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Contents

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).

In accordance with CCITT Recommendation I.130, the following three level structure is used to describe the supplementary telecommunication 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 Call Deflection (CD) supplementary service. The stage 1 and stage 3 aspects are detailed in ETS 300 202 (1994) and ETS 300 207-1 (1994), respectively.

Proposed transposition dates	
Date of latest announcement of this ETS (doa):	31 March 1995
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 September 1995
Date of withdrawal of any conflicting National Standard (dow):	30 September 1995

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1 Scope

This European Telecommunication Standard (ETS) defines the stage two of the Call Deflection (CD) supplementary service for the pan-European ISDN as provided by European public telecommunications operators. Stage two identifies the functional capabilities and the information flows needed to support the stage one service description. The stage two description also identifies user operations not directly associated with a call (see CCITT Recommendation I.130 [3]).

This ETS is specified according to the methodology defined in CCITT Recommendation Q.65 [6].

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

In addition this ETS does not specify the requirements where the service is provided to the user via a private ISDN. This ETS does not specify the requirements for the allocation of defined Functional Entities (FEs) within a private ISDN; it does, however, define which FEs may be allocated to a private ISDN.

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

The CD supplementary service enables the served user to respond to an incoming call by requesting redirection of that call to another user. The CD supplementary service can only be invoked before the connection is established by the served user, i.e. in response to the offered call, or during the period that the served user is being informed of the call. The served user's ability to originate calls is unaffected by the CD supplementary service.

The CD supplementary service is applicable to all circuit-switched telecommunication services.

This ETS is applicable to the stage three standards for the ISDN, CD supplementary service. The term "stage three" is also defined in CCITT Recommendation I.130 [3]. Where the text indicates the status of a requirement, i.e. as strict command or prohibition, as authorization leaving freedom, as a capability or possibility, this shall be reflected in the text of the relevant stage three standards.

Furthermore, conformance to this ETS 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 ETS.

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 E.164 (1991): "Numbering plan for the ISDN era".

[2] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".

[3] CCITT Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[4] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".

[5] CCITT Recommendation Q.9 (1988): "Vocabulary of switching and signalling terms".

[6] CCITT Recommendation Q.65 (1988): "Stage 2 of the method for the characterization of services supported by an ISDN".

[7] CCITT Recommendation Q.71 (1988): "ISDN 64 kbit/s circuit mode switched bearer service".

[8] CCITT Recommendation Z.100 (1988): "Specification and Description Language (SDL)".

[9] ETS 300 202: "Integrated Services Digital Network (ISDN); Call Deflection (CD) supplementary service: Service description".

3 Definitions

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

address: See CCITT Recommendation E.164 [1], clause 12.

basic service: See CCITT Recommendation Q.9 [5], definition 7018.

connected number: The ISDN number of the final destination (user C).

deflected-to address: The address to which a call has been deflected.

Deflected-To Number (DTN): The ISDN number to which a call has been deflected.

deflected-to user: A user to whom the call is redirected as a result of deflection.

deflecting number: The ISDN number of the served user.

forwarding cause: Parameter which contains the reason for the forwarding, e.g. due to the Call Forwarding Busy (CFB) supplementary service, the Call Forwarding Unconditional (CFU) supplementary service, the Call Forwarding No Reply (CFNR) supplementary service, or the CD supplementary service.

forwarding indicator: Indicator showing that call has been deflected and indicating whether this information should be given to calling user.

forwarding number presentation indicator: Indicator showing whether the served user's ISDN number is allowed to be presented to the deflected-to user.

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [2], definition 308.

ISDN number: A number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [1].

originally called number: The ISDN number of user B.

Presentation Indicator (PI): Indicator showing whether the DTN should be presented to the calling user, as derived from the Connected Line Identification Restriction (COLR) supplementary service of user C.

served user: The user to whom the CFNR supplementary service is provided.

service; telecommunication service: See ITU-T Recommendation I.112 [2], definition 201.

supplementary service: See ITU-T Recommendation I.210 [4], subclause 2.4.

user A: The calling user in a call which is subject to diversion.

user B: The served user when a call (from user A) is subject to the CD supplementary service.

user C: The deflected-to user in a call which is subject to the CD supplementary service. In the case of a call which is subject to multiple diversions, user C is the deflected-to user with respect to the final call deflecting.

4 Abbreviations

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

CC	Call Control
CCA	Call Control Agent
CD	Call Deflection
CFB	Call Forwarding Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
COLR	Connected Line Identification Restriction
DTN	Deflected-to Number
FE	Functional Entity
FEA	Functional Entity Action
ISDN	Integrated Services Digital Network
LE	Local Exchange
NDUB	Network Determined User Busy
NSO	Notification Subscription Option
PI	Presentation Indicator
PTNX	Private Telecommunication Network eXchange
SDL	Specification and Description Language

5 Description

The general description of the CD supplementary service is specified in ETS 300 202 [9], clause 5.

6 Derivation of the functional model

6.1 Functional model Description

The functional model for the CD supplementary service is shown in figure 1.

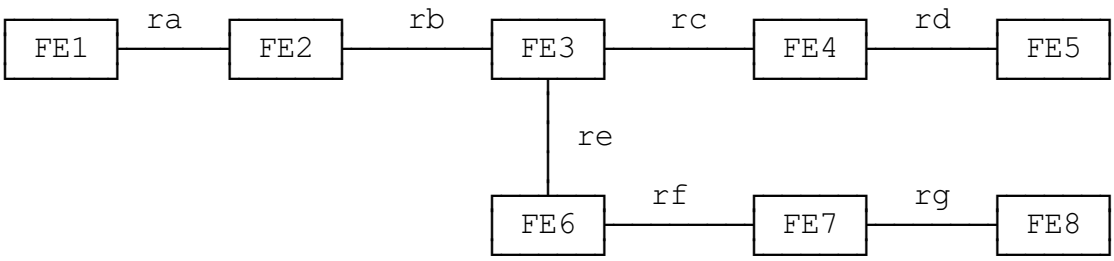

Figure 1: Functional model

6.2 Description of the FEs

The FEs required by the CD supplementary service in addition to those of the basic call are as follows:

FE1: Calling user's service agent;
FE2: Calling user's service control entity (SCE);
FE3: CD execution entity;
FE4: CD detection and control entity;
FE5: Served user's service agent;
FE6: Interface controlling entity;
FE7: Deflected-to user's service control entity;
FE8: Deflected-to user's service agent.

6.3 Relationship with a basic service

Relationship with a basic service is shown in figure 2.

NOTE: The basic call model is defined in CCITT Recommendation Q.71 [7], § 2.1, with the exception that r1 represents an outgoing call relationship from a Call Control Agent (CCA) and r3 represents an incoming call relationship to a CCA.

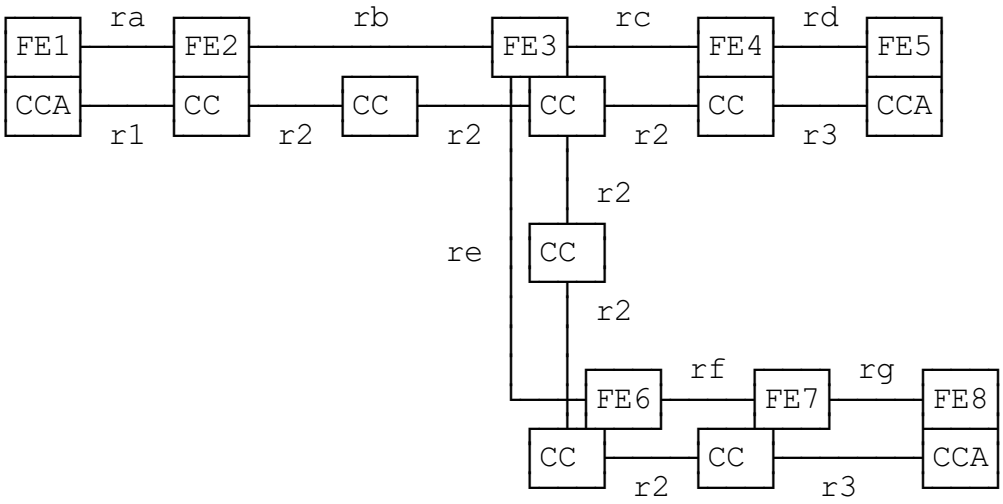

Figure 2: Relationship with a basic service

7 Information flow

7.1 Information flow diagram

Figures 3 to 8 contain the information flows for the CD supplementary service.

The following notes are related to figures 3 to 8.

NOTE 1: The INFORM5 req.ind is not later presented to FE8 than the associated SETUP req.ind.

NOTE 2: In case of:
- temporary mode of the COLR supplementary service activated at user C; or
- immediately responding terminal at user C,

the value of PI is determined on receipt of SETUP resp.conf from FE8.

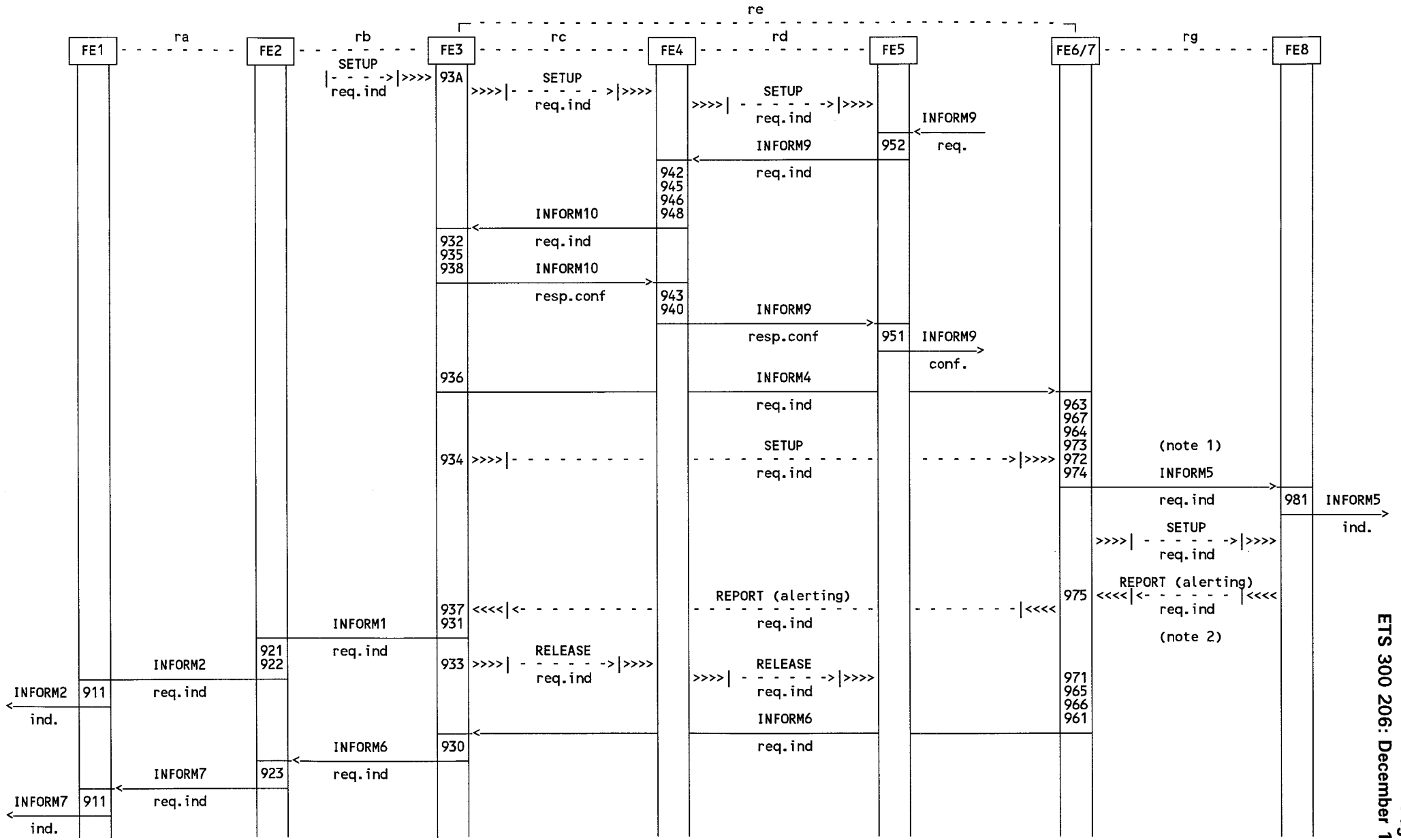

Figure 3: CD supplementary service, option A, late release of the served user, immediate response

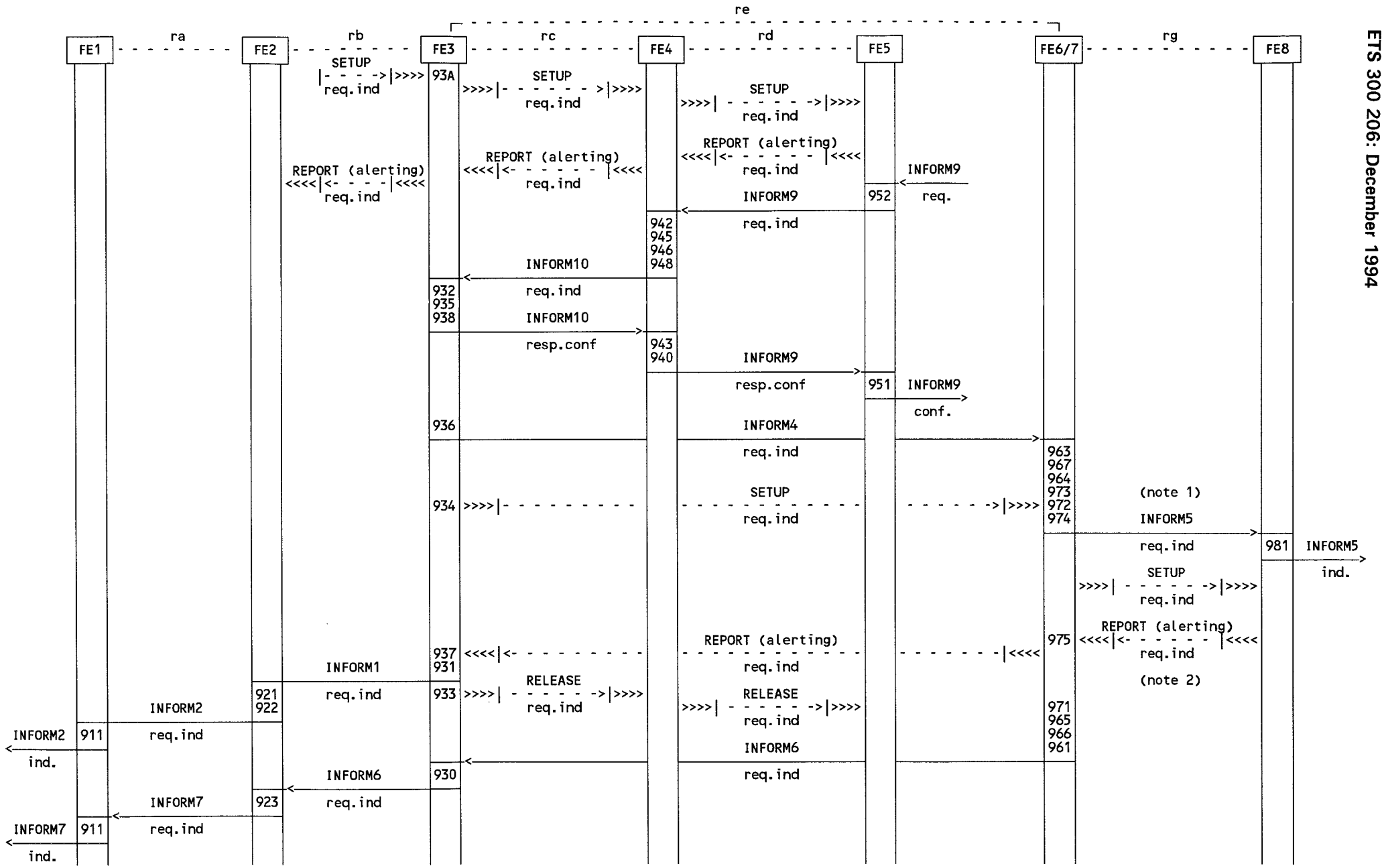

Figure 4: CD supplementary service, option A, late release of the served user, response during alerting phase

