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**Integrated Services Digital Network (ISDN);
Connected Line Identification Presentation (COLP) and
Connected Line Identification Restriction (COLR)
supplementary services
Functional capabilities and information flows**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI) and was adopted having passed through the ETSI standards approval procedure.

In accordance with CCITT Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and,
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage 2 aspects (functional capabilities and information flows) needed to support the Connected Line Identification Presentation (COLP) and Connected Line Identification Restriction (COLR) supplementary services. The stage one aspects are detailed in ETS 300 094 (1992) [COLP] and ETS 300 095 (1992) [COLR], respectively, and the stage three aspects in ETS 300 097 (1992) [COLP] and ETS 300 098 (1992) [COLR], respectively.

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1 Scope

This standard defines the stage two of the pan-European Integrated Services Digital Network (ISDN) as provided by the European public telecommunications operators for the Connected Line Identification Presentation (COLP) and Connected Line Identification Restriction (COLR) supplementary services. Stage two identifies the functional capabilities and the information flows needed to support the service description. The stage two description also identifies user operations not directly associated with a call (see CCITT Recommendation I.130 [1]).

This standard is defined according to the methodology specified in CCITT Recommendation Q.65 [2].

This standard does not formally describe the relation between these supplementary service and the basic call but, where possible, this information is included for guidance.

In addition this standard does not specify the requirements where the service is provided to the user via a private ISDN. This standard does not specify the requirements for the allocation of defined functional entities within a private ISDN; it does however define which functional entities may be allocated to a private ISDN.

This standard does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN.

The COLP supplementary service provides the calling party with the possibility to receive identification of the connected party.

The COLR supplementary service enables the connected party to prevent presentation of its ISDN number to the calling party.

The COLP and COLR supplementary services are applicable to all telecommunication services.

This standard is applicable to the stage three standards for the ISDN COLP and COLR supplementary services. The term "stage three" is defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement, i.e. as a strict command or prohibition, as authorisation leaving freedom, as a capability or possibility, this shall be reflected in the text of the relevant stage three standards.

Furthermore, conformance to this standard is met by conforming to the stage three standards with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for this standard.

2 Normative references

This standard 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 characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [2] CCITT Recommendation Q.65 (1988): "Stage 2 of the method for the characterisation of services supported by an ISDN".
- [3] ETS 300 094 (1992): "Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Service description".

- [4] ETS 300 095 (1992): "Integrated Services Digital Network (ISDN); Connected Line Identification Restriction (COLR) supplementary service; Service description".
- [5] CCITT Recommendation Q.71 (1988): "Basic call handling; Functional capabilities and information flows".
- [6] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [7] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [8] CCITT Recommendation E.164 (1988): "Numbering plan for the ISDN era".
- [9] CCITT Recommendation I.330 (1988): "ISDN numbering and addressing principles".
- [10] ETS 300 209: "Integrated Services Digital Network (ISDN); Freephone (FPH) supplementary service; Functional capabilities and information flows".
- [11] CCITT Recommendation Z.100 (1988): "Functional Specification Description Language (SDL)".
- [12] ETS 300 062 (1991): "Integrated Services Digital Network (ISDN); Direct Dialling In (DDI) supplementary service; Service description".
- [13] ETS 300 050 (1991): "Integrated Services Digital Network (ISDN); Multiple Subscriber Number (MSN) supplementary service; Service description".

3 Definitions

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

Connected line identity: the address (the ISDN number, and if supplied the subaddress) of the connected line, and the screening indicator. If these are not available the reason is indicated, via the presentation indicator.

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [6], § 2.3 definition 308.

International number: an ISDN number structured as specified in § 3.2 (the paragraphs relating to international number) of CCITT Recommendation E.164 [8].

ISDN number: a number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [8].

National number; National significant number: an ISDN number structured as specified in § 3.2 (the paragraphs relating to national significant number) of CCITT Recommendation E.164 [8].

Partial Number: a part of an ISDN number which is significant for distinguishing between addressable entities beyond the network boundary. The partial number digits and the partial number length shall be governed by the requirements of the direct dialling in and multiple subscriber number supplementary services (see ETS 300 062 [12] and ETS 300 050 [13]).

Presentation Indicator (PI): the PI Presentation Indicator provides instructions on whether or not the provided connected line identity is allowed to be presented or not, or indicates that the number is not available.

Screening Indicator (SI): the SI provides information on the source and the quality of the provided information.

Service; telecommunications service: see CCITT Recommendation I.112 [6], § 2.2 definition 201.

Subaddress: see CCITT Recommendation I.330 [9], § 5.4.

Subscriber number: an ISDN number structured as specified in § 3.2 (the paragraphs relating to subscriber number) of CCITT Recommendation E.164 [8].

Supplementary service: see CCITT Recommendation I.210 [7], § 2.4.

4 Symbols and abbreviations

CC	Call Control
CCA	Call Control Agent
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
FEA	Functional Entity Action
INT TR	International Transit Exchange
ISDN	Integrated Services Digital Network
LE	Local Exchange
PI	Presentation Indicator
PTNX	Private Telecommunications Network Exchange
SDL	Specification and Description Language
SI	Screening Indicator
TE	Terminal Equipment

5 Description

The relationship between the COLP and the COLR supplementary services is described in ETS 300 094 [3], subclause 6.3.3 and ETS 300 095 [4], subclause 6.1.

The provisions for overriding the COLR supplementary service are described in ETS 300 094 [3], subclause 8.5.4 and ETS 300 095 [4], Clause 5 and subclause 6.2.3.

6 Derivation of a functional model

6.1 Functional model description

The model for the COLP and COLR supplementary services is shown in figure 1.

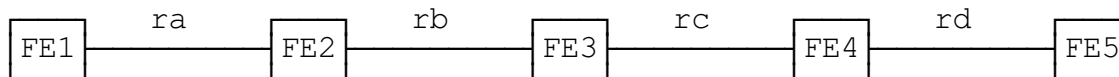


Figure 1: Functional model

6.2 Description of the functional entities

The functional entities required by the COLP and COLR supplementary services above those of the basic call are as follows:

- FE1: service requesting entity;
- FE2: service providing entity;
- FE3: handling of connected line identity at international gateway;
- FE4: service information checking entity;
- FE5: connected party provided information and COLR requesting entity.

6.3 Relationship with a basic service

The relationship with a basic service is shown in figure 2.

NOTE: The basic call model is defined in CCITT Recommendation Q.71 [5], § 2.1, with the exception that r1 represents an outgoing call relationship from a CCA and r3 represents an incoming call relationship to a CCA.

