



EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 392-10-05

April 1996

Source: ETSI TC-RES

Reference: DE/RES-06001-10-05

ICS: 33.020, 33.060.50

Key words: TETRA, V+D

**Radio Equipment and Systems (RES);
Trans-European Trunked Radio (TETRA);
Voice plus Data (V+D);
Part 10: Supplementary services stage 1;
Part 10-05: List search call**

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

*

Copyright Notification: No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1996. All rights reserved.

Contents

Foreword	5
1 Scope	7
2 Normative references	7
3 Definitions and abbreviations	7
3.1 Definitions	7
3.2 Abbreviations	8
3.2.1 General abbreviations	8
3.2.2 Supplementary service abbreviations	8
4 SS-LSC stage 1 specification	8
4.1 Description	8
4.1.1 General description	8
4.1.2 Qualifications on applicability to telecommunication services	9
4.2 Procedures	9
4.2.1 Provision/Withdrawal	9
4.2.2 Normal procedures	9
4.2.2.1 Activation, deactivation, definition, registration, interrogation and cancellation	9
4.2.2.1.1 Activation and deactivation	9
4.2.2.1.2 Definition	9
4.2.2.1.3 Registration	9
4.2.2.1.4 Interrogation	10
4.2.2.1.5 Cancellation	10
4.2.2.2 Invocation and operation	10
4.2.3 Exceptional procedures	10
4.2.3.1 Activation, deactivation, definition, registration, interrogation and cancellation	10
4.2.3.1.1 Activation and deactivation	10
4.2.3.1.2 Definition	10
4.2.3.1.3 Registration	11
4.2.3.1.4 Interrogation	11
4.2.3.1.5 Cancellation	11
4.2.3.2 Invocation and operation	11
4.3 Interactions with other supplementary services	11
4.3.1 Calling line identification presentation	11
4.3.2 Connected line identification presentation	11
4.3.3 Calling/Connected line identification restriction	11
4.3.4 Call report	11
4.3.5 Talking party identification	11
4.3.6 Call forwarding unconditional	11
4.3.7 Call forwarding on busy	12
4.3.8 Call forwarding on no reply	12
4.3.9 Call forwarding on not reachable	12
4.3.10 List search call	12
4.3.11 Call authorized by dispatcher	12
4.3.12 Short number addressing	12
4.3.13 Area selection	12
4.3.14 Access priority	12
4.3.15 Priority call	12
4.3.16 Call waiting	13
4.3.17 Call hold	13
4.3.18 Call completion to busy subscriber	13
4.3.19 Late entry	13
4.3.20 Transfer of control	13

4.3.21	Pre-emptive priority call	13
4.3.22	Include call	13
4.3.23	Advice of charge	13
4.3.24	Barring of outgoing calls	13
4.3.25	Barring of incoming calls.....	13
4.3.26	Discreet listening	13
4.3.27	Ambience listening.....	13
4.3.28	Dynamic group number assignment.....	13
4.3.29	Call completion on no reply.....	14
4.3.30	Call retention.....	14
4.4	Inter-working considerations	14
4.5	Overall SDL.....	15
History		16

Foreword

This European Telecommunication Standard (ETS) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is a multi-part standard and will consist of the following parts:

- Part 1: "General network design".
- Part 2: "Air Interface (AI)".
- Part 3: "Inter-working", (DE/RES-06001-3).
- Part 4: "Gateways", (DE/RES-06001-4).
- Part 5: "Terminal equipment interface", (DE/RES-06001-5).
- Part 6: "Line connected stations", (DE/RES-06001-6).
- Part 7: "Security".
- Part 8: "Management services", (DE/RES-06001-8).
- Part 9: "Performance objectives", (DE/RES-06001-9).
- Part 10: "Supplementary services stage 1".**
- Part 11: "Supplementary services stage 2", (DE/RES-06001-11).
- Part 12: "Supplementary services stage 3", (DE/RES-06001-12).
- Part 13: "SDL Model of the Air Interface", (DE/RES-06001-13).
- Part 14: "PICS Proforma", (DE/RES-06001-14).
- Part 15: "Inter-working - Extended Operations", (DE/RES-06001-15).
- Part 16: "Gateways for Supplementary Services", (DE/RES-06001-16).

Transposition dates	
Date of adoption of this ETS:	1 March 1996
Date of latest announcement of this ETS (doa):	31 July 1996
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 January 1997
Date of withdrawal of any conflicting National Standard (dow):	31 January 1997

Blank page

1 Scope

This European Telecommunication Standard (ETS) defines the stage 1 specifications of the List Search Call (LSC) supplementary service for the Trans-European Trunked RAdio (TETRA) as provided by European operators. Stage 1 is an overall service description from the users point of view but does not deal with the details of the human interface itself.