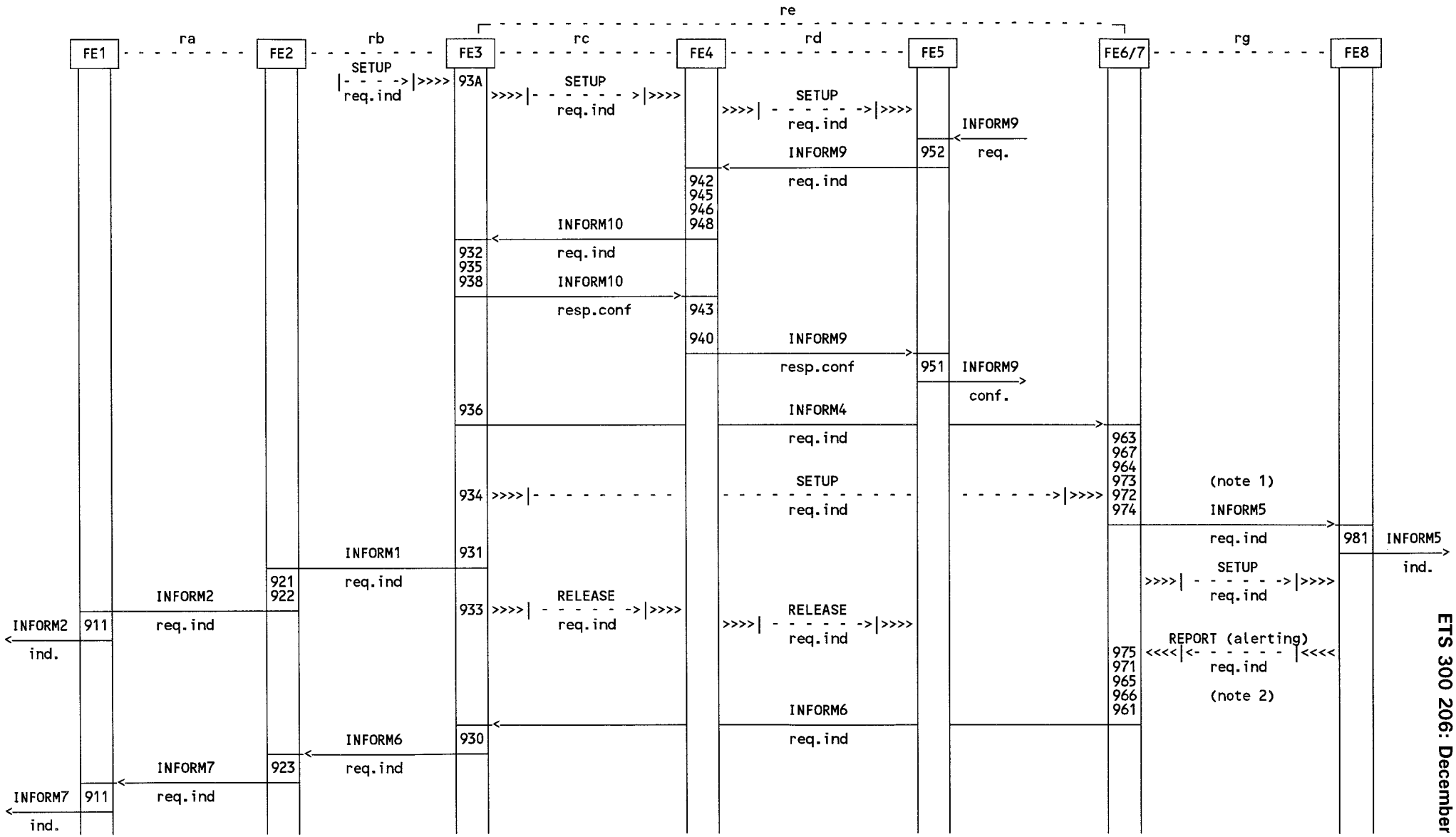

Figure 5: CD supplementary service, option B, early release of the served user, immediate response

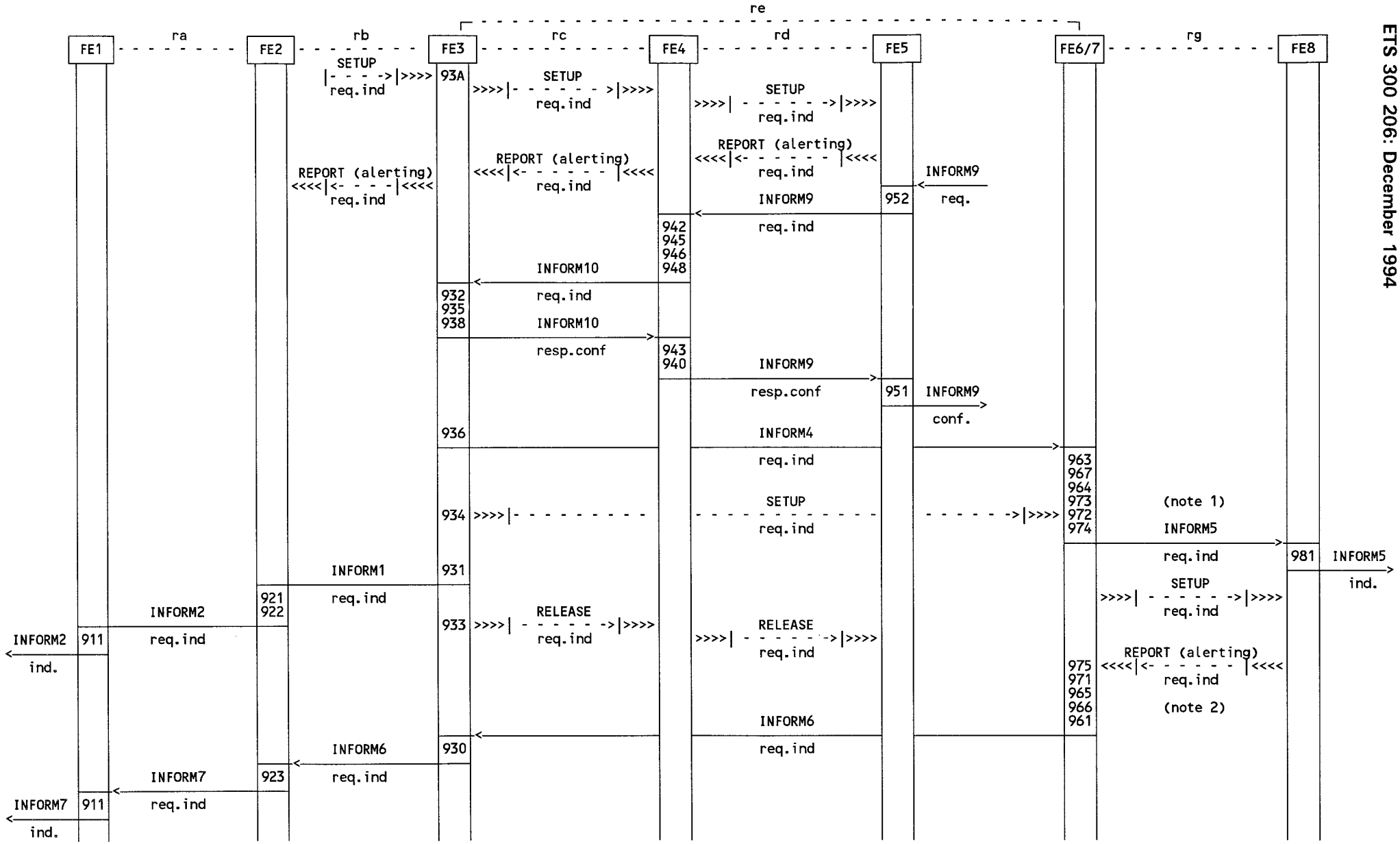

Figure 6: CD supplementary service, option B, early release of the served user, response during alerting phase

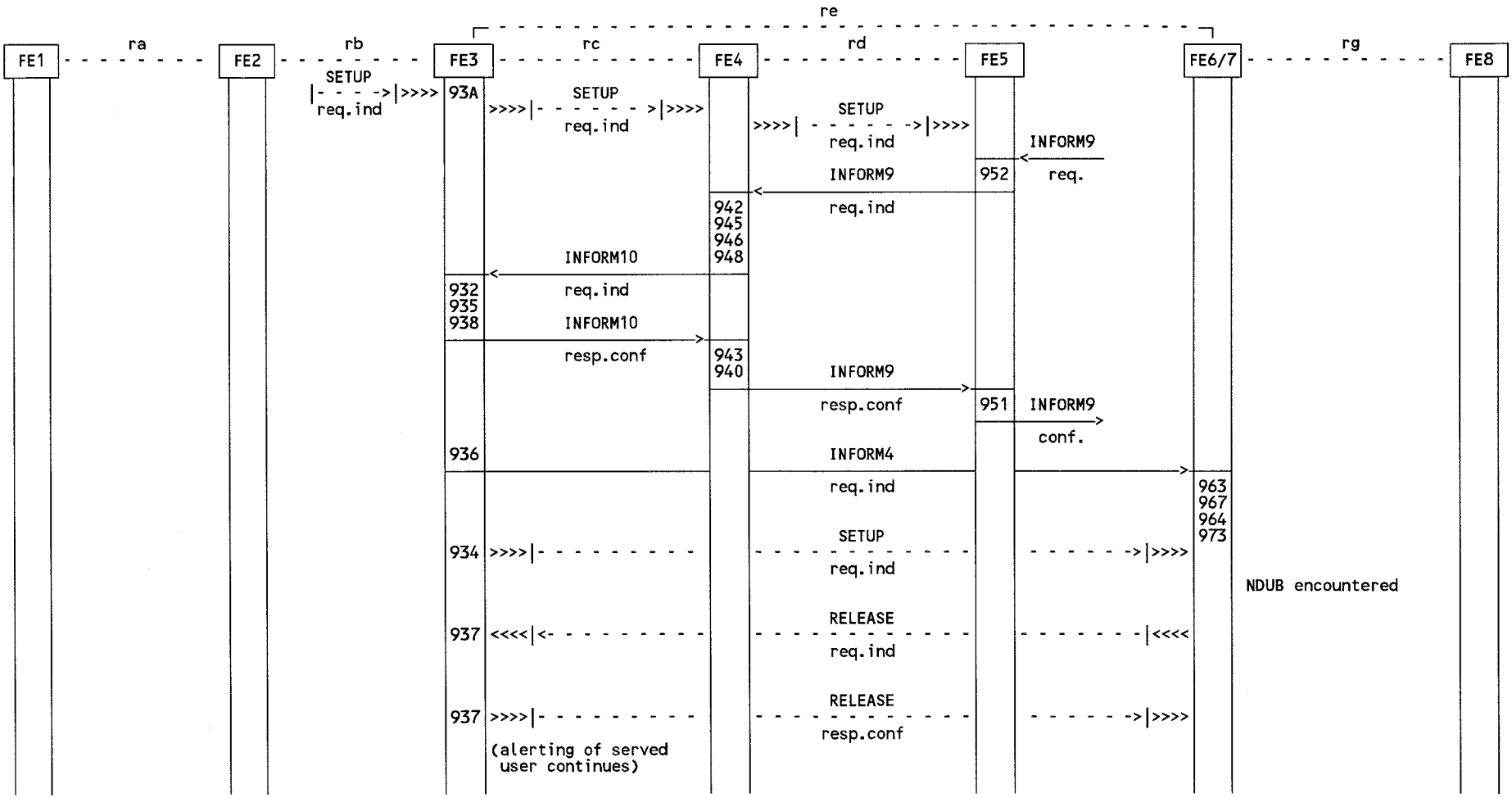

Figure 7: CD supplementary service, option A, late release of the served user, user C is NDUB

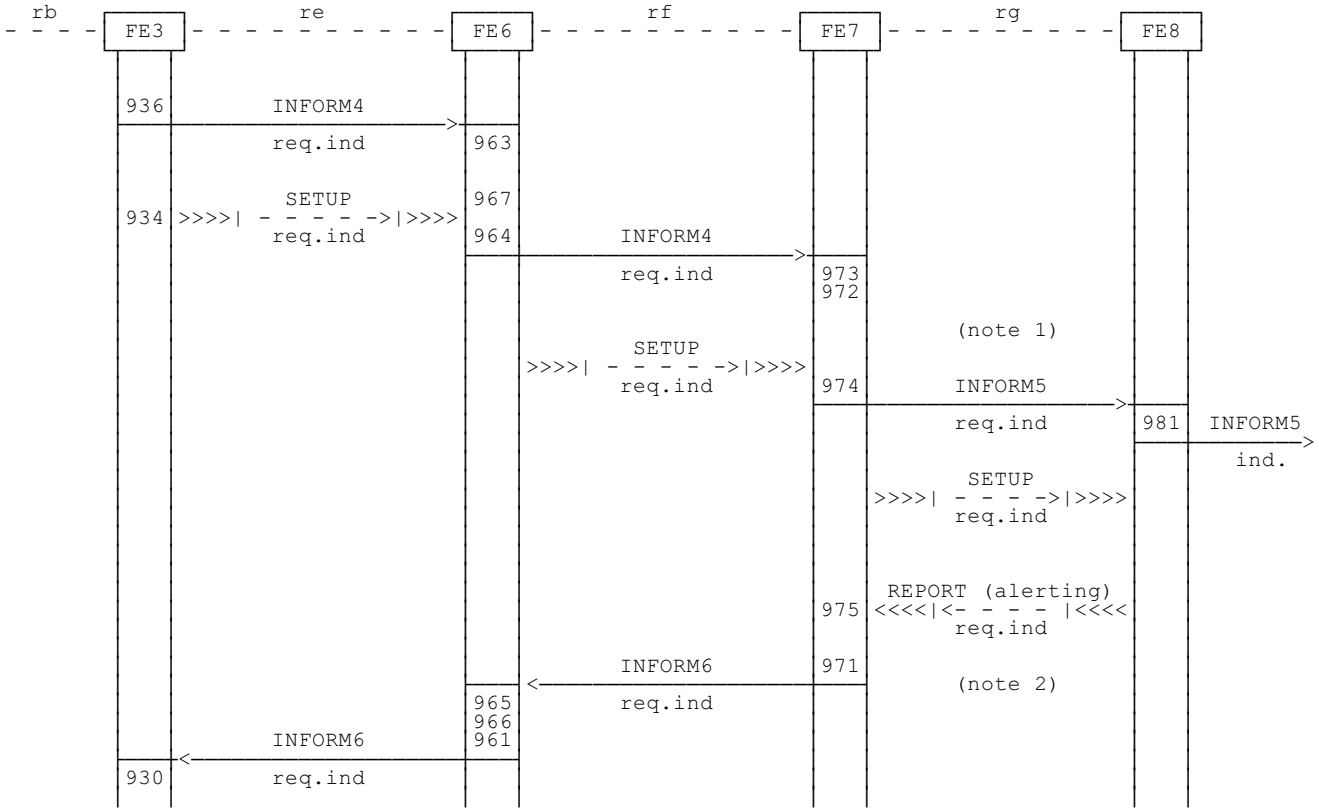

Figure 8: Flows across the public/private network interface at user C

7.2 Definition of individual information flows

7.2.1 Relationship ra

7.2.1.1 Contents of INFORM2

The content of INFORM2 is shown in table 1.

Table 1

Parameter	Allowed value	req.ind
forwarding indicator		M

7.2.1.2 Contents of INFORM7

The content of INFORM7 is shown in table 2.

Table 2

Parameter	Allowed value	req.ind
DTN DTN PI	ISDN number - number restricted - number not available - number allowed	M (note) M
NOTE: Only present if PI = number allowed.		

7.2.2 Relationship rb

7.2.2.1 Contents of INFORM1

The content of INFORM1 is shown in table 3.

Table 3

Parameter	Allowed value	req.ind
forwarding indicator including Notification Subscription Option (NSO)	 - No - Yes, without DTN - Yes, with DTN	M
forwarding cause	CD	M
DTN (note)		O
NOTE: This option refers to the situation in which the DTN is withheld on the basis of a network-provider decision.		

7.2.2.2 Contents of INFORM6

The content of INFORM6 is shown in table 4.

Table 4

Parameter	Allowed value	req.ind
PI	- presentation allowed - presentation not allowed	M

7.2.3 Relationship rc

7.2.3.1 Contents of INFORM10 (rerouteing request)

NOTE: All the information necessary to FE3 to launch the forwarded call is included in the INFORM10.

The content of INFORM10 is shown in table 5.

Table 5

Parameter	Allowed value	req.ind	resp.conf
cause for forwarding	CD	M	
forwarded-to address		M	
forwarding indicator		M	
forwarding number		O	
restriction indicator for forwarding number		M	
telecommunications service information		M	
user-to-user information		O	
forwarding counter		M	
calling party subaddress		O	
forwarding invocation result	positive/negative acknowledgement		M
reason for rejection	(note)		O

NOTE: Possible reasons are: "service not subscribed", "service not available", "service not implemented", "resource unavailable", "invalid DTN", "DTN is operator access", "DTN is special service ISDN number", "number of diversions exceeded".

7.2.4 Relationship rd

7.2.4.1 Contents of INFORM9 (CD request)

The content of INFORM9 is shown in table 6.

Table 6

Parameter	Allowed value	req.ind	resp.conf
DTN	ISDN numbe	M	
deflected-to subaddress		O	
forwarding number PI	- presentation allowed	O	
	- presentation restricted		
deflecting invocation result	positive/negative acknowledgement		M
reason for rejection	(note)		O

NOTE: Possible reasons are: "service not subscribed", "service not available", "service not implemented", "resource unavailable", "invalid DTN", "DTN is operator access", "DTN is special service ISDN number", "number of diversions exceeded", "another terminal has responded".

7.2.5 Relationship re

7.2.5.1 Contents of INFORM4

The content of INFORM4 is shown in table 7.

Table 7

Parameter	Allowed value	req.ind
forwarding cause	CD	M
forwarding number (note)		M
forwarding counter		M
originally called number (note)		M

NOTE: This ISDN number shall always be transferred in the network together with a "restriction indicator" whose value is set according to the subscription options of the user. On boundaries between different networks or to private networks the ISDN number need not be passed depending on a network-provider decision.

7.2.5.2 Contents of INFORM6

The content of INFORM6 is shown in table 8.

Table 8

Parameter	Allowed value	req.ind
PI for DTN	- presentation allowed - presentation not allowed	M

7.2.6 Relationship rf

7.2.6.1 Contents of INFORM4

The content of INFORM4 is shown in table 9.

Table 9

Parameter	Allowed value	req.ind
forwarding cause	CD	M
forwarding number (note)		M
forwarding counter		M
originally called number (note)		M
NOTE: This ISDN number shall always be transferred in the network together with a "restriction indicator" whose value is set according to the subscription options of the user. On boundaries between different networks or to private networks the ISDN number need not be passed depending on a network-provider decision.		

7.2.6.2 Contents of INFORM6

The content of INFORM6 is shown in table 10.

Table 10

Parameter	Allowed value	req.ind
PI for DTN	- presentation allowed - presentation not allowed	M

7.2.7 Relationship rg

7.2.7.1 Contents of INFORM5

The content of INFORM5 is shown in table 11.

Table 11

Parameter	**Allowed value**	**req.ind**
last forwarding cause		M
last forwarding number (note 1)	- ISDN number - number restricted - number not available	O
originally called number (note 1)	- ISDN number - number restricted - number not available	O
calling party address (note 2)	- address - number restricted - number not available	O

NOTE 1: This ISDN number shall only be included if no restrictions exist.
NOTE 2: The calling party address shall be included if required by the calling line identification presentation supplementary service, if not restricted.

8 SDL diagrams for FEs

All Specification and Description Language (SDL) diagrams for FEs are described according to CCITT Recommendation Z.100 [8].

NOTE: The notes to the figures within this clause refer to a basic call model defined in CCITT Recommendation Q.71 [7] with the exception that r1 represents only an outgoing call relationship from a CCA and r3 represents an incoming call relationship to a CCA.

8.1 FE1

The SDL diagram for FE1 is shown figure 9.