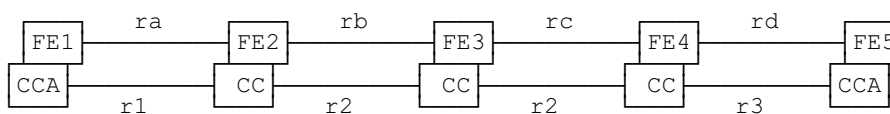


Figure 2: Example of a mapping of the functional model on a model for the basic call

7 Information flows

7.1 Information flow diagrams

Figure 3 shows the information flow diagram for the COLP and the COLR supplementary services.

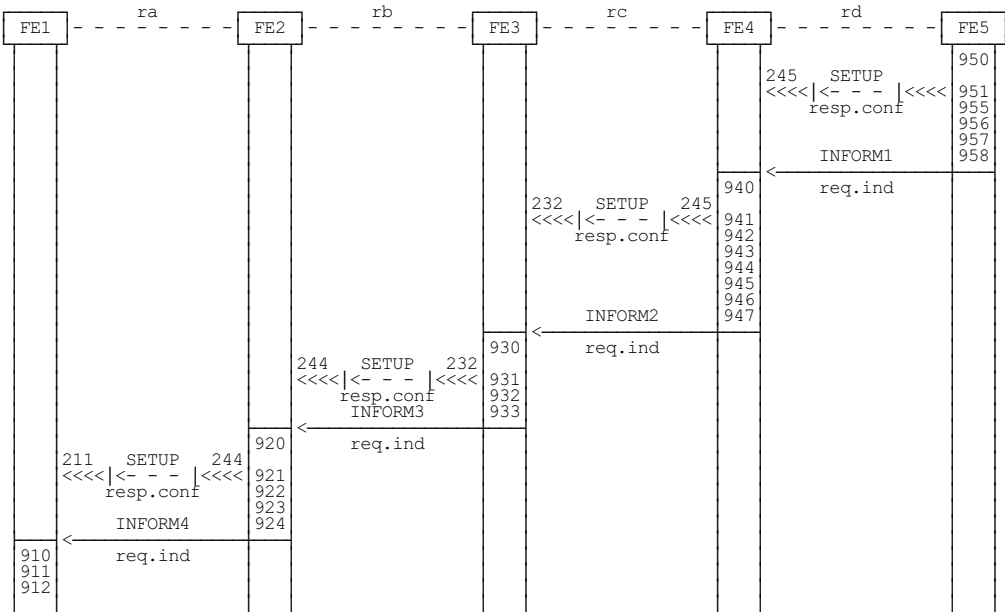


Figure 3

7.2 Definition of individual information flows

Within the definitions below, PI can take one of the following three rules:

- a) presentation allowed;
- b) presentation restricted; or
- c) number not available.

Within the definitions below, SI can take one of the following three rules:

- a) user provided, verified and passed;
- b) network provided; or
- c) user provided, not-screened.

7.2.1 Relationship ra

7.2.1.1 Contents of INFORM4

The contents of the INFORM4 are shown in table 1.

The contents for SETUP are as specified for basic call (see CCITT Recommendation Q.71 [5]).

Table 1

Parameter	Allowed value	req.ind
Number information		M
- Numbering plan identification	ISDN number	M
- Type of number	National number International number	M
- Number digits		M
- Subaddress		O (NOTE 1)
Presentation indicator (PI)	Presentation allowed Presentation restricted Number not available	M (NOTE 2)
Screening indicator (SI)	Network provided number User provided number, verified and passed User provided number, not screened	M
<p>NOTE 1: This information flow is included only in the case that FE5 provides the information.</p> <p>NOTE 2: No number information is provided in the case that the COLR supplementary service applies.</p>		

7.2.2 Relationship rb

7.2.2.1 Contents of INFORM3

The contents of the INFORM3 are those in table 2. The contents for SETUP are as specified for basic call (see CCITT Recommendation Q.71 [5]).

Table 2

Parameter	Allowed value	req.ind
Number information		M
- Numbering plan identification	ISDN number	M
- Type of number	National number International number	M
- Number digits		M
- Subaddress		O (NOTE 1)
Presentation indicator (PI)	Presentation allowed Presentation restricted Number not available	M (NOTE 2)
Screening indicator (SI)	Network provided number User provided number, verified and passed User provided number, not screened	M
<p>NOTE 1: This information flow is included only in the case that FE5 provides the information.</p> <p>NOTE 2: No number information is provided in the case that the COLR supplementary service applies and no bilateral agreement exists between the networks for the handling of restricted information.</p>		

7.2.3 Relationship rc

7.2.3.1 Contents of INFORM2

The contents of the INFORM2 are shown in table 3. The contents for SETUP are as specified for basic call (see CCITT Recommendation Q.71 [5]).

Table 3

Parameter	Allowed value	req.ind
Number information		M
- Numbering plan identification	ISDN number	M
- Type of number	National number International number	M
- Number digits		M
- Subaddress		O (NOTE 1)
Presentation indicator (PI)	Presentation allowed Presentation restricted	M
Screening indicator (SI)	Network provided number User provided number, verified and passed User provided number, not screened	M
NOTE 1: This information flow is included only in the case that FE5 provides the information.		

7.2.4 Relationship rd

7.2.4.1 Contents of INFORM1

The contents of the INFORM1 are shown in table 4. The contents for SETUP are as specified for basic call (see CCITT Recommendation Q.71 [5]).

Table 4

Parameter	Allowed value	req.ind
Number information		O (NOTE 1)
- Numbering plan identification	ISDN number	M
- Type of number	Partial number Subscriber number National number International number (NOTE 2)	M
- Number digits		M
- Subaddress		O (NOTE 3)
Presentation indicator	Presentation allowed Presentation restricted	O (NOTE 4)
<p>NOTE 1: Included if FE5 provides information.</p> <p>NOTE 2: When a special arrangement exists, only national or international number is allowed.</p> <p>NOTE 3: May be omitted even if number information is provided.</p> <p>NOTE 4: This information flow is included only in the case that the COLR supplementary service temporary mode is invoked in the terminal.</p>		

8 SDL diagrams for functional entities.

The SDL's are provided according to CCITT recommendation Z.100 [11].

8.1 FE1

The SDL for FE1 is shown in figures 4 and 5.

