia autom´atica de las tasas imputadas

1) *Definition*

The automatic debiting to a subscriber's account of charges for calls made from any telephone by persons nominated by that subscriber and identified by the use of a secret code

This is similar to the existing credit card service but does not involve an operator. It must be provided for throughout a network.

2) *Description*

3) *Remarks*

For international use there would have to be a study of changes to operating and accounting procedures for manual credit card service

4) *Market data*

5) *General operational requirements*

6) *Charging principles*

1.8 **radio paging** (10.3)

F: service radio´electrique d'appel unidirectionnel

S: servicio m´ovil de aviso a personas (servicio de radiob´usqueda)

1) *Definition*

The service provides the subscriber with the facility, by means of portable equipment used in a given area, to receive an alert by radio initiated by any telephone in a public network.

The alert can be accompanied by a spoken message or visual coded display either entered by the caller or generated within the network.

2) *Description*

The mobile receiving equipment of a pocket sized nature has a unique identity enabling it to be selectively called using a common radio channel.

An alert is initiated by a telephone on a public network using a direct dialling number, with or without the requirement to pass additional code digits on completion of the call through

the public network. Alerts can be made to one or more receivers using a single number and restricted to predetermined geographical zones in agreement with the renter.

Additional alerts with distinctive tones can be incorporated in a single receiver but individually activated by separate calling numbers.

3) *Remarks*

Under study in Study Group II

CCIR standardized in 1982 a uni-directional signalling system radio-paging code No. 1 to use on the radio channels for alerting receivers and providing text messages.

CCITT should undertake studies on international access to national radio-paging services with particular attention to the indication given to the caller.

4) *Market data*

Already exists in some countries and is becoming increasingly popular.

5) *General operational requirements*

The service should provide access to a radiopager using a normal telephone number and advise the caller that the pager is being automatically called. In the case of a manual service the caller should be advised that the pager will be called and the appropriate voice message or coded display transmitted.

6) *Charging principles*

When used internationally the caller should be charged in accordance with international direct dialling (IDD) service and standard called subscriber answered conditions returned. The subscriber may be charged for having the service. This special charge may be fixed nationally.

1.9 **direct dialling-in** (12.1)

F: s´election directe d'un poste suppl´ementaire

S: marcaci´on directa de extensiones

1) *Definition*

Calls can be dialled from a telephone line connected to the public network directly to extensions in a PABX

2) *Description*

Direct Dialling-In (DDI) can be realized when the last digits in the directory number of a PABX correspond to the number series of the extensions within the PABX. These last digits are sent from the exchange to the PABX, which automatically establishes a connection to the extension without assistance of the PABX operator.

3) *Remarks*

The dialled number must not exceed the number of digits of international numbers (Recommendation E.163).

4) *Market data*

Already exists in many countries.

5) *General operational requirements*

A call to a number in the DDI numbering range shall be routed to the appropriate extension at the PABX

Trunk offering may be required via the DDI route from an operator of the public telephone network to a busy extension line, irrespective of whether the extension line is busy with a call in the PABX or with an external call to or from the public telephone network. The call from the operator of the public telephone network is then to be routed to an appropriate PABX operator or extension.

If a call is made by sending incomplete address information, the connection will be released by time supervision within the public exchange. A corresponding time supervision within the PABX may also be convenient.

Calls to numbers outside a DDI numbering plan within the public exchange and calls to unassigned numbers within an exchange DDI numbering range may immediately be re-routed according to normal public exchange interception rules.

Failures in the PABX causing inability to receive incoming calls should be signalled from the PABX to the public exchange by suitable means. The public exchange should return to callers the same indication as given on a call to a faulty subscribers line.

6) *Charging principles*

Note — Numbers 1.10 to 1.20 (below) refer to services which might be standardized but require further studies in CCITT Study Groups before being handled in Study Group II.

1.10 **incoming call barring** (3.2)

F: service de limitation des appels d'arriv´ee

S: servicio de prohibici´on de llamadas entrantes

1) *Definition*

The ability of the Administration or the subscriber to prevent all or certain incoming calls to a telephone line.

No variants identified so far.

2) *Description*

3) *Remarks*

This service can cause multiple repeat attempts and/or unnecessary use of operator services.

CCITT should undertake studies on:

— indications given to the calling subscriber;

— interworking between this service and the absent subscriber service and do not disturb service;

— interexchange signalling if only calls from certain numbers should be barred.

4) *Market data*

5) *General operational requirements*

6) *Charging principles*

1.11 **registration of incoming calls** (4.2)

F: service d'enregistrement de communications d'arriv´ee

S: servicio de registro de llamadas entrantes

1) *Definition*

The registration of details of all incoming calls to a particular telephone line (e.g. caller's number, time ringing commences, time of answer or time of abandonment, time of release, but excluding the recording of speech).

2) *Description*

3) *Remarks*

CCITT should undertake studies on interexchange signalling allowing sending of different kinds of information.

4) *Market data*

5) *General operational requirements*

Subject to national law and regulations concerning secrecy in telecommunications the service could be provided when required by connection of a device in the exchange to the subscriber's line or by program instruction.

This service could be useful to subscribers (e.g. emergency services) who may require detailed information of incoming calls.

Provision of the service could possibly act as a deterrent to malicious or nuisance callers

6) *Charging principles*

1.12 **completion of calls to busy subscribers service** (6.1)

F: service d'aboutissement d'appels adress´es à des abonn´es occup´es

S: servicio de compleci´on de llamadas a abonado ocupado

1) *Definition*

The possibility for a subscriber who reaches a busy number to have the call completed when the line becomes free without generating a second call or waiting on the line.

2) *Description*

The subscriber who has found the called party busy can activate the service during or after the call and wait for establishment of the connection.

When the service is activated, the line of the called party is tested. When this line becomes free the calling party is rung and when he answers the called party is rung. The time during which the line of the called party is tested is limited. If the calling party is found busy the service is deactivated.

The service may be manual, semiautomatic or automatic.

3) *Remarks*

Applications in PBXs and local public exchanges are suitable but, for long-distance and international use, if the service is controlled only from the originating exchange, it may cause difficulties, such as:

— long holding times;

— multiple automatic reattempts.

CCITT should undertake studies on interexchange signalling to overcome the disadvantages mentioned.

4) *Market data*

5) *General operational requirements*

According to the manner of realization of the services, consideration should be given to:

— the length of the time during which the system attempts to set up a call,

— the frequency of the attempts to complete a call in order to avoid congesting the network unnecessarily,

— the recall sequence to ensure that the calling subscriber has answered the recall before the called subscriber is rung.

Special measures may be necessary to ensure that the operation of the service does not interfere with normal outgoing and incoming service on both lines.

Special consideration should be given to the requirements when one or both subscribers are involved in diversion arrangements.

Special consideration should be given to the provision of the services to special categories of subscriber lines, e.g. payphones, PBX lines with DDI, etc.

It appears more convenient to adopt a realization of the service based on a continuous check of the called subscriber’s state in order to set up the connection as soon as possible (called party free). This realization is only feasible for subscribers belonging to the same exchange or different exchanges of an SPC type and connected by advanced signalling systems. This condition is not, at present, the general case.

Though provision of the service is likely to be advantageous both from the Administration and the subscriber’s point of view, the numerous operational and technical problems associated with the automatic services will make them very difficult to provide in the near future.

When the service is activated the line of the called party is continuously tested. When this line becomes free the calling party is rung and when he answers the called party is rung.

It may be necessary to advise the calling party which call completion is being offered (if, for example, the service has been activated on more than one call).

The number of call completions activated at the same time to the line of a called busy party may be limited, e.g. to one.

6) *Charging principles*

1.13 **automatic transferred charge call** (7.9)

F: service d'appel avec transfert automatique de taxe

S: servicio de transferencia autom´atica de la tasa de la comunicaci´on

1) *Definition*

With prior indication and mutual agreement between the two parties, the automatic debiting to a called subscriber's account of relevant charges for a call made to his telephone number.

No variants have been identified so far.

2) *Description*

3) *Remarks*

CCITT should undertake studies on:

— how the service is established;

— agreement procedures between the calling and the called party (additional interexchange signalling may be required).

4) *Market data*

5) *General operational requirements*

6) *Charging principles*

1.14 **remote call forwarding** (7.11)

F: service de r´eacheminement des appels

S: servicio de teletransferencia de llamadas

1) *Definition*

The possibility for a subscriber to obtain a telephone number in another area and have all calls to that number automatically forwarded at his cost to a telephone number in his premises.

2) *Description*

A subscriber who wants to receive calls at his premises at low cost for callers in a certain (distant) area can be allocated a telephone number in that area. All calls received by the

allocated number are automatically forwarded through the public switched network to a telephone number at the subscriber's premises. The allocated number can be a telephone number in another country and the service will only be available on pre-arrangement with the Administration concerned.

3) *Remarks*

4) *Market data*

5) *General operational requirements*

The provision of the service requires an arrangement between the subscriber and the Administration concerned.

Forwarded calls are treated as normal incoming calls. The calling subscriber may be informed by a recorded announcement that his call will be forwarded without extra cost.

