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**Integrated Services Digital Network (ISDN);
Conference call, add-on (CONF) supplementary service
Functional capabilities and information flows**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols & Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

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 3 aspects (signalling system protocols and switching functions) to support the Conference call, add-on (CONF) supplementary service. The stage 1 and stage 3 aspects are detailed in ETS 300 183 (1992) and ETS 300 185 (1993), respectively.

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1 Scope

This standard defines stage two of the Conference call, add-on (CONF) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage two identifies the functional capabilities and the information flows needed to support the service as described in stage one. The stage two description also identifies user operations not directly associated with a call (see CCITT Recommendation I.130 [1]).

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

This standard 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 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, specify 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 CONF supplementary service provides a user with the ability to have a multi-connection call, i.e. a simultaneous communication between more than two parties.

The CONF supplementary service is defined for all telecommunication services carrying speech.

This standard is applicable to the stage three standards for the ISDN Conference call, add-on (CONF) supplementary service. The term stage three is also defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement, i.e. as 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 standard 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] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [4] CCITT Recommendation Q.71 (1988): "ISDN 64 kbit/s circuit mode switched bearer services".
- [5] ETS 300 183 (1992): "Integrated Services Digital Network (ISDN); Conference call, add-on (CONF) supplementary service; Service description".

- [6] CCITT Recommendation Z.100 (1988): "Functional Specification and Description Language (SDL)".
- [7] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means used to describe them".

3 Definitions

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

Backward connection: that part of a normal call that connects a served user's CCA with a CC located with the Service Providing Entity (SPE).

Conferee: a conference participant not being the conference controller.

Conference controller: the served user controlling the conference.

Forward connection: the connection between a Call Control (CC) located with the SPE and a conferee's Call Control Agent (CCA).

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [3], § 2.3, definition 308.

Multi Connection Call Control (MCCC): a call control entity with the ability to control one connection directly and several others via One Connection Call Control (OCCC) entities.

One Connection Call Control (OCCC): a call control entity with the ability to control a single connection for a MCCC entity.

Party: either a conferee or the conference controller.

Service; telecommunications service: see CCITT Recommendation I.112 [3], § 2.2, definition 201.

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

4 Symbols and abbreviations

CC	Call Control
CCA	Call Control Agent
CONF	Conference call, add-on
FEA	Functional Entity Action
ISDN	Integrated Services Digital Network
LE	Local Exchange
MCCC	Multi Connection Call Control
OCCC	One Connection Call Control
PTNX	Private Telecommunications Network eXchange
SDL	Specification and Description Language
SPE	Service Providing Entity
TE	Terminal Equipment

5 Description

The CONF supplementary service can be invoked from the idle state. As a network option, the CONF supplementary service can be invoked from an existing active call.

When the CONF supplementary service is invoked, conference resources (e.g. a "bridge") are allocated to the served user. In the case of invocation from an active call, this shall be automatically connected by the network to the conference resources.

Once a conference is active, parties may be added, dropped, isolated (i.e. prevented from communicating with the conference), reattached or split (i.e. removed from the conference but remain connected to the conference controller).

6 Derivation of a functional model

6.1 Functional model description

The model has been based on the concept that the served user maintains by means of FE1 a single relation to the centre of the conference FE2. FE2 has the ability to have simultaneous relations with all the conferees.

This concept has been depicted in figure 1.

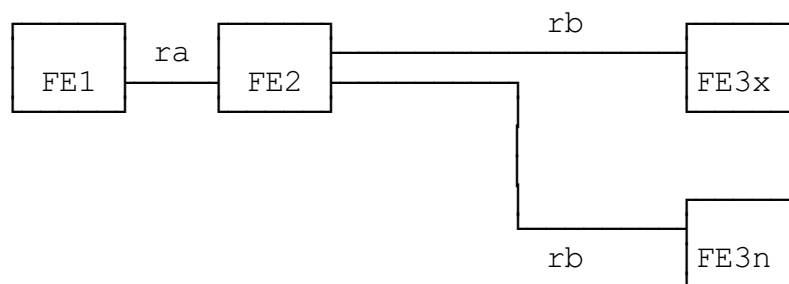


Figure 1

6.2 Description of functional entities

- FE1: Originating service agent
- FE2: Service providing entity
- FE3: Destination service agent

6.3 Relation with a basic service

The relationship with a basic service is shown in figure 2. The model for basic call handling is defined in CCITT Recommendation Q.71 [4].

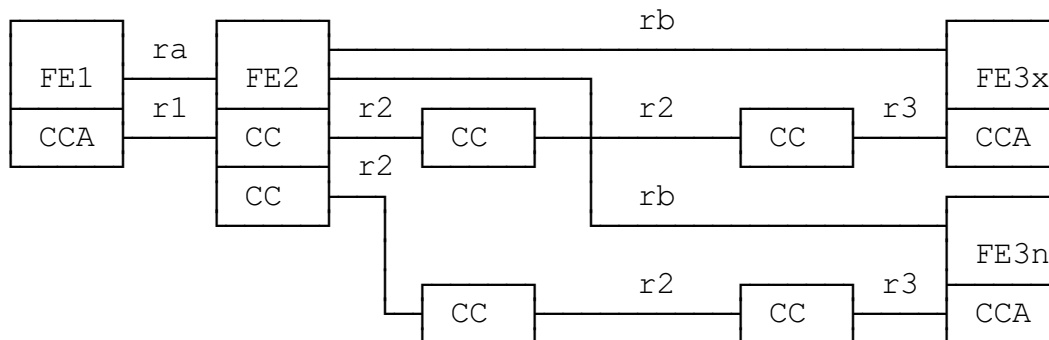


Figure 2

7 Information flows

7.1 Information flow diagrams

The following information flow diagrams are identified:

- Figure 3: Requesting a new conference call;
- Figure 4: Change normal call into conference call;
- Figure 5: Adding a new conferee;
- Figure 6: Isolating a conferee;
- Figure 7: Reattaching a conferee;
- Figure 8: Dropping a conferee from the conference;
- Figure 9: Splitting a conferee from the conference;
- Figure 10: Call clearing by conferee;
- Figure 11: Ending the conference.

NOTE: FE3x is the functional entity which belongs to that party which is explicitly identified by the conference controller (e.g. DROP party-X). FE3n are the functional entities which belong to the parties not identified by the conference controller (e.g. all parties except party-X).