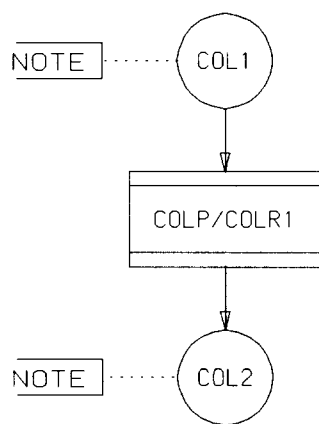


Figure 4

Note to figure 4.

NOTE: COL1 and COL2 break the basic call transition:

- following the receipt of the SETUP resp.conf (see figure 2-8 (sheet 2 of 11) of CCITT Recommendation Q.71 [5] following state "1 CALL SENT" and "2 CONNECTION PROCEEDING". COL2 reconnects at the same point; or
- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 3 of 19) of CCITT Recommendation Q.71 [5] following state "1 r1-r2 CALL SENT" and following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 4 of 19) of CCITT Recommendation Q.71 [5] following state "26 r1-r2 CALL SENT (alerting)". COL2 reconnects at the same point; or
- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [5] following state "18 r2-r2 CALL SENT". COL2 reconnects at the same point.

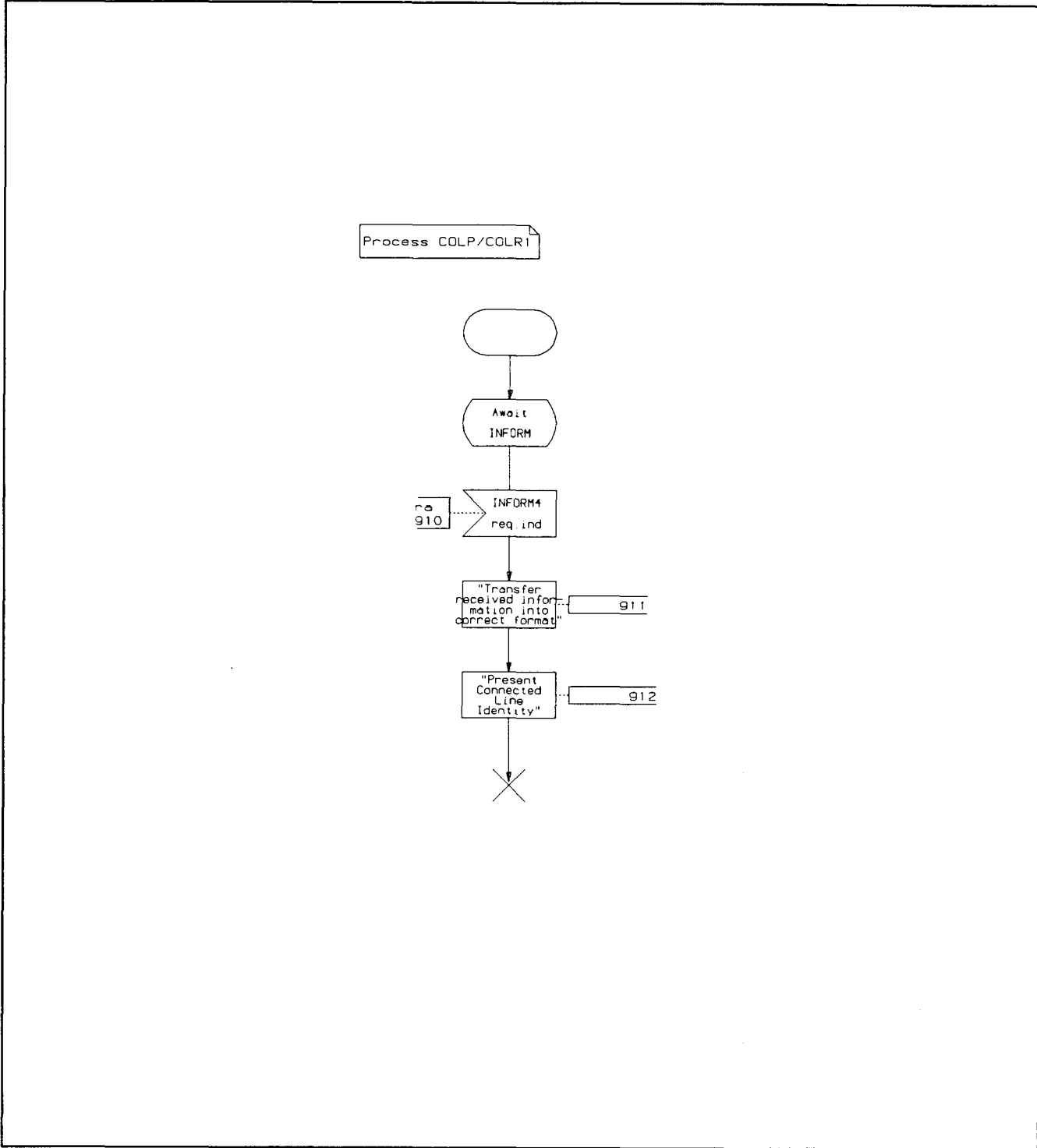


Figure 5

8.2 FE2

The SDL for FE2 is shown in figure 6 and 7.

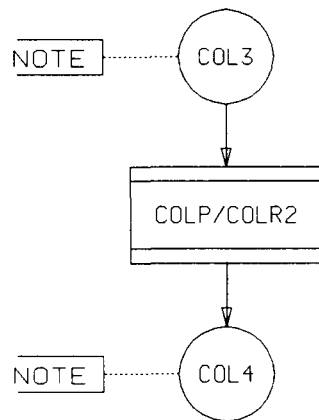


Figure 6

Note to figure 6.

NOTE: COL3 and COL4 break the basic call transition:

- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 3 of 19) of CCITT Recommendation Q.71 [5] following state "1 r1-r2 CALL SENT" and following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 4 of 19) of CCITT Recommendation Q.71 [5] following state "26 r1-r2 CALL SENT (alerting)". COL4 reconnects at the same point; or
- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [5] following state "18 r2-r2 CALL SENT". COL4 reconnects at the same point.