This ETS specifies the service description of the supplementary service and the procedures to be expected with successful and unsuccessful outcomes. In addition the standard specifies the interactions with other TETRA supplementary services and inter-working considerations.

Charging principles are outside the scope of this ETS.

The LSC supplementary service allows an incoming call to be offered to a pre-defined list of attendants in sequence, until the incoming call is answered or the call set up attempt is considered to be unsuccessful.

2 Normative references

This ETS incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [2] ITU-T Recommendation Z.100 (1993): "Specification and Description Language (SDL)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

attendant: An address within the search list which has been designated upon definition by the authorized user to receive calls.

authorized user: A user authorized to define and activate the search list against an Individual TETRA Subscriber Identity (ITSI).

Base Station (BS): A physical grouping of equipment which provides the fixed portion of the air interface. One base station transmits and receives radio signals to and from a single location area (a single region of geographical coverage). A BS contains at least one Base Radio Stack (BRS).

bearer service: A type of telecommunication service that provides the capability for the transmission of signals between user-network interfaces.

search list: A group of attendants accessed by the infrastructure in sequence.

search list number: The number (ITSI) to which a search list is assigned.

served user: The user making an incoming call to the search list number.

Supplementary Service (SS): A supplementary service modifies or supplements a bearer service or a teleservice. A supplementary service cannot be offered to a customer as a stand alone service. It should be offered in combination with a bearer service or a teleservice.

Switching and Management Infrastructure (SwMI): All of the TETRA equipment for a Voice plus Data (V+D) network except for subscriber terminals. The SwMI enables subscriber terminals to communicate with each other via the SwMI.

teleservice: A type of telecommunications service that provides the complete capability, including terminal equipment functions, for communication between users according to agreed protocols.

3.2 Abbreviations

3.2.1 General abbreviations

For the purposes of this ETS, the following general abbreviations apply:

GTSI	Group TETRA Subscriber Identity
ISDN	Integrated Services Digital Network
ITSI	Individual TETRA Subscriber Identity
SDL	(Functional) Specification and Description Language
SS	Supplementary Service

NOTE: The abbreviation SS is only used when referring to a specific supplementary service.

SwMI	Switching and Management Infrastructure
TETRA	Trans-European Trunked RAdio

3.2.2 Supplementary service abbreviations

For the purposes of this ETS, the following Supplementary Service abbreviations apply:

AL	Ambience Listening
AS	Area Selection
BIC	Barring of Incoming Calls
CAD	Call Authorized by Dispatcher
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
CFB	Call Forwarding on Busy
CFNRy	Call Forwarding on No Reply
CFNRc	Call Forwarding on Not Reachable
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling/Connected Line Identification Restriction
COLP	Connected Line Identification Presentation
CW	Call Waiting
DL	Discreet Listening
LSC	List Search Call
PPC	Pre-emptive Priority Call
SLN	Search List Number
SNA	Short Number Addressing

4 SS-LSC stage 1 specification

4.1 Description

4.1.1 General description

The LSC supplementary service allows an authorized user to define a list of attendants so that when a served user makes an incoming call to the Search List Number (SLN), the infrastructure shall re-route the incoming call to the first attendant within the search list. If the call request to the first attendant is unsuccessful, then the infrastructure shall attempt to re-route the call request to the second attendant in the search list, and so on until either an attendant answers or the end of the search list is reached.

Supplementary services shall not be associated with the search list number except for SS-Barring of Incoming Calls (BIC).

There shall be no restriction on the addressing domains of the attendants within the search list.

The identities of the attendants may be given either as ITSIs or Group TETRA Subscriber Identity (GTSI)s.

It shall be possible for an authorized user to define a number of search lists.

4.1.2 Qualifications on applicability to telecommunication services

SS-LSC activated against an ITSI: shall be applicable to all incoming individual TETRA teleservices and bearer services.

SS-LSC cannot be activated against an GTSI.

4.2 Procedures

4.2.1 Provision/Withdrawal

The LSC supplementary service shall be provided by prior arrangement with the service provider. Search List Numbers (SLN) shall be allocated upon provision.

The LSC supplementary service can be withdrawn by the service provider at the request of the authorized user or for administrative purposes.

The authorized user shall be able to carry out the process of definition upon provision.

4.2.2 Normal procedures

4.2.2.1 Activation, deactivation, definition, registration, interrogation and cancellation

4.2.2.1.1 Activation and deactivation

SS-LSC shall be activated/deactivated upon request from the authorized user. The authorized user shall associate the SLN with a search list. It may be possible to activate many search lists against the one SLN, depending on implementation.