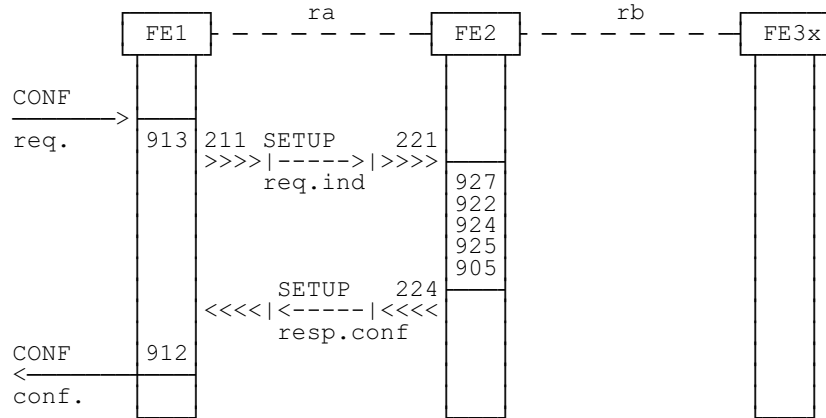


Figure 3: Requesting a new conference call from idle call state

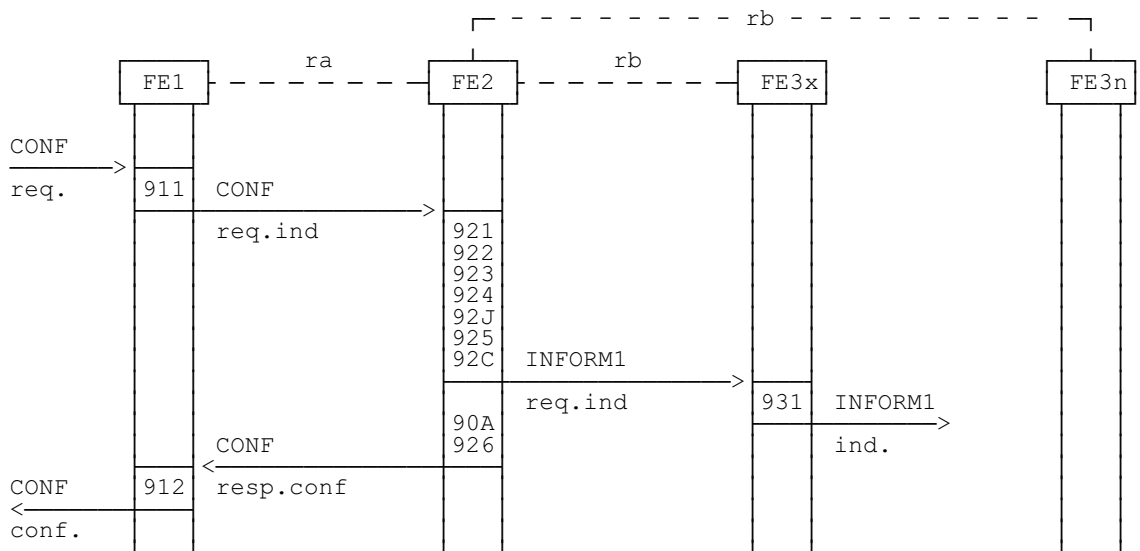


Figure 4: Change normal call into conference call

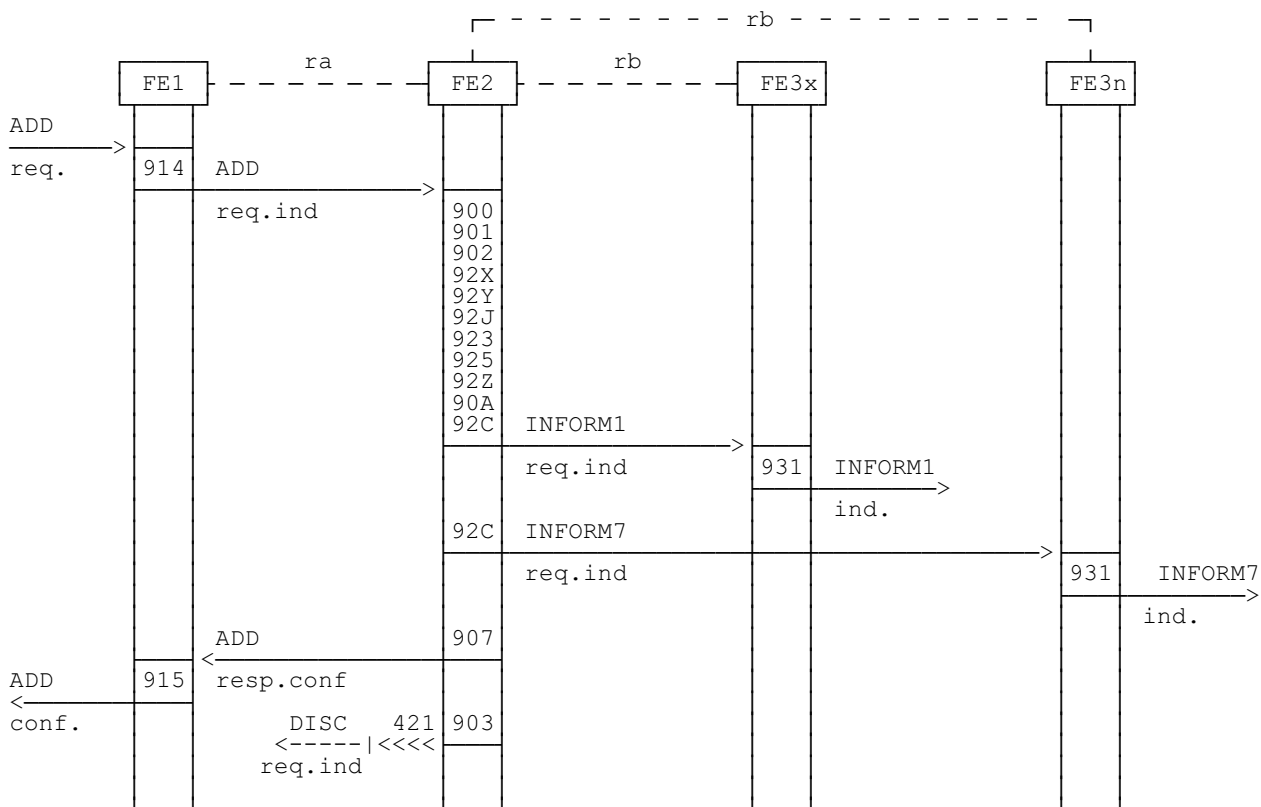


Figure 5: Adding a new conferee

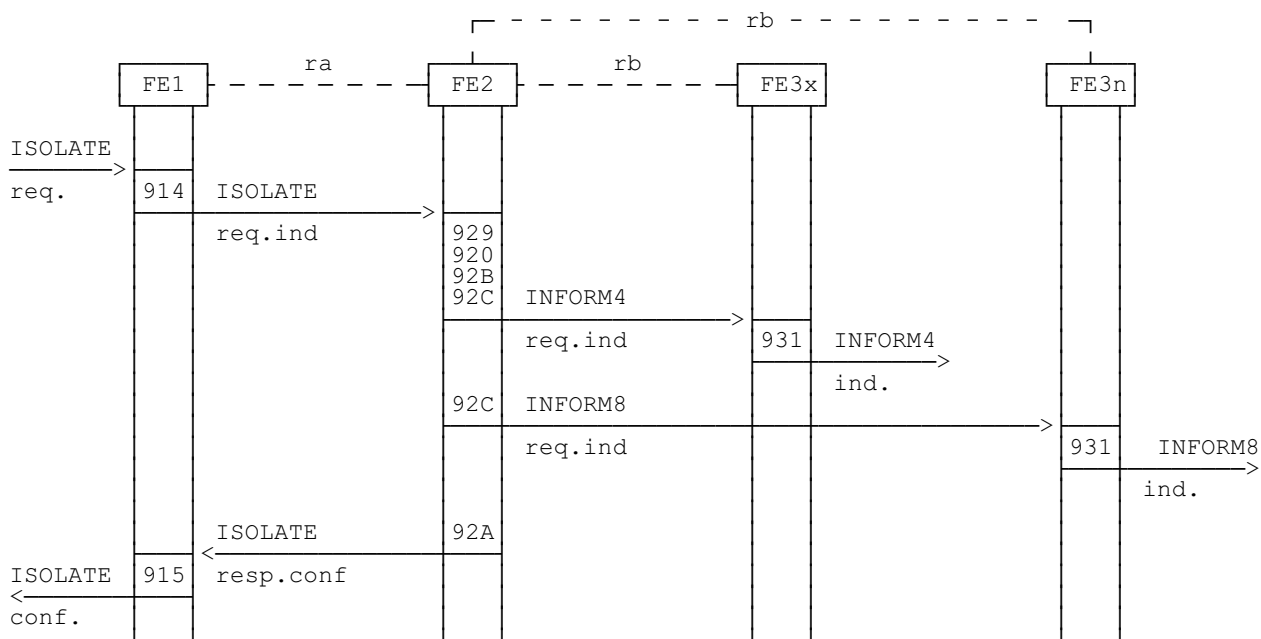


Figure 6: Isolating a conferee

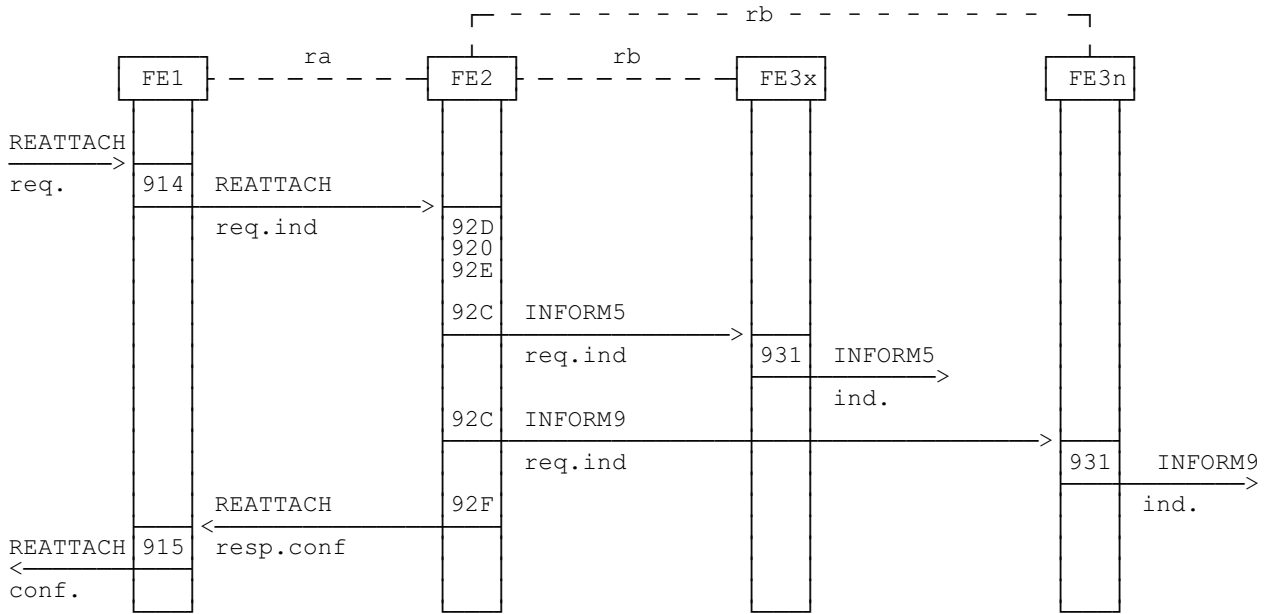


Figure 7: Reattaching a conferee

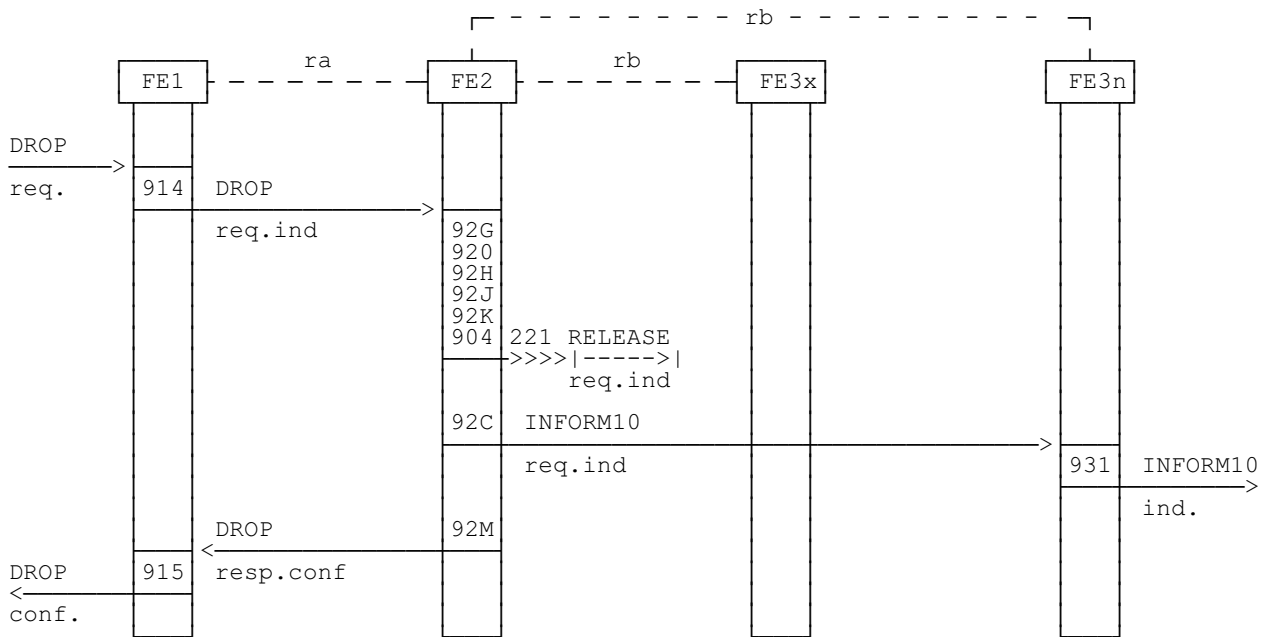


Figure 8: Dropping a conferee

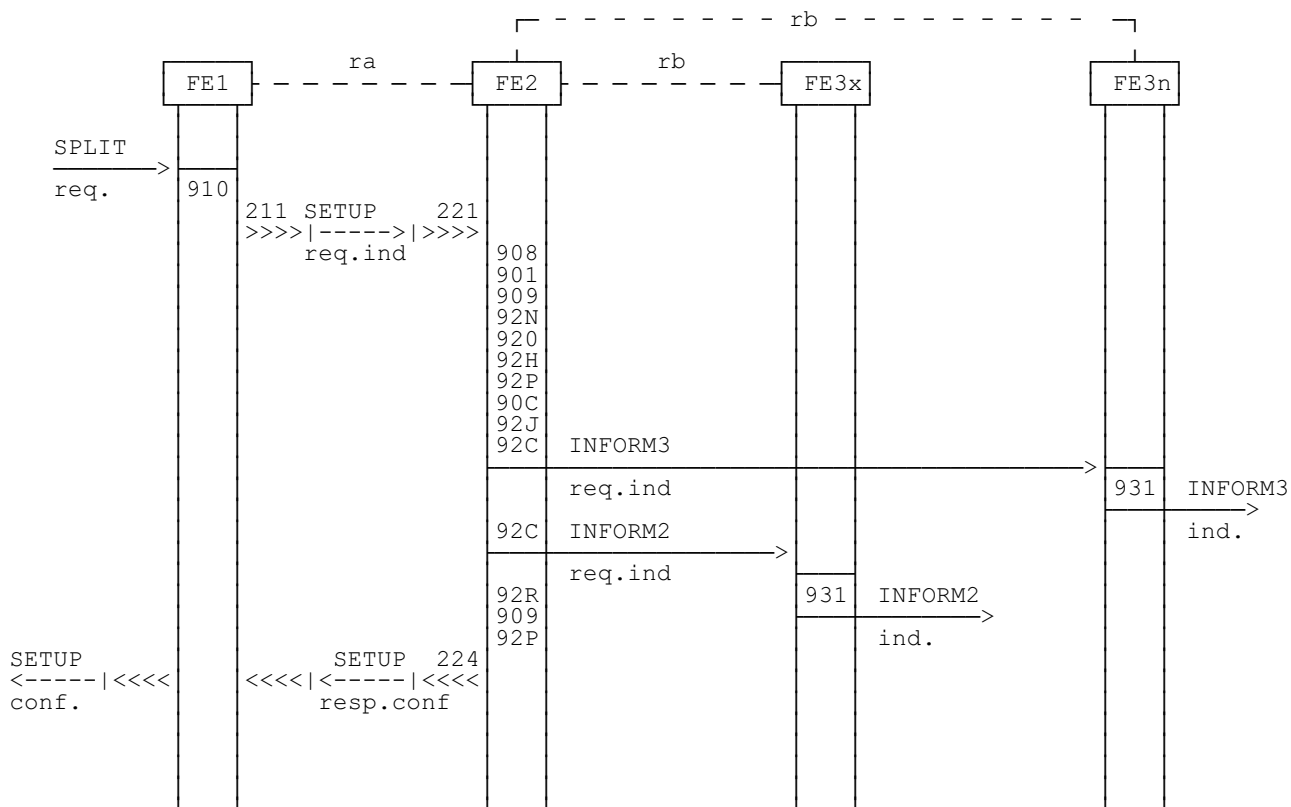


Figure 9: Splitting a conferee

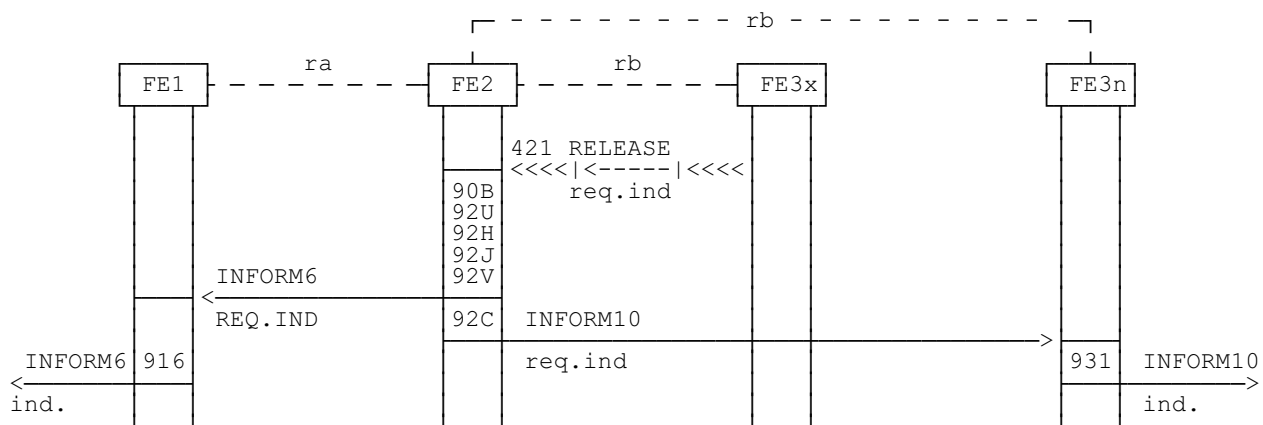


Figure 10: Call clearing by conferee

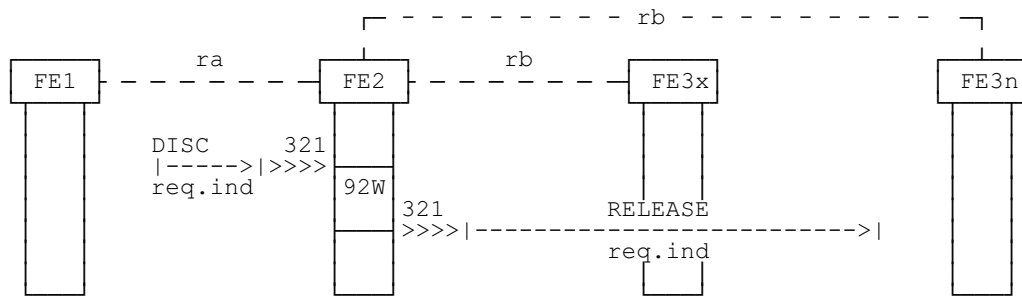


Figure 11: Ending of the conference

7.2 Definition of individual information flows

7.2.1 Modification to relationship r1 associated with ra

The CONF supplementary service defines the following modifications to the r1 relationship.

7.2.1.1 Contents of SETUP

The additional contents of SETUP are shown in table 1.

Table 1

SETUP		req.ind	resp.conf
Conference indicator	(NOTE 1)	Optional	
Split indicator	(NOTE 2)	Optional	
Conference size	(NOTE 3)	Optional	
Conference identity	(NOTE 1)		Optional
Conference identity	(NOTE 2)	Optional	
Party identity	(NOTE 2)	Optional	

NOTE 1: This information element is mandatory when a conference call is requested.

NOTE 2: This indicator is mandatory when a 2 party call to a conferee is requested.

NOTE 3: This information element shall only be used if a conference call is requested.

7.2.2 Relationship ra

7.2.2.1 Contents of CONF

The contents of CONF are shown in table 2.

Table 2

CONF		req.ind	resp.conf
Conference size		Optional	
Party identity			Mandatory

This confirmed information flow is used to request the conference call, add-on service from an existing call.

7.2.2.2 Contents of CONF REJECT

The contents of CONF REJECT are shown in table 3.

Table 3

CONF REJECT	req.ind
Cause	Mandatory

7.2.2.3 Contents of ADD

The contents of ADD are shown in table 4.

Table 4

ADD	req.ind	resp.conf
Conference identity	Mandatory	
Party identity		Mandatory