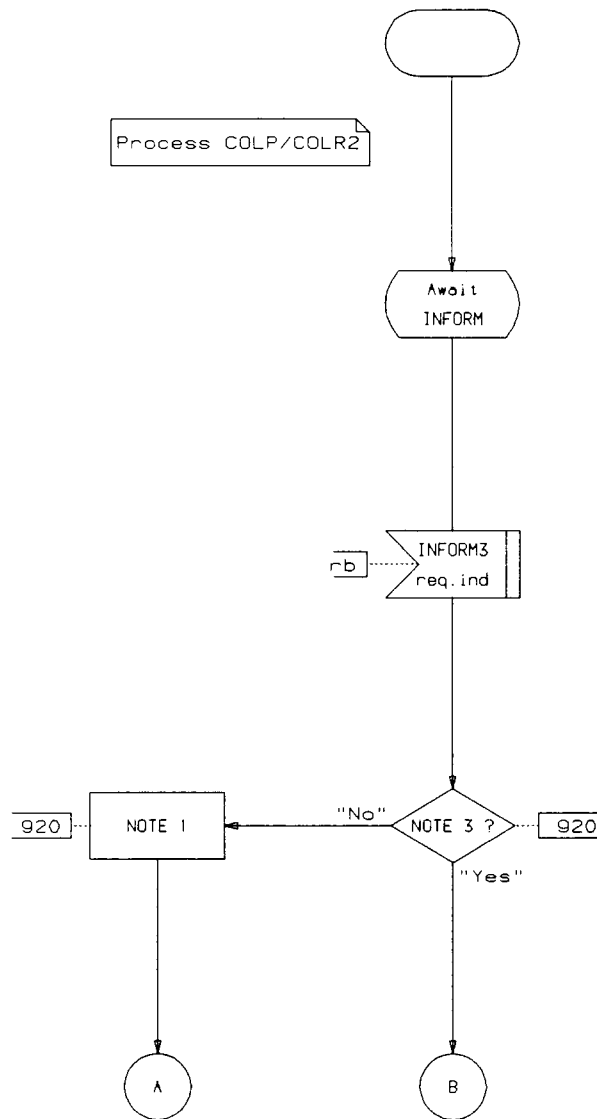


Figure 7 (Sheet 1 of 2)

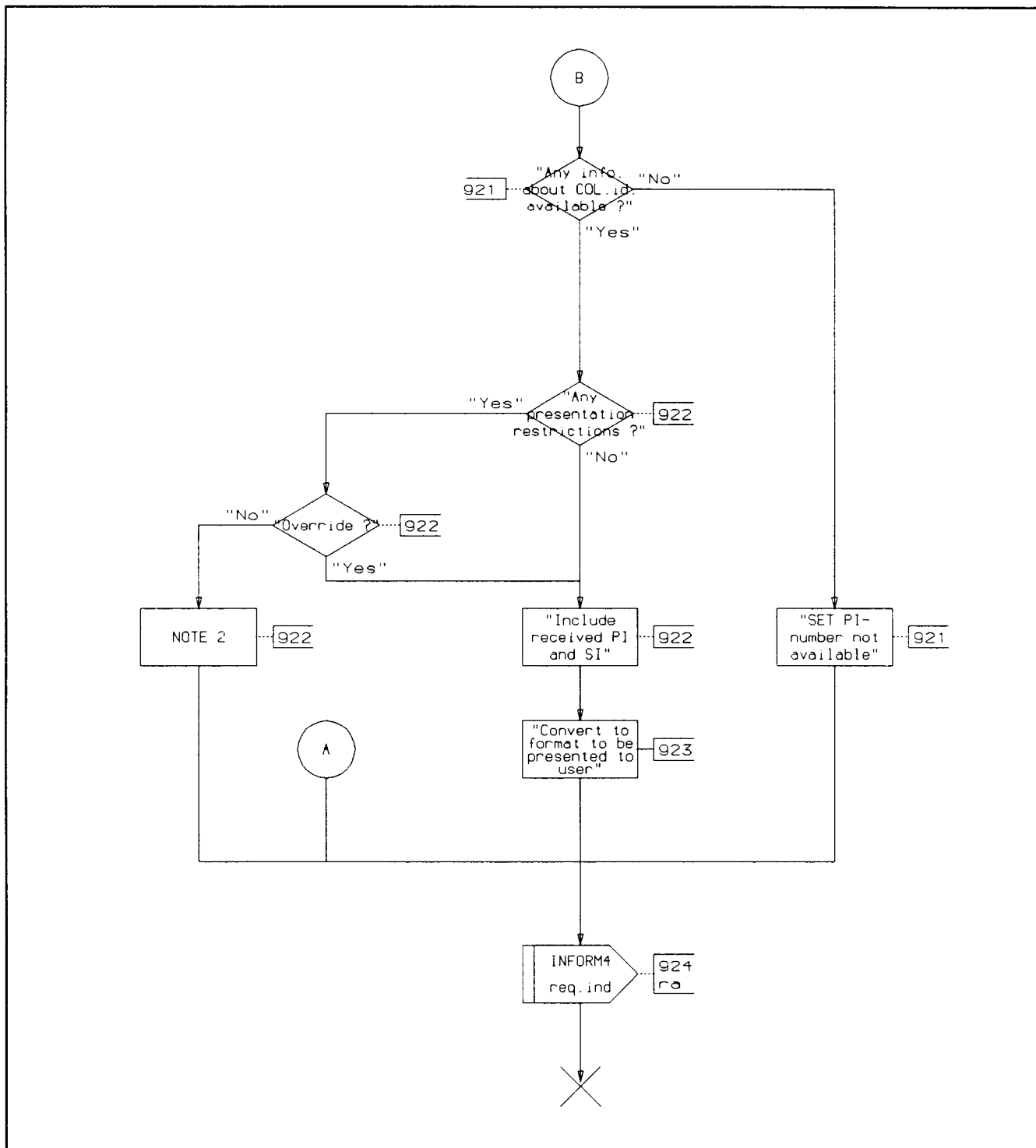


Figure 7 (Sheet 2 of 2)

Notes to figure 7.

NOTE 1: No information about the COL identity is sent to the calling party.

NOTE 2: SET PI - presentation restricted. Erase number information. No number information shall be presented to the calling party.

NOTE 3: COLP subscribed to or COLP generally available.

8.3 FE3

The SDL for FE3 is shown in figure 8 and 9.

In the case of a national call FE3 has null functionality.

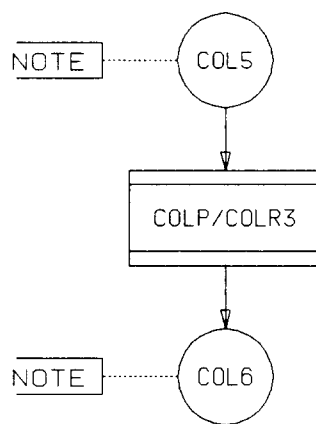


Figure 8

Note to figure 8.

NOTE: COL5 and COL6 break the basic call transition:

- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [5] following state "18 r2-r2 CALL SENT". COL6 reconnects at the same point.