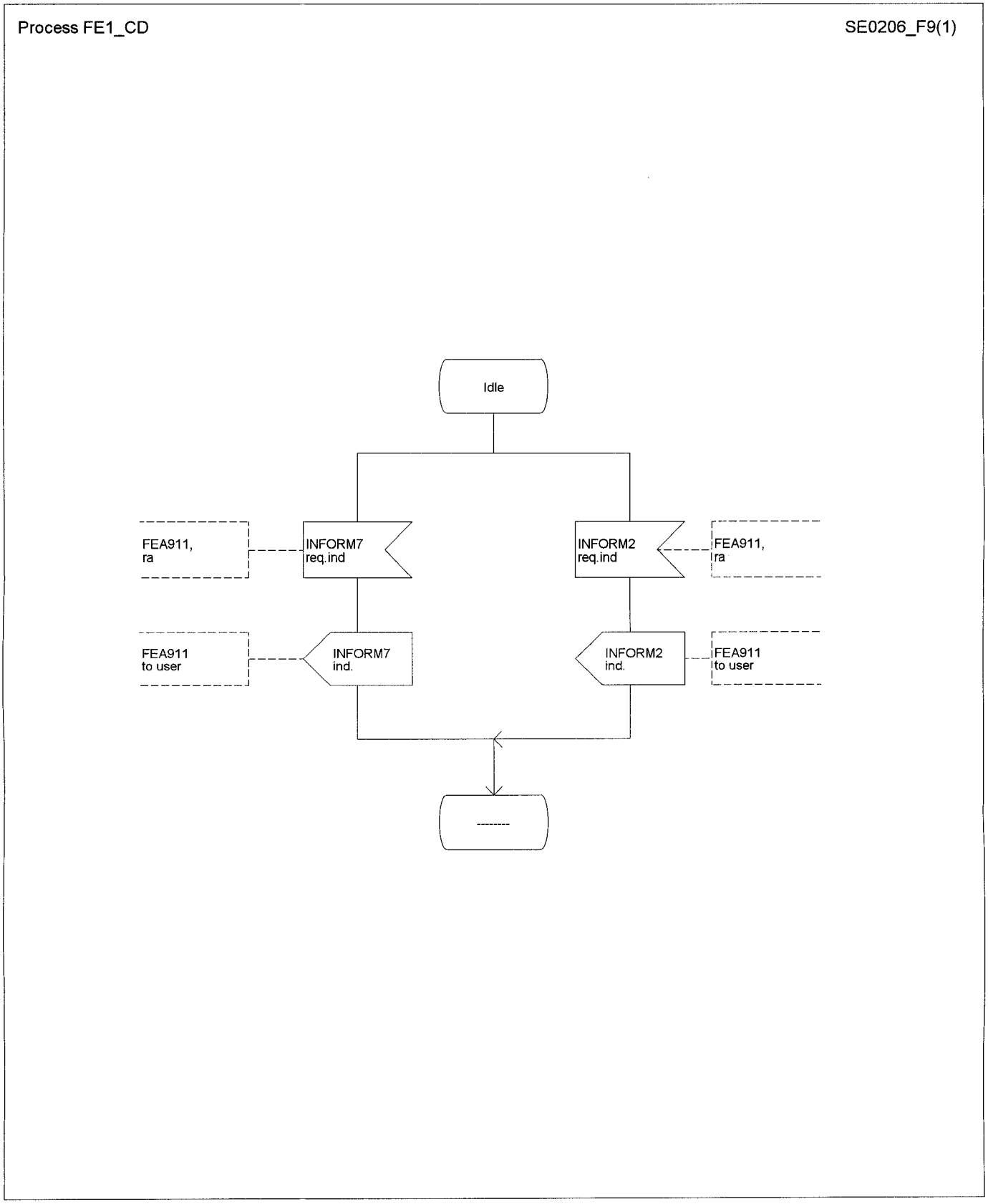

Figure 9

8.2 FE2

The SDL diagrams for FE2 are shown in figures 10 and 11.

Process FE2_CD SE0206_F10.1(2)

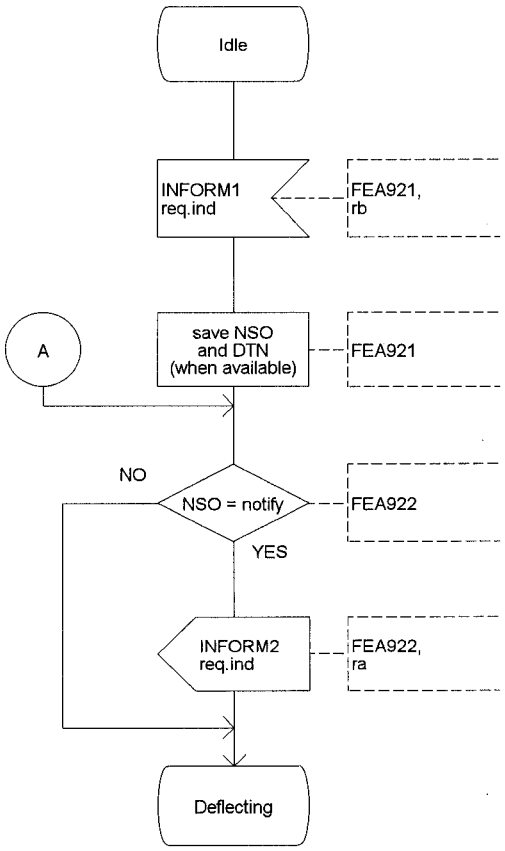

Figure 10 (sheet 1 of 2)

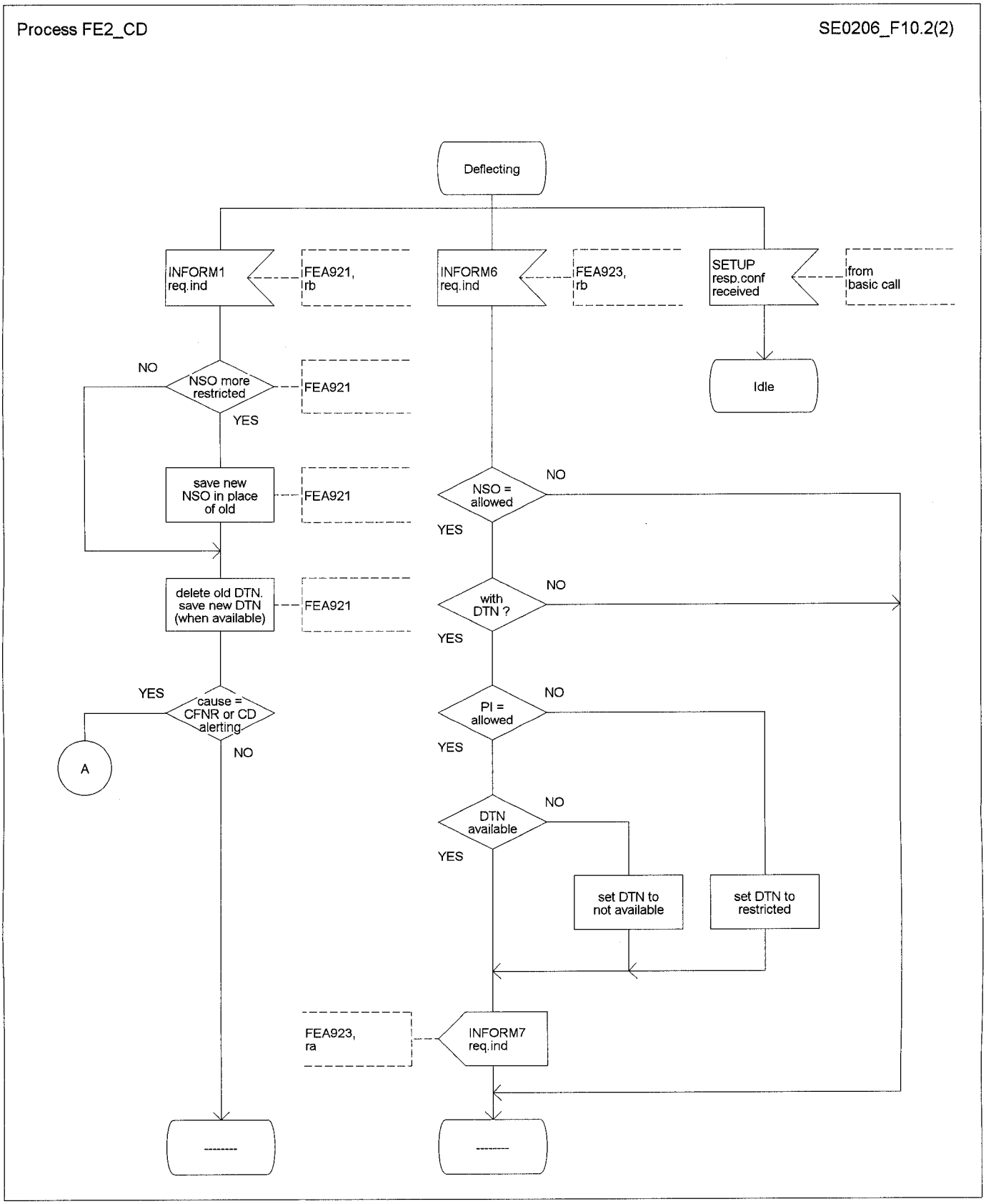

Figure 10 (sheet 2 of 2)

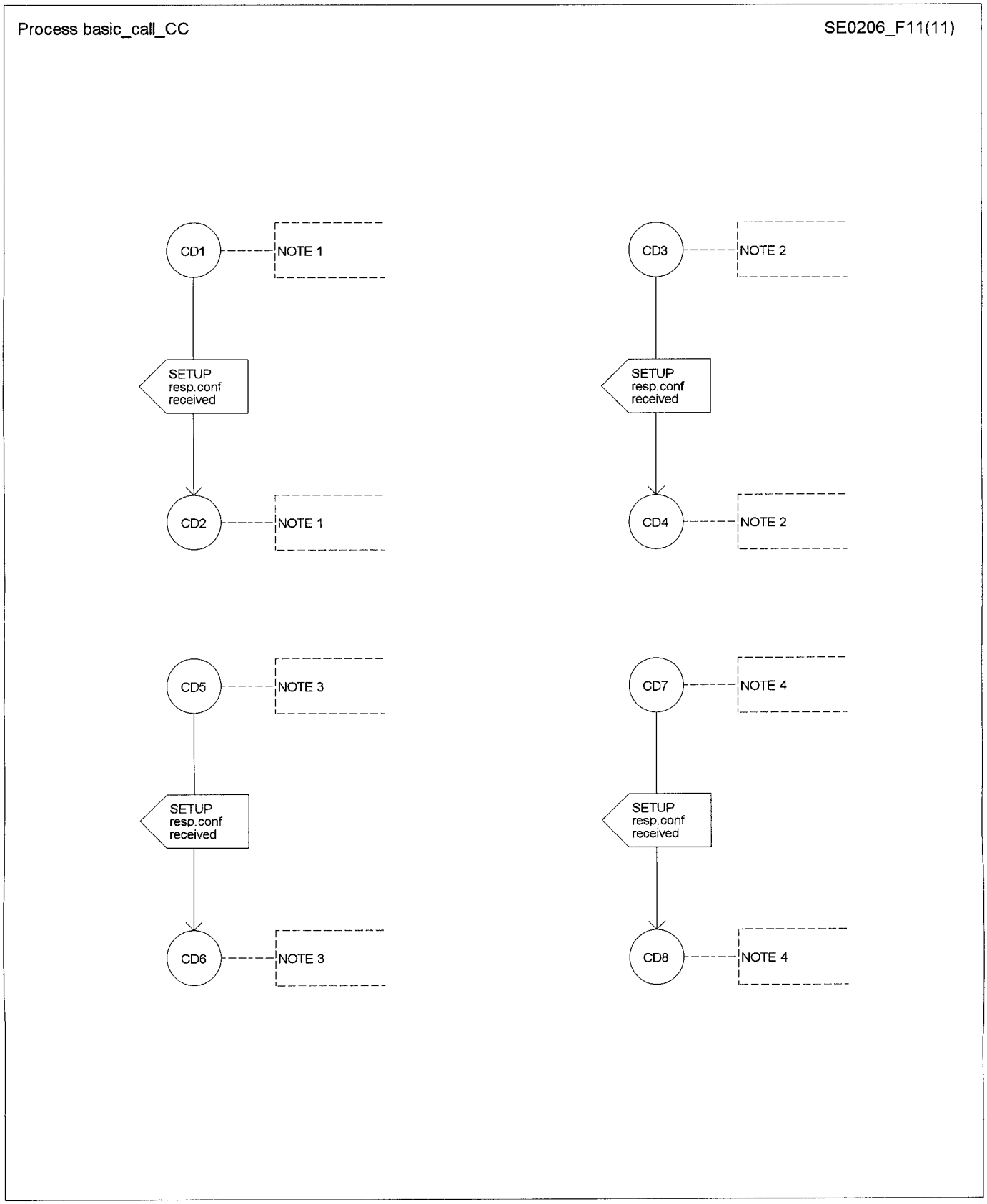
Process basic_call_CC
SE0206_F11(11)
CD1
NOTE 1
SETUP resp.conf received
CD2
NOTE 1
CD3
NOTE 2
SETUP resp.conf received
CD4
NOTE 2
CD5
NOTE 3
SETUP resp.conf received
CD6
NOTE 3
CD7
NOTE 4
SETUP resp.conf received
CD8
NOTE 4

Figure 11

Notes to figure 11:

NOTE 1: CD1 and CD2 break the basic call transition after receiving "SETUP resp.conf" (see figure 2-9 (sheet 3 of 19) of CCITT Recommendation Q.71 [7]). CD2 reconnects at the same point.

NOTE 2: CD3 and CD4 break the basic call transition after receiving "SETUP resp.conf" (see figure 2-9 (sheet 4 of 19) of CCITT Recommendation Q.71 [7]). CD4 reconnects at the same point.

NOTE 3: CD5 and CD6 break the basic call transition after receiving "SETUP resp.conf" (see figure 2-9 (sheet 15 of 19) of CCITT Recommendation Q.71 [7]). CD6 reconnects at the same point.

NOTE 4: CD7 and CD8 break the basic call transition after receiving "SETUP resp.conf" (see figure 2-9 (sheet 16 of 19) of CCITT Recommendation Q.71 [7]). CD8 reconnects at the same point.

8.3 FE3

The SDL diagrams for FE3 are shown figures 12 and 13.

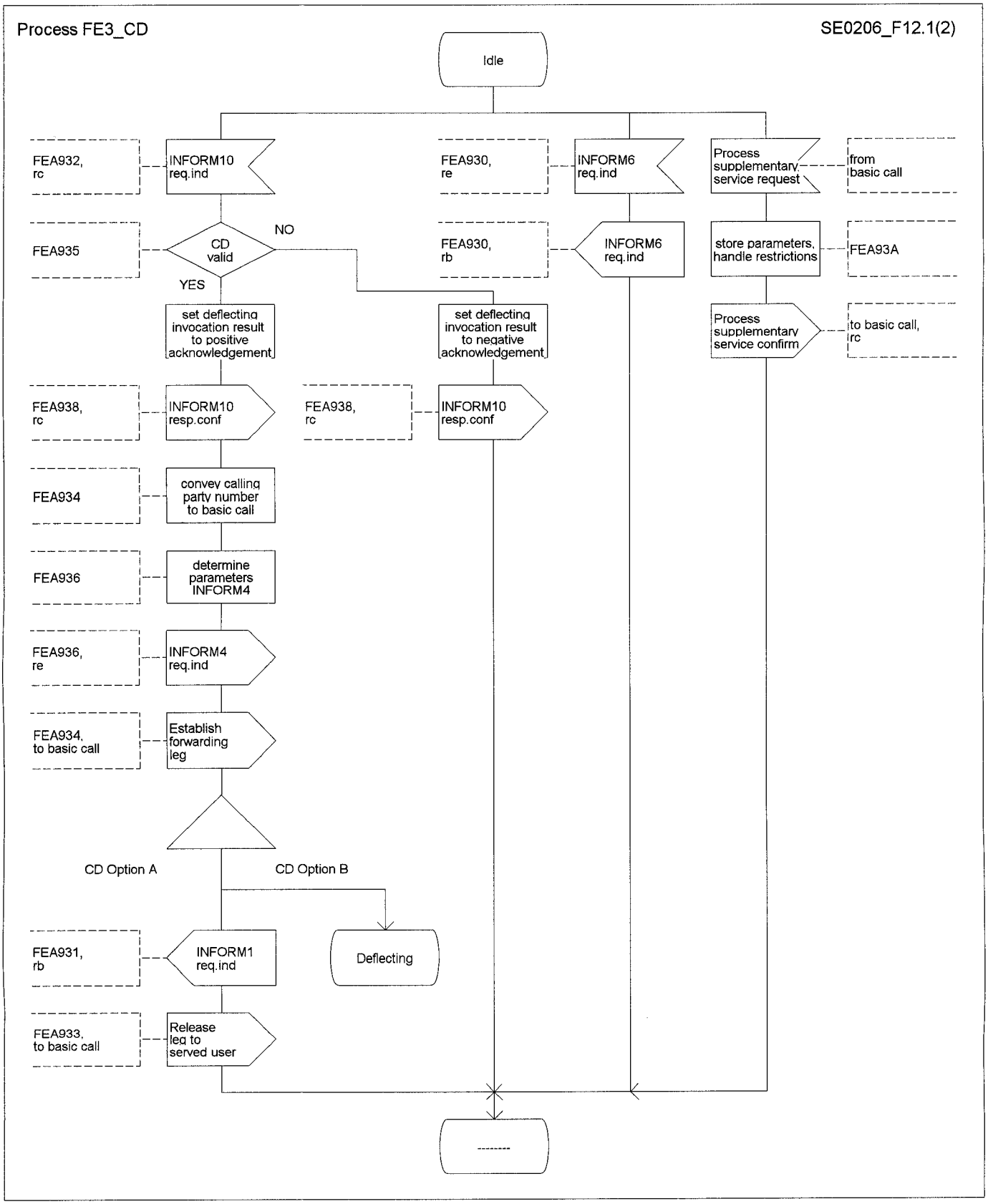

Figure 12 (sheet 1 of 2)