4.2.2.1.2 Definition

The authorized user shall be able to carry out the process of definition upon provision. A SwMI shall provide definition upon request from the authorized user.

To define SS-LSC, the authorized user shall supply:

- 1) the identification of the search list;
- 2) the identification of each attendant in the search list.

NOTE: During the definition process the attendants may be initially addressed by SS-Short Number Addressing (SNA)-1, which would be converted by the infrastructure to the full ITSI.

The number of attendants in each search list shall be an operator option.

The number of search lists shall be an operator option.

When the authorized user requests definition of SS-LSC, the service provider shall return acceptance or rejection of the request (see exception procedures for a list of possible causes of rejection).

4.2.2.1.3 Registration

Registration shall be used by the network to determine authorized users who are permitted to define the search list.

4.2.2.1.4 Interrogation

If interrogation is provided, the SwMI shall support interrogation on a search list number basis. The TETRA response to an interrogation request may provide the following information to the authorized user:

- activated or deactivated state of the search lists;
- constituent attendants of the appropriate search list.

The SwMI may support general interrogation of SS-LSC. The TETRA response may be identification of search list numbers defined by the authorized user.

4.2.2.1.5 Cancellation

Not applicable.

4.2.2.2 Invocation and operation

The service is invoked by an incoming basic service call to the list search number, and SS-LSC being activated against that ITSI.

When invoked, the call shall first be offered in sequence to attendants in the search list, one at a time. The precise algorithm of the sequence shall be dependent on the network implementation. After a time-out, or active rejection of the call by the first attendant, the incoming call shall subsequently be offered to a second attendant in the activated search list, and depending on the implementation, a notification may be sent to the calling user that his call is in the process of being offered to another attendant.

If the call to the second attendant in the search list is unsuccessful then the infrastructure shall release this call attempt and attempt to offer the call to a third attendant in the search list, and so on until either the call is answered or the end of the search list is reached.

If, after the end of the sequence has been reached and the call remains unanswered, the calling user shall receive an notification the call attempt has been unsuccessful, and the reason for rejection, e.g. attendants are busy.

4.2.3 Exceptional procedures

4.2.3.1 Activation, deactivation, definition, registration, interrogation and cancellation

4.2.3.1.1 Activation and deactivation

When authorized user initiated activation or deactivation cannot be completed, an indication shall be returned to the authorized user. Possible causes for rejection can be:

- insufficient information;
- invalid ITSI/GTSI for the attendant address;
- invalid list search number.

If the infrastructure deactivates SS-LSC without the served user having requested deactivation (e.g. when an exceptional condition occurs), the served user shall receive notification along with the cause.

4.2.3.1.2 Definition

If the system cannot accept a definition request, the authorized user should receive a notification that SS-LSC definition was not successful. Possible causes can be:

- insufficient information;
- invalid ITSI/GTSI for the attendant address;

- number of attendants exceeded;
- invalid list search number.

4.2.3.1.3 Registration

Not applicable.

4.2.3.1.4 Interrogation

If the SwMI cannot accept an interrogation request, the interrogating user shall receive a notification that SS-LSC interrogation was unsuccessful. Possible causes for rejection can be:

- insufficient information;
- invalid ITSI for the list search number.

4.2.3.1.5 Cancellation

Not applicable.

4.2.3.2 Invocation and operation

If there is no list associated with the LSN or the LSN is not activated, the calling user shall receive an indication that the call has failed, e.g. an indication of number unobtainable.

4.3 Interactions with other supplementary services

4.3.1 Calling line identification presentation

Attendant who has activated the SS-Calling Line Identification Presentation (CLIP): there shall not be any interaction.

4.3.2 Connected line identification presentation

Calling user who has activated SS-Connected Line Identification Presentation (COLP): there shall not be any interaction.

4.3.3 Calling/Connected line identification restriction

Served user who has activated SS-Calling/Connected Line Identification Presentation (CLIR): there shall not be any interaction.

Attendant who has activated SS-CLIR: there shall not be any interaction, i.e. the calling user shall not receive the identity of the attendant unless the calling user has an override capability.

Calling user who has activated SS-CLIR: there shall not be any interaction. The attendant shall not receive the identity of the calling user, unless the attendant has an override capability.

4.3.4 Call report

List search call shall not have any interaction with call report. It is an implementation option as to which attendant the call report shall be sent to.

4.3.5 Talking party identification

List search call shall not have any interaction with talking party identification.

4.3.6 Call forwarding unconditional

List search call shall not have any interaction with call forwarding unconditional as SS-Call Forwarding Unconditional (CFU) cannot be activated against a list search number.