In the case of international use, any promotional activities aimed at customers abroad should be coordinated among Administrations concerned to avoid problems.

Fowarding should be possible to any telephone number except payphones subject to compatibility limitation. Due regard must be given to transmission limitations. It may not be suitable for data transmission.

Sufficient remote call forwarding (RCF) features and facilities are necessary so as not to interfere with or impair any services offered by the telephone company. Call forwarding should not be offered again at the terminating telephone.

The allocated telephone number may appear in its local directory listing associated with the name and address of the terminating location.

6) *Charging principles*

The caller is charged for the call to the allocated number only; the charge related to the forwarded part of the call is applied to the subscriber having the service.

— As the service is only available on pre-arrangement with the Administration, a service provision charge and a recurring rental charge may be applied.

— The charge may be related to the number of lines provided with the service.

1.15 **three party services** (11.1)

F: service comportant un troisi`eme correspondant

S: servicio tripartito

1) *Definition*

The possibility for a busy subscriber to hold the existing call and make a call to a third party. The following arrangements may then be possible: the ability to switch between the two calls, the introduction of a common speech path between the three parties and the connection of the other two parties.

2) *Description*

These services will permit a subscriber to place an existing call into a suspended state and make a call to a third party. When the third party answers, the subscriber may then make use of the following options, as available, in any appropriate order:

— switch from one call to the other as required, secrecy being provided between the two calls;

— introduce a common (three-way) speech path;

— connect the other two parties together.

3) *Remarks*

CCITT should undertake study on:

— transmission limitations;

— charging and accounting when the other two parties enter into communication.

4) *Market data*

Widely used in some countries by business subscribers.

5) *General operational requirements*

With this service the subscriber may be involved in two simultaneous outgoing calls and it will be necessary to provide the ability to register charges accurately under these conditions.

Difficulties may be experienced in recording charges for this service on a meter situated at the subscriber’s premises.

If the other parties to a three party service call also have this service available it is possible for subscribers to establish a complex chain of interconnections. It may be necessary to prevent or limit such interconnections.

The hold-for-enquiry mode in its simple form would permit a busy subscriber to make an enquiry call, then release it and return to the original call. However, having the ability to retain both calls, and switch from one to the other as required, will increase considerably the usefulness of this service. Another feature which might prove useful would enable the user to retain the enquiry call but release the original call, i.e. to specify which of the two calls should be released.

It is desirable that the subscribers should be able to revert from three way conversation to the normal ‘‘single call’’ state and subsequently use the three party service again.

All three party services require the register recall feature.

Hold for enquiry

An enquiry call may be made to any subscriber’s number, provided such a call is not inhibited by another service.

If Subscriber A should clear whilst either the original call or the enquiry call is in the suspended call path state, calling conditions shall be applied to Subscriber A's terminal. On answer the call shall proceed as if Subscriber A had released the other

call and switched to the held call. If Subscriber A does not answer within a specified period the held subscriber shall be advised that Subscriber A has cleared.

Three-way conversation

When Subscriber A is connected by a speech path to Subscriber B or C, the other connection being held, it shall be possible for Subscriber A to establish a 3-way conversation and subsequently revert to the enquiry mode enquiry shall then be available.

If Subscriber A should clear during a 3-way conversation, then the call paths shall be released. If Subscriber B or C should clear, the connection between A and the other subscriber should revert to that appropriate for a normal call.

Transfer of an established call

When the hold-for-enquiry option only is being employed, it shall be possible for Subscriber A to signal that the transfer of the held call to the subscriber to which he is connected by a call path is required.

Following the procedure described, the elected subscriber only shall receive a recorded announcement informing him that he has been nominated to pay call charges for the transferred call and advising him on the signal to give if he agrees to pay call charges. If he does not agree he should clear. If he agrees, a call path shall be established between B and C, the charges for this call being debited to whichever of these is the elected subscriber, and Subscriber A shall be released.

If a clear condition from the elected subscriber is detected the connections between A, B and C shall be released.

6) *Charging principles*

The subscriber originating a call, whether an original or enquiry call, shall incur the normal charges for that call.

Periods when a subscriber is in the suspended call path state shall be considered as chargeable time.

It shall be possible to impose, in addition to normal call charges as described, a fixed fee debited to Subscriber A on selection of any one of the three options available. The fee shall be determined by:

i) the option selected;

ii) any previous option selected.

In addition to the call fixed fee charges, it should be possible to impose on Subscriber A a periodic charge while hold-for-enquiry or 3-party connection options are in use. It shall be possible to apply different periodic charges to each of these options.

When a call is released, charging for that call shall cease.

Following the call transfer, charges shall be levied against the paying subscriber at the rate applicable to a call set up normally between the 2 subscribers.

1.16 **conference call services** (11.2)

F: service de communication conf˝erence

S: servicio de comunicaci´on pluripartita (o de conferencia m´ultiple)

1) *Definition*

The service provides the possibility to connect a number of specified subscribers on the same telephone call.

2) *Description*

These services enable a subscriber to establish connections simultaneously with more than one subscriber using a common speech path. The calls may be set up by an operator, or the information for setting up the call may be registered by the Administration, but leaving it to the subscriber either to activate the call or to control it completely. Where the services are fully subscriber controlled, the calls can be set up simultaneously or sequentially.

Conference calls are normally of two types:

— bidirectional calls in which each participant can listen and speak whenever he wishes to intervene in the conversation;

— unidirectional calls in which only one of the participants can speak, the other participants being able only to listen.

However, a conference call may consist of a combination of both types of call defined above.

3) *Remarks*

4) *Market data*

5) *General operational requirements*

There seems to be a need in future switching systems for an automatic service which does not require operator assistance in setting up conference calls. Any such automatic service should provide security facilities to prevent unauthorized access.

The number of participants may be limited for operation and/or transmission or other technical reasons.

There may be a certain demand for connection and disconnection of participants during a conference call in progress.

The customer is used to certain conveniences offered by operator connected conference calls. Control procedures in automatic service should therefore be both clear and simple.

6) *Charging principles*

(See Recommendations E.151 and D.110.)

1.17 **calling number indication** (14.3)

F: service d'indication du num´ero du demandeur

S: servicio de indicaci´on del n´umero del abonado que llama

1) *Definition*

A service whereby the calling subscriber's number can be identified by means of a visual or verbal indication at the called terminal.

No variants have been identified so far.

2) *Description*

3) *Remarks*

The service could cause ineffective use of the network (repeat attempts or long holding times) should the called subscriber refuse to answer the call because he is informed of the calling subscriber's number.

The service requires extended interexchange and local network signalling to enable transmission of the calling subscriber's number.

4) *Market data*

1.18 **subscriber's alpha-numerical display** (14.4)

F: service d'affichage alphanum´erique de renseignements relatifs aux abonn´es

S: servicio de visualizaci´on alfanumerica en el aparato telef´onico

1) *Definition*

The visual display at a subscriber's telephone terminal of information sent to or received from the public telephone network. This display comprises outgoing and/or incoming information.

No variants have been identified so far.

2) *Description*

3) *Remarks*

Applications regarding outgoing information are suitable.

Regarding incoming information, the same problem applies for this service as for the calling number indication service.

There may also be a need to indicate the calling subscriber's name.

4) *Market data* .bp

1.19 **private number ringing signal**

F: service de signal d'appel d'un num´ero particulier

S: servicio de señal de llamada individualizada

1) *Definition*

Each member of a family is given different identification (ID) codes. If the calling party wants a particular member he dials the ID code related to that member. The called member can know he is wanted by a particular kind of ringing signal.

2) *Description*

3) *Remarks*

Requires extended interexchange and possibly local network signalling.

4) *Market data*

1.20 **voice mailbox service (VMS)**

F: service de boite aux lettres t´el´ephonique

S: servicio de buz´on telef´onico

1) *Definition*

(Under study.)

2) *General Description*

Recent advances in technology have allowed the voice mailbox to evolve and market research has indicated a potential for this type of service.

The renter of a mailbox (subscriber) is provided with a mailbox telephone number which he can publicize to customers, clients, business associates, friends, etc.

Callers are answered by a personalized announcement which can either invite the caller to leave a message or impart information.

As an optional feature of VMS, the mailbox may be programmed to alert a radiopager each time a message is left in the mailbox or to call certain telephone numbers and deliver messages.

The subscriber may retrieve his messages either from a push button phone by dialling the same number as callers and then entering a security code and system command or, by dialling an alternative number (known only to him) from a rotary dial phone.

Retrieval from push button phones allows sophisticated control of message playback and mailbox facilities, e.g. repeat message, retain message, switch pager on/off, switch recording service on/off, change personalized announcement, etc. These facilities can be provided from rotary dial phones if the subscriber has a hand-held tone generator. Otherwise retrieval from rotary dial phones may be limited to simple one-time playback of all messages in the mailbox.

Systems may allow tailoring of individual mailboxes to meet subscribers' needs regarding message length, number of messages stored at any one time, retention period, etc.

The number of simultaneous calls to a subscriber's mailbox is limited only by the capacity of the VMS equipment, e.g. a 32 port system could theoretically be handling 32 simultaneous calls to the same mailbox number.