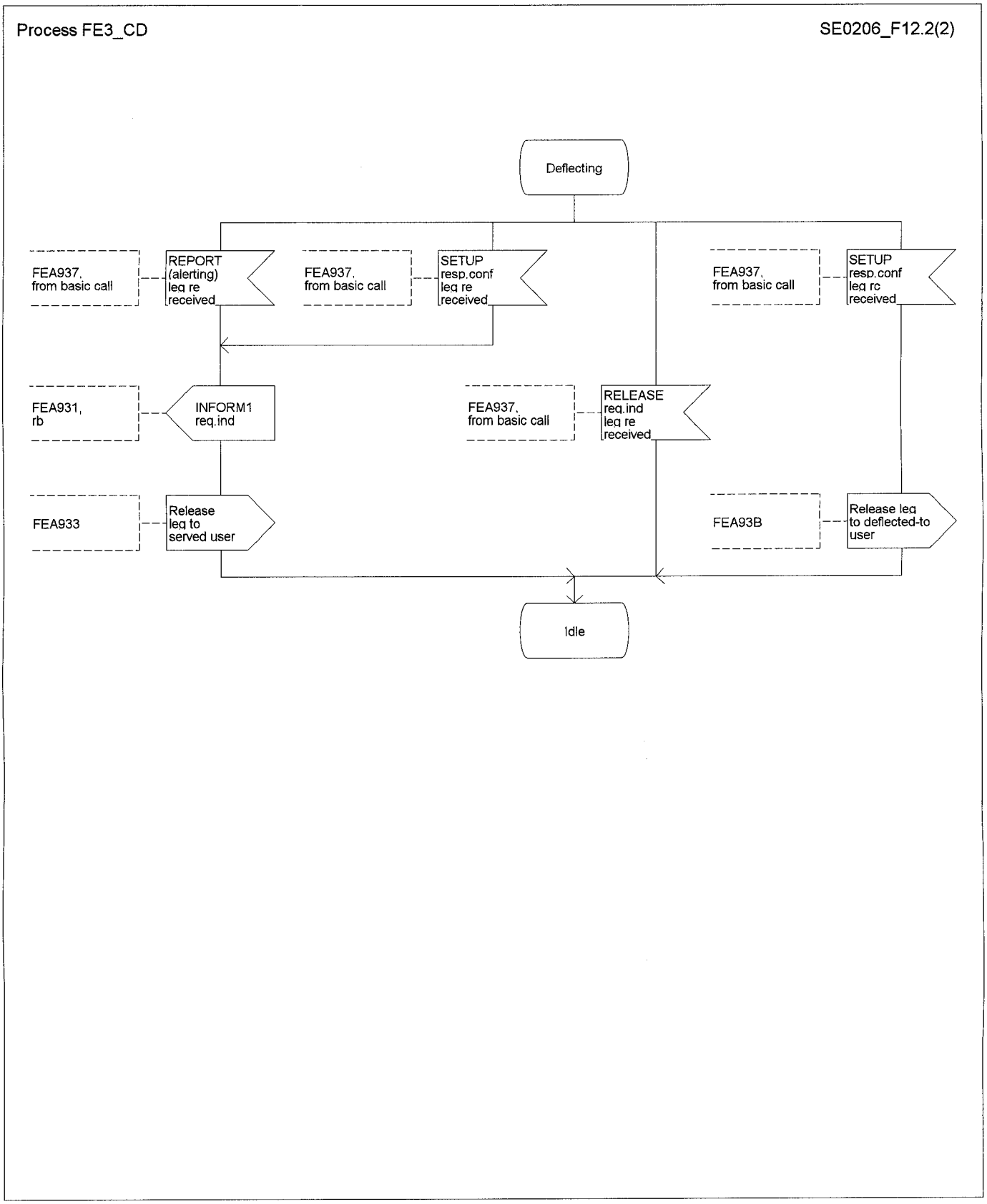

Figure 12 (sheet 2 of 2)

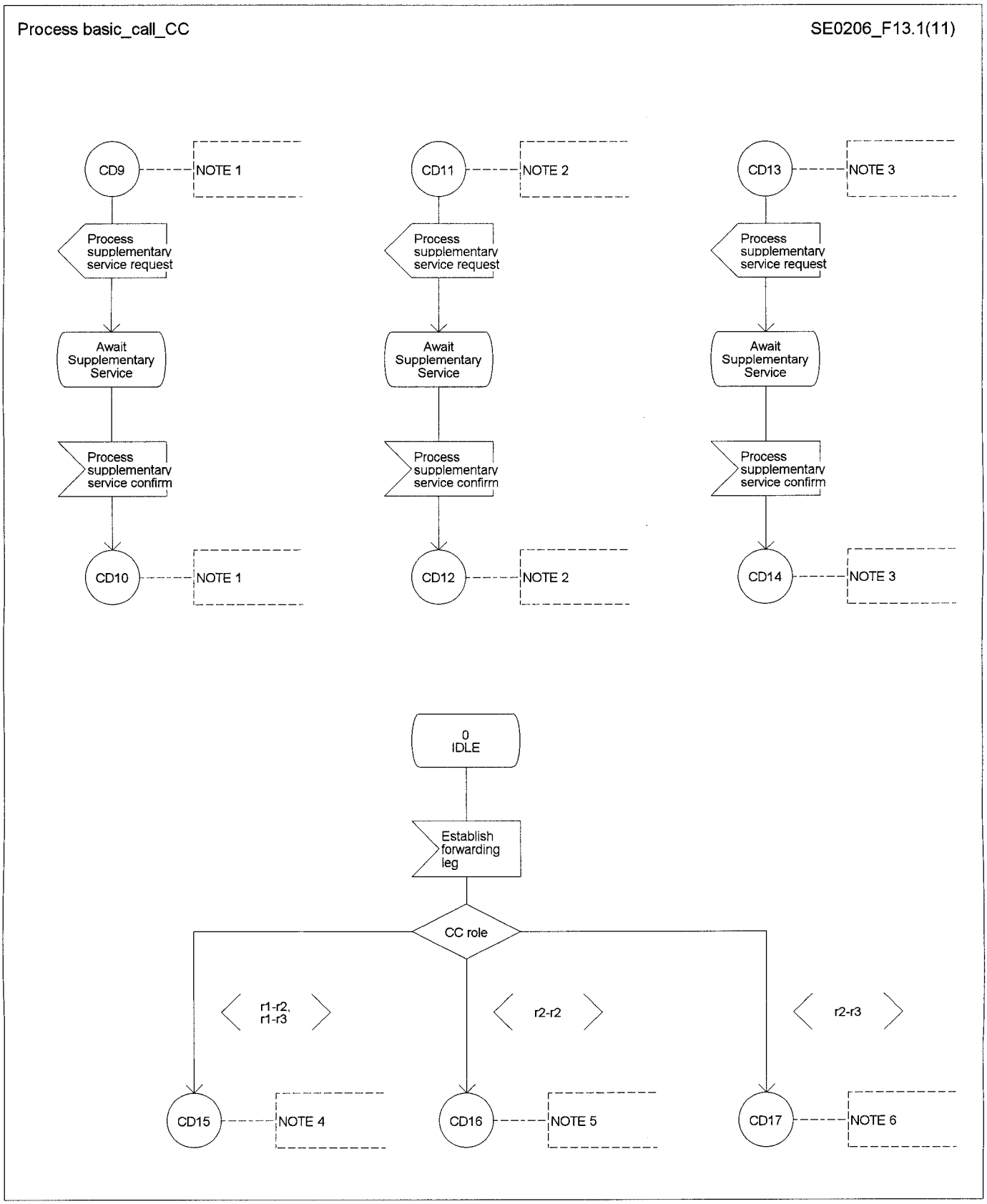

Figure 13 (sheet 1 of 4)

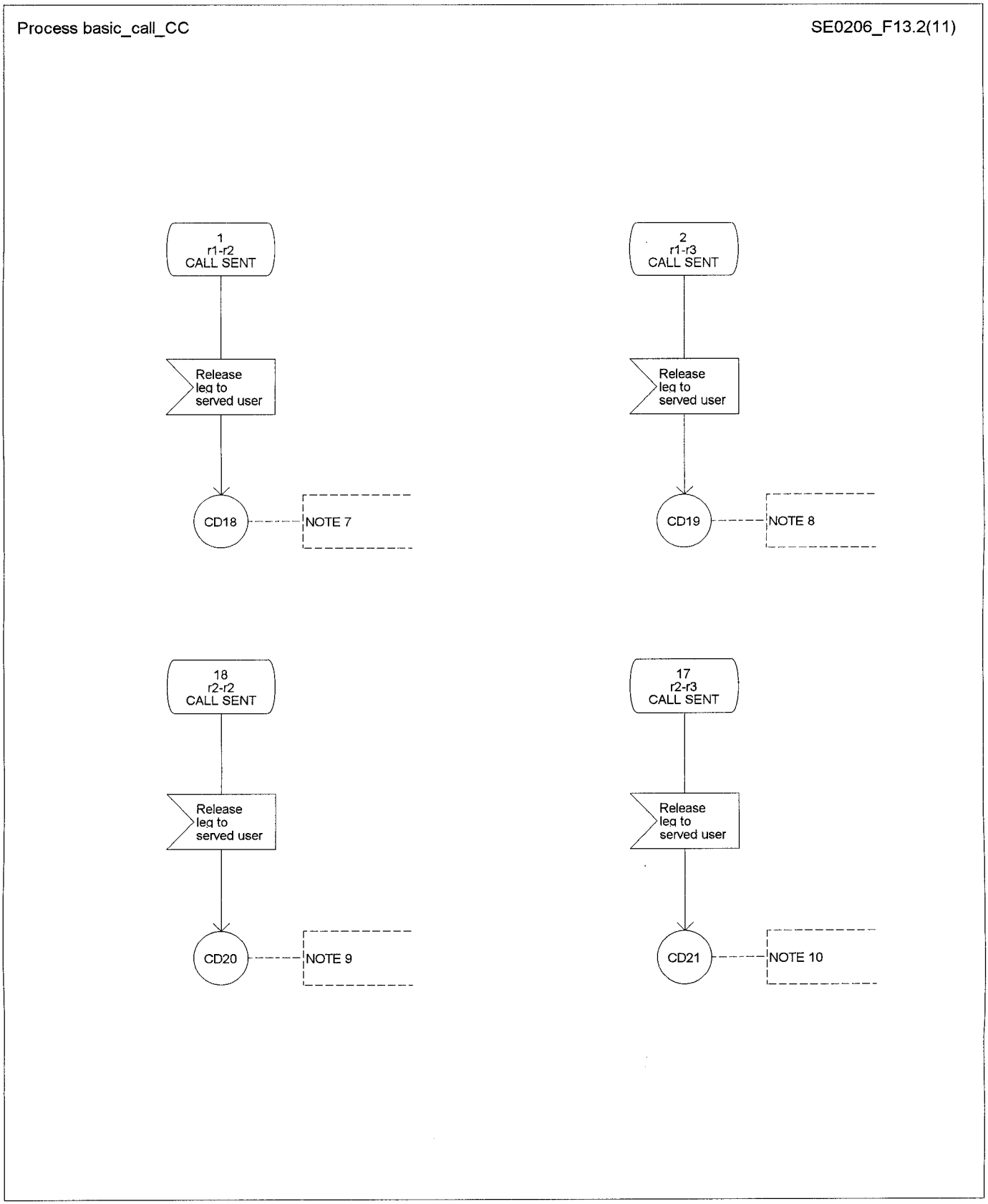

Figure 13 (sheet 2 of 4)

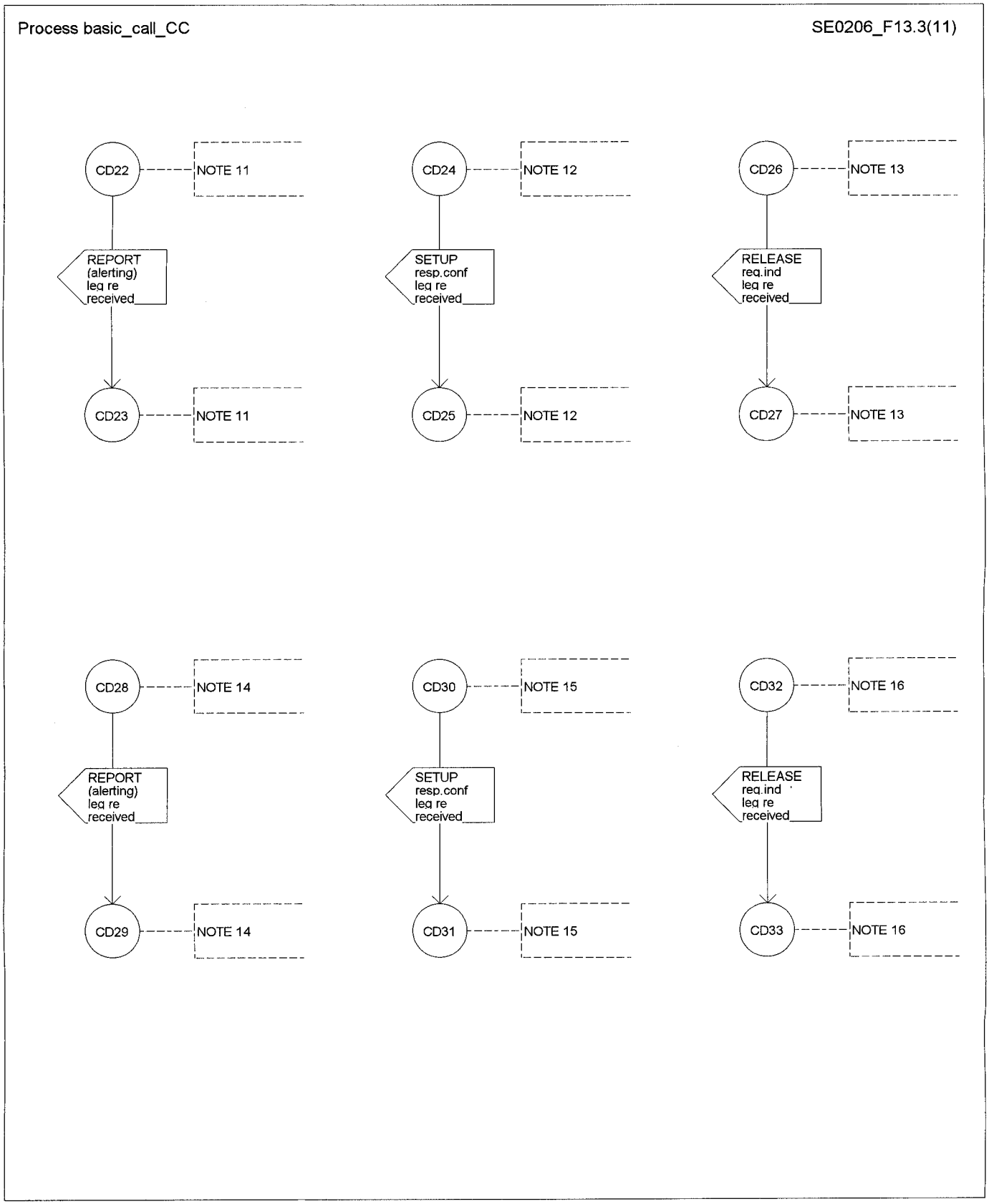

Figure 13 (sheet 3 of 4)

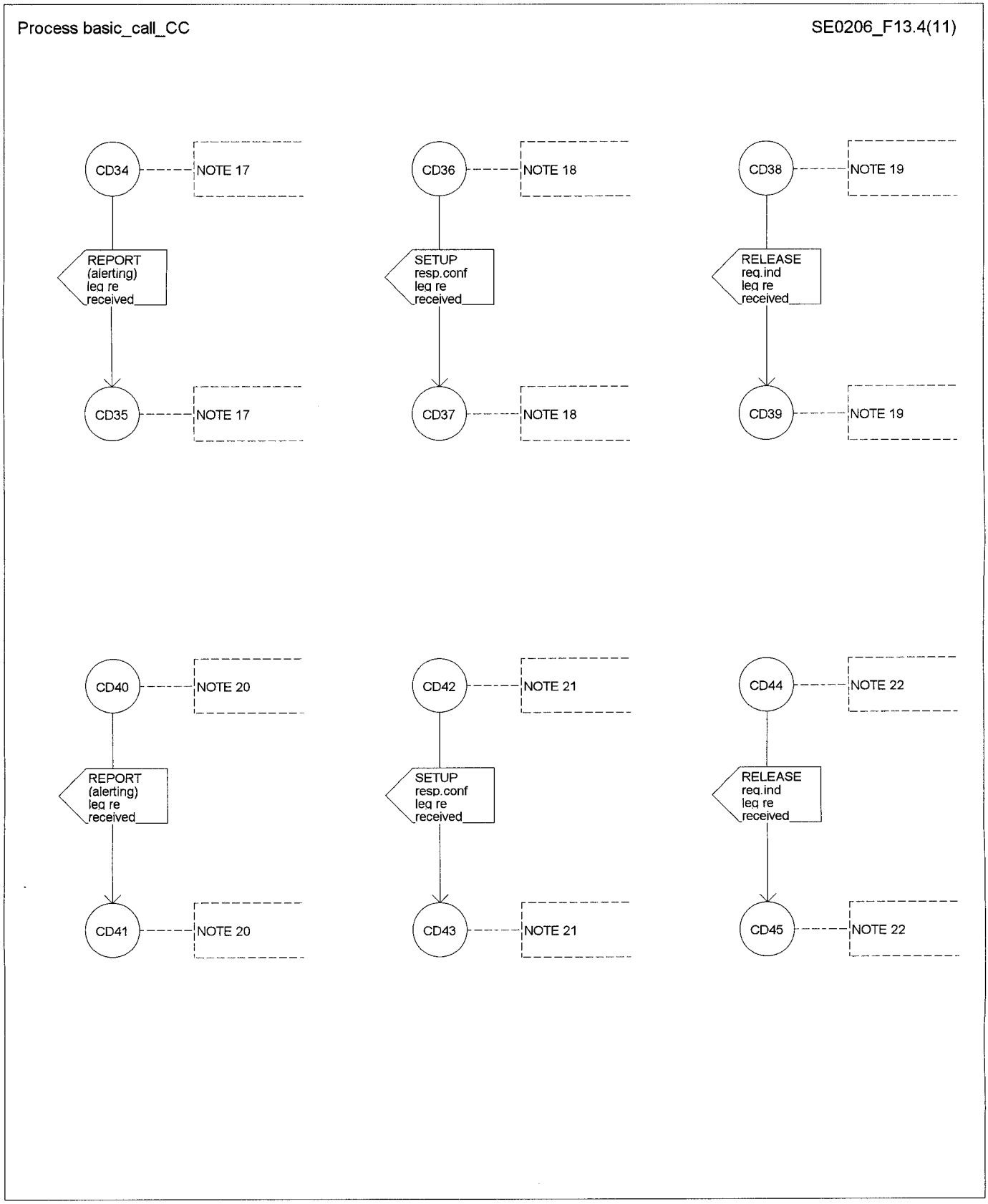

Figure 13 (sheet 4 of 4)

Notes to figure 13:

NOTE 1: CD9 and CD10 break the basic call transition on the "Yes" branch of the decision "Successful?" following the task "Term. Screen. Process attempt" (see figure 2-9 (sheet 7 of 19) of CCITT Recommendation Q.71 [7]). CD10 reconnects at the same point.