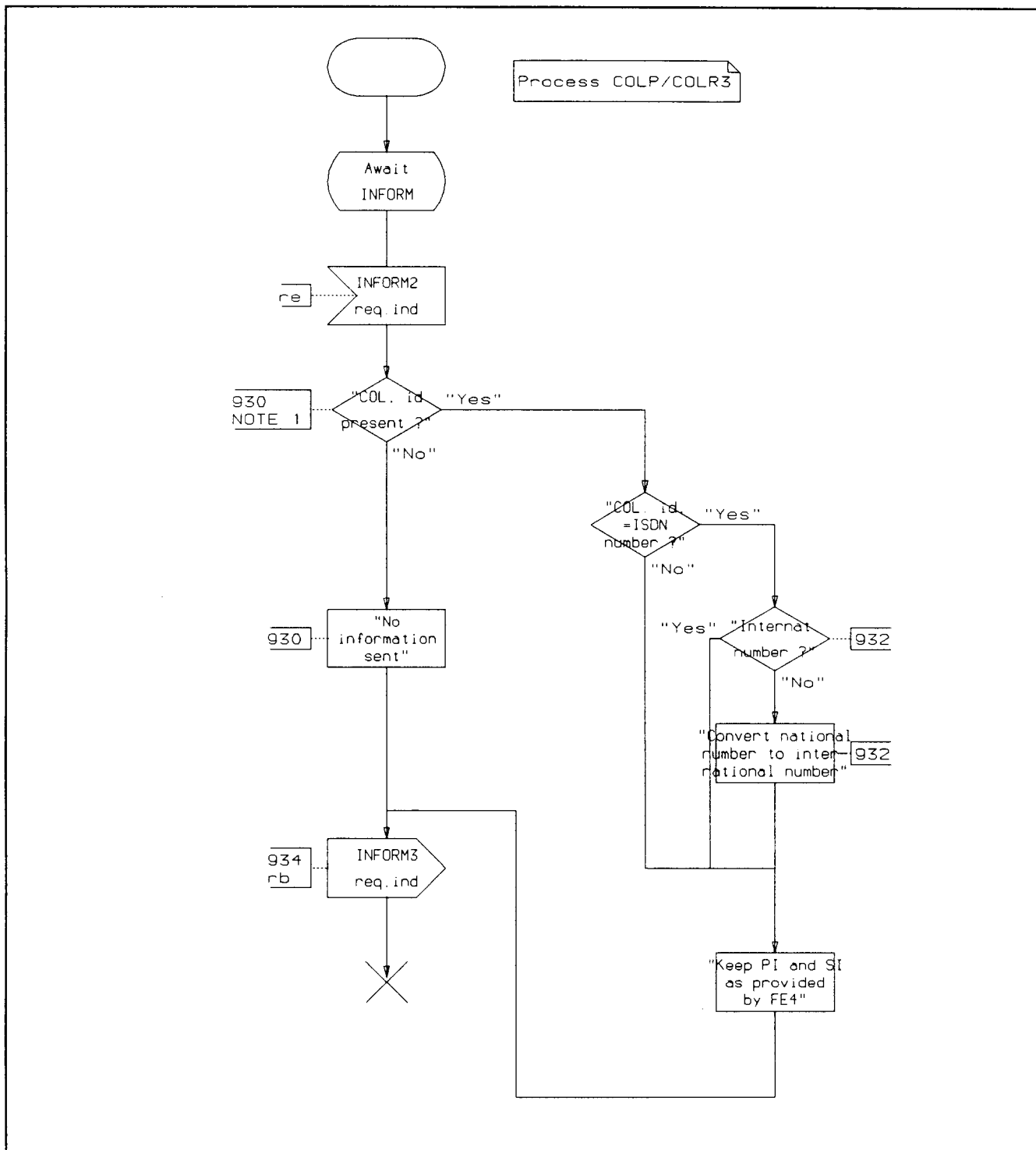


Figure 9

8.4 FE4

The SDL for FE4 is shown in figure 10, 11 and 12.

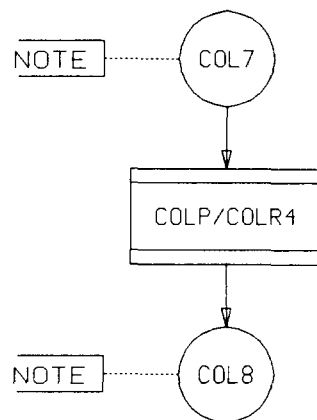


Figure 10

Note to figure 10.

NOTE: COL7 and COL8 break the basic call transition:

- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [5] following state "18 r2-r2 CALL SENT". COL8 reconnects at the same point; or
- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [5] following state "17 r2-r1 CALL SENT". COL8 reconnects at the same point.