3) *Remarks*

VMS offers the following benefits:

— elimination of successive reciprocal call attempts in order to establish a single communication;

— elimination of time-zone constraints;

— optional indication on a radiopager whenever a message is left;

— retrieval at the convenience of the subscriber;

— access to people on the move;

— 24-hour service;

— no need to talk to callers directly;

— messages heard in the caller’s own voice.

4) *Market data*

Although services may initially have close ties with radiopaging, they are likely to rapidly evolve a separate identity and be sold on the strength of their own intrinsic benefits.

5) *General operational requirements*

(Under study.)

6) *Charging principles*

Initially subsets of a wide range of facilities may be contained in the service offerings at fixed periodic tariffs. The offerings may be elaborated in the light of customer reaction. The tariffs may be increased as additional facilities are opted for and usage sensitive billing may be introduced to account for variations in message length, message holding time, overcalls and computer resource usage.

2 Supplementary services without implications for the international service

2.1 **abbreviated dialling services** (1.1)

F: service de num´erotation abr´eg´ee

S: servicio de marcaci´on abreviada

1) *Definition*

The possibility for a subscriber to make a call by dialling a short code instead of the full telephone number.

2) *Description*

Subscribers may have certain telephone numbers stored by the telephone network and each of these numbers is given a corresponding abbreviated number. The stored numbers may be local, national and international. When a short code which includes the abbreviated number is dialled, it is converted by the network into the called subscriber’s telephone number. The call is then processed as a normal telephone call. Abbreviated dialling may be available on demand or on a subscription basis. The number registration can be done either by the subscriber, or, on request, by the Administration.

3) *Remarks*

Although this service can be provided from the exchange, in many cases it can be provided by sophisticated subscriber terminals.

4) *Market data*

Many Administrations are planning to provide this service.

2.2 **alarm call services** (2.1)

F: service du r´eveil

S: servicio de despertador

1) *Definition*

The possibility for a user to cause an alarm call or calls to be made to his line at a time or times specified in advance by him, and to hear an appropriate announcement when the call is answered.

2) *Description*

The user can order the network to call his line at times specified by him; upon answer of the call the user will get an appropriate verbal announcement indicating the character of the call.

The alarm call service may be offered on a manual, semiautomatic or automatic basis.

To meet different subscriber needs the services may be offered on either an occasional or regular use basis, viz:

— The occasional alarm call service covers only the 24-hour period immediately following the time at which the call was booked. The subscriber, however, may have the possibility to order more than one alarm call to be made to his line within a 24-hour period.

— The regular alarm call service covers a number of 24-hour periods. The subscriber can order the alarm calls to be made either every day for a specified number of days, or on specified days of the calendar week for a specified number of weeks. The days of a calendar week may be chosen as consecutive days or according to an established order.

The services are available to subscribers without prearrangement with the Administration.

In principle, the manual and the semiautomatic forms of the service offer the same possibilities as the automatic versions. Unlike the automatic forms, however, the manual and the semiautomatic forms would require no special subscriber procedures to meet the subscriber needs in question.

3) *Remarks*

The service is wholly provided within the local exchange.

It is an automation of an existing manual service which has been available for many years.

4) *Market data*

2.3 **automatic booked call** (2.2)

F: service de demande automatique d'une communication

S: servicio de llamadas autom´aticas prefijadas

1) *Definition*

With prior information from a subscriber, a call may be made automatically from his telephone termination, to a particular number or service (excluding the alarm call service) at a specific date and time.

2) *Description*

3) *Remarks*

Service wholly provided within the local exchange. Will require special memory capacity.

4) *Market data*

2.4 **diary service** (2.3)

F: service de rappel de date

S: servicio de agenda

1) *Definition*

With prior indication from a subscriber, a call is made automatically to his telephone number at a specific date and time, and when an answer condition is detected a recorded message is connected to this telephone termination to remind him of a particular event, e.g. birthday of a relative. Two versions of the series are envisaged:

a) the recorded message is dictated by the subscriber in each case;

b) the recorded message is selected from a variety of pre-stored messages.

2) *Description*

3) *Remarks*

Wholly local exchange based; requires long-term storage of information.

4) *Market data*

2.5 **restriction in the outgoing direction service** (3.1)

F: service de limitation des communications de d´epart

S: servicio de restricci´on de llamadas salientes

1) *Definition*

The possibility for a subscriber to prevent all or certain outgoing calls and/or service control operations from his telephone line.

2) *Description*

These services are used by subscribers to prevent unauthorized use of their telephone lines. When the restriction is activated all calls or calls to certain destinations are blocked. Keys or keywords are required for deactivation. Incoming calls are received normally.

The restrictions can be either permanently applied to a line by the Administration on the request of the subscriber, or applied to a line by the subscriber without the assistance of the Administration.

In the case of subscriber control, the subscriber can either just switch the restriction on and off, or select the type of restriction when he activates the service.

3) *Remarks*

Purely local service. Could be provided as PBX features. Emergency calls may be excluded.

4) *Market data*

2.6 **PBX line hunting services** (12.2)

F: service de recherche de ligne libre dans un commutateur priv´e

S: servicio de captura de l´inea (l´ineas de salto)

1) *Definition*

The automatic selection of a free line from a group of lines serving a subscriber , on receipt of a call to that subscriber’s general directory number.

2) *Description*

Line hunting may take the following two main forms:

a) sequential search where the search for a free line always starts with the same line and then follows a fixed order;

b) random search where the search for a free line does not start with the same line each time. This covers a range of search procedures, e.g.:

— random start point and then fixed order;

— start point is the last seized line plus one and then fixed order, etc.

The hunting procedures are only initiated when the general directory number (GDN) is called. One line in the group is directly associated with the GDN, the other individual lines in the group may also be allocated normal individual telephone numbers and when these other individual numbers are called, the calls are processed in the normal way, without hunting.

The subscriber may, under certain conditions, have the ability to reduce the number of lines forming the group or, alternatively, inhibit the automatic selection, or switch from random to sequential hunting.

3) *Remarks*

Purely local service.

4) *Market data*

Required by nearly all multi-number group users.

2.7 **subscriber call charge meter** (7.1)

F: service d'indicateur de taxe au domicile de l'abonn´e

S: servicio de contadores de tasas en el domicilio del abonado

1) *Definition*

Meters at the subscriber's premises showing call charge units debited.

2) *Description*

3) *Remarks*

Provided from local exchange.

4) *Market data*

A service used extensively

2.8 **automatic verbal announcement of charges applied service** (7.2)

F: service d'indication automatique verbale des ´el´ements de taxation

S: servicio de indicaci´on autom´atica verbal de la tasa de la comunicaci´on

1) *Definition*

The possibility for a user to request a verbal announcement of either total or individual call charges.

2) *Description*

A user may request an announcement giving the charge for a call, each call of a series or the total call charges registered against his line. The request may be made before, during or after a call.

3) *Remarks*

Provided from local exchange.

4) *Market data*

Automation of an existing manual service (AD and C) with extensions to cover more than one call. Usage likely to be high.

2.9 **printed record of duration and charge of calls service** (7.3)

F: service d'enregistrement ´ecrit des ´el´ements de taxation

S: servicio de registro impreso de la duraci´on y la tasa de las comunicaciones

1) *Definition*

The possibility for a subscriber to get a specific printed record of called number, duration and charge of calls.

2) *Description*

These services make it possible for the subscriber to get a specific printed record on, for example, charges imposed on him for normal telephone calls and/or possibly supplementary services.

The services imply storage and/or printout of data on a suitable media within the network. The data or part of it will be made available to the subscriber normally in the form of a printed record.

Manual, semiautomatic or automatic services are offered.

Services may either be fully Administration controlled, or partly or fully subscriber controlled.

The category may either be fixed-programmed by the Administration at provision or selected by the subscriber at his activation of the service.

The fully subscriber controlled services imply printout of data for all calls of a certain category or for any particular (outgoing) call chosen by the subscriber. The requests for printout of data for a particular call can be made before, during or after a call.

3) *Remarks*

A service to provide subscribers with itemized billing of all calls. Provided from local exchange.

4) *Market data*

Demand for this service could be significant.

2.10 **automatic credit card service** (7.7)

F: service automatique de cartes de cr´edit

S: servicio autom´atico con tarjeta de cr´edito

1) *Definition*

Payment of call charges is made by placing a credit card in a specially adapted telephone or by calling the credit number. A telephone bill will be sent to the credit card holder later.

2) *Description*

3) *Remarks*

This service could create billing problems for Administrations.

4) *Market data*

2.11 **selective accounting** (7.10)

F: service de comptabilit´e s´elective

S: servicio de contabilidad selectiva

1) *Definition*

A number of separate telephone accounts are associated with an exchange termination and the account to which charges for a particular call are to be debited is identified when making the call.

2) *Description*

3) *Remarks*

4) *Market data*

Most likely from business users who need to differentiate on the allocation of costs, e.g. legal professions.

2.12 **customer recorded information service** (8.3)

F: service particulier d'information enregistr´ee

S: servicio de informaci´on grabada por el abonado

1) *Definition*

This service gives to the customer the possibility of distributing information transmitted from recording equipment to calling subscribers.