This confirmed information flow appears from FE1 to FE2 and is used to request to add a call to the indicated conference.

7.2.2.4 Contents of ADD REJECT

The contents of ADD REJECT are shown in table 5.

Table 5

ADD REJECT	req.ind
Cause	Mandatory

7.2.2.5 Contents of ISOLATE

The contents of ISOLATE are shown in table 6.

Table 6

ISOLATE	req.ind	resp.conf
Party identity	Mandatory	

This confirmed information flow appears between FE1 and FE2 and is used to request the indicated conferee to be isolated from the conference.

7.2.2.6 Contents of ISOLATE REJECT

The contents of ISOLATE REJECT are shown in table 7.

Table 7

ISOLATE REJECT	req.ind
Cause	Mandatory

7.2.2.7 Contents of REATTACH

The contents of REATTACH are shown in table 8.

Table 8

REATTACH	req.ind	resp.conf
<hr/>		
Party identity	Mandatory	

This confirmed information flow appears between FE1 and FE2 and is used to request the indicated conferee to be reattached to the conference bridge.

7.2.2.8 Contents of REATTACH REJECT

The contents of REATTACH REJECT are shown in table 9.

Table 9

REATTACH REJECT	eq.ind
<hr/>	
Cause	Mandatory

7.2.2.9 Contents of DROP

The contents of DROP are shown in table 10.

Table 10

DROP	req.ind	resp.conf
<hr/>		
Party identity	Mandatory	

This confirmed information flow appears between FE1 and FE2 and is used to request the call to the indicated conferee to be released.

7.2.2.10 Contents of DROP REJECT

The contents of DROP REJECT are shown in table 11.

Table 11

DROP REJECT	req.ind
<hr/>	
Cause	Mandatory

7.2.2.11 Contents of INFORM6

The contents of INFORM6 are shown in table 12.

Table 12

INFORM6	req.ind
<hr/>	
Party identity	Mandatory

The unconfirmed information flow appears between FE2 and FE1 and is used to indicate that a party has terminated his connection.

7.2.3 Relationship rb

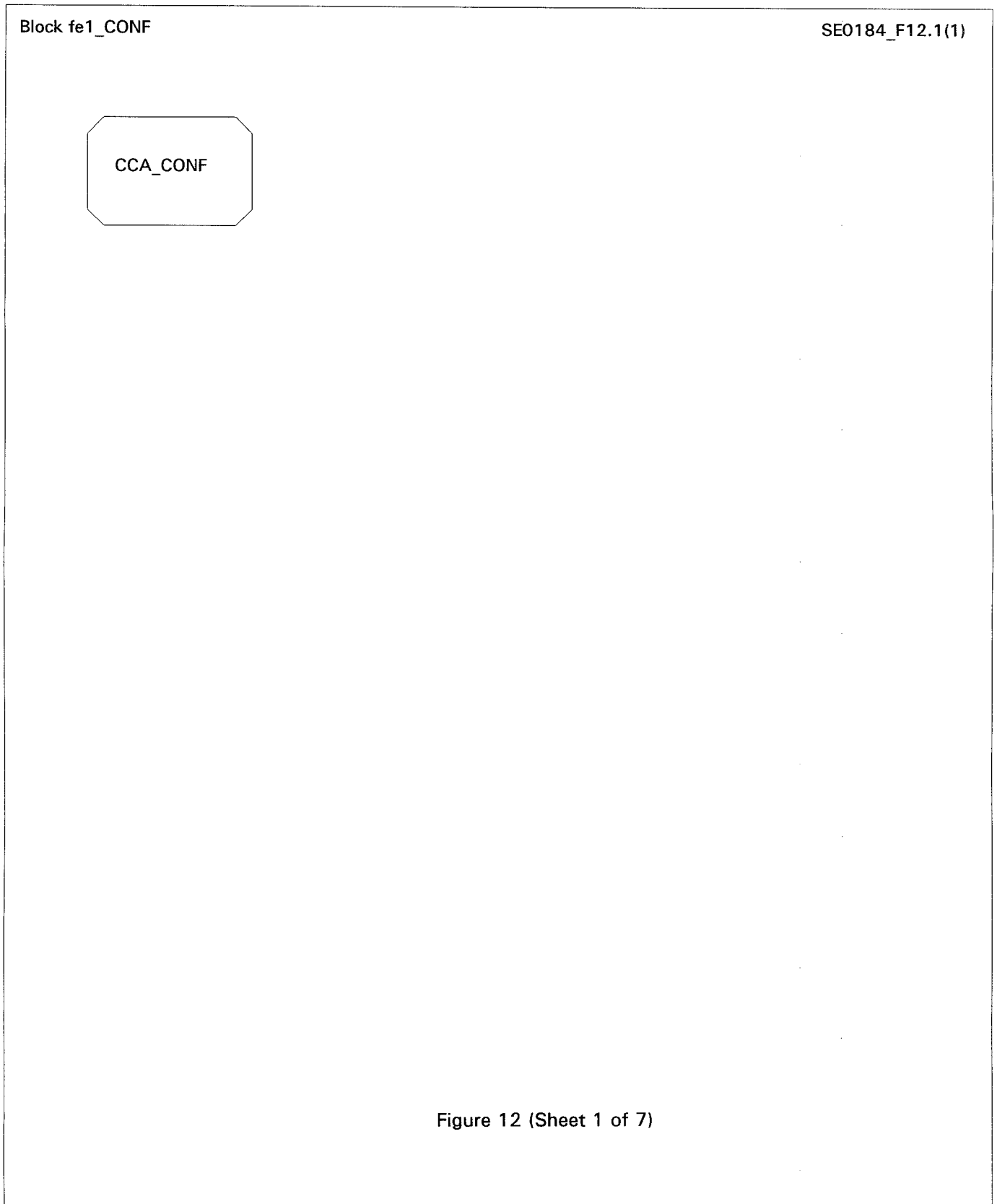
There are no parameters included in INFORM1 "ADDED TO CONFERENCE", INFORM2 "PRIVATE COMMUNICATION", INFORM3 "OTHER PARTY IN PRIVATE COMMUNICATION", INFORM4 "ISOLATED", INFORM5 "REATTACHED" , INFORM7 "OTHER PARTY ADDED TO CONFERENCE" , , INFORM8 "OTHER PARTY ISOLATED" and INFORM9 "OTHER PARTY REATTACHED" and INFORM10 "OTHER PARTY DROPPED" .