NOTE 2: CD11 and CD12 break the basic call transition on the "Yes" branch of the decision "Successful?" following the task "Process attempt" (see figure 2-9 (sheet 7 of 19) of CCITT Recommendation Q.71 [7]). CD12 reconnects at the same point.

NOTE 3: CD13 and CD14 break the basic call transition following the output signal "PROCEEDING req.ind" (see figure 2-9 (sheet 1 of 19) of CCITT Recommendation Q.71 [7]). CD14 reconnects at the same point.

NOTE 4: CD15 joins the basic call transition immediately following the task "Orig. screen. Process attempt" (see figure 2-9 (sheet 1 of 19) of CCITT Recommendation Q.71 [7]). Subsequent output signals "PROCEEDING req.ind" to the originating side (r1) are not sent.

NOTE 5: CD16 joins the basic call transition immediately following the "r2-r2" branch of the decision "CC role" (see figure 2-9 (sheet 7 of 19) of CCITT Recommendation Q.71 [7]). Elements of the task "Process attempt" relating to the originating side (r1) are not performed.

NOTE 6: CD17 joins the basic call transition immediately following the "r2-r3" branch of the decision "CC role" (see figure 2-9 (sheet 7 of 19) of CCITT Recommendation Q.71 [7]). Elements of the task "Term. Screen. Process attempt" relating to the originating side (r1) are not performed.

NOTE 7: CD18 joins the basic call transition immediately following the input signal "DISCONNECT req.ind" from the originating side (r1) (see figure 2-9 (sheet 3 of 19) of CCITT Recommendation Q.71 [7]). Subsequent output signals relating to the originating side (r1) are not sent.

NOTE 8: CD19 joins the basic call transition immediately following the input signal "DISCONNECT req.ind" from the originating side (r1) (see figure 2-9 (sheet 14 of 19) of CCITT Recommendation Q.71 [7]). Subsequent output signals relating to the originating side (r1) are not sent.

NOTE 9: CD20 joins the basic call transition immediately following the input signal "RELEASE req.ind" from the originating side (r2) (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [7]). Subsequent output signals relating to the originating side (r2) are not sent.

NOTE 10: CD21 joins the basic call transition immediately following the input signal "RELEASE req.ind" from the originating side (r2) (see figures 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). Subsequent output signals relating to the originating side (r2) are not sent.

NOTE 11: CD22 and CD23 break the basic call transition following the receipt of the input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 3 of 19) of CCITT Recommendation Q.71 [7]). CD23 reconnects at the same point.

NOTE 12: CD24 and CD25 break the basic call transition following the receipt of the input signal "SETUP resp.conf" (see figure 2-9 (sheet 3 of 19) of CCITT Recommendation Q.71 [7]). CD25 reconnects at the same point.

NOTE 13: CD26 and CD27 break the basic call transition following the receipt of the input signal "RELEASE req.ind" (see figure 2-9 (sheet 5 of 19) of CCITT Recommendation Q.71 [7]). CD27 reconnects at the same point.

NOTE 14: CD28 and CD29 break the basic call transition following the receipt of the input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 5 of 19) of CCITT Recommendation Q.71 [7]). CD29 reconnects at the same point.

NOTE 15: CD30 and CD31 break the basic call transition following the receipt of the input signal "SETUP resp.conf" (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD31 reconnects at the same point.

NOTE 16: CD32 and CD33 break the basic call transition following the receipt of the input signal "DISCONNECT req.ind" (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD33 reconnects at the same point.

NOTE 17: CD34 and CD35 break the basic call transition following the receipt of the input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [7]). CD35 reconnects at the same point.

NOTE 18: CD36 and CD37 break the basic call transition following the receipt of the input signal "SETUP resp.conf" (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [7]). CD37 reconnects at the same point.

NOTE 19: CD38 and CD39 break the basic call transition following the receipt of the input signal "RELEASE req.ind" (see figure 2-9 (sheet 5 of 19) of CCITT Recommendation Q.71 [7]). CD39 reconnects at the same point.

NOTE 20: CD40 and CD41 break the basic call transition following the receipt of the input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [7]). CD41 reconnects at the same point.

NOTE 21: CD42 and CD43 break the basic call transition following the receipt of the input signal "SETUP resp.conf" (see figure 2-9 (sheet 15 of 19) of CCITT Recommendation Q.71 [7]). CD43 reconnects at the same point.

NOTE 22: CD44 and CD45 break the basic call transition following the receipt of the input signal "DISCONNECT req.ind" (see figure 2-9 (sheet 14 of 19) of CCITT Recommendation Q.71 [7]). CD45 reconnects at the same point.

8.4 FE4

The SDL diagrams for FE4 are shown figures 14 and 15.

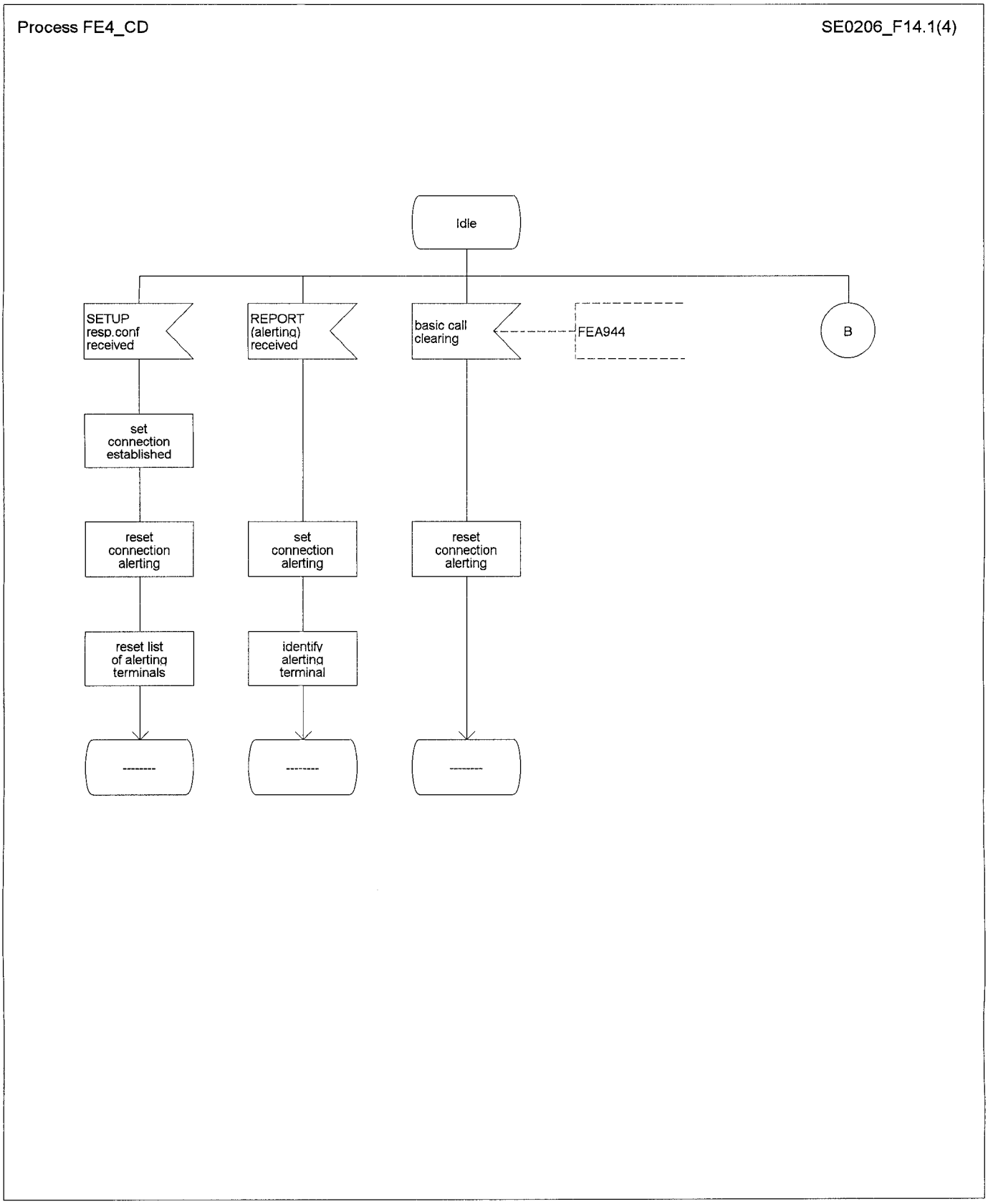

Figure 14 (sheet 1 of 4)

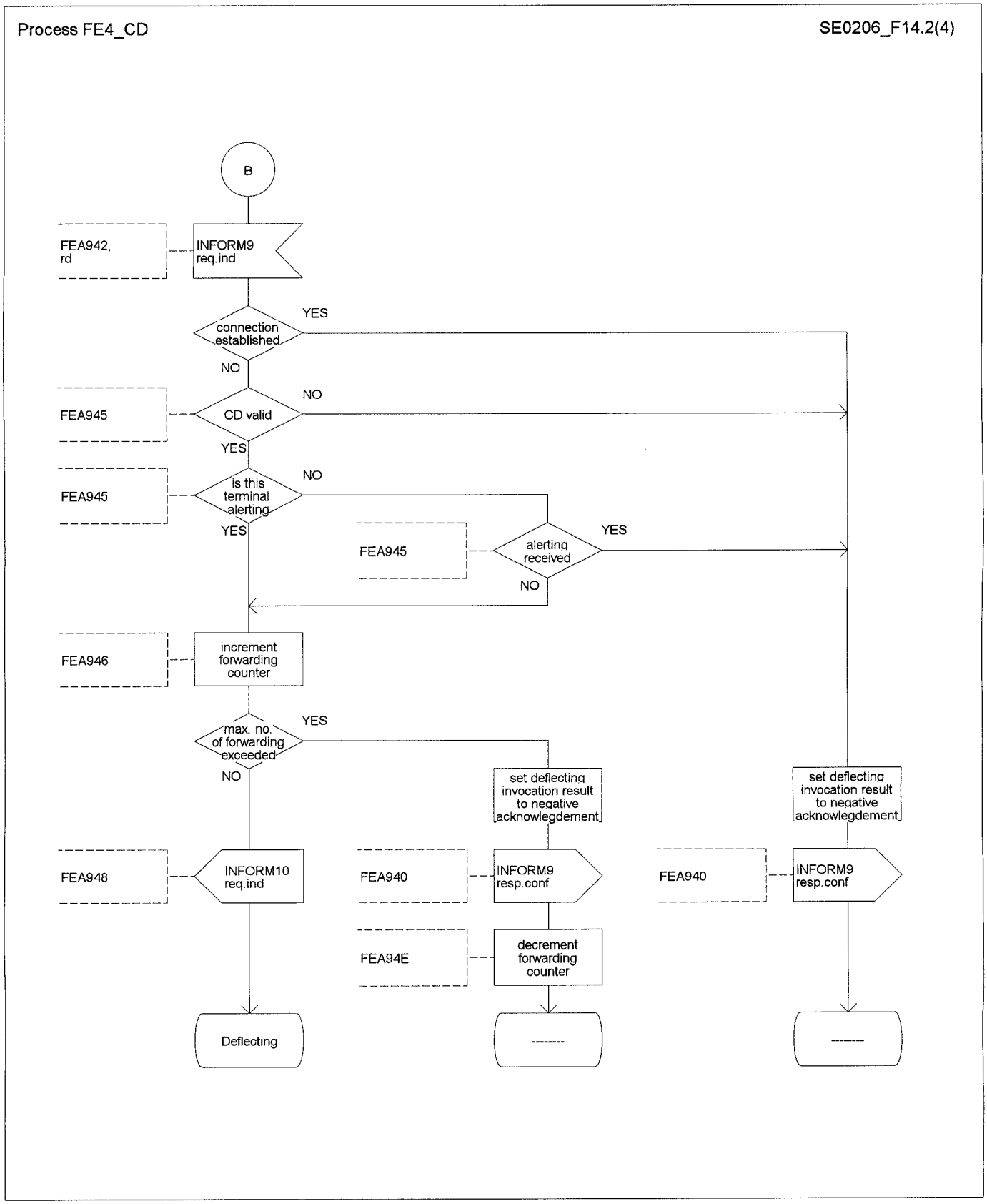

Figure 14 (sheet 2 of 4)

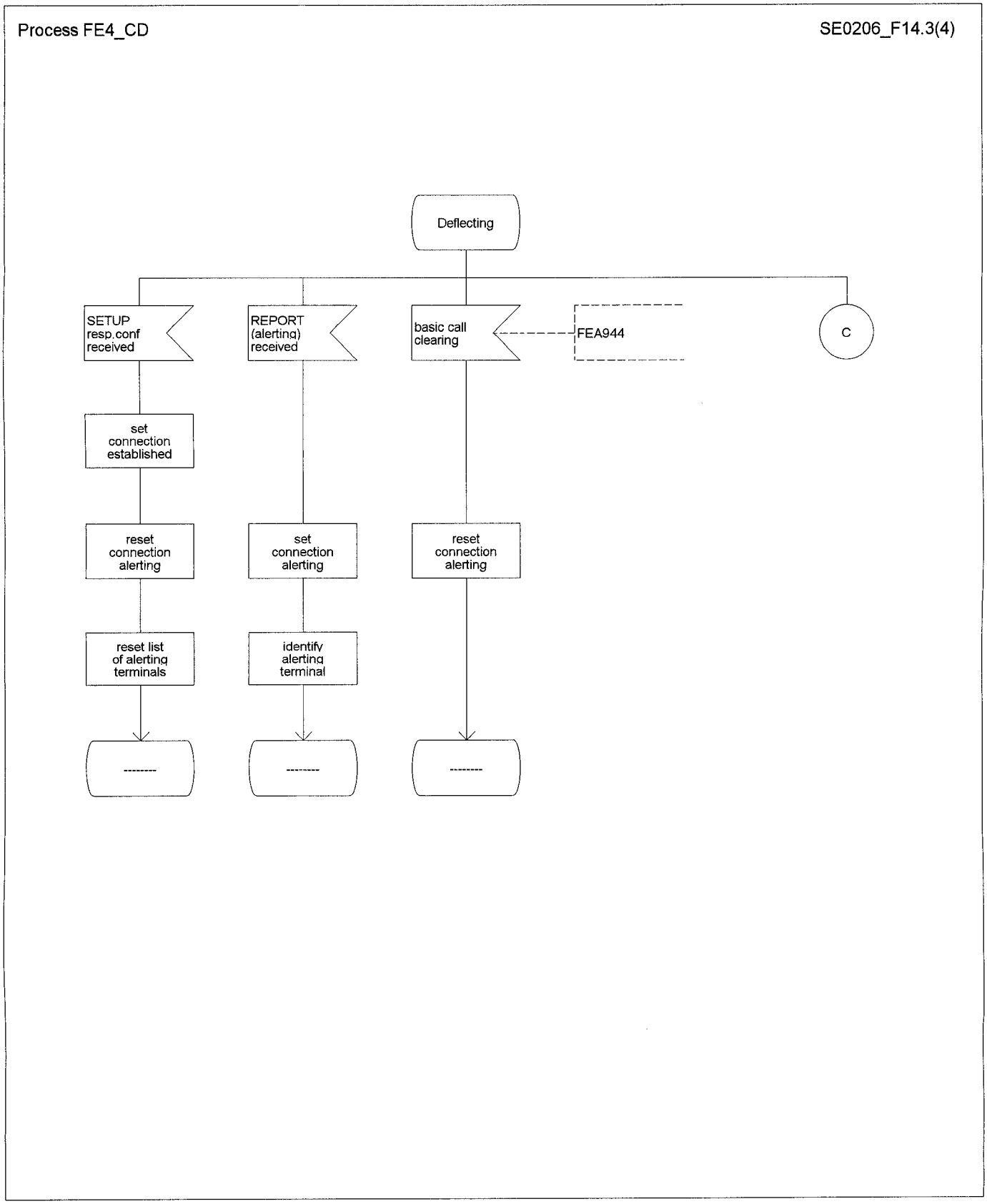

Figure 14 (sheet 3 of 4)