2) *Description*

3) *Remarks*

Could be provided from local exchange based equipment or terminal equipment at customer's premises.

4) *Market data*

2.13 **public recorded information service** (8.4)

F: service public d'information enregistr´ee

S: servicio de informaci´on p´ublica grabada

1) *Definition*

Recorded information of public interest provided by the telecommunications Administrations, possibly in cooperation with appropriate public or private institutions, is given to subscribers calling the respective service numbers.

2) *Description*

3) *Remarks*

Access to service may well be at the local exchange.

4) *Market data* .bp

2.14 **emergency call service** (9.1)

F: service d'appels d'urgence

S: servicio de llamadas de emergencia

1) *Definition*

A caller is given a fast and easy means of giving information about an emergency situation to the appropriate emergency organization (e.g. fire department, police, ambulance).

2) *Description*

3) *Remarks*

An existing service.

4) *Market data*

High demand.

2.15 **centrex service**

F: service centrex

S: servicio c´entrex

1) *Definition*

The provision to subscribers, by means of a specially equipped public telephone exchange, of services normally available only in PABXs (e.g. automatic internal dialling, operators' desk, client access to network, direct dialling-in, transfer of calls).

2) *Description*

3) *Remarks*

4) *Market data*

North America and Japan have shown a high demand.

2.16 **babyphone** (14.6)

F: service d'appels à destination d'un poste dont le combin´e est d´ecroch´e

S: servicio de llamadas a un tel´efono descolgado

1) *Definition*

A service providing for a call to be made to a telephone in the ''off hook'' condition for the purpose of audible supervision at the called subscriber's premises

2) *Description*

3) *Remarks*

Has local application only.

4) *Market data*

2.17 **transmission of a verbal message** (14.1)

F: service de transmission d'un message verbal

S: servicio de transmisi´on de un mensaje verbal

1) *Definition*

At the request of a caller (whether a subscriber or not), a short message is transmitted by an operator, either to one or several telephone numbers at a specified time, or to a specified person (whether a subscriber or not) when he calls the operator.

2) *Description*

3) *Remarks*

Could be provided locally or on a national basis.

Has charging and accounting implications.

Could be an automated service.

4) *Market data*

2.18 **universal access number** (14.5)

F: service de num´eros universels

S: servicio de n´umeros universales

1) *Definition*

A customer with several installations in different parts of the country can be reached from anywhere in the country by dialling one given number. Calls from subscribers on exchanges in predetermined areas of the country will be routed to installations chosen (with certain restrictions) for the area in question by the customer having the service.

2) *Description*

3) *Remarks*

Requires cost/demand study before agreement.

Has numbering problems.

4) *Market data*

2.19 **message relay** (14.7)

F: service de transmission de messages

S: servicio de retransmisi´on de mensajes (mensaje diferido)

1) *Definition*

A caller, whether a subscriber or not, may dictate a message into recording equipment and require that it is passed to a particular telephone number by the following morning.

2) *Description*

3) *Remarks*

4) *Market data*

2.20 **interruption of a call in progress** (6.7)

F: service d'interruption d'une conversation en cours

S: servicio de llamada preferente

1) *Definition*

Intervention by an operator, interrupting a call in progress, in order to allow another incoming call to be offered.

2) *Description*

3) *Remarks*

Manual ‘‘call waiting’’ service.

4) *Market data*

Low demand.

2.21 **fixed destination call services** (1.2)

F: service d’appels à destination fixe

S: servicio de llamada de l´inea directa

1) *Definition*

The possibility for a subscriber to set up a call to a predetermined telephone number by lifting the handset only.

2) *Description*

When the subscriber lifts the handset or the lifting condition is given by automatic equipment, the exchange sets up automatically either immediately or after a time-out a connection to a predetermined telephone number. This telephone number may be local, national, international, or the number of an operator service. The *fixed destination call* may be available on demand or on a subscription basis. The number registration can be done either by the subscriber, or, on request, by the Administration.

3) *Remarks*

Beneficial to the aged and handicapped.

4) *Market data*

2.22 **pick-up facility** (10.2)

F: service de prise d'une communication ´etablie

S: servicio de facilidad de telecaptura

1) *Definition*

A subscriber being away from his telephone can pick up a call on his line by dialling his own number and/or possibly a special code from any other telephone, after having been informed by means of a paging system that there is such a call.

2) *Description*

3) *Remarks*

Mainly applies to PABXs or closed user groups.

4) *Market data*

2.23 **call waiting services** (6.4)

F: service d'appels en instance

S: servicios de indicaci´on de llamada en espera

1) *Definition*

A subscriber engaged on an existing call is given an indication that a caller is attempting to obtain connection to his number.

2) *Description*

A subscriber A engaged on an existing call with subscriber B is given an indication that a caller, subscriber C, is attempting to obtain connection. Subscriber A may answer by replacing the handset (acceptance by clearing). Alternatively, he may ignore or reject the indication and continue with the

existing call, terminate the existing call and answer subscriber C or hold the existing call and answer subscriber C (acceptance without clearing).

The call waiting indication may be controlled by the called subscriber or the calling subscriber.

3) *Remarks*

A possible variation where the calling rather than the called subscriber controls the service is considered undesirable.

4) *Market data*

Medium interest shown in USA.

2.24 **dual telephone numbers**

F: service de num´eros de t´el´ephone doubles

S: servicio de duplicidad de n´umeros telef´onicos

1) *Definition*

Two telephone numbers are given to one subscriber. One number is known to the public while the other is revealed by the subscriber only to a limited number of persons. When the subscriber applies call diversion or do not disturb services to the first number, the people using the second number will still be connected.

2) *Description*

3) *Remarks*

4) *Market data*

2.25 **voice dialling**

F: service de num´erotation par la voix

S: servicio de marcaci´on por la voz

1) *Definition*

Verbal indication of a telephone number or name activates call set-up without the dialling operation.
Could be implemented in the exchange or in subscriber terminal equipment.

2) *Description*

3) *Remarks*

4) *Market data*

2.26 **number repetition service** (6.2)

F: service de r´ep´etition de num´ero

S: servicio de repetici´on del ´ultimo n´umero marcado

1) *Definition*

The possibility for the subscriber to repeat a previously dialled number by dialling a short code.

2) *Description*

The service can be provided in a form where either the subscriber requests the registration of the number if the call cannot be completed, or the number of each outgoing call is registered automatically. The subscriber can repeat this number by dialling a short code.

3) *Remarks*

4) *Market data*

2.27 **lecture call** (11.3)

F: service de communication conf´erence unilat´erale

S: servicio de conferenc´ia m´ultiple unidireccional

1) *Definition*

A lecture call is an established connection between one caller and two or more parties, in which the speech path is used in a unidirectional way from the caller to the other connected parties. The call may be set up either by an operator, or by an automatic device programmed by the caller from his own telephone.

2) *Description*

3) *Remarks*

4) *Market data* .bp

APPENDIX I

Telephone services, considered as nonsupplementary

(These services appeared in earlier lists of supplementary services)

I.1 **payphone service** (7.8)

F: service publiphone

S: servicio telef´onico de previo pago

1) *Definition*

A service offered by means of a special equipment permitting outgoing telephone calls after insertion of adequate coins, tokens or coded cards and, without payment, incoming calls. Outgoing calls to certain services (e.g. emergency service) may be admitted without payment.

2) *Description*

3) *Remarks*

Includes public telephones and private telephones, which may be used in two modes, ‘‘private mode’’ and ‘‘ coin-box mode’’.

4) *Market data*

High interest.

I.2 **directory inquiry service** (8.1)

F: service de renseignements concernant les listes d’abonn´es

S: servicio de informaci´on sobre gu´ias telef´onicas

1) *Definition*

Callers can be informed of subscribers’ telephone numbers, and, possibly, also of their names and addresses.

2) *Description*

3) *Remarks*

See Question 2/II [3].

4) *Market aspects*

I.3 **general telecommunications information service** (8.2)

F: service de renseignements g´en´eraux sur les t´el´ecommunications

S: servicio de informaci´on general sobre telecomunicaciones

1) *Definition*

A service given by an operator or a machine using the most common languages explaining the telecommunciations services and facilities in a country.

2) *Description*

3) *Remarks*

4) *Market data*

I.4 **interception of calls** (13.1)

F: service d'interception d'appels

S: servicio de interceptaci´on de llamadas

1) *Definition*

Calls which, for reasons such as those listed below, cannot reach the wanted number may be intercepted and diverted to an operator, an answering machine, or a tone to give the caller the appropriate information:

— change of a particular number including indication of new number;

— renumbering of a group of numbers or a change of dialling code;

— wrong information in telephone directory ;

— dialling of an unallocated code ;

— dialling of a number or numbers allowed by the numbering plan but not yet allocated or no longer in service;

— route(s) out of order ;

— route(s) congested ;

— subscriber's line temporarily out of order ;

— suspension of service owing to nonpayment

2) *Description*

3) *Remarks*

Indication signals should be standardized to be useful for foreign subscribers.

4) *Market data*

I.5 **priority** (6.5)

F: service de priorit´e

S: servicio de prioridad

1) *Definition*

In telephone exchanges provision is made to give preferential treatment concerning the order of path or circuit selection to certain calls.