8 SDL diagrams for functional entities

All SDL diagrams for functional entities are described according to the general principles of CCITT Recommendation Z.100 [6].

8.1 SDL diagrams for FE1

The SDL for FE1 is shown figure 12.



Process CCA_CONF

SE0184_F12.2(6)

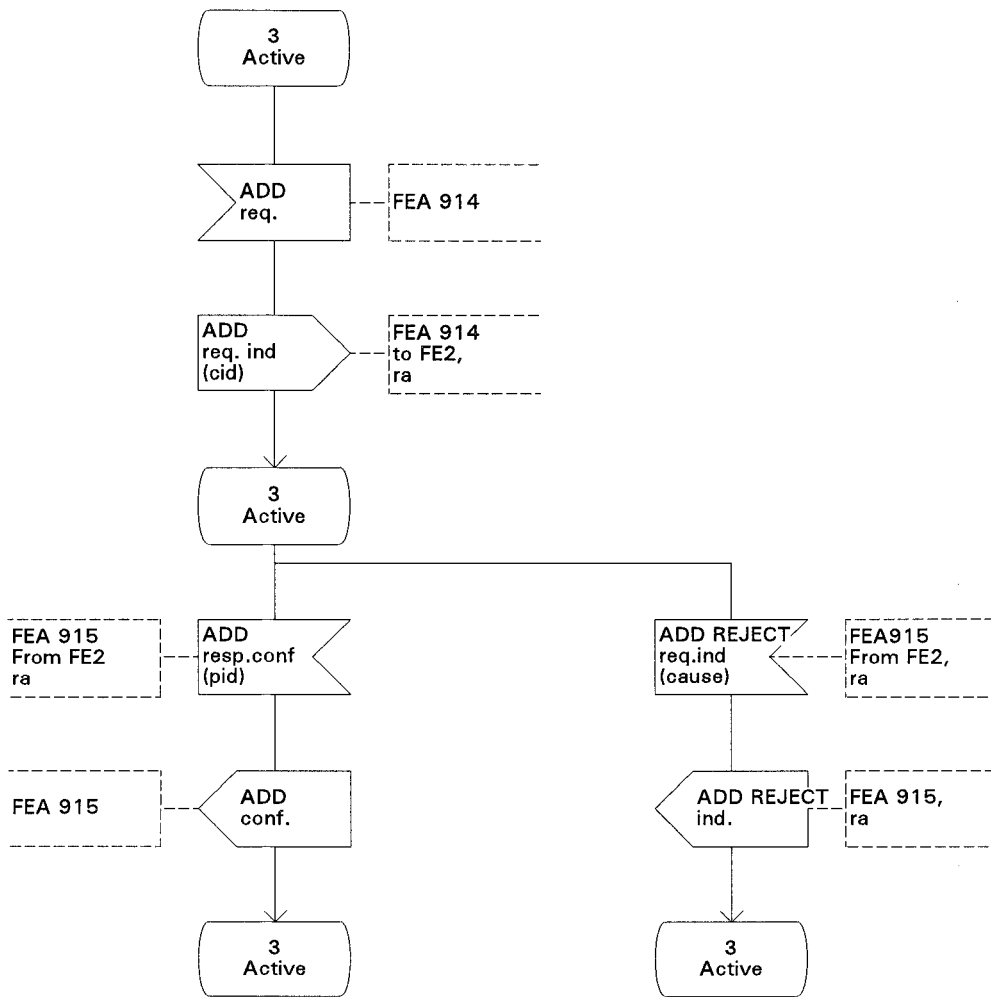
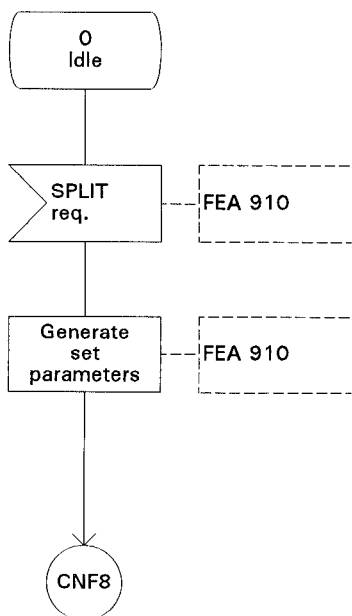


Figure 12 (Sheet 2 of 7)

Process CCA_CONF

SE0184_F12.3(6)



CNF8 breaks basic call during FEA 211 before sending SETUP req.ind (see Figure 2.8 (sheet 1 of 11) of CCITT Recommendation Q.71 [4] "Process service request").

NOTE: Before establishing the new call the user may place another call on hold to obtain a B-channel.

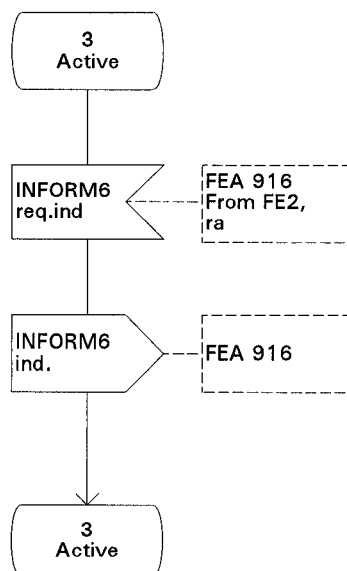
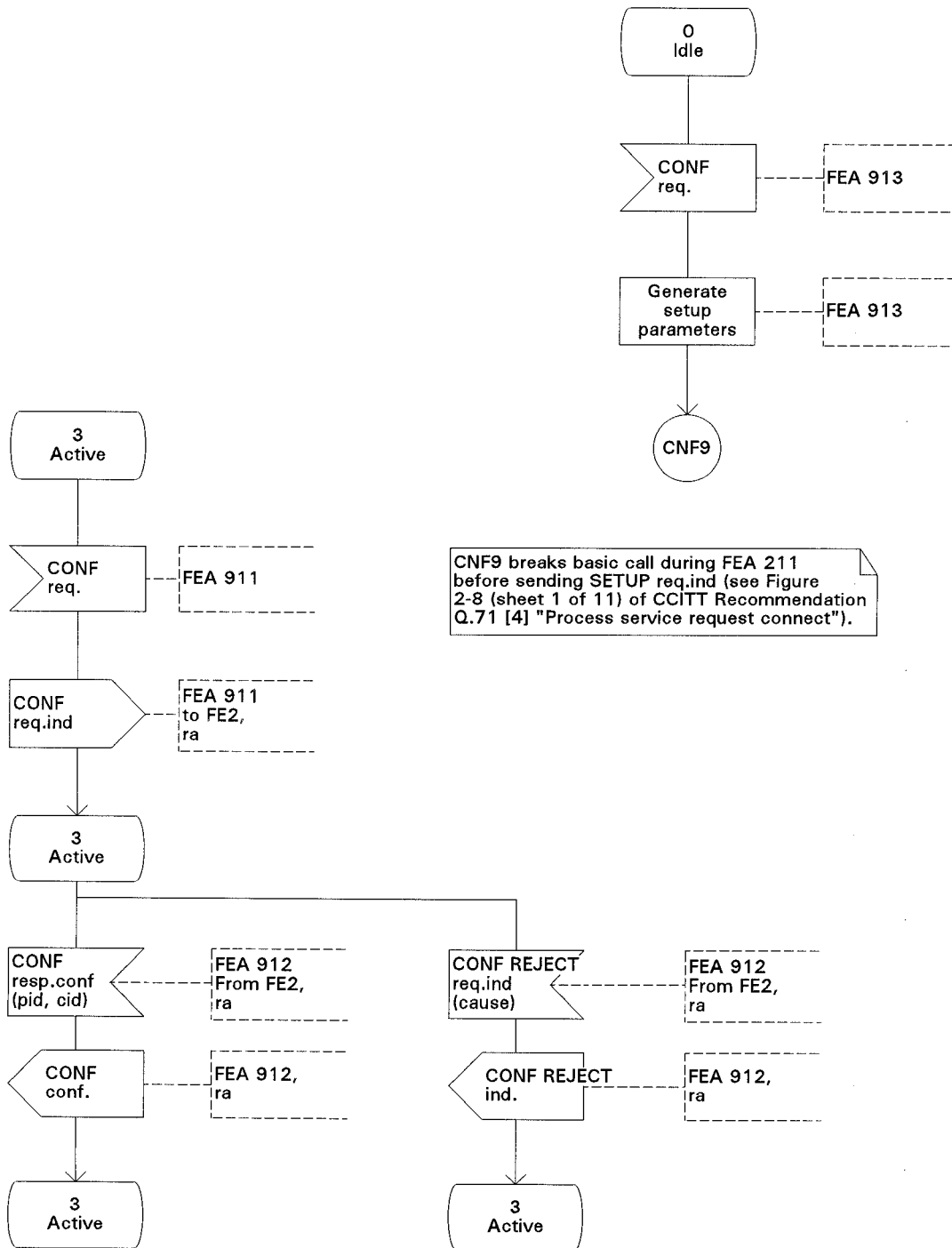


Figure 12 (Sheet 3 of 7)

Process CCA_CONF

SE0184_F12.4(6)



CNF9 breaks basic call during FEA 211 before sending SETUP req.ind (see Figure 2-8 (sheet 1 of 11) of CCITT Recommendation Q.71 [4] "Process service request connect").