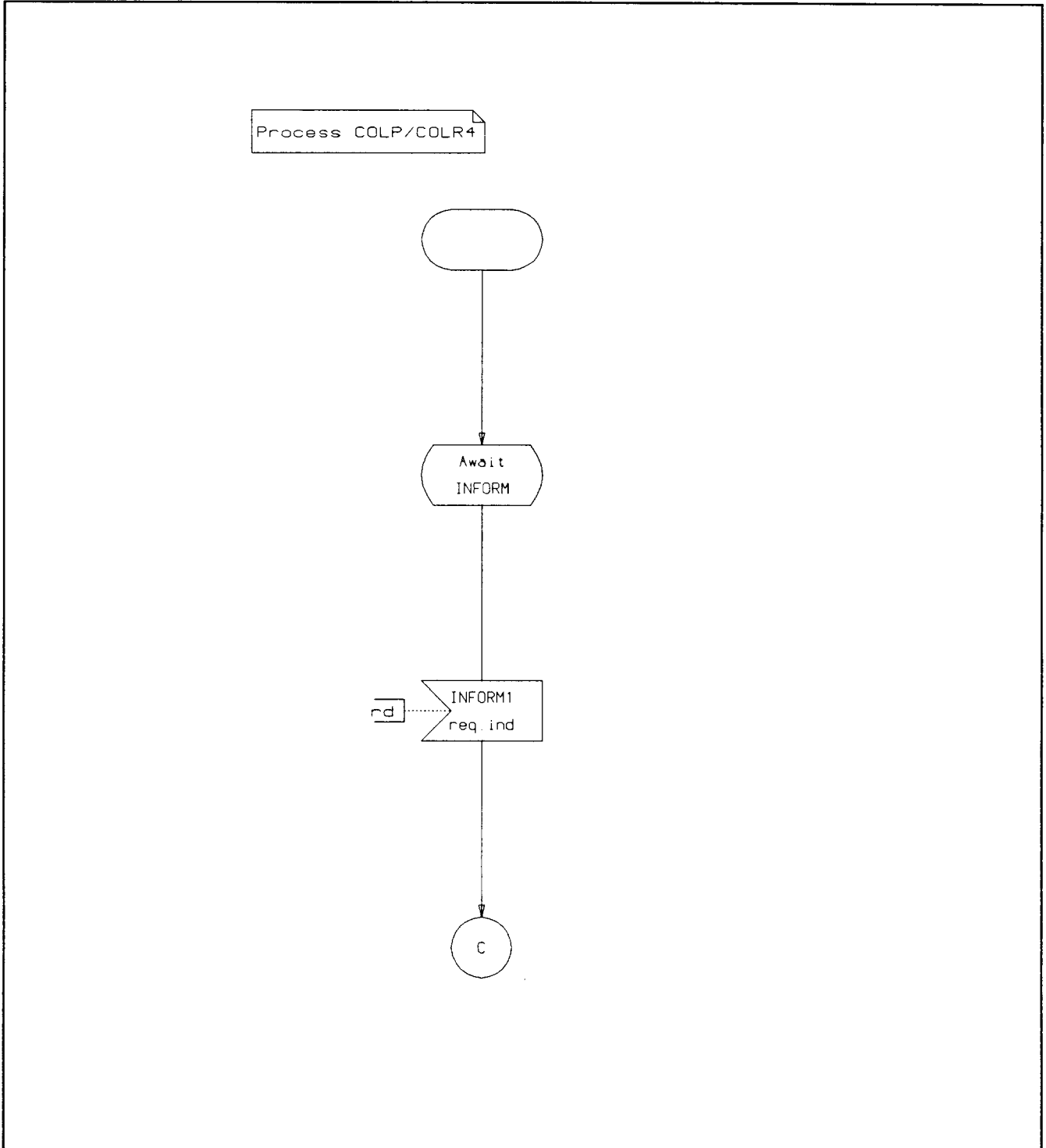


Figure 11 (Sheet 1 of 2)

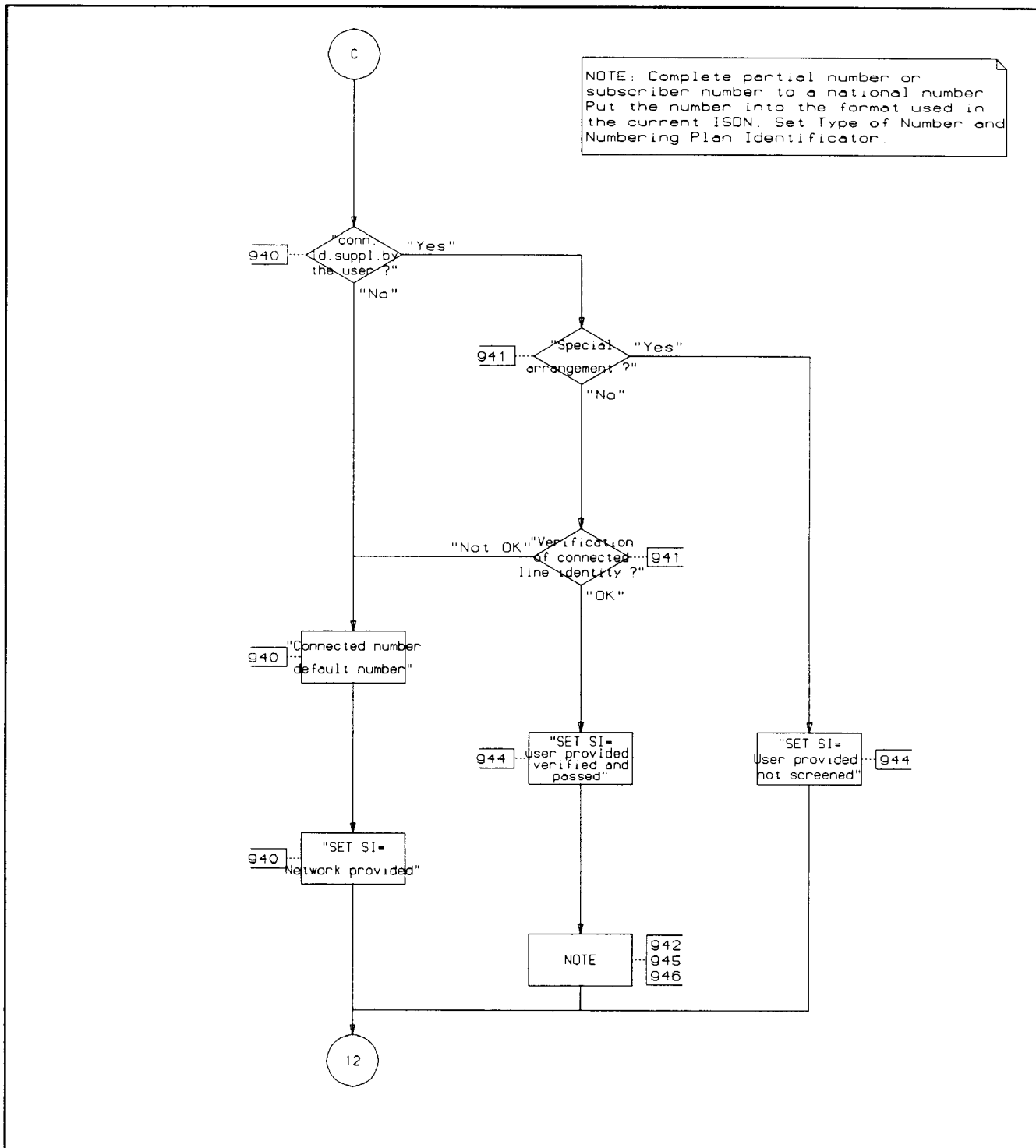


Figure 11 (Sheet 2 of 2)