2) *Description*

3) *Remarks*

For exceptional overload conditions, Administrations should control priority arrangements for essential services.

4) *Market data*

I.6 **malicious call identification services** (14.2)

F: service d'identification d'appels malveillants

S: servicio de identificaci´on de llamadas maliciosas

1) *Definition*

At the discretion of the Administration, assistance is given to ascertain the origin of malicious, nuisance or obscene calls

2) *Description*

After prearrangement with the Administration, a subscriber will be given the possibility to request identification of calls received by him. The service may be provided by manual intervention or automatic means and may be offered on all calls or only certain calls specified by the subscriber. The data received at the identification (calling subscriber's number, identity of the incoming line, time of the incident, etc.) will be made available to the Administration.

3) *Remarks*

Used on an international basis, the service requires agreement among the countries involved. To allow flexible use, the interexchange signalling must allow sending of the calling subscriber's number.

4) *Market data*

5) *General operational requirements*

The use of the services may be restricted due to certain legal requirements which may differ from country to country.

The manual service can normally be provided to a limited extent depending on the existing administrative and technical possibilities.

Modern exchange and signalling systems make it possible to provide automatic services with extended possibilities regarding identification of the caller's number.

The services shall be provided and withdrawn after prearrangement between the subscriber and the Administration in accordance with national legal requirements.

Provision of the service on an international basis requires agreement between the Administrations concerned.

Among the automatic services, those which allow request by the subscriber during a call are preferred.

References

[1] CEPT *Handbook on services and facilities offered to the subscribers in modern telephone systems*

[2] CCITT — Question 16/II, Contribution COM II-No. 1, Study Period 1985-1988, Geneva, 1985.

[3] CCITT — Question 2/II, Contribution COM II-No. 1, Study Period 1985-1988, Geneva, 1985.

Supplement No. 2

VARIOUS TONES USED IN NATIONAL NETWORKS

Table Suppl. No. 2 p.344 MONTAGE resserrer le titre pour faire rentrer le tableau

Table Suppl. No. 2 cont’d. p.345

Table Suppl. No. 2 cont'd. p.346

Table Suppl. No. 2 cont’d. p.347

Table Suppl. No. 2 p.348

Table Suppl. No. 2 p.349

Table Suppl. No. 2 cont'd. p.350

Table Suppl. No. 2 cont’d. p.351

Table Suppl. No. 2 fin p.352

Notes du Tableau Suppl. No. 2, p.353

Symbols used in compiling tone tables

TABLEAU, p.354

$f_1 \times f_2$ means that f_1 is modulated by f_2.

$f_1 + f_2$ means the juxtaposition of two frequencies f_1 and f_2 without modulation.

f_1 / f_2 means that f_1 is followed by f_2.

$f_1 // f_2$ means that in some exchanges frequency f_1 is used and in others frequency f_2 is used.

Supplement No. 3

NORTH AMERICAN PRECISE AUDIBLE TONE PLAN

Table 1 is a description of the audible tone plan in operation in the North American network to:

1) achieve uniformity in the quality of audible tones;

2) minimize customer and operator confusion as to meaning of audible tones;

3) enable machine recognition of audible tones for purposes of service observing, etc.

Basically, the plan provides four frequencies that are used, singly or in combination with particular cadences, to form the audible tone signals shown in Table 1 as well as some other special purpose, limited use signals.

H.T. [T1.3]

TABLE 1

Tones	{	{				
	Cadence					
	350	440	480	620		
Dial tone	•	•			— | 3 dBm0	Continuous tone
{						
Dial tone — Modern PABX only						
}	•	•			{	
| ud)						
— | 6 dBm0 | ud)						
}	Continuous tone					
Recall dial tone	•	•			— | 3 dBm0	{
3 bursts of 0.1 s followed by a continuous tone | ue)						
}						
{						
Recall dial tone — Modern PABX only | ug)						
}	•	•			— | 6 dBm0	{
3 bursts of 0.1 s followed by a continuous tone | ue)						
}						
Busy tone			•	•	— | 4 dBm0	Burst 0.5 s/silence 0.5 s
{						
Busy tone — Modern PABX only						
}			•	•	— | 1 dBm0	Burst 0.5 s/silence 0.5 s
Reorder tone			•	•	— | 4 dBm0	Burst 0.25 s/silence 0.25 s
{						
Reorder tone — Modern PABX only						
}			•	•	— | 1 dBm0	Burst 0.25 s/silence 0.25 s
Audible ringing tone		•	•		— | 9 dBm0	Burst 2 s/silence 4 s
{						
Audible ringing tone — Modern PABX only						
}		•	•		— | 6 dBm0	Burst 1 s/silence 3 s
Call waiting tone		•			— | 3 dBm0	Burst of 0.3 s every 10 s
{						
Call waiting tone — Modern PABX only | ug)						
}		•			— | 6 dBm0	{
A burst of 0.3 s						
}						
{						
Station call waiting						
}					— | 6 dBm0	{
2 bursts of 0.1 s | ue)						
Outside call waiting						
}						
					— | 6 dBm0	{
3 bursts of 0.1 s | ue)						
Urgent call waiting						
}						
Busy verification		•			— | 3 dBm0	{
A 2.0 s burst followed by 0.5 s bursts every 10 s						
}						
{						
Busy verification — Modern PABX only | ug)						
}		•			— | 4 dBm0	{
Burst of 1.5 to 2.0 s followed by | | | | uf)						
}						
{						
Executive override — Modern PABX only | ug)						
}		•			— | 4 dBm0	Burst of 3.0 s

Confirmation tone
Burst 0.1 s/silence 0.1 s/Burst
0.3 s
}
{
Confirmation tone — Modern PABX only | ug)
}
3 bursts 0.1 s | ue)
}
	•	•			— | 3 dBm0
					
					— | 6 dBm0
						{
						
						{

a) Frequency limits are ± 0.5% of the nominal frequency.

b) PABX tone levels are measured at the PABX interfaces (typically at customer premises). Power levels are 2 dB lower for private line interfaces.

c) Power level tolerances are +1.5 dB.

d) Tolerance level for PABX dial tone is +0.75 dB.

e) Bursts are separated by 0.1 s.

f) Burst of 1.5 to 2.0 s before attendant intervenes, followed by repeated bursts of 0.5 to 0.8 s, 8 to 20 s apart.

g) Tones applied at PABX station or private line interfaces and not at the exchange interfaces.

Table 1 [T1.3] p.355

Supplement No. 4

TREATMENT OF CALLS CONSIDERED AS ‘‘TERMINATING ABNORMALLY’’

H.T. [1T1.4]

Supplement No. 4
{
TREATMENT OF CALLS CONSIDERED AS ‘‘TERMINATING ABNORMALLY’’
}

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{
Afghanistan	Ringing tone		Busy tone	
Algeria Operator or busy tone or ringing tone } Recorded announcement proposed }	Operator or ringing tone Busy tone {	Busy tone	Operator	{
Argentina Normally operator; exceptionally, ringing tone }	Ringing tone —	{ Ringing tone	Busy tone	
Australia Operator, recorded announcement or number unobtainable tone } Operator or recorded announcement } Ringing tone, busy tone or recorded announcement } Number unobtainable tone, ringing tone or recorded announcement } Recorded announcement or number unobtainable tone } Congestion tone or recorded announcement }	{ { { { { {			
Austria Operator or busy tone or special information tone, the latter if necessary also at the initiative of the operator } Busy tone or special information tone } Operator of recorded announcement or busy tone or special information tone; the latter may also be transmitted during the intervals of the announcement or if necessary on the initiative of the operator } Operator or recorded announcement or special information tone to be transmitted during the intervals of the announcement or on the initiative of the operator } Busy tone or special information tone }	{ { { { Ringing tone or busy tone Busy tone	{ {		

Tableau [1T1.4] A L’ITALIENNE, p.

H.T. [2T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service	Changed number	{
Bahamas Recorded announcement or unobtainable tone } Recorded announcement or unobtainable tone }	Recorded announcement — Fast busy tone	{ Operator intercepted	— {	
Belgium Operator. In certain cases, ringing tone (information tone complemented by a recorded announcement is proposed) } Ringing tone. In certain cases operator } Operator for individual cases; recorded announcement in case of transfer of groups of subscribers } Ringing tone. In certain cases information tone or operator } Ringing tone. In certain cases recorded announcement } Information tone with or without recorded announcement } In certain cases congestion tone }	{ { { Operator { { { {			
Brazil Number unobtainable tone or recorded announcement } Operator or number unobtainable tone or recorded announcement } Number unobtainable tone or recorded announcement or operator }	{ { Busy tone	Busy tone or ringing tone	{	
Burundi	Information tone	Operator	Ringing tone or busy tone	
Cameroon Ringing tone or recorded announcement } Recorded announcement or ringing tone } Recorded announcement or busy tone }	{ Ringing tone or operator {	Ringing tone or busy tone	{	
Canada Operator or recorded announcement | * | n many cases, the recorded announcement is followed by cut-through to an operator	{			

} New number from operator or automatic intercept system } Service usually provided by persons not in the employ of the Telephone Company } Operator, busy tone or ringing tone } Operator or recorded announcement } Operator, recorded announcement, busy tone, or re-order (congestion tone) } Re-order (congestion) tone or recorded announcement }	{ { { { { {						
Chile Ringing tone or recorded announcement } Operator or recorded announcement }	Ringing tone { Service not provided	{ Ringing tone or busy tone	Ringing tone	Busy tone			

Tableau [2T1.4] A L'ITALIENNE, p.