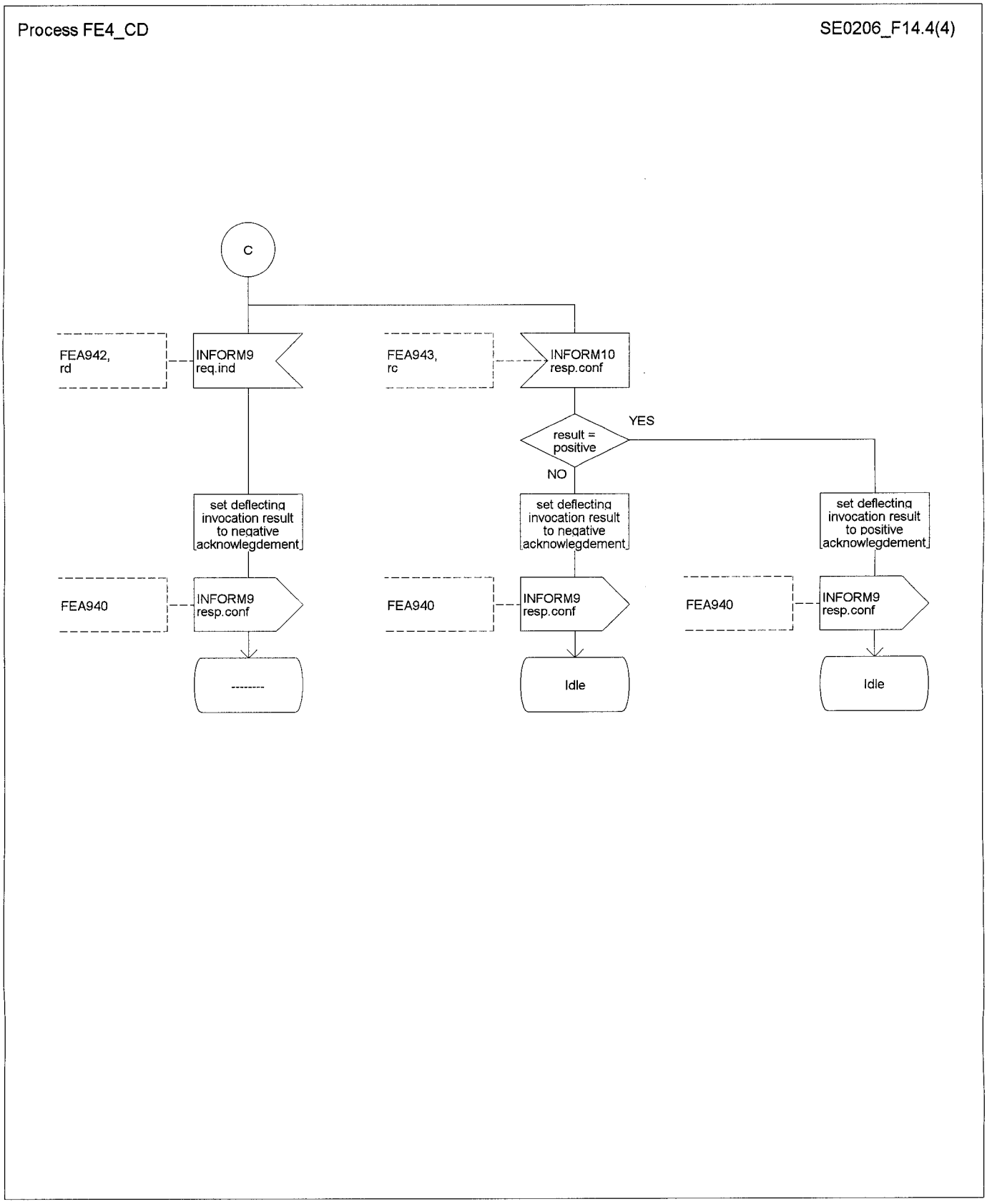

Figure 14 (sheet 4 of 4)

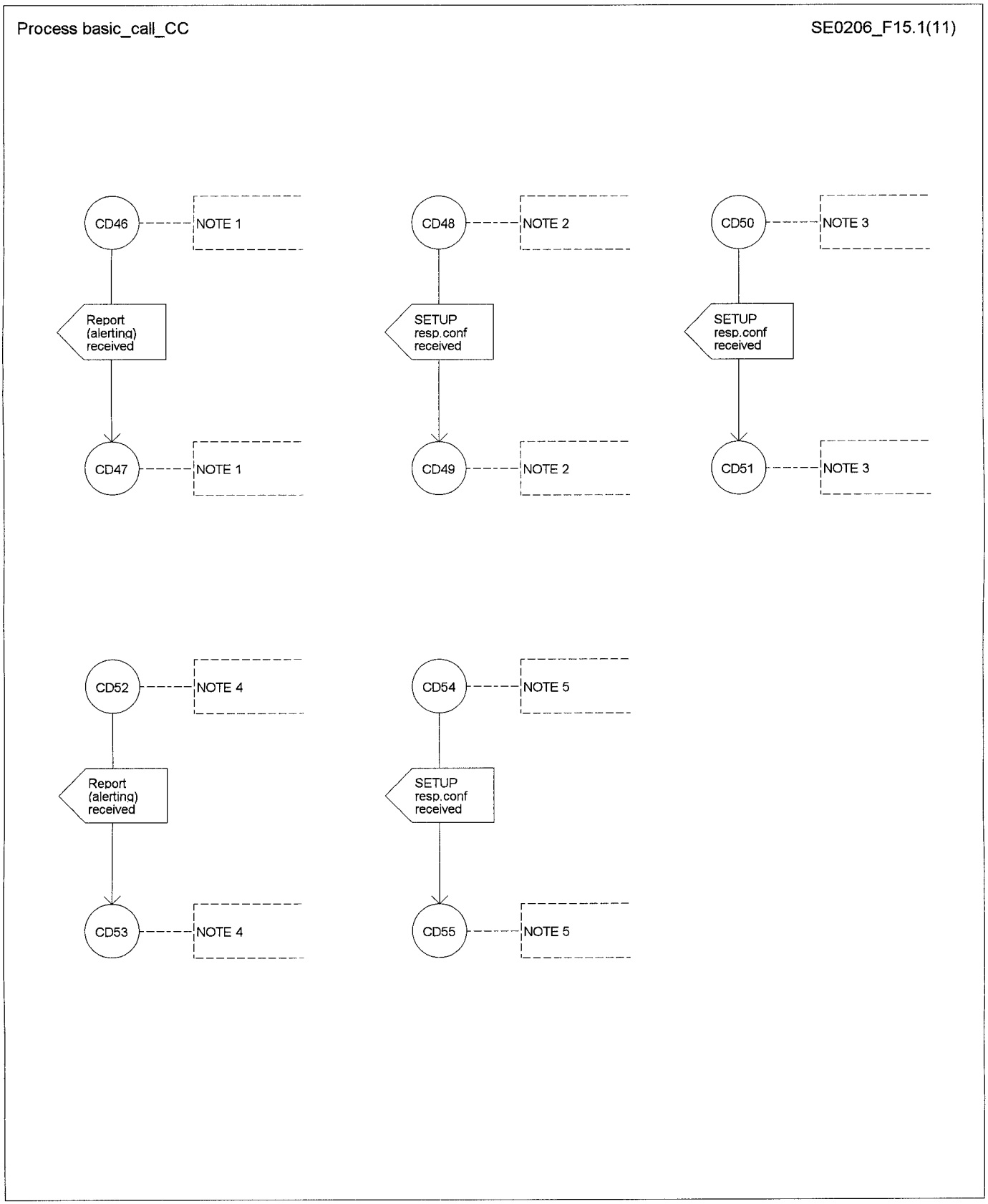

Figure 15 (sheet 1 of 3)

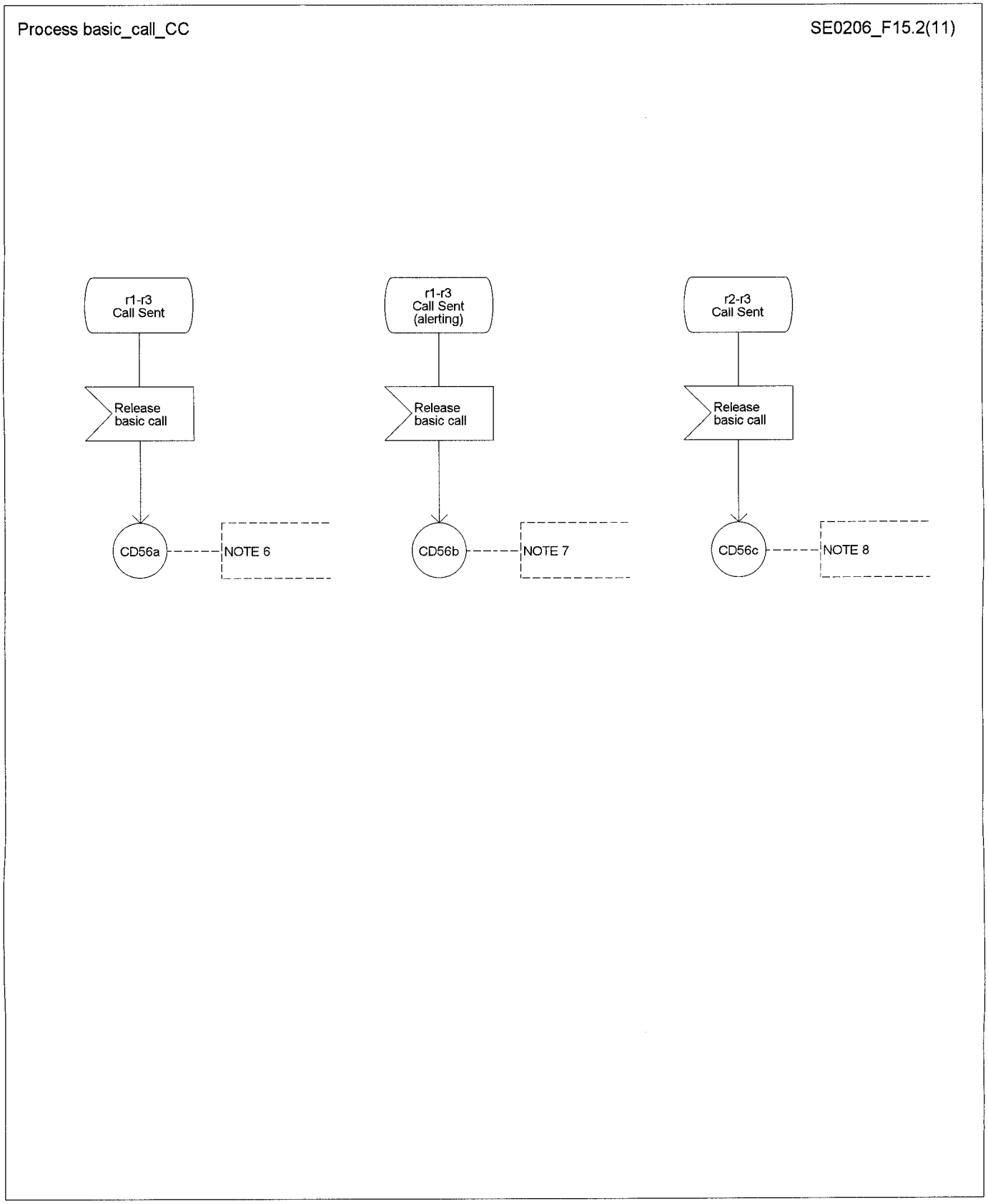

Figure 15 (sheet 2 of 3)

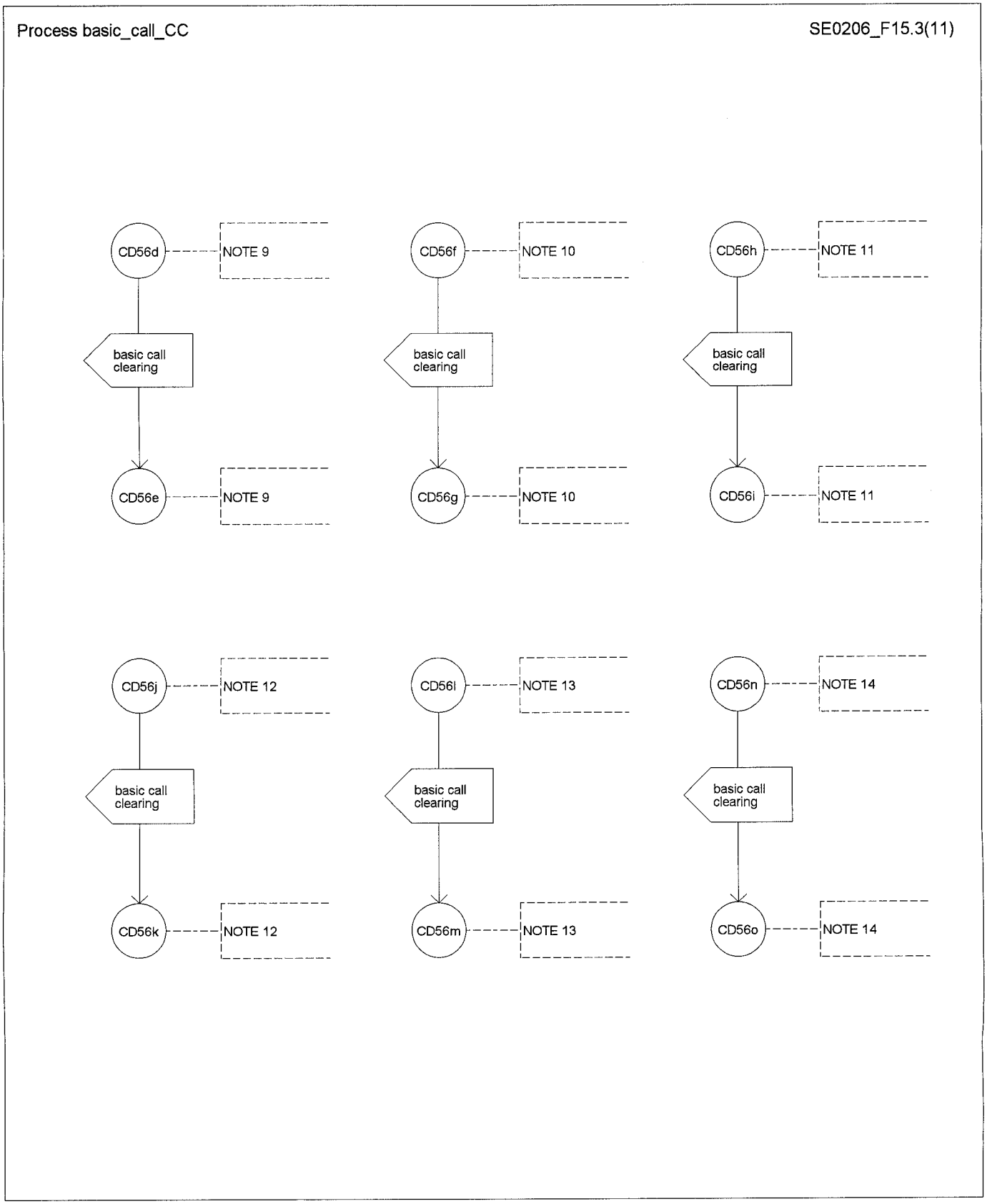

Figure 15 (sheet 3 of 3)

Notes to figure 15:

NOTE 1: CD46 and CD47 break the basic call transition following the receipt of input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 14 of 19) of CCITT Recommendation Q.71 [7]). CD47 reconnects at the same point.

NOTE 2: CD48 and CD49 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 15 of 19) of CCITT Recommendation Q.71 [7]). CD49 reconnects at the same point.

NOTE 3: CD50 and CD51 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 16 of 19) of CCITT Recommendation Q.71 [7]). CD51 reconnects at the same point.

NOTE 4: CD52 and CD53 break the basic call transition following the receipt of input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 14 of 19) of CCITT Recommendation Q.71 [7]). CD53 reconnects at the same point.

NOTE 5: CD54 and CD55 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 15 of 19) of CCITT Recommendation Q.71 [7]). CD55 reconnects at the same point.

NOTE 6: CD56a joins the basic call transition following the receipt of input signal "DISCONNECT req.ind" from the destination side (r3) (see figure 2-9 (sheet 14 of 19) of CCITT Recommendation Q.71 [7]).

NOTE 7: CD56b joins the basic call transition following the receipt of input signal "DISCONNECT req.ind" from the destination side (r3) (see figure 2-9 (sheet 16 of 19) of CCITT Recommendation Q.71 [7]).

NOTE 8: CD56c joins the basic call transition following the receipt of input signal "DISCONNECT req.ind" from the destination side (r3) (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]).

NOTE 9: CD56d and CD56e break the basic call transition following the receipt of input signal "DISCONNECT req.ind" from the destination side (r3) (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD56e reconnects at the same point.

NOTE 10: CD56f and CD56g break the basic call transition following the receipt of input signal "RELEASE req.ind" from the originating side (r2) (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD56g reconnects at the same point.

NOTE 11: CD56h and CD56i break the basic call transition following the receipt of input signal "TIMER 1" (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD56i reconnects at the same point.

NOTE 12: CD56j and CD56k break the basic call transition following the receipt of input signal "DISCONNECT req.ind" from the destination side (r3) (see figure 2-9 (sheet 16 of 19) of CCITT Recommendation Q.71 [7]). CD56k reconnects at the same point.

NOTE 13: CD56l and CD56m break the basic call transition following the receipt of input signal "DISCONNECT req.ind" from the originating side (r1) (see figure 2-9 (sheet 16 of 19) of CCITT Recommendation Q.71 [7]). CD56m reconnects at the same point.

NOTE 14: CD56n and CD56o break the basic call transition following the receipt of input signal "TIMER 4" (see figure 2-9 (sheet 16 of 19) of CCITT Recommendation Q.71 [7]). CD56o reconnects at the same point.

8.5 FE5

The SDL diagram for FE5 is shown figure 16.