Attendant who has activated SS-CFU: there shall not be any interaction. On a call to the attendant, SS-CFU shall be invoked and the call shall be diverted as appropriate. If the call cannot be completed to the diverted-to user, then the next attendant in the search list shall be offered the call.

4.3.7 Call forwarding on busy

List search call shall not have any interaction with call forwarding on busy as SS-Call Forwarding on Busy (CFB) cannot be activated against the list search number.

Attendant who has activated SS-CFB: on a call to the attendant and that attendant is busy, dependent on the network implementation, SS-CFB may be invoked or the call may be offered to the next attendant in the search list.

4.3.8 Call forwarding on no reply

List search call shall not have any interaction with call forwarding on no reply as SS-Call Forwarding on No Reply (CFNRy) cannot be activated against the list search number.

Attendant who has activated SS-CFNRy: on a call to the attendant and that attendant does not reply, dependent on the network implementation, SS-CFNRy may be invoked or the call may be offered to the next attendant in the search list.

4.3.9 Call forwarding on not reachable

List search call shall not have any interaction with call forwarding on not reachable as SS-Call Forwarding on Not Reachable (CFNRc) cannot be activated against the list search number.

Attendant who has activated SS-CFNRc: on a call to the attendant and that attendant is not reachable, dependent on the network implementation, SS-CFNRc may be invoked or the call may be offered to the next attendant in the search list.

4.3.10 List search call

It is possible that an attendant in the list may be a list search number. Under these circumstances the incoming call shall invoke the additional list search call. It is an operator option as to the number of times SS-LSC may be invoked during the course of call.

4.3.11 Call authorized by dispatcher

SS-Call Authorized by Dispatcher (CAD) which applies to the attendant: if the attendant is a restricted user i.e. certain incoming categories of incoming calls cannot proceed before authorization by a dispatcher, then SS-CAD shall be invoked before the call is routed to the attendant. After authorization, the dispatcher shall allow the incoming call to proceed to the attendant.

Calling user who has invoked SS-CAD: there shall not be any interaction.

4.3.12 Short number addressing

List search call shall not have any interaction with short number addressing.

4.3.13 Area selection

If the calling user has activated SS-Area Selection (AS) and the attendant is outside the selected area, then the call shall fail and the next attendant in the list shall be tried.

4.3.14 Access priority

List search call shall not have any interaction with access priority.

4.3.15 Priority call

List search call shall not have any interaction with priority call.

4.3.16 Call waiting

Attendant who has activated SS-Call Waiting (CW): SS-CW shall be invoked and the attendant shall receive an indication that an incoming call is waiting for attention.

4.3.17 Call hold

List search call shall not have any interaction with call hold.

4.3.18 Call completion to busy subscriber

If the supplementary service has searched through the list without success, and has informed the calling user that the call cannot be completed due to busy attendants, as a network implementation option, the calling user may invoke the SS-Call Completion to Busy Subscriber (CCBS). If the SS-CCBS invocation is accepted, the network shall monitor the attendants in the search list.

4.3.19 Late entry

List search call shall not have any interaction with late entry.

4.3.20 Transfer of control

List search call shall not have any interaction with transfer of control.

4.3.21 Pre-emptive priority call

The Pre-emptive Priority Call (PPC) shall be offered to the attendants in the search list by sequence, (the sequence may offer the PPC to the available attendants in the list first), until either (a) an attendant answers or (b) a busy attendant is found and is pre-empted or (c) the end of the search list is reached without success.

4.3.22 Include call

List search call shall not have any interaction with include call.

4.3.23 Advice of charge

List search call shall not have any interaction with advice of charge.

4.3.24 Barring of outgoing calls

List search call shall not have any interaction with barring of outgoing calls. For the calling user, only the barring of the list search number is checked by the network. There is no re-checking for barring calls to the attendants.

4.3.25 Barring of incoming calls

SS-BIC may be activated against the list search number. This shall not affect the individual barring profiles that the attendants may have activated.

4.3.26 Discreet listening

Not applicable. SS-Discreet Listening (DL) cannot be invoked to a list search number.

4.3.27 Ambience listening

Not applicable. SS-Ambience Listening (AL) cannot be invoked to a list search number.

4.3.28 Dynamic group number assignment

List search call shall not have any interaction with dynamic group number assignment.

4.3.29 Call completion on no reply

If the supplementary service has searched through the list without success, and has informed the calling user that the call cannot be completed due to no reply from the attendants, as a network implementation option, the calling user may invoke the SS-Call Completion on No Reply (CCNR). If the SS-CCNR invocation is accepted, the network shall monitor the attendants.