Figure 12 (Sheet 4 of 7)

Process CCA_CONF

SE0184_F12.5(6)

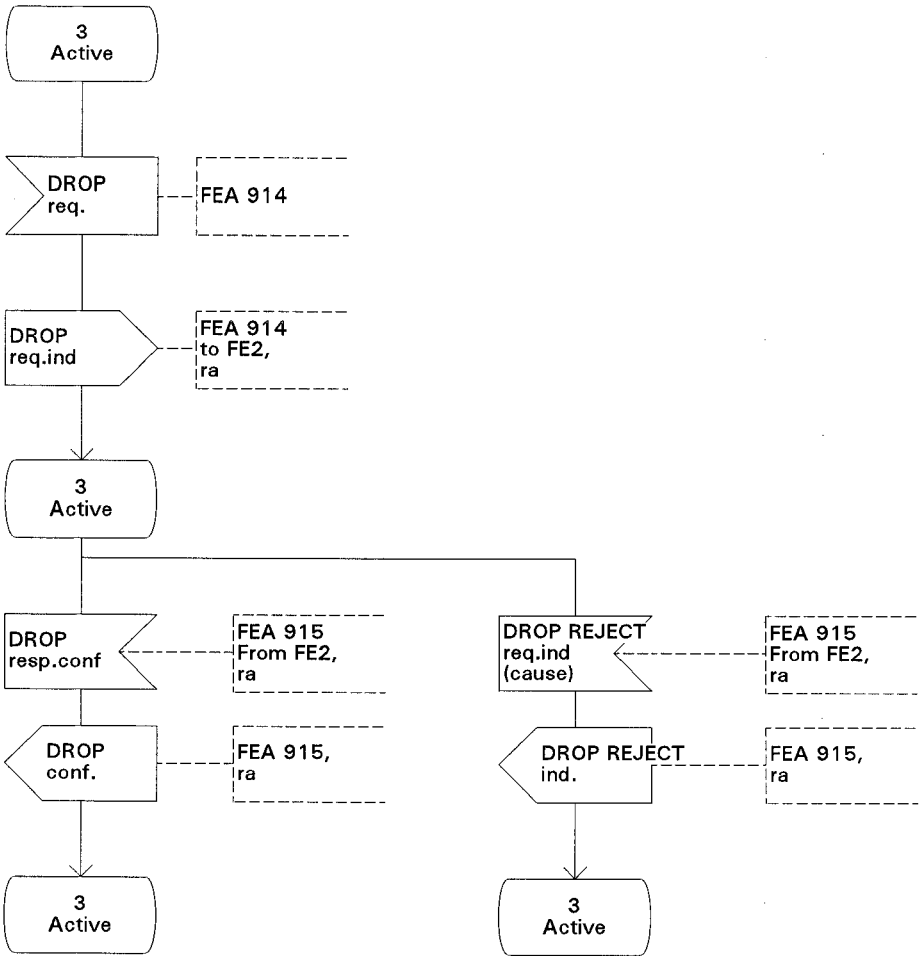


Figure 12 (Sheet 5 of 7)

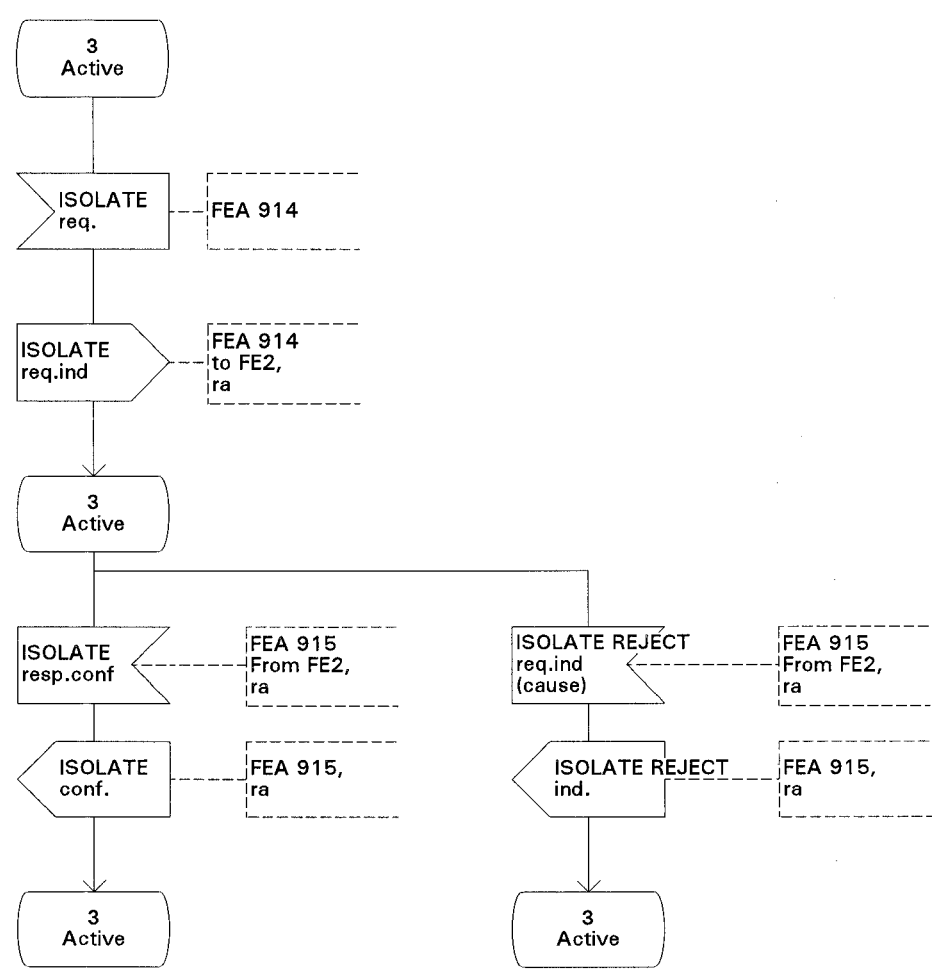


Figure 12 (Sheet 6 of 7)

Process CCA_CONF

SE0184_F12.7(6)

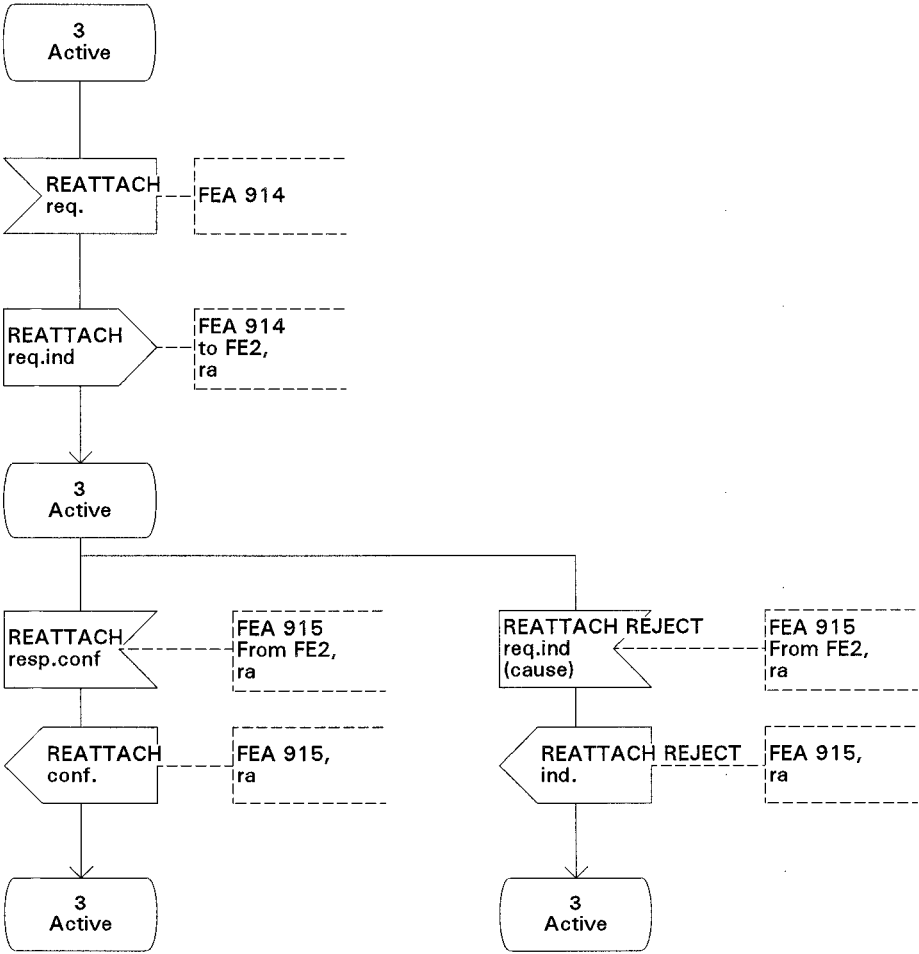


Figure 12 (Sheet 7 of 7)

8.2 SDL diagrams for FE2

The SDL for FE2 is shown in figure 13.

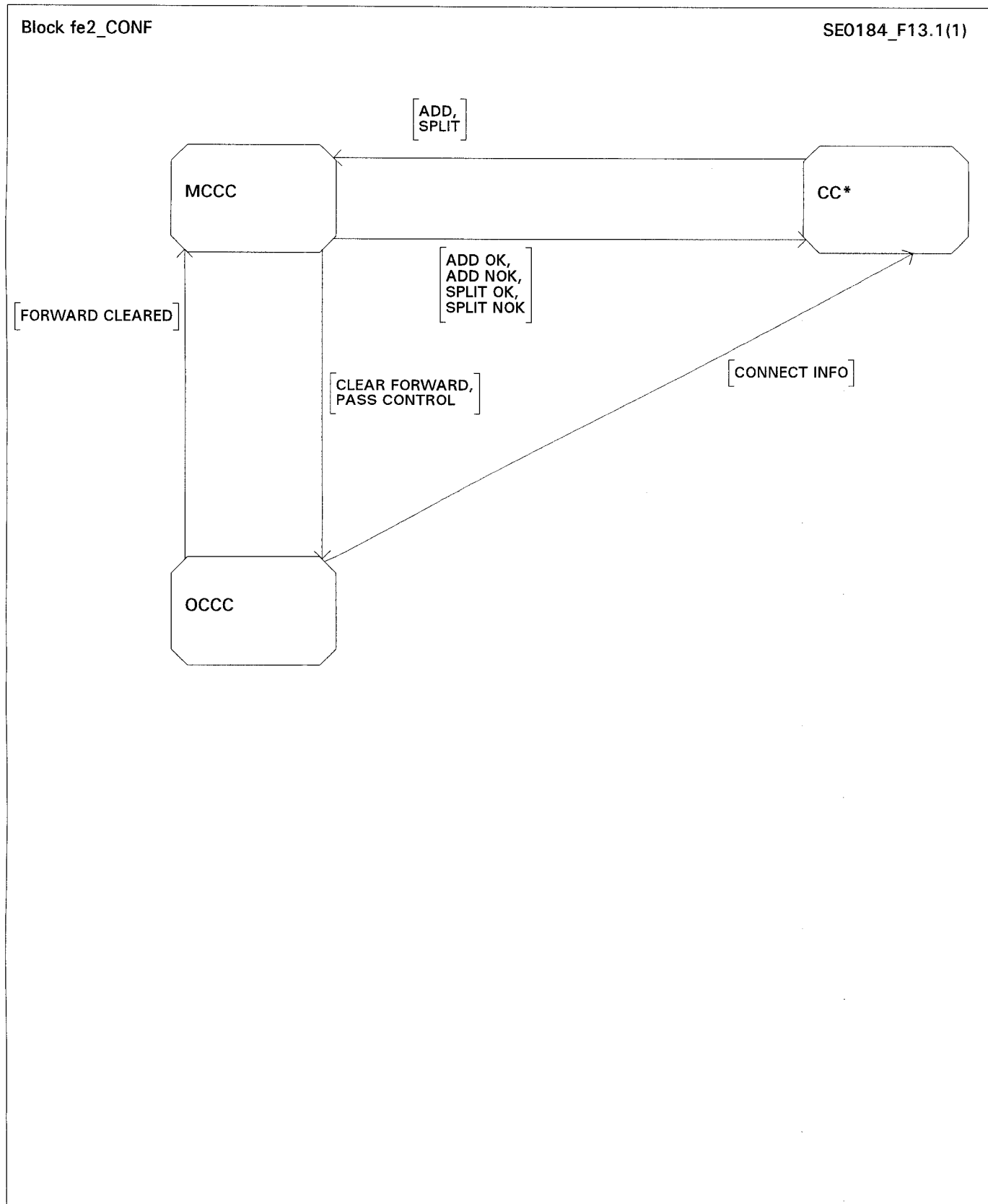


Figure 13 (Sheet 1 of 12)