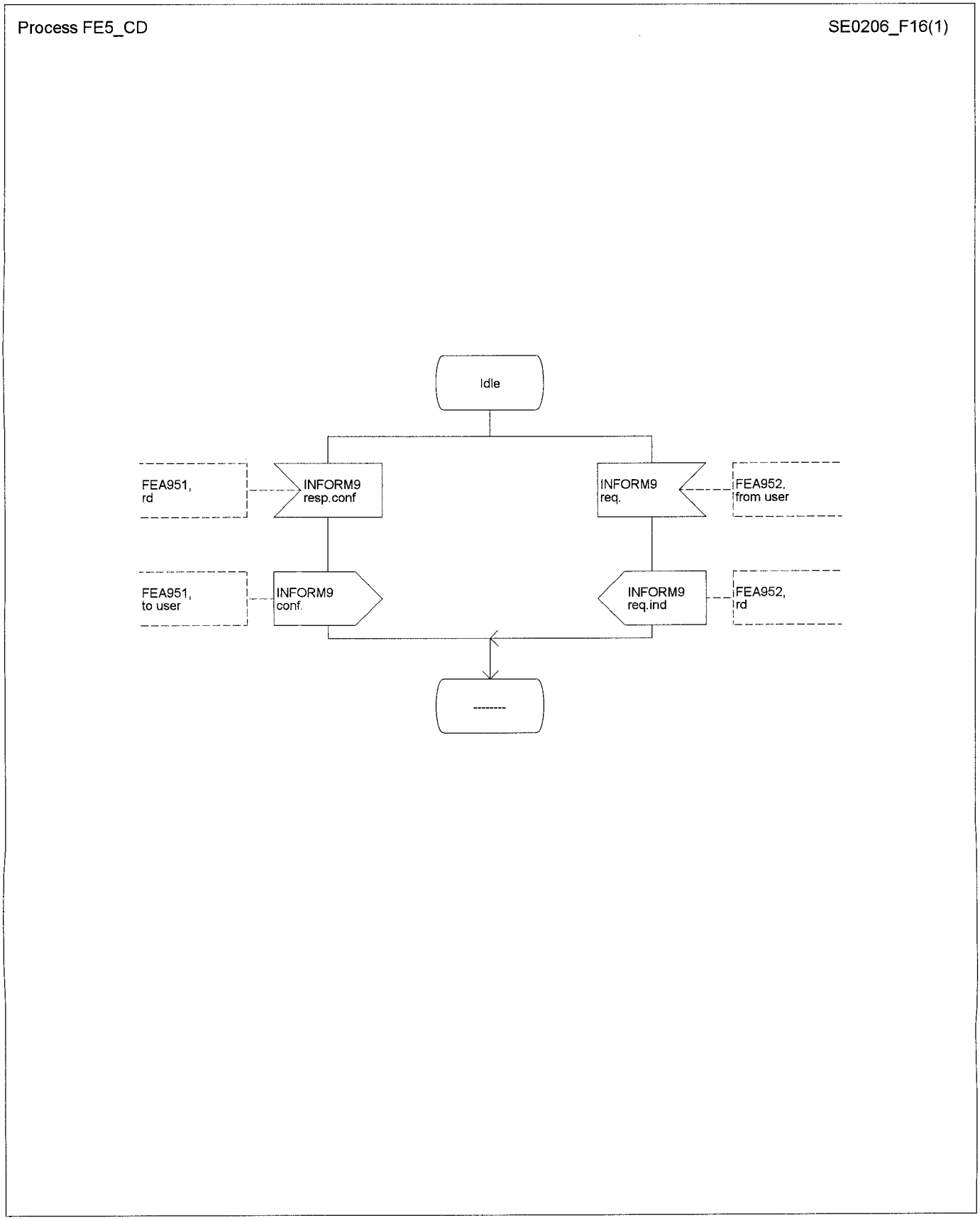

Figure 16

8.6 FE6

The SDL diagrams for FE7 are shown figures 17 and 18.

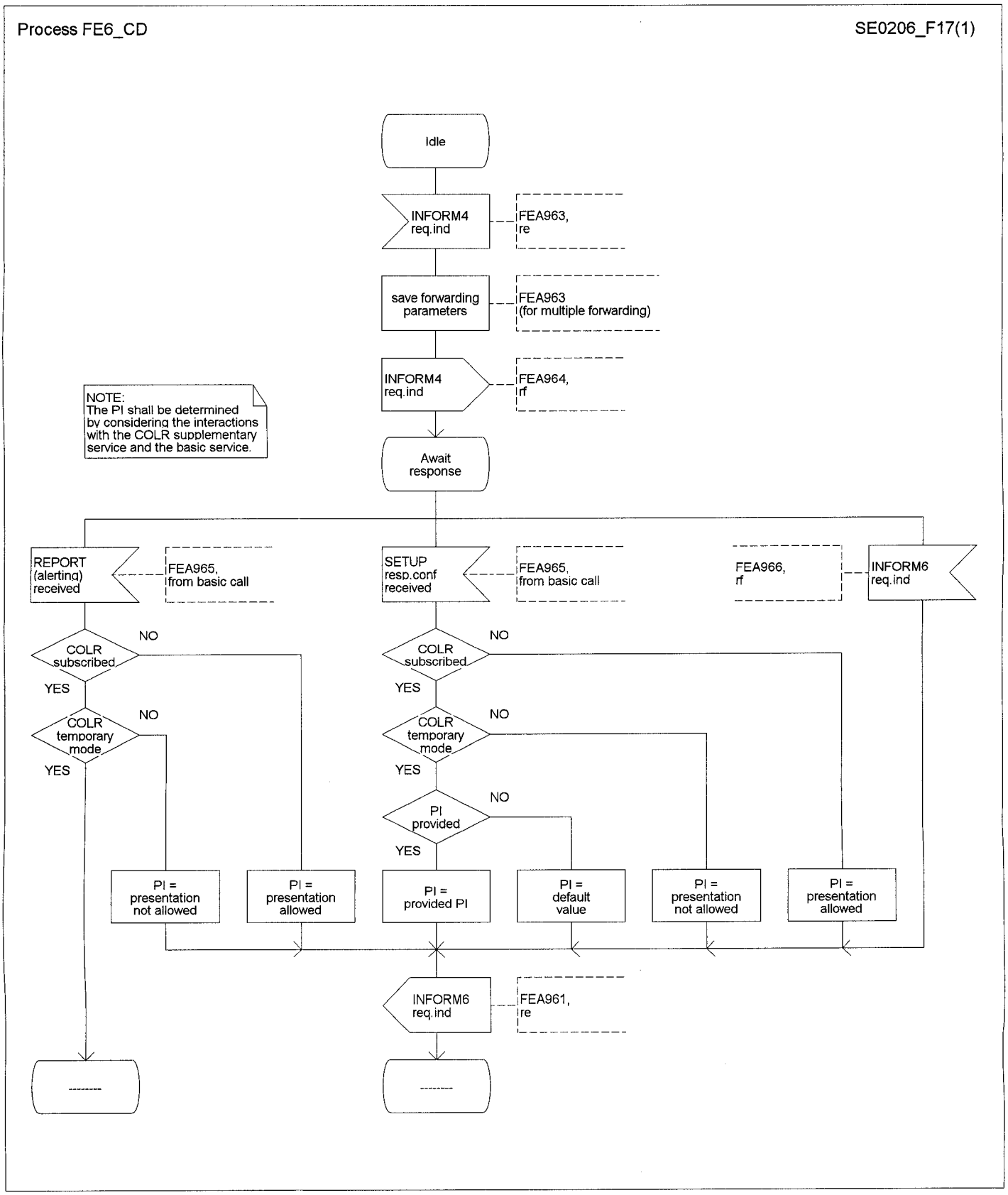

Figure 17

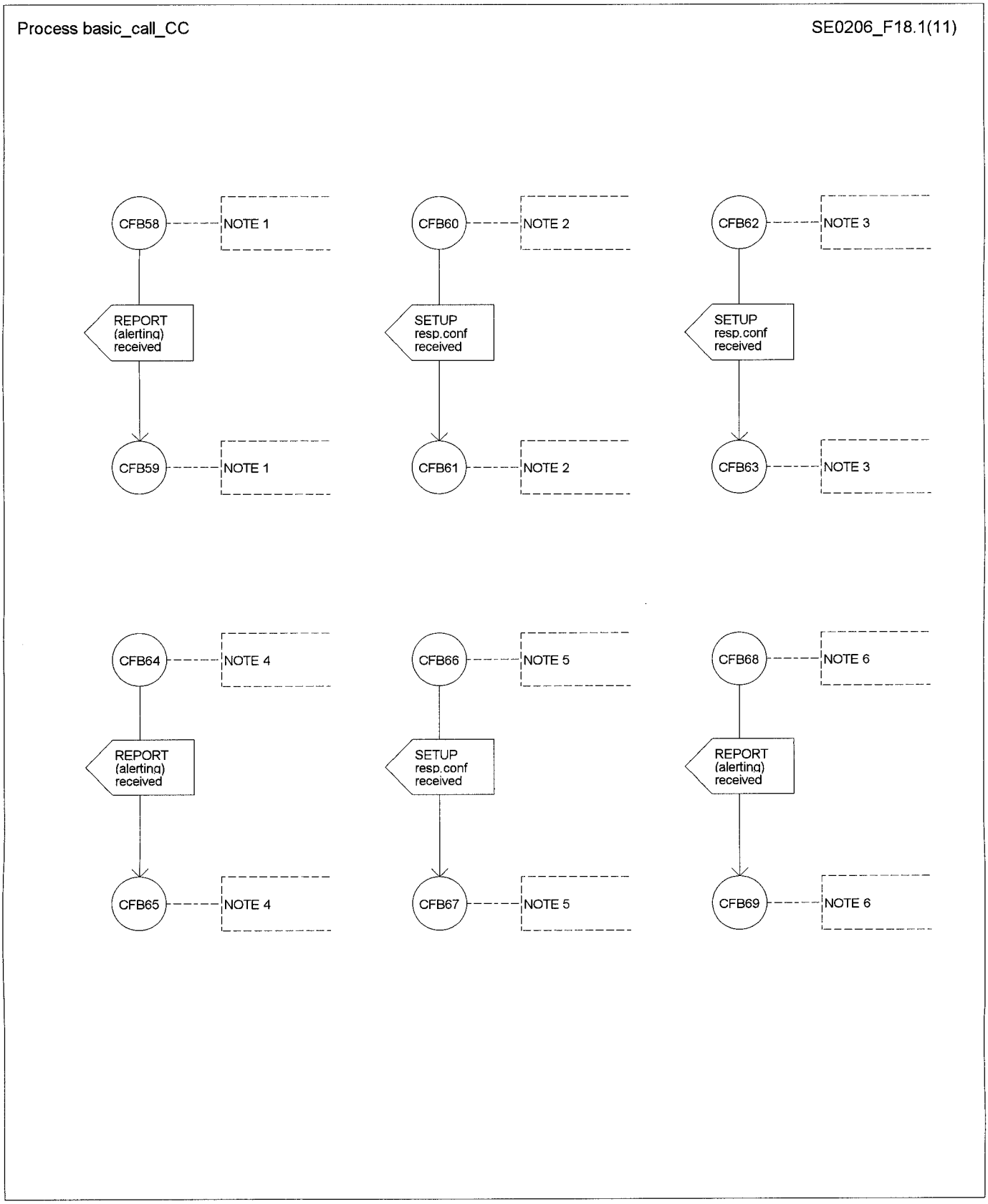

Figure 18 (sheet 1 of 2)

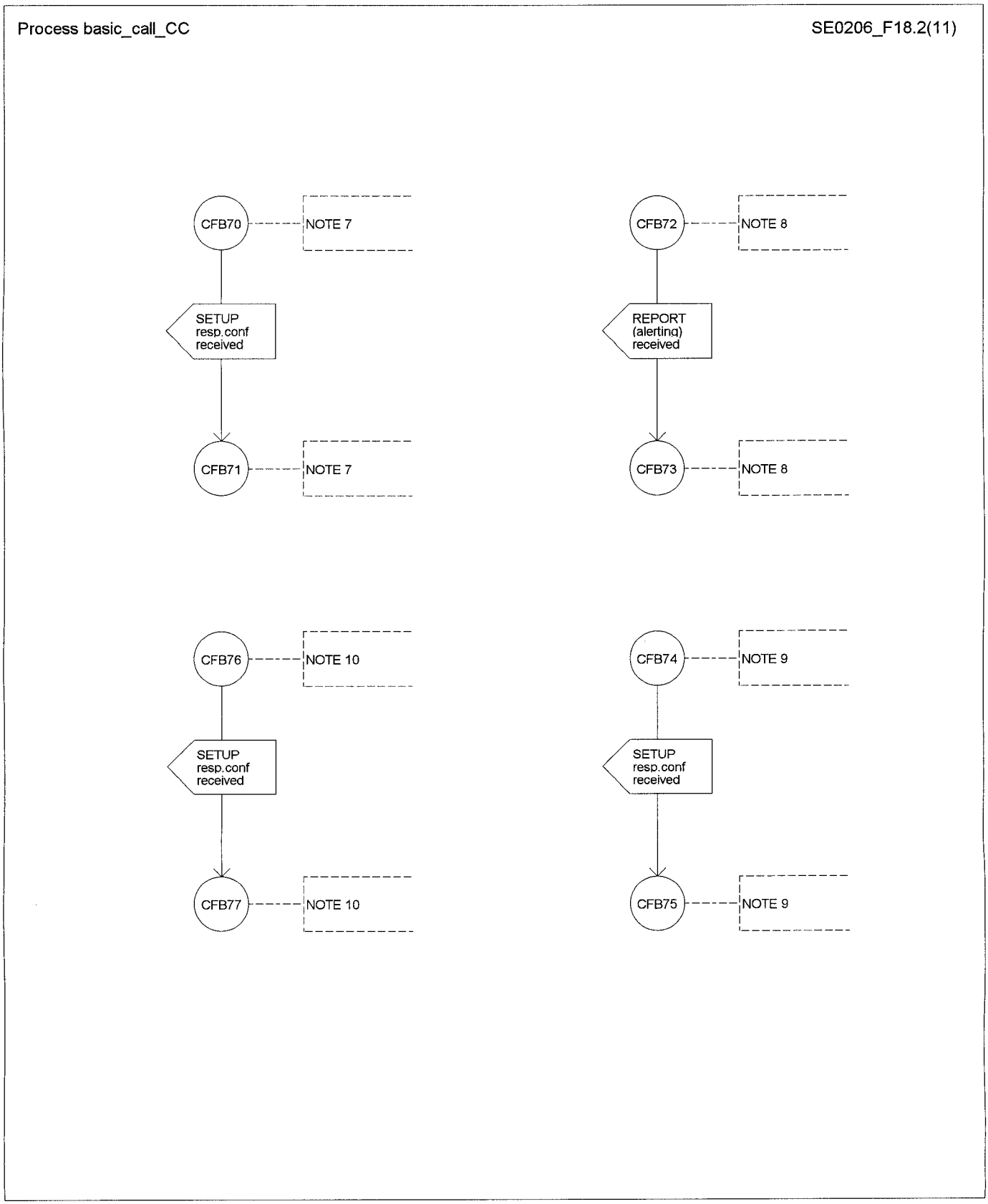

Figure 18 (sheet 2 of 2)

Notes to figure 18:

NOTE 1: CD58 and CD59 break the basic call transition following the receipt of input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 3 of 19) of CCITT Recommendation Q.71 [7]). CD59 reconnects at the same point.

NOTE 2: CD60 and CD61 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 3 of 19) of CCITT Recommendation Q.71 [7]). CD61 reconnects at the same point.

NOTE 3: CD62 and CD63 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 4 of 19) of CCITT Recommendation Q.71 [7]). CD63 reconnects at the same point.

NOTE 4: CD64 and CD65 break the basic call transition following the receipt of input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD65 reconnects at the same point.

NOTE 5: CD66 and CD67 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD67 reconnects at the same point.

NOTE 6: CD68 and CD69 break the basic call transition following the receipt of input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [7]). CD69 reconnects at the same point.

NOTE 7: CD70 and CD71 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 11 of 19) of CCITT Recommendation Q.71 [7]). CD71 reconnects at the same point.

NOTE 8: CD72 and CD73 break the basic call transition following the receipt of input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 14 of 19) of CCITT Recommendation Q.71 [7]). CD73 reconnects at the same point.

NOTE 9: CD74 and CD75 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 15 of 19) of CCITT Recommendation Q.71 [7]). CD75 reconnects at the same point.

NOTE 10: CD76 and CD77 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 16 of 19) of CCITT Recommendation Q.71 [7]). CD77 reconnects at the same point.

8.7 FE7

The SDL diagrams for FE7 are shown in figure 19 and 20.