4.3.30 Call retention

List search call shall not have any interaction with call retention.

4.4 Inter-working considerations

List search call shall be available across the intersystem interface.

4.5 Overall SDL

Figure 1 contains the dynamic description of SS-LSC using the Specification and Description Language (SDL) defined in ITU-T Recommendation Z.100 [2]. The SDL process represents the behaviour of the network in providing SS-LSC. Input signals from the left and output signals to the left represent primitives from and to the served user.

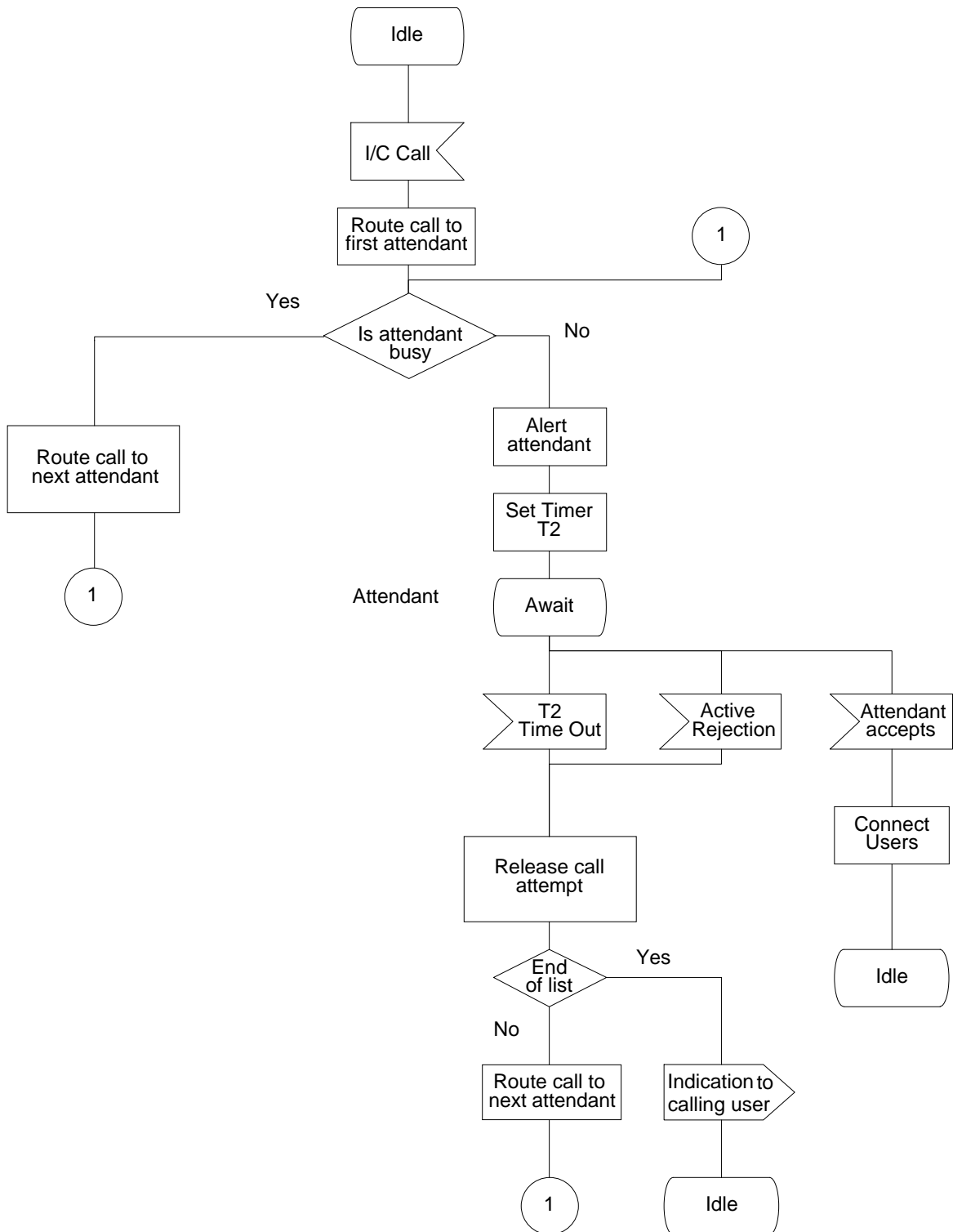


Figure 1: List search call supplementary service, overall SDL

History

Document history			
November 1994	Public Enquiry	PE 73:	1994-11-07 to 1995-03-03
December 1995	Vote	V 94:	1995-12-27 to 1996-02-16
April 1996	First Edition		