Process MCCC_CONF

SE0184_13.2(8)

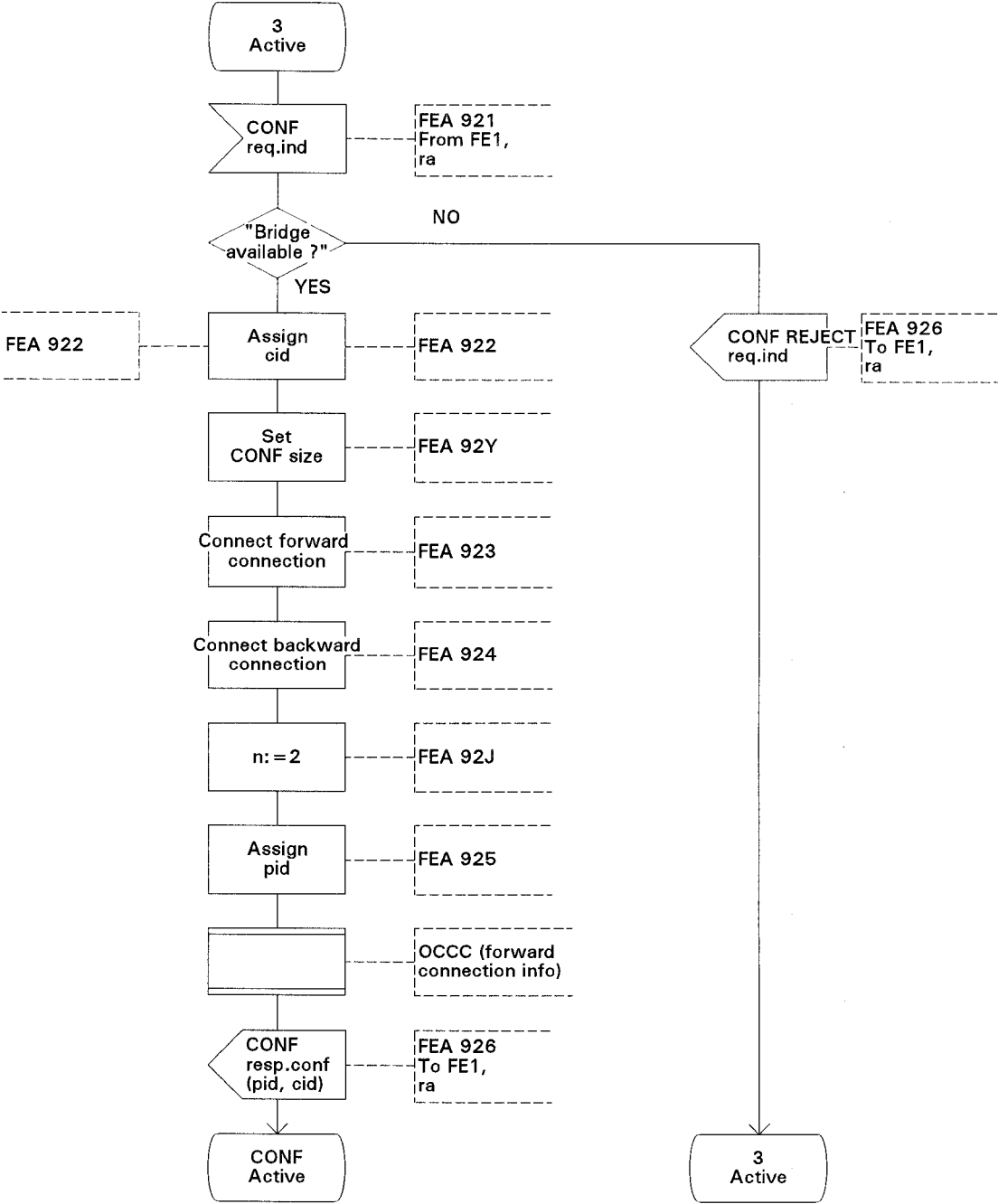
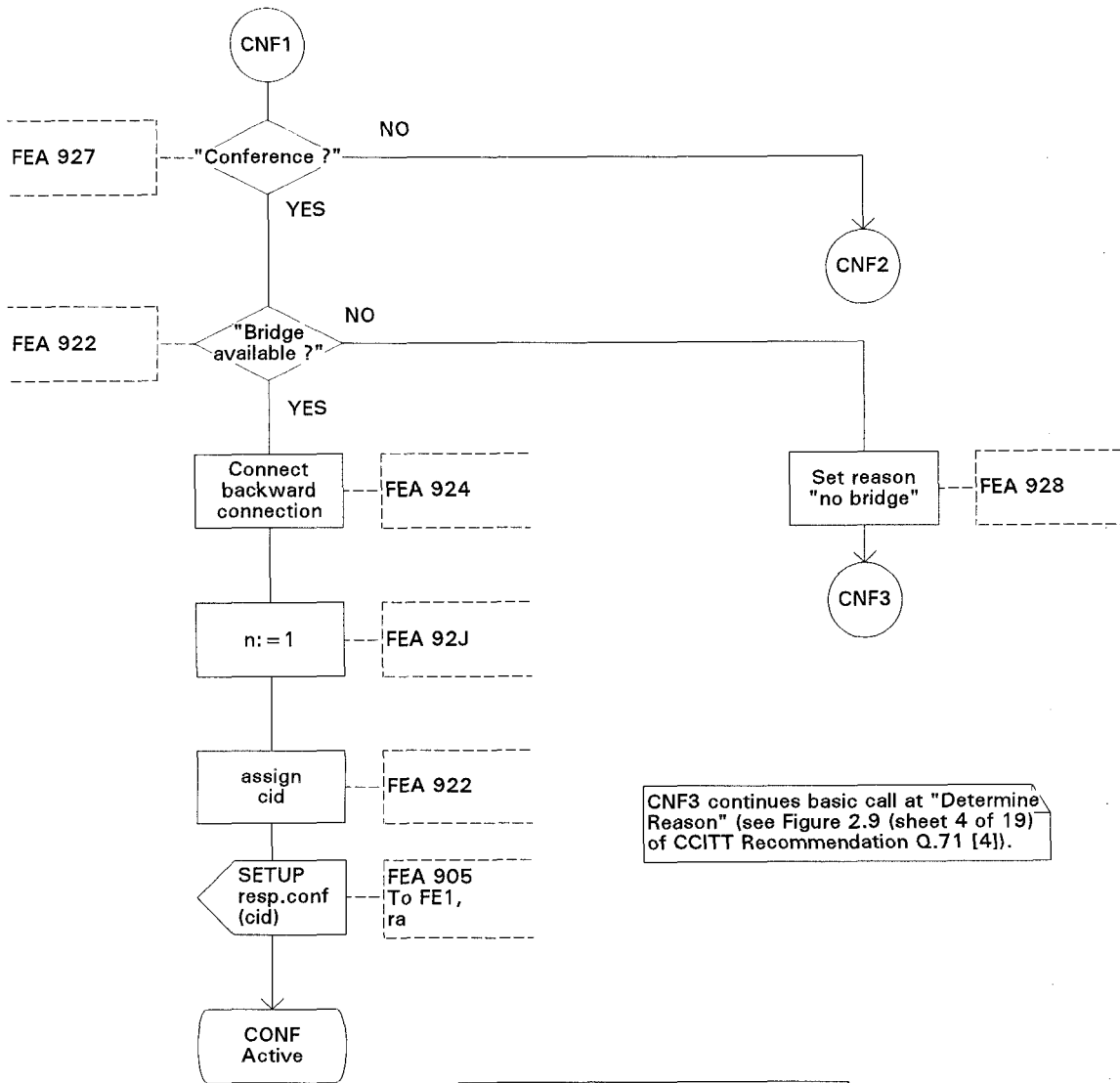


Figure 13 (Sheet 2 of 12)

Process MCCC_CONF

SE0184_F13.3(8)

CNF and CNF2 break basic call during FEA 221 after sending PROCEEDING req.ind (see Figure 2.9 (sheet 1 of 19) of CCITT Recommendation Q.7 [4]).



CNF3 continues basic call at "Determine Reason" (see Figure 2.9 (sheet 4 of 19) of CCITT Recommendation Q.71 [4]).

CNF11 breaks basic call during FEA 224 in basic call state Active (see Figure 2.9/Q.71 (sheet 5 of 19) of CCITT Recommendation Q.71 [4]).