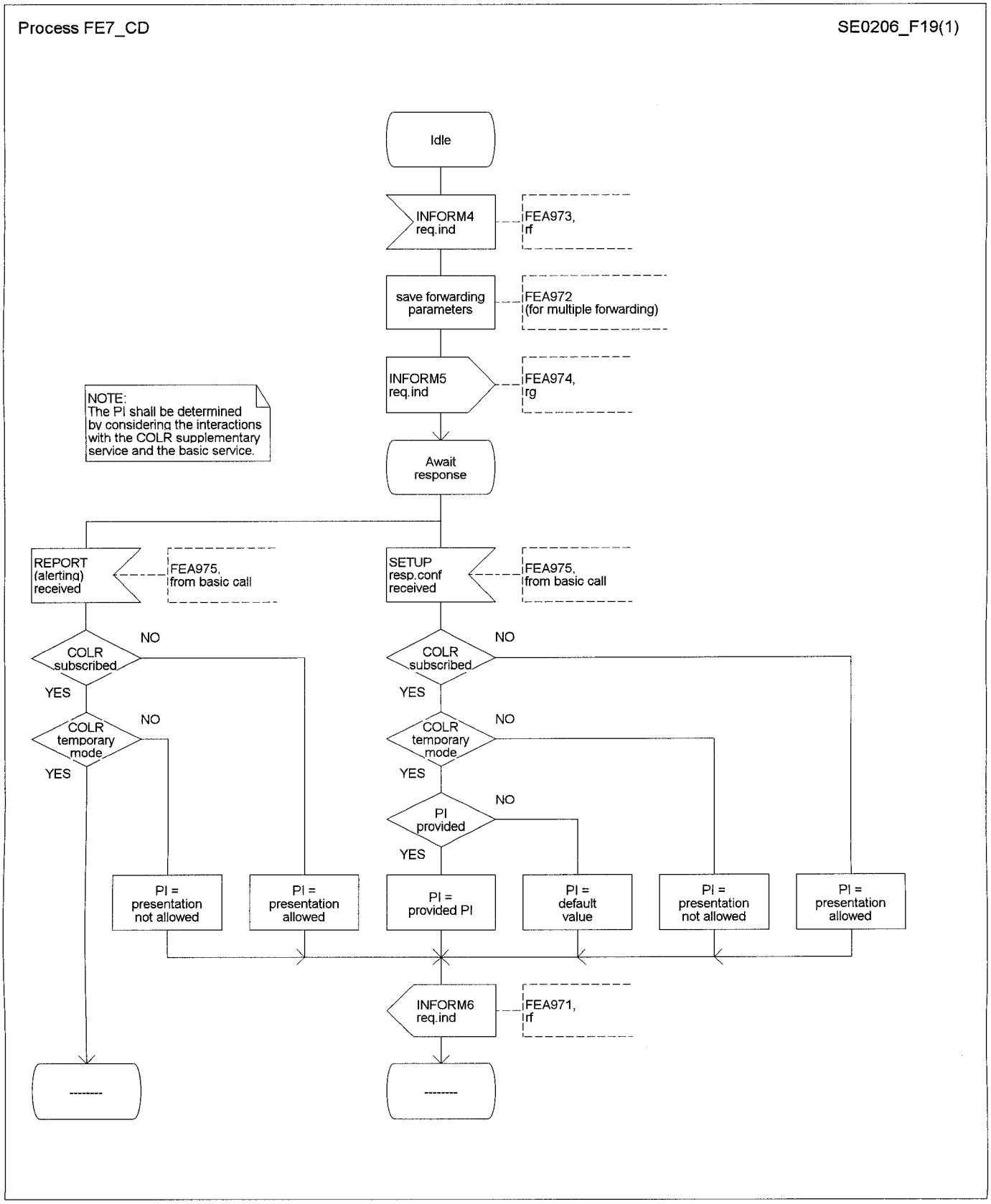

Figure 19

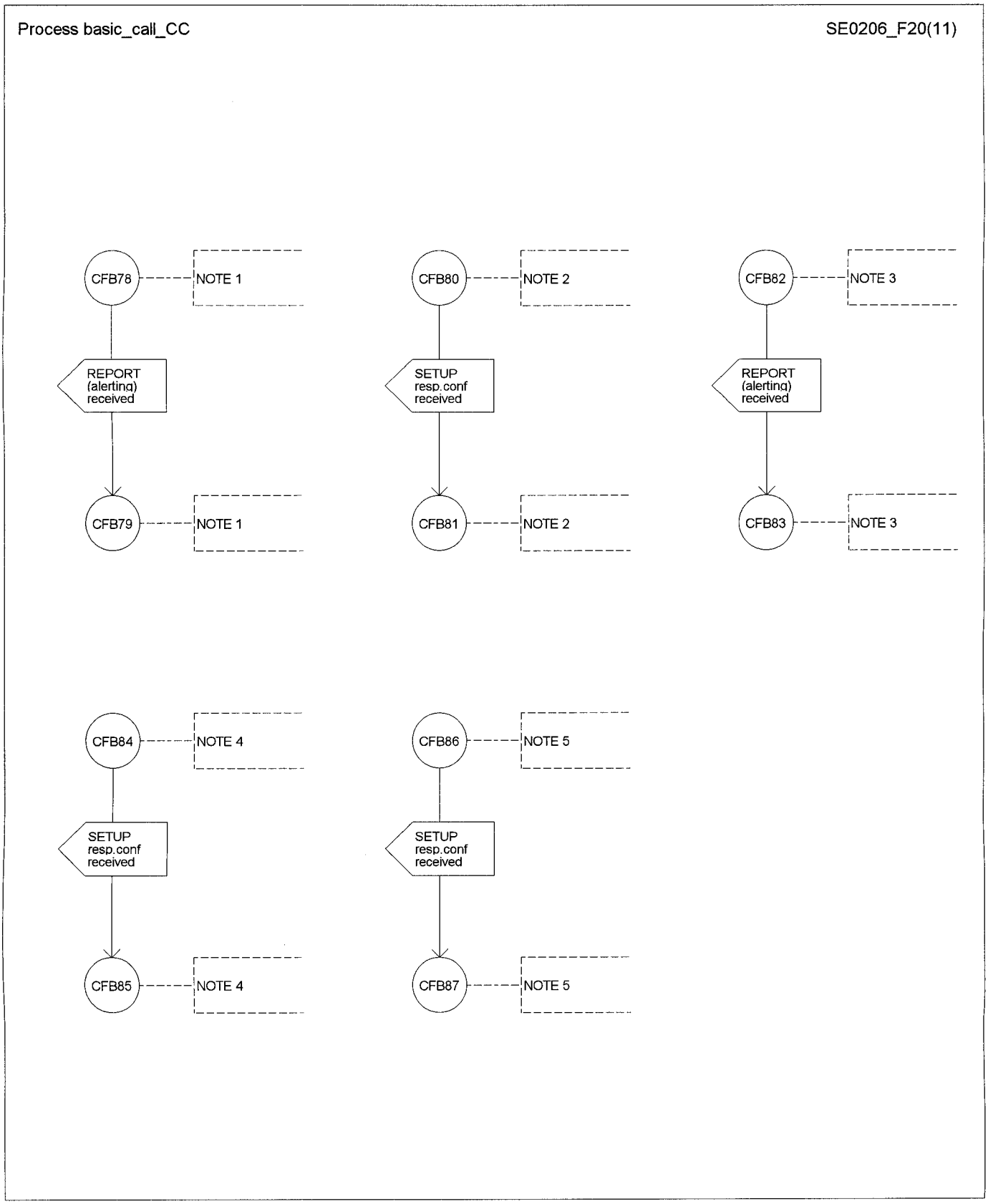
Process basic_call_CC
SE0206_F20(11)
CFB78
NOTE 1
REPORT (alerting) received
CFB79
NOTE 1
CFB80
NOTE 2
SETUP resp.conf received
CFB81
NOTE 2
CFB82
NOTE 3
REPORT (alerting) received
CFB83
NOTE 3
CFB84
NOTE 4
SETUP resp.conf received
CFB85
NOTE 4
CFB86
NOTE 5
SETUP resp.conf received
CFB87
NOTE 5

Figure 20

Notes to figure 20:

NOTE 1: CD78 and CD79 break the basic call transition following the receipt of input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD79 reconnects at the same point.

NOTE 2: CD80 and CD81 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 8 of 19) of CCITT Recommendation Q.71 [7]). CD81 reconnects at the same point.

NOTE 3: CD82 and CD83 break the basic call transition following the receipt of input signal "REPORT (alerting) req.ind" (see figure 2-9 (sheet 14 of 19) of CCITT Recommendation Q.71 [7]). CD83 reconnects at the same point.

NOTE 4: CD84 and CD85 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 15 of 19) of CCITT Recommendation Q.71 [7]). CD85 reconnects at the same point.

NOTE 5: CD86 and CD87 break the basic call transition following the receipt of input signal "SETUP resp.conf" (see figure 2-9 (sheet 16 of 19) of CCITT Recommendation Q.71 [7]). CD87 reconnects at the same point.

8.8 FE8

The SDL diagram for FE8 is shown figure 21.

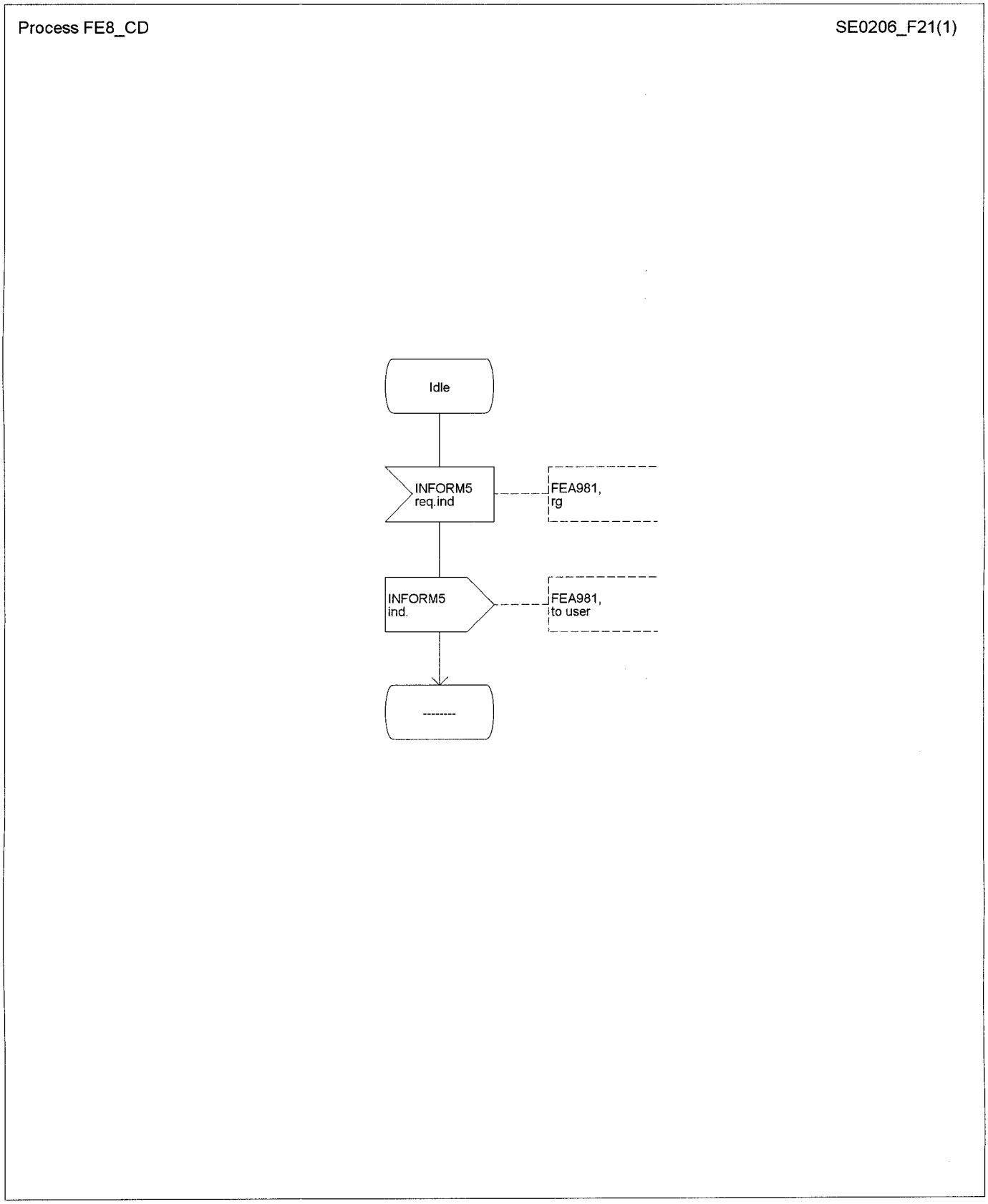

Figure 21

9 Functional Entity Actions (FEAs)

9.1 FEAs of FE1

911: Receive indications related to the service from FE2 and present them to the calling user.

9.2 FEAs of FE2

921: Receive INFORM1 req.ind, delete old DTN if already saved, save new DTN (when available), save NSO if it is the first or a subsequent more restrictive NSO.

922: Send INFORM2 req.ind to FE1 if allowed.

923: Receive INFORM6 req.ind and send INFORM7 req.ind to FE1 if allowed.

9.3 FEAs of FE3

931: Send INFORM1 req.ind to FE2.

932: Receive INFORM10 req.ind (deflecting request) including all necessary parameters from FE4.

933: Stimulate release procedures for the leg towards the served user.

934: Stimulate basic call set-up towards the deflected-to user.

935: Decide whether deflecting is allowed and valid.

936: Insert stored parameters (FEA 93A and FEA 932) into SETUP req.ind and INFORM4 req.ind and send INFORM4 req.ind with all necessary information to FE6.

937: Receive indications from the basic call of REPORT (alerting) req.ind, SETUP resp.conf or RELEASE req.ind detected on the leg towards the deflected-to user.

938: Send INFORM10 resp.conf (result of deflecting request) to FE4.

930: Receive INFORM6 req.ind from FE6 and send it to FE2.

93A: Receive indication of SETUP req.ind from basic call and store calling party number and restriction indicator.

93B: Stimulate the release of the leg towards the forwarded-to user.

9.4 FEAs of FE4

942: Receive INFORM9 req.ind (CD request) from FE5.

943: Receive INFORM10 resp.conf and determine the success or failure of the deflection request.

944: Detect release of the served user.

945: Validation of CD request.

946: Increment forwarding counter and determine whether the call count limit is exceeded.

948: Determine parameters for INFORM10 req.ind and send INFORM10 req.ind to FE3.

940: Recognize CD supplementary service activated and send INFORM9 req.ind to FE5.

94E: Decrement forwarding counter.

9.5 FEAs of FE5

951: Receive indications related to the served user from FE4 and present them to the served user.

952: Send INFORM9 req.ind (deflection request) with deflected-to address to FE4.

9.6 FEAs of FE6

961: Send INFORM6 req.ind to FE3.

NOTE: This FEA is only required when the PI is determined in FE6.

963: Receive INFORM4 req.ind from FE3, store:
- last forwarding number + restriction indicators;
- originally called number + restriction indicator.

964: Send INFORM4 req.ind to FE7, restrict, if required, originally called number and/or last forwarding number.

965: Receive indication from the basic call of receipt of REPORT (alerting) req.ind or SETUP resp.conf and determine PI by interaction between the basic service, the CD supplementary Service and the COLR supplementary service.

966: Relay any received INFORM6 req.ind.

967: Pass stored parameters to new FE3 (internal) when multiple forwarding occurs (not fully described in the SDL diagrams).

9.7 FEAs of FE7

971: Send INFORM6 req.ind to FE6.

972: Save forwarding parameters for use in next FE4 (internal) when multiple forwardings apply (not described in the SDL diagrams).

973: Receive INFORM4 req.ind from FE6.

974: Send INFORM5 req.ind to FE8.

975: Receive indication from the basic call of receipt of REPORT (alerting) req.ind or SETUP resp.conf and determine PI by interaction between the basic service, the CD supplementary service and the COLR supplementary service.

9.8 FEAs of FE8

981: Receive indications related to the service from FE7 and present them to the called user.

10 Allocation of functional entities to physical locations

The possible physical locations of FEs are shown in table 12.

Table 12 Scenarios for the CD supplementary service

Scenario	A Party		B Party			C Party		
	FE1	FE2	FE3	FE4	FE5	FE6	FE7	FE8
1	TE	LE	LE		TE	LE		TE
2	PTNX	LE	LE		TE	LE		TE
3	TE	LE	PTNX		TE	LE		TE
4	TE	LE	LE		TE	LE	PTNX	TE
5	PTNX	LE	LE		TE	LE	PTNX	TE
6	TE	LE	PTNX		TE	LE	PTNX	TE
7 (note 2)	TE	LE	LE		PTNX	LE		TE
8 (note 2)	TE	LE	LE		PTNX	LE	PTNX	TE
9 (note 3)	TE	LE	LE	PTNX	TE	LE		TE
10 (note 3)	PTNX	LE	LE	PTNX	TE	LE		TE
11 (note 3)	TE	LE	LE	PTNX	TE	LE	PTNX	TE
12 (note 3)	PTNX	LE	LE	PTNX	TE	LE	PTNX	TE

NOTE 1: The network provider may limit the number of calls simultaneously diverted from a particular access.
NOTE 2: In these scenarios the CD supplementary service is provided to the private network.
NOTE 3: The provision of partial rerouteing is a public network provider option. In networks which provide partial rerouteing, Private Telecommunications Network Exchange (PTNXs) may operate scenarios 9, 10, 11 and 12.

Annex A (informative): Explanatory model for multiple diversion

Figure A.1 contains an explanatory model for multiple diversions in the case of call forwarding by forward switching.

In figure A.1 the functional model is mapped on a model for a basic call. When the call forwarding supplementary service is implemented by forward switching, FE3 and FE4 are always collocated at the same Call Control (CC).

The different hops of a call encountering several diversions are linked at the level of the basic call.

In the nodes (CCs) where new hops occur, both the FE6 of the last hop and FE3 of the new hop need to be collocated.

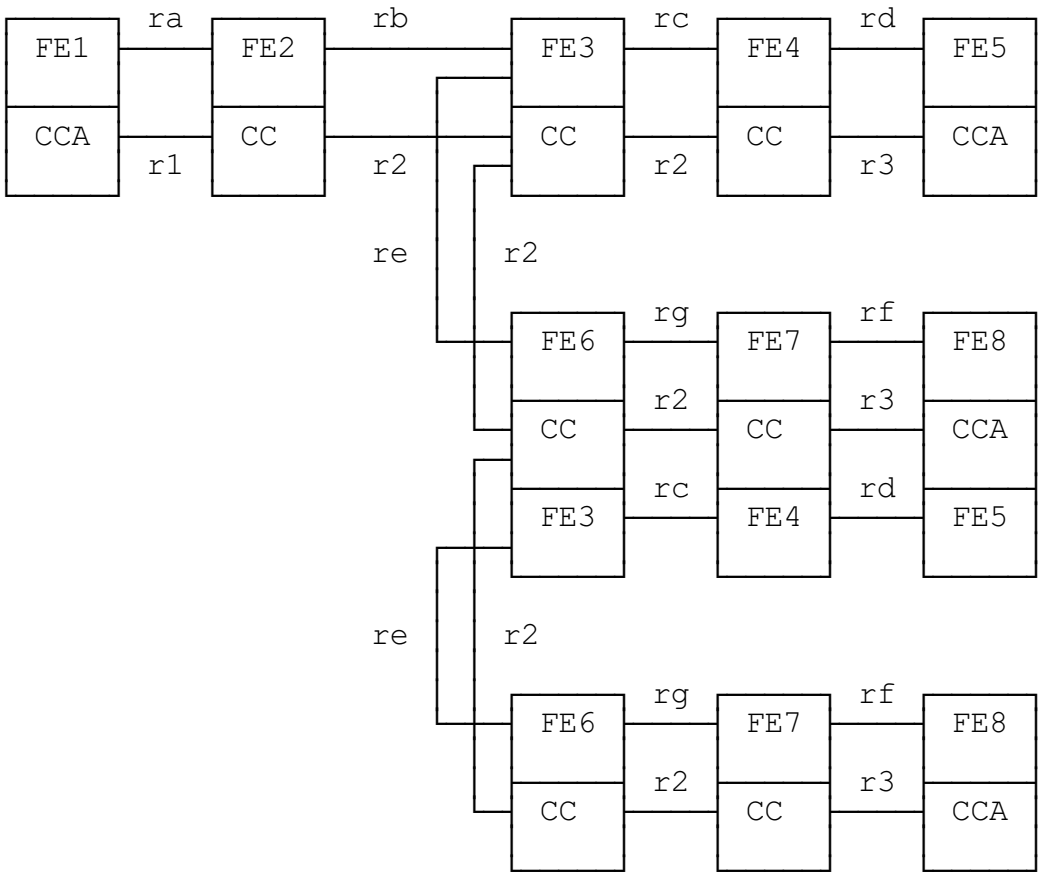

Figure A.1: Explanatory model for multiple diversion

History

Document history	
December 1994	First Edition
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