H.T. [3T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{		
C | te d'Ivoire Information tone with recorded announcement } Service not provided. Ringing tone } Information tone with recorded announcement }	{ { {					
Cuba Operator for individual cases; operator or recorded announcement in case of transfer of groups of subscribers } Number unobtainable tone or congestion tone }	Ringing tone Service not provided Busy tone	{ Ringing tone or busy tone	Ringing tone	{		
Cyprus	Number unobtainable tone	Ringing tone	Operator	—	Busy tone or ringing tone	Number unobtainable tone
Denmark Information tone or ringing tone, or operator or recorded announcement } Operator or recorded announcement } Information tone or ringing tone }	{ { Ringing tone Information tone	{ Busy tone				
Djibouti	Ringing tone of low level	—	Service not provided	Ringing tone or busy tone	Ringing tone of low level	Busy tone
El Salvador	Busy tone	Ringing tone	Operator or ringing tone	Busy tone or ringing tone	Ringing tone	Busy tone
Fiji Operator or number unobtainable tone } Operator or number unobtainable tone } Number unobtainable tone. Continuous, busy or ringing tone }	{ Number unobtainable tone Service not provided Ringing tone	{ { Number unobtainable tone	Busy tone			
Finland Ringing tone or operator or recorded announcement } Ringing tone or busy tone or recorded announcement } Operator or recorded announcement or ringing tone } Operator or recorded announcement } Busy tone or information tone } Busy tone. In certain cases no tone }	{ { { { Ringing tone or busy tone {	{ { { Ringing tone or busy tone	{ {			

Tableau [3T1.4] A L’ITALIENNE, p.

H.T. [4T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{		
France Operator or recorded announcement } Operator or recorded announcement or busy tone or ringing tone } Operator or recorded announcement or busy tone or ringing tone } Busy tone or recorded announcement }	{ Operator { {	 {				
Germany (Federal Republic of) Special information tone, alone or with a recorded announcement (use according to Recommendation E.180) } Operator or recorded announcement } Ringing tone (alone without any other indication) or special information tone, alone or with recorded announcement } Special information tone, alone or with a recorded announcement (use according to Recommendation E.180) }	{ { Ringing tone or busy tone { Busy tone, congestion tone	 {				
Ghana	Number unobtainable tone	Ringing tone and operator	Number unobtainable tone	Ringing tone or busy tone	Number unobtainable tone	Busy tone
Guinea	Ringing tone	Operator	Busy tone or ringing tone	Number unobtainable tone	—	
Hungary Ringing tone or recorded announcement } Special information tone (Recommendation E.180) }	Operator or ringing tone Operator Busy tone	{ Busy tone or ringing tone	Ringing tone	{		
India Operator or recorded announcement or number unobtainable tone }	Number unobtainable tone Service not provided	{ Number unobtainable tone	 Busy tone			
Ireland	Number unobtainable tone	Operator	Service not provided		Number unobtainable tone	Busy tone

Tableau [4T1.4] A L’ITALIENNE, p.

H.T. [5T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{				
Israel Information tone with a recorded announcement } Information tone with a recorded announcement } Busy tone alone or with a recorded announcement }	 Busy tone	{ Busy tone or ringing tone {		{ 				
Italy Operator or recorded announcement } Operator or recorded announcement }	Busy tone or ringing tone { Busy tone or ringing tone	{ Ringing tone		 Busy tone				
Jamaica Number unobtainable tone or congestion tone or recorded announcement } Operator or recorded announcement } Operator or recorded announcement } Call answered by a private answering service } Number unobtainable tone or congestion tone or busy tone or ringing tone } Number unobtainable tone or congestion tone or recorded announcement }	{ { { { { Congestion tone or busy tone							
Japan Recorded announcement or operator } Recorded announcement or ringing tone } Recorded announcement or busy tone or ringing tone } Recorded announcement or operator } Busy tone or recorded announcement }	{ { { { Recorded announcement	 {						
Kenya	Number unobtainable tone	Operator	Number unobtainable tone	Busy tone				
Korea (Rep. of) Ringing tone or recorded announcement } Automatic intercept system or ringing tone } Recorded announcement or ringing tone } Ringing tone or recorded announcement } Busy tone or recorded announcement	{ Ringing tone or busy tone { Busy tone or ringing tone {	 { 						

}	Busy tone or congestion tone							
Lebanon Ringing tone (recorded announcement proposed) } Ringing tone (recorded announcement proposed) }	{ Operator Ringing tone	{ Special tone	Busy tone					

Tableau [5T1.4] A L'ITALIENNE, p.

H.T. [6T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{				
Liberia	Ringing tone	Service not provided	Busy tone or ringing tone	Ringing tone	Number unobtainable tone	Busy tone		
Luxembourg Ringing tone or recorded announcement or congestion tone } Ringing tone or congestion tone } Busy tone or recorded announcement }	{ Operator { Busy tone or congestion tone	Ringing tone or busy tone	{ 					
Unable to convert table								

Tableau [6T1.4], A L'ITALIENNE, p.

H.T. [7T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{		
Morocco Ringing tone or recorded announcement } Ringing tone or recorded announcement } Busy tone or recorded announcement }	{ Operator { Busy tone	Busy tone or ringing tone	{			
Mozambique	Ringing tone	Busy tone	Service not provided	Busy tone or ringing tone	Ringing tone	Busy tone
Nauru	Ringing tone	Service not provided	Ringing tone or busy tone	Ringing tone	Number unobtainable tone	Busy tone
Norway Operator or recorded announcement or special information tone or busy tone or ringing tone } Operator or recorded announcement or special information tone or busy tone } Ringing tone or busy tone or special information tone } Special information tone or busy tone }	{ { Ringing tone or busy tone { Congestion tone or busy tone					
Netherlands Special information tone or recorded announcement } Special information tone or recorded announcement } Special information tone (Manual service); recorded announcement (Automatic service) } Special information tone or ringing tone } Special information tone or congestion or recorded announcement }	{ Special information tone { Ringing tone or busy tone { Congestion tone	{ { {				
New Caledonia Operator or recorded announcement } Operator or recorded announcement or busy tone or ringing tone } Busy tone or recorded announcement }	{ Operator {	{ {				
New Zealand Number unobtainable tone or ringing tone } Operator or recorded announcement } Number unobtainable tone or ringing tone	{ Number unobtainable tone Service not provided	{ Busy tone or ringing tone	{			

} Disconnect or recorded announcement }	Number unobtainable tone	{					
Oman	Number unobtainable tone	Busy tone	Number unobtainable tone		Busy tone	Ringing tone	Number unc

Tableau [7T1.4], A L'ITALIENNE, p.

H.T. [8T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{
Philippines Ringing tone or busy tone; operator or recorded announcement } Busy tone; operator recorded announcement }	{ Operator Busy tone	 Ringing tone or busy tone	{ 	
Poland Ringing tone or busy tone or special information tone followed by recorded announcement } Special information tone or busy tone }	Ringing tone {	{		
Polynesia Ringing tone or busy tone according to the fault }	Operator Ringing tone	{ Busy tone		
Portugal Busy tone or number unobtainable tone } Busy tone or number unobtainable tone } Operator or busy tone for individual cases; recorded announcement in case of groups of subscribers } Busy tone or number unobtainable tone } Operator or busy tone or number unobtainable tone }	{ { { Service not provided { Busy tone	 Ringing tone or busy tone	{ 	
Qatar	Number unobtainable tone	Operator	Number unobtainable tone	Busy tone
Roumania ‘‘Spare line tone’’ or operator }	{ Service not provided	 Busy tone or ringing tone	 ‘‘Spare line tone’’	 Busy tone
Singapore Operator or recorded announcement }	Number unobtainable tone	{ Ringing tone or busy tone	 Number unobtainable tone	 Busy tone or congestion tone
South Africa Operator or recorded announcement }	Number unobtainable tone	{ Ringing tone or busy tone	 Number unobtainable tone	 Busy tone
Spain Operator or recorded announcement } Operator or recorded announcement }	Special tone { Ringing tone	{ Special tone	 Congestion tone	

Tableau [8T1.4], A L’ITALIENNE, p.