Figure 13 (Sheet 3 of 12)

Process MCCC_CONF

SE0184_F13.4(8)

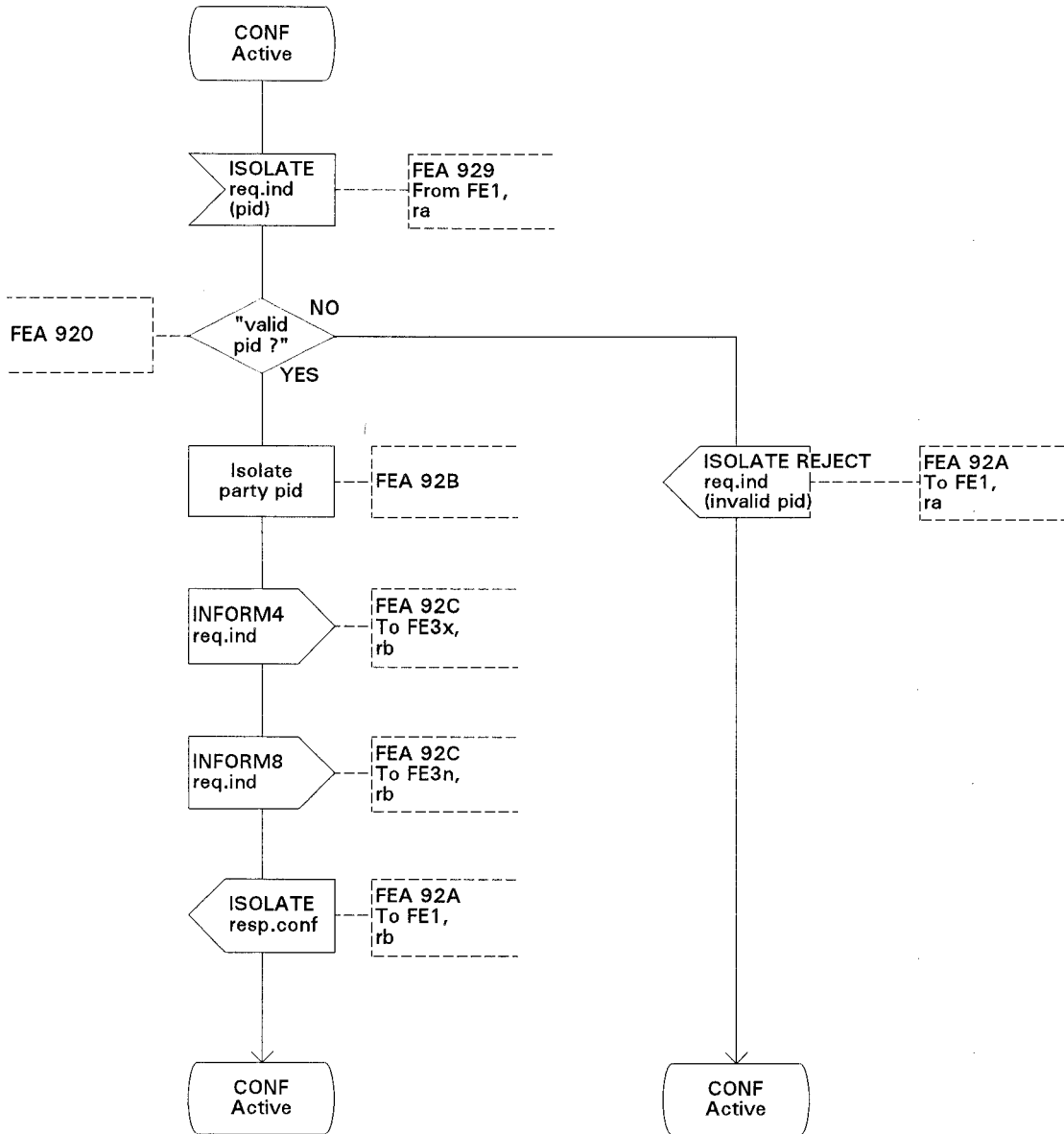


Figure 13 (Sheet 4 of 12)

Process MCCC_CONF

SE0184_F13.5(8)

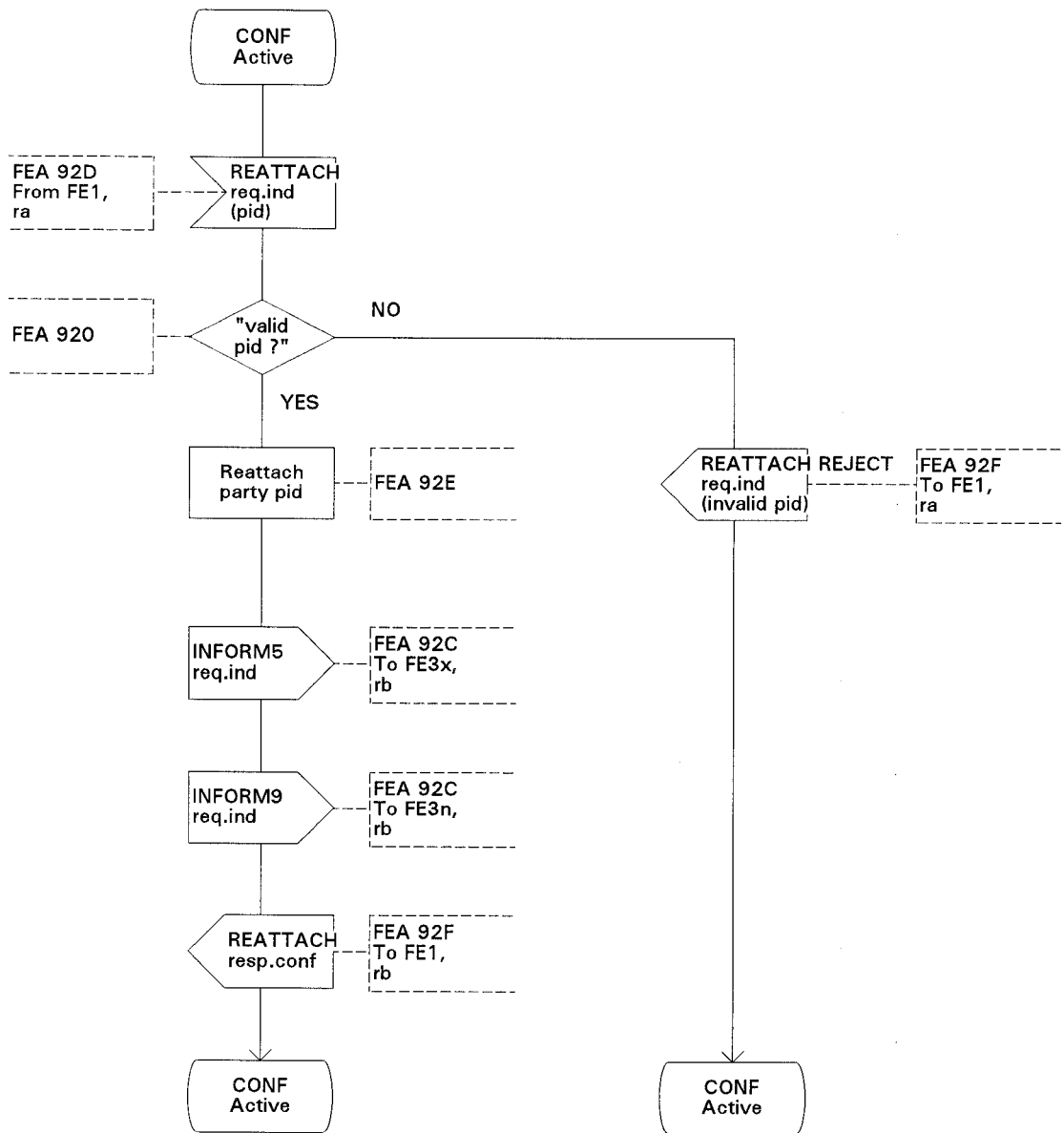
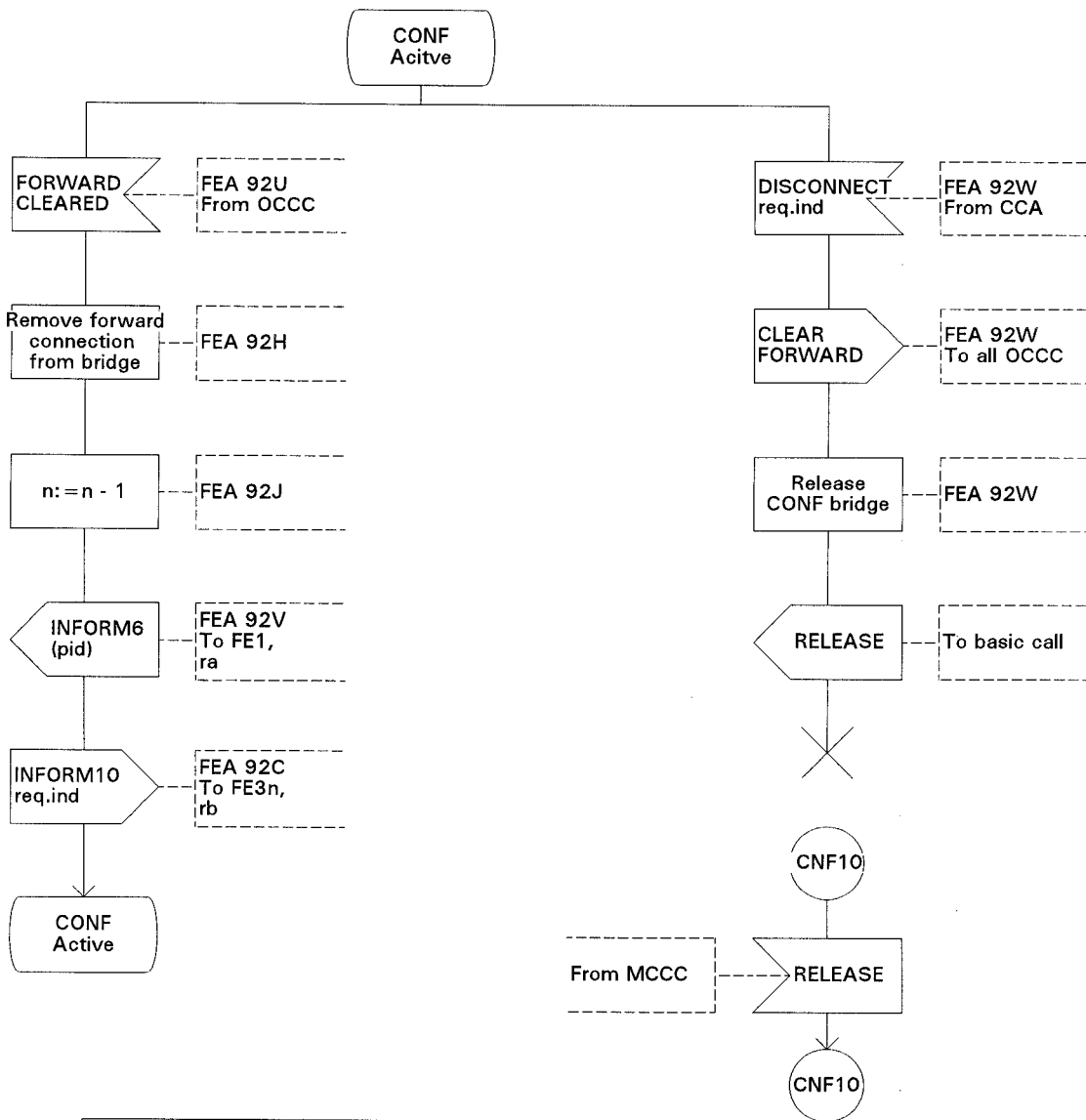


Figure 13 (Sheet 5 of 12)

Process MCCC_CONF

SE0184_F13.6(8)



CNF10 breaks basic call transition during FEA 321 (see Figure 2-9/Q.71 (sheet 5 of 19) of CCITT Recommendation Q.71 [4]).