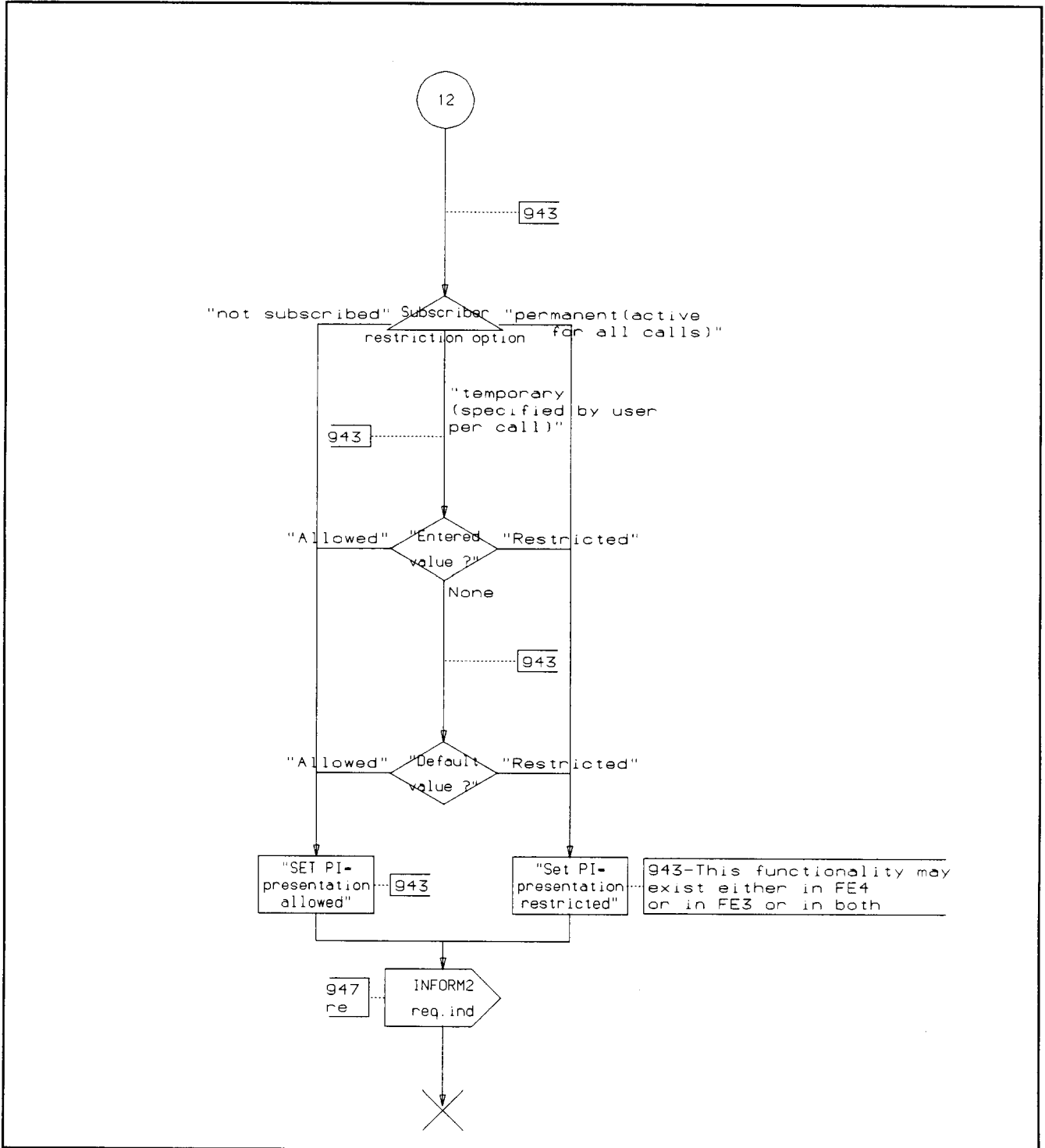


Figure 12

Note to figure 12.

NOTE: When the COLR supplementary service is invoked, some network providers may not send the calling line identity to other network providers. The functionality to do this may exist either in FE4 or in FE3 or in both.

8.5 FE5

The SDL for FE5 is shown in figure 13 and 14.

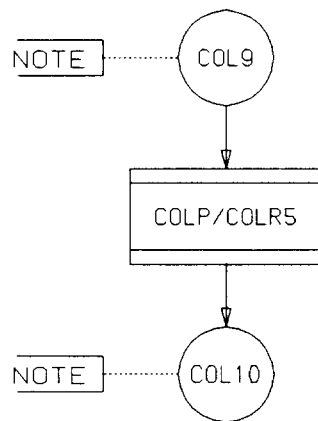


Figure 13

Note to figure 13.

NOTE: COL9 and COL10 break the basic call transition:

- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [5] following state "18 r2-r2 CALL SENT". COL10 reconnects at the same point; or
- following the receipt of the SETUP resp.conf (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [5] following state "17 r2-r1 CALL SENT". COL10 reconnects at the same point; or
- following the receipt of the SETUP resp.conf (see figure 2-8 (sheet 8 of 11) of CCITT Recommendation Q.71 [5] following state "4 INCOMING SETUP". COL10 reconnects at the same point.