H.T. [9T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{
Swaziland Operator or recorded announcement } Ringing tone or busy tone or number unobtainable tone }	Number unobtainable tone Number unobtainable tone	{ { Busy tone		
Sweden Operator or information tone or recorded announcement with information tone } Ringing tone, busy tone or information tone or recorded announcement with information tone } Operator, or recorded announcement with information tone or information tone }	{ { { Congestion tone or no tone			
Switzerland Operator or recorded announcement }	{ Operator	 Ringing tone	 Busy tone	
Suriname Ringing tone or information tone } Recorded announcement or busy tone }	Service not provided { Busy tone	Busy tone or ringing tone	{	
Syria Ringing tone. Operator (proposed) } Operator or ringing tone or recorded announcement } Ringing tone. Operator (proposed) }	{ Number unobtainable tone { Ringing tone	 { ‘‘Barred level’’ tone	 Busy tone	
Tanzania	Number unobtainable tone	Operator	Number unobtainable tone	Busy tone
Uganda	Number unobtainable tone	Operator	Number unobtainable tone	Busy tone
USSR Ringing tone — recorded announcement proposed } Operator or recorded announcement proposed } Recorded announcement proposed } Recorded announcement proposed }	{ { { Busy tone or ringing tone Busy tone	 Ringing tone	 {	

Tableau [9T1.4], A L’ITALIENNE, p.

H.T. [10T1.4]

Country of destination Line connected to absent subscribers service } Spare numbers (no subscriber) } Congestion in the inland automatic system }	Ceased line Faulty line Spare level or spare code	Line out of service { {	Changed number	{				
United Kingdom Operator or recorded announcement } Call answered by an operator or a private answering service or a call transferred to another subscriber } Number unobtainable tone or busy tone } Equipment engaged tone or recorded announcement }	Number unobtainable tone { { Number unobtainable tone	{ {						

United States
Operator or recorded announcement |
}
New number from operator or recorded announcement |
}
Operator or recorded announcement
}
Operator or recorded announcement |
}
Operator or recorded announcement
}
Recorder (congestion) tone or recorded announcement
}
{
* | n many cases, the recording is followed by cut-through to an operator
}
	{
	
	{
	
	Recorded announcement
	
	{
	
	{
	
	{
		
		{						

Uruguay	Ringing tone	Operator	Ringing tone or busy tone	Ringing tone	Busy tone			
Yugoslavia Ringing tone; exceptionally special information tone } Normally ringing tone; exceptionally, operator or recorded announcement } Ringing tone; exceptionally special information tone } Busy tone or special information tone }	{ { { Busy tone	 Ringing tone or busy tone	{ 					
Zambia Number unobtainable tone or information tone } Operator or special information tone }	Number unobtainable tone { Service not provided	{ Ringing tone or busy tone	Number unobtainable tone	Congestion tone				

Tableau [10T1.4], A L’ITALIENNE, p.

Supplement No. 5

MODELLING OF AN EXPERIMENTAL TEST DESIGN FOR THE DETERMINATION OF INEXPERIENCED USER DIFFICULTIES IN SETTING UP INTERNATIONAL CALLS USING NATIONALLY AVAILABLE INSTRUCTIONS, OR TO COMPARE DIFFERENT SETS OF INSTRUCTIONS

During the Study Periods 1973-1977 and 1978-1980, a method was developed for identifying the most important difficulties encountered by inexperienced subscribers in dialing their own international calls. The same method was then shown to be a good way to compare the effectiveness of different sets of instructions.

A full description of this method can be found in Supplement No. 5 in the *Red Book* , Volume II, Fascicle II.2 published by the CCITT in 1985.

Supplement No. 6

PREPARATION OF INFORMATION TO CUSTOMERS TRAVELLING ABROAD

Considering that some Administrations have found it desirable to provide information, usually in the form of a pamphlet, for the guidance of their customers who are planning to travel abroad, it is suggested that such information should include:

i) information enabling the visitor to identify suitable payphones from which international telephone calls may be made in those countries where not all payphones afford international call facilities;

ii) operating procedure for payphones in the country visited including dialling instructions for automatic calls, with an example of the composition of the digits to be dialled, i.e. international prefix , country code , trunk code (if necessary) and subscriber's number particularly to the need to omit the trunk prefix used in the destination country;

iii) reference to the possibility that unfamiliar tones and recorded announcements may be encountered (see Annex A to Recommendation E.121 which gives guidance in identifying such tones);

iv) an indication when an additional dialling tone may be encountered and definition of the point in the dialling sequence at which it must be awaited;

v) description of the paid-time expiration warning signal.

Other useful information that may be considered desirable for inclusion is the following:

a) time differences between home country and the country to be visited;

b) the advantage of writing down the required international telephone number before starting the call to minimize the risk of a dialling error;

c) information on how the traveller may be called from his home country.

Methods by which pamphlets may be distributed include provision of supplies at airport departure lounges, through telecommunications publicity, information points and travel agencies.

It should be noted that no evidence is yet available to indicate whether the production of pamphlets does or does not contribute to the successful completion of international telephone calls

Supplement No. 7

DESCRIPTION OF INMARSAT EXISTING AND PLANNED SYSTEMS

1 Standard A system

The INMARSAT Standard A communications system has enabled INMARSAT to provide maritime communications following the organization's inception in February 1982. The primary function of the Standard A system is to provide telephone, telex and some data services together with distress and safety-related traffic.

1.1 The Standard A system consists of the following major elements in an ocean region:

a) the network coordination (NCS);

b) coast earth station (CES);

c) ship earth station (SES); and

d) the space segment.

1.1.1 Three network coordination stations are provided in the Standard A system, one in each ocean region, managing central resources such as allocating traffic channels on a demand assigned basis and coordinating signalling and control traffic.

1.1.2 Each coast earth station serves as a gateway to and from the terrestrial network to ship earth stations within the coverage area of the satellite. The types of terrestrial network interfaces at a coast earth station are provided at the discretion of the coast earth station operator.

1.1.3 The ship earth station interfaces the CES via the space segment at L-Band, and consists of two portions: above-deck equipment and below-deck equipment. The above-deck equipment consists of an antenna with stabilization and automatic steering equipment enabling the antenna beam to remain pointed at a satellite, regardless of course and ship movements. The below-deck equipment consists of an antenna control unit, communications electronics used for transmission, reception, access control and signalling, and telephone and teleprinter equipment. Optional equipment for low-speed data, high-speed data, facsimile, etc., can be installed with the below-deck

equipment. Before joining the Network, SESs have to successfully complete the prescribed commissioning tests.

1.1.4 The space segment consists of three operational satellites, one in each ocean region, together with three spare satellites provided on a 1-for-1 basis. The operational satellites are in a geostationary orbit and provide global coverage up to 75° latitude.

1.2 The satellite channels needed to establish communication services and associated signalling in the Standard A system are described below:

1.2.1 *Common TDM carrier*

The common TDM carrier (or common signalling channel) is transmitted by the NCS and is received by all CESs amd SESs in the respective ocean region for the reception of signalling messages from the NCS.

1.2.2 *Coast earth station TDM carrier*

Each coast earth station transmits a TDM carrier at a frequency which is uniquely associated with the station. The TDM carrier carries signalling messages to the NCS and telegraph channels to ship earth stations. Twenty-two 50-baud telex channels and an out-of-band signalling channel are time-division multiplexed on the TDM carrier in the shore-to-ship link.

1.2.3 *Ship earth station TDMA channel*

There is a ship-to-shore TDMA channel, paired to the CES TDM carrier, for the corresponding ship-to-shore twenty-two 50-baud channels. SESs transmit their telex channels in bursts in this channel, with burst timing derived from the ‘‘unique word’’ in the CES TDM carrier.

1.2.4 *Request channels*

Request messages are transmitted by ship earth stations as random access bursts. Each coast earth station monitors the two ship-to-shore channels and processes only those call requests addressed to it.

1.2.5 *FM/SCPC channels*

Frequency modulated single channel per carrier channels are used for the transmission of voice, data and analog and digital facsimile. Telephone channels are assigned on demand by the network coordination station.

1.2.6 *High Speed Data (HSD) channels*

High-speed 56 kbit/s data transmission is also possible, but in the ship-to-shore direction only, from specially equipped SESs to specially equipped CESs.

1.3 The following services are provided by each CES:

a) telephone calls on a ship-to-shore, shore-to-ship and ship-to-ship basis; the channels may be used for facsimile or data at the user’s discretion;

b) telex calls on a ship-to-shore, shore-to-ship and ship-to-ship basis;

c) optional services which may be provided at the discretion of the respective CES operator:

i) group calls, i.e., calls to groups of SESs, using only a shore-to-ship channel (telephony or telegraphy). The SESs in the group may be selected on the basis of:

— national identity,

— fleet,

— ocean area,

— similar interest;

ii) high-speed data 56 kbit/s ship-to-shore direction only.

2 Standard B system

2.1 The Standard B system has been designed to provide more efficient utilisation of satellite power and bandwidth resources for INMARSAT’s

mainstream services (telephone and telex), to provide digital data services, and to provide the capability of fulfilling future maritime ISDN service requirements.

2.2 The Standard B system consists of the following major elements in an ocean region, in addition to the satellites:

a) the network coordination station (NCS);

b) coast earth stations (CESs); and

c) ship earth stations (SESs).

2.2.1 Three network coordination stations are provided in the Standard B system, one in each region, managing central resources such as SCPC traffic channels when demand assigned operation is used, and coordinating signalling and control traffic.

2.2.2 Each coast earth station provides the interface between the terrestrial network and the mobile ship earth stations within the coverage area of the satellite. Coast earth stations operate at C-band (although an L-band capability is also required for NCS signalling purposes). The terrestrial network interfaces provided at CESs are at the discretion of each CES operator.