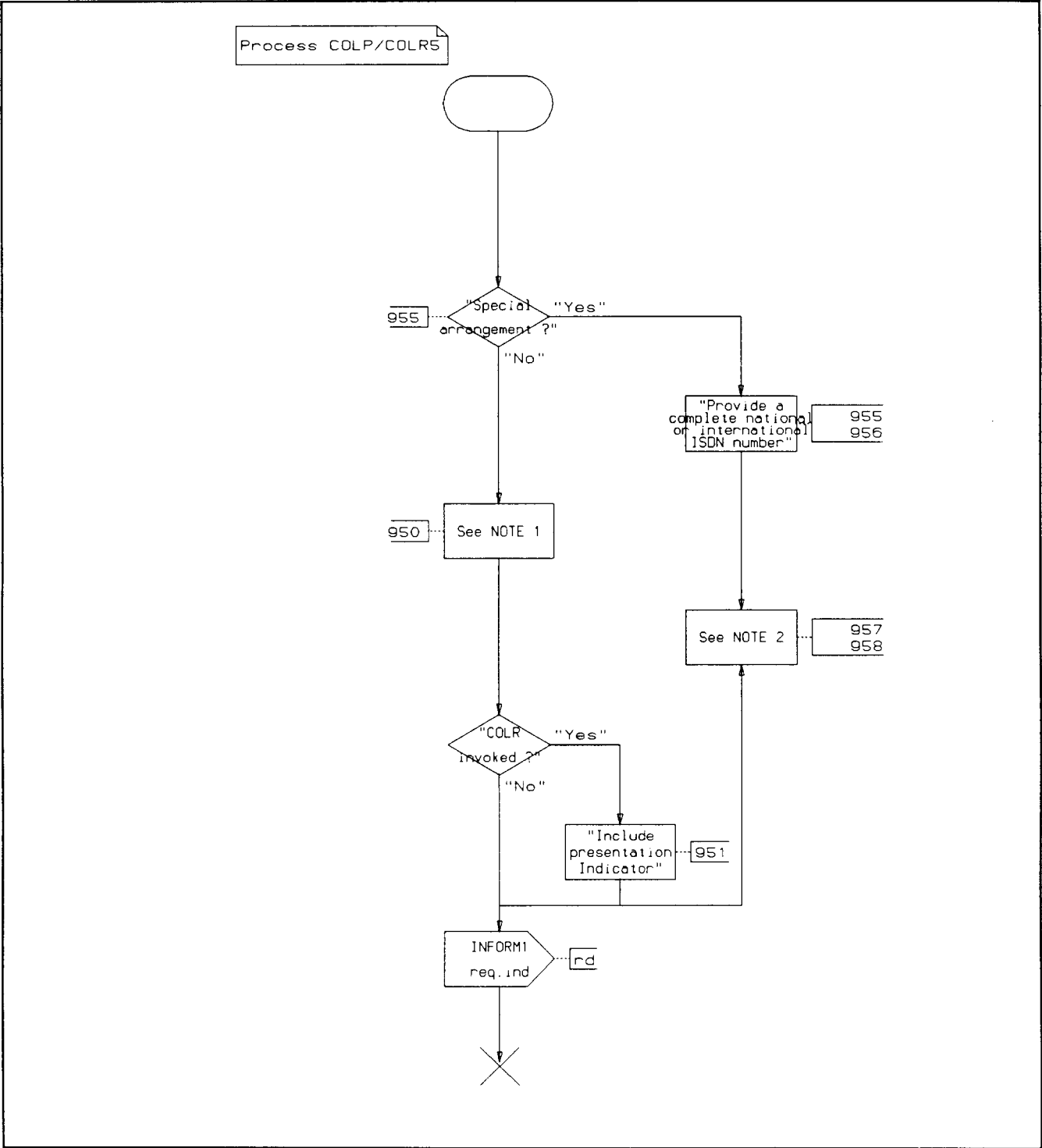


Figure 14

Notes to figure 14.

NOTE 1: Provide a partial, or subscriber, or national, or international number according to destination user's request.

NOTE 2: Set type of number national or international number and set numbering plan identification ISDN number.

9 Functional entity actions (FEAs)

9.1 FEAs of FE1

- 910: The functional entity shall receive the service information from FE2.
- 911: The functional entity shall transfer the received information into a format that makes it usable for establishing a call.
- 912: The functional entity shall present the received information to the served user.

9.2 FEAs of FE2

- 920: The functional entity shall check if the COLP supplementary service is subscribed to.
- 921: The functional entity shall check if the connected line identity is provided. If the number is not available, then FE2 shall set the presentation indicator to "number not available".
- 922: The functional entity shall check if presentation restrictions exist. If presentation restrictions exist, the number and subaddress information shall be erased, no number information shall be sent to the calling party and the received presentation indicator (PI) showing "presentation restricted" shall be sent to FE1 unless FE1 has the override category. If FE1 has such a category, then all the received information shall be sent to FE1.
- 923: The functional entity shall transfer the received information into a format that makes it usable by FEA911 (e.g. adding prefixes).
- 924: The functional entity shall forward the information to FE1.

9.3 FEAs of FE3

In the case of a national call, FE3 has null functionality.

- 930: The functional entity shall check if no information, is received. In this case no information is sent to FE2.
- 931: The functional entity shall check if the connected party ISDN number may be passed between the networks.
- 932: The functional entity shall convert to an international number if not already in this form.
- 933: If a number cannot be passed to FE2, FE3 shall erase the connected party ISDN number and shall set the presentation indicator to "presentation restricted".
- 934: The functional entity shall forward the information to FE2.

9.4 FEs of FE4

- 940: The functional entity shall check if the connected line identity is provided by FE5 and if not, shall include the default connected party ISDN number with presentation indicator set to "network provided".
- 941: The functional entity shall verify connected line identity (unless a special arrangement for not screening the number exists).
- 942: The functional entity shall complete a partial number or a subscriber number to a national number. FE4 shall put the number into the format used in the current ISDN.
- 943: The functional entity shall set the presentation indicator
- 944: The functional entity shall set the screening indicator.
- 945: The functional entity shall set the type of number (when a special arrangement exists, FE5 shall also set the type of number).
- 946: The functional entity shall set the numbering plan identification (when a special arrangement exists, FE5 shall also set the numbering plan identification).
- 947: The functional entity shall forward the information to FE3.

9.5 FEs of FE5

- 950: The functional entity shall receive and shall forward destination users service requests to FE4.
- 951: The functional entity shall request the COLR supplementary service temporary mode (override of network stored value of present action indicator).
- 955: In the case of a special arrangement, FE5 shall screen the number to be provided.
- 956: In the case of a special arrangement, FE5 shall complete the number to national or international format (for ISDN-numbers).
- 957: The functional entity shall set the type of number.
- 958: The functional entity shall set the numbering plan identification.

10 Allocation of functional entities to physical locations

The possible locations of functional entities FE1, FE2, FE3, FE4 and FE5 are shown in table 5.

Table 5

SCENARIOS	FE1	FE2	FE3	FE4	FE5
Scenario 1	TE	LE	-	LE	TE
Scenario 2	TE	LE	INT TR	LE	TE
Scenario 3	PTNX	LE	-	LE	PTNX
Scenario 4	PTNX	LE	INT TR	LE	PTNX
Scenario 5	PTNX	LE	-	LE	TE
Scenario 6	PTNX	LE	INT TR	LE	TE
Scenario 7	TE	LE	-	LE	PTNX
Scenario 8	TE	LE	INT TR	LE	PTNX

11 Interactions with other supplementary services

The COLP supplementary service interacts with the freephone supplementary service in such a way that when the freephone supplementary service is used, the served user shall receive the freephone number as the connected line identification. The description of this is included in the stage two description of the freephone supplementary service (ETS 300 209 [10]).

Annex A (informative): Terminal interchangeability between public and private ISDNs

Terminals conforming to this standard are also compatible with private ISDNs offering interfaces conforming to the Connected Line Identifier Presentation (COLP) supplementary service aspects of ETS 300 173, provided the terminal is able to accept the Calling party number information element with the numbering plan identifier coded as "private numbering plan".

Terminals conforming to the Connected Line Identifier Restriction (COLR) aspects of ETS 300 173 are also compatible with public ISDNs offering interfaces conforming to this standard.

Bibliography

ETS 300 173: "Private Telecommunication Networks (PTN); Specification, functional model and information flows; Identification supplementary services".

History

Document history	
May 1992	First Edition
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