2.2.3 The mobile ship earth station interfaces with the CES via the space segment at L-band; multi-channel ship earth stations are planned as an addition to the baseline system.

2.3 SESs wishing to operate in a particular ocean region do not have to register with a particular CES on a log-on/log-off basis once they have met the requirements of the commissioning tests. All relevant SES and service information is provided to the CES during initialisation signalling procedures.

2.4 The satellite channels used for communication services and signalling in the Standard B system are described below:

2.4.1 *Voice (V) channels* | are single-channel-per-carrier (SCPC) digital channels supporting a voice coding rate of 16 kbit/s with Adaptive Predictive Coding (APC) (including facsimile) up to 2400 kbit/s information rate, and sub-band signalling (for service address and, in the future, ISDN signalling).

2.4.2 The *Data (D) channel* | is an SCPC digital channel supporting a data information rate of 9.6 kbit/s. These channels also support Group 3 facsimile and sub-band signalling.

2.4.3 *CES TDM channel* | are used to carry CES signalling messages to SESs, including channel assignments, telex (ITA2) and data (IA5 asynchronous) at 300 bit/s information rate.

2.4.4 *NCS TDM channels* | are used to carry NCS signalling messages to SESs and CESs including call announcements and channel assignments and Bulletin Board information so that additional or alternate signalling channels can be implemented to meet operational needs.

2.4.5 *SES TDMA channels* | are used to carry SES telex (ITA2) or data (IA5) at 300 bit/s information rate.

2.4.6 *SES Request channel (SESRQ)* | is a random access (Aloha) channel used to carry SES signalling information, specifically the request signals which initiate a ship-originated call transaction to CESs (including satellite spot-beam identification).

2.4.7 *SES Response channel (SESRP)* | provides SES signalling information to CESs, specifically the SES response information required to facilitate a shore-originated call (including satellite spot-beam identification).

2.4.8 *CES/NCS Inter-Station Signalling channel (ISS)* | enables signalling information to be exchanged between CESs and NCSs for call and network management purposes.

2.5 The following services are available at each CES:

a) telephone calls on a ship-to-shore, shore-to-ship and ship-to-ship basis;

b) telex calls on a ship-to-shore, shore-to-ship and ship-to-ship basis;

c) broadcast of shore originated telephone or telex calls when addressed with any of the following:

— the SES’s unique mobile ship earth staion number,

— an ‘‘all ships’’ identity,

— a national identity,

— a fleet group identity,

— a general group identity;

d) voice band data services, including facsimile;

e) digital data services, including Group 3 facsimile.

2.6 Further services determined in the future for ISDN applications will be added as a feature of this system once they have been clearly defined.

3 Standard C system

3.1 The Standard C communications system has been designed allowing the operation of the smallest ship earth station in the INMARSAT system and thus enabling the smallest vessels to avail themselves with satellite communications. Its primary communications function is text and data transmission to and from ships. It has been designed to interface with the International Telex Network on a store-and-forward basis as well as a range of terrestrial data networks. It is also able to carry an oceanwide broadcast only service known as the Enhanced Call group (EGC).

3.2 The Standard C system consists of the following main elements in an ocean region:

a) the network coordination station (NCS);

b) coast earth station (CES); and

c) ship earth station (SES).

3.2.1 Three network coordination stations are initially provided in the Standard C system, one in each ocean region, managing central resources such as traffic channels and coordinating signalling and control traffic.

3.2.2 Each coast earth station serves as a gateway to and from the terrestrial network to ship earth stations within the coverage area of the satellite. The types of terrestrial network interfaces at a coast earth station are a national matter.

3.2.3 The ship earth station consists of a DTE which provides the user interface and a DCE which provides the interface to the satellite network. In the ship-to-shore direction, a message is formatted in the DTE and then transferred to the DCE for transmission. In the shore-to-ship direction, the DCE receives the complete message from the radio channel before passing it to the DTE. The mobile ship earth station may be equipped for access to marine safety information carried by the enhanced group call service, or a separate receive-only terminal for EGC calls may be used. Using the distress priority message , a ship operator may transmit a ship-to-shore distress alert. Upon receipt of this message, the addressed coast earth station will

immediately provide confirmation of the message being received. This distress alert message provides the ability to include the position of the vessel. A ship earth station wishing to operate in a particular ocean region must log in to the NCS in that region.

3.3 The Standard C system consists of 5 main channel types which are described below.

3.3.1 The *NCS common channel* | is transmitted continuously by the NCS. All mobile ship earth stations registered as operational in a particular ocean region must tune to this channel when not engaged in message transfer. This channel provides the following functions: message announcements, message confirmations, frequency reference for all ship earth stations and EGC message transmission.

3.3.2 *NCS-CES signalling links* | pass information between the NCS and CESs concerning the operational status of the network. This link is used to transfer EGC messages from a CES to the NCS for subsequent transmission on the NCS common channel. It also relays signalling information to ship earth stations and CESs.

3.3.3 *Message channels* | are used by SESs to transfer their message traffic to a CES. The message channel is assigned by the CES.

3.3.4 *Signalling channels* | are used by SESs to transmit signalling information to a CES. Each CES has one or more of these channels assigned to it.

3.3.5 The *NCS-NCS signalling channel* | is an inter-ocean-region data connection between the three NCSs. This link is used for updating SES log-in status.

3.4 The following services are provided on a mandatory basis by each CES:

a) store-and-forward telex;

b) Enhanced Group Call message handling and distress message handling.

4 Aeronautical system (Initial system)

4.1 The INMARSAT aeronautical satellite communications system will provide two-way voice and data communications for aircraft operating within the coverage area of a set of geostationary satellites. Since the system capabilities will evolve with time, the initial set of capabilities and functions are designated ‘‘Initial system’’. The additional capabilities and functions which may be added due to traffic demand and technological evolution will form the ‘‘Enhanced system’’.

4.2 The Aeronautical system consists of the following major elements in an ocean region:

a) the network coordination station (NCS);

b) the aeronautical ground earth station (GES); and

c) the mobile aircraft earth station (AES).

4.2.1 Network coordination stations will be provided as part of the ‘‘Enhanced system’’ to manage central resources such as allocating traffic channels on a demand assigned basis. Due to the limited number of GESs involved in the initial aeronautical system the provision of NCS facilities has not been considered necessary.

4.2.2 Aeronautical ground earth stations interface to and from the terrestrial network to mobile aircraft earth stations within the coverage area of a specific satellite. The types of terrestrial network interfaces at the GES are provided at the discretion of the GES operator.

4.2.3 The mobile aircraft earth station (AES) interfaces with the space segment at L-band, and interfaces within the aircraft with the Aircraft Communications Addressing and Report System (ACARS) and other data equipment and with aircraft crew and passenger voice equipment.

4.3 An AES wishing to operate in a particular ocean region must register with a GES in the Initial system. The procedure known as the log-on/log-off of an AES provides the GES with the ability to manage the number of AESs receiving one forward P-Channel (Pd) and transmitting on each R-Channel (Rd), thus controlling the queueing delays and burst collision probabilities. Provision exists in the Initial system for the log-on handover of a particular AES to another GES which may work to a different satellite ocean region. The handover can be initiated on an automatic or manual basis depending on the type of AES and the specific requirements of the aircraft at that time.

4.4 The aeronautical Initial system is configured with the following main channel types:

4.4.1 *P-channel (ground earth station-mobile aircraft earth station)*

The P-channel is a TDM channel which is used to provide system management and medium speed data services in the ground-to-air direction. Once the AES has logged on, it is directed to tune to this P-channel over which both system management information and other data can be passed. In the Initial system, the communication links between GESs in the same ocean area will be by means of P channels.

4.4.2 *R-channels (mobile aircraft earth station-ground earth station)*

The R-channels are a set of randpm access channels which are used for log-on, system management and some short user messages.

4.4.3 *T-channels (mobile aircraft earth station-ground earth station)*

The T-channel which is a TDMA channel is used to pass longer messages from the aircraft.

4.4.4 *C-channel (ground earth station-mobile aircraft earth station)*

The C-channels are established and cleared by circuit switching signalling procedures, to provide voice traffic capabilities between the GES and AESs. The channel format allocates the bulk of the channel capacity for circuit switched voice or data service, and also provides a low-rate ‘‘sub-band’’ channel for signalling and some data.

4.4.5 *NCS-GES links*

Plans to provide NCSs under the Enhanced system will require the provision of NCS-GES channels which will be based on the P-channels used for inter-GES communications in the Initial system.

4.5 The four main application areas for the Aeronautical system are:

i) air traffic services;

ii) aeronautical operations control;

iii) aeronautical administrative communications;

iv) aeronautical passenger communications.

The availability of a particular service in a given area will be dependent upon the facilities offered by the respective GESs.

4.5.1 Voice services in the Initial system will be primarily in the air-to-ground direction and will enable passengers and air crew to set up telephone calls through GESs which offer the telephony service.

4.5.2 For data, connection mode and connectionless mode, open systems interconnection (OSI) network layer services will be provided, based on a connectionless link layer protocol. Circuit mode data service may be provided as an option.

4.5.3 Telex service will be available as an option in the aeronautical system.

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