Figure 13 (Sheet 6 of 12)

Process MCCC_CONF

SE0184_F13.7(8)

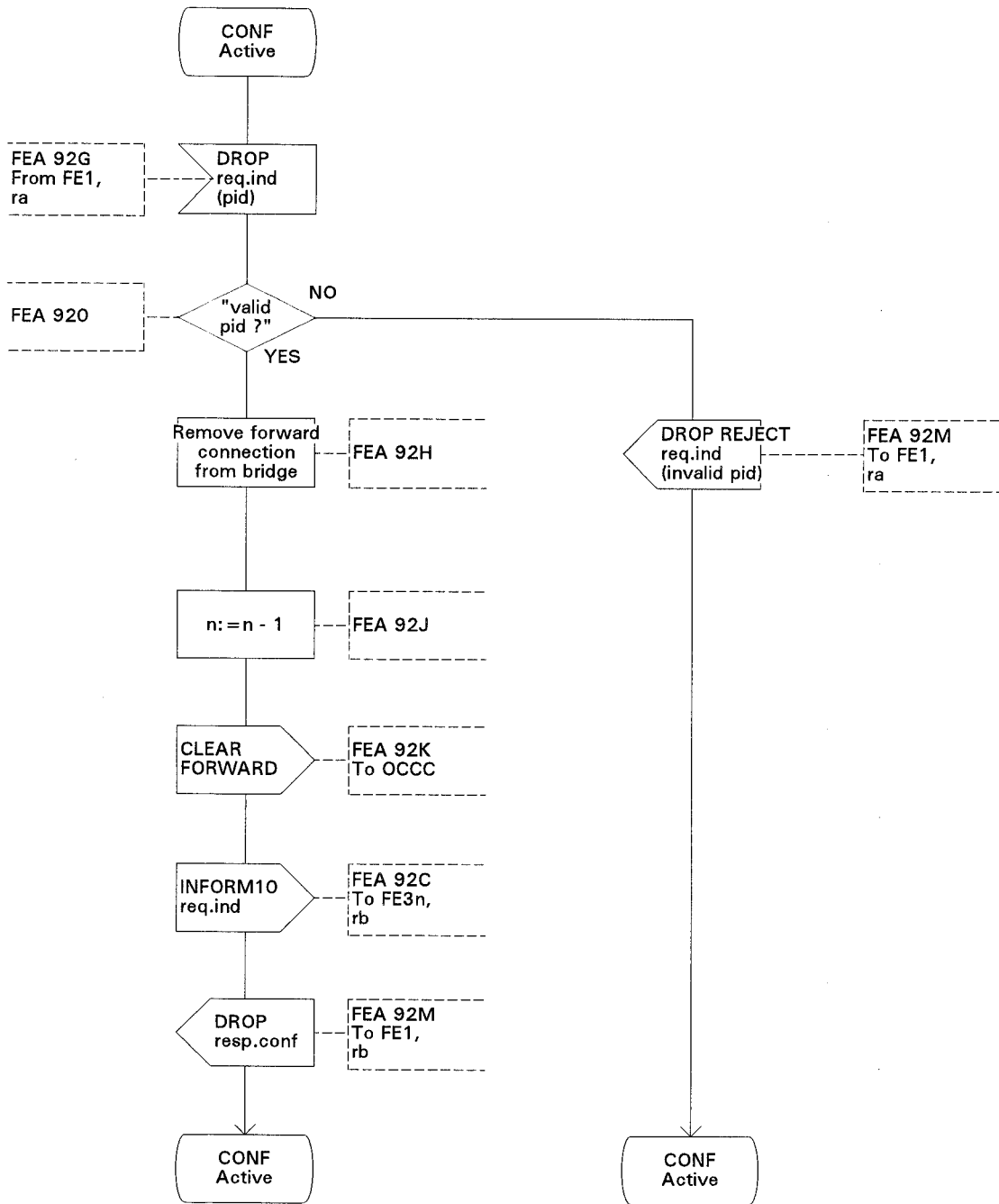


Figure 13 (Sheet 7 of 12)

Process MCCC_CONF

SE0184_F13.8(8)

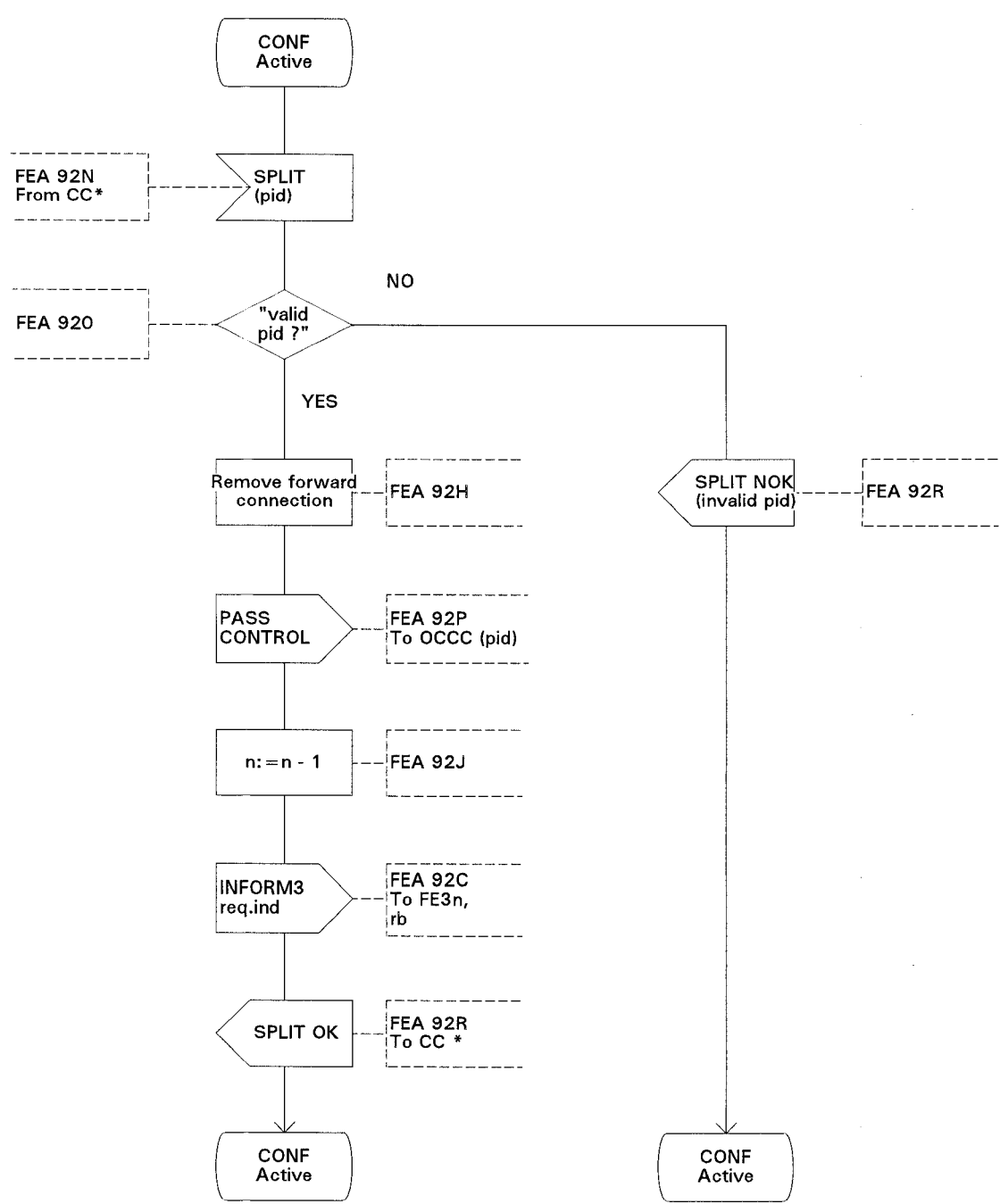


Figure 13 (Sheet 8 of 12)

Process MCCC_CONF

SE0184_F13.9(8)

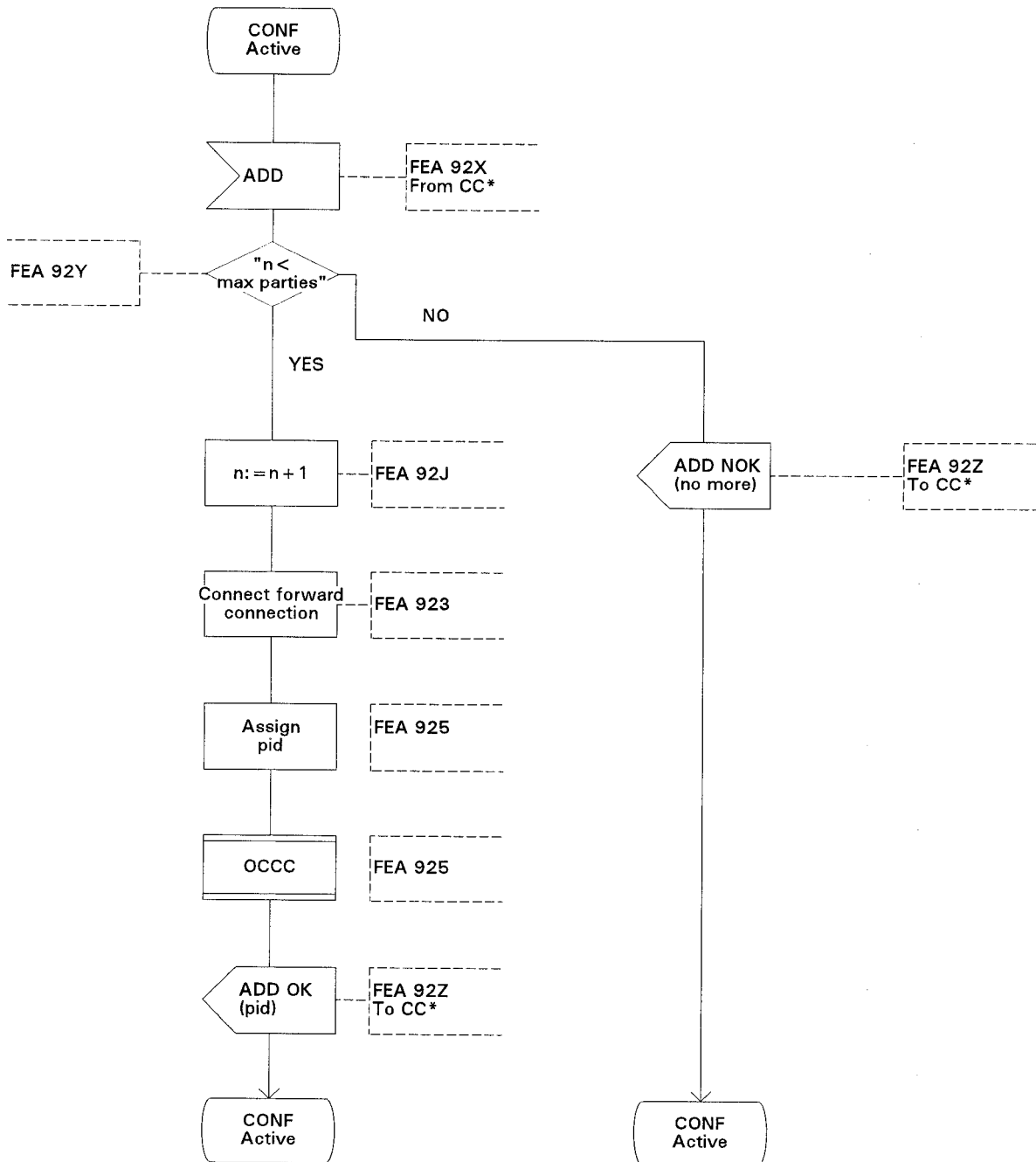


Figure 13 (Sheet 9 of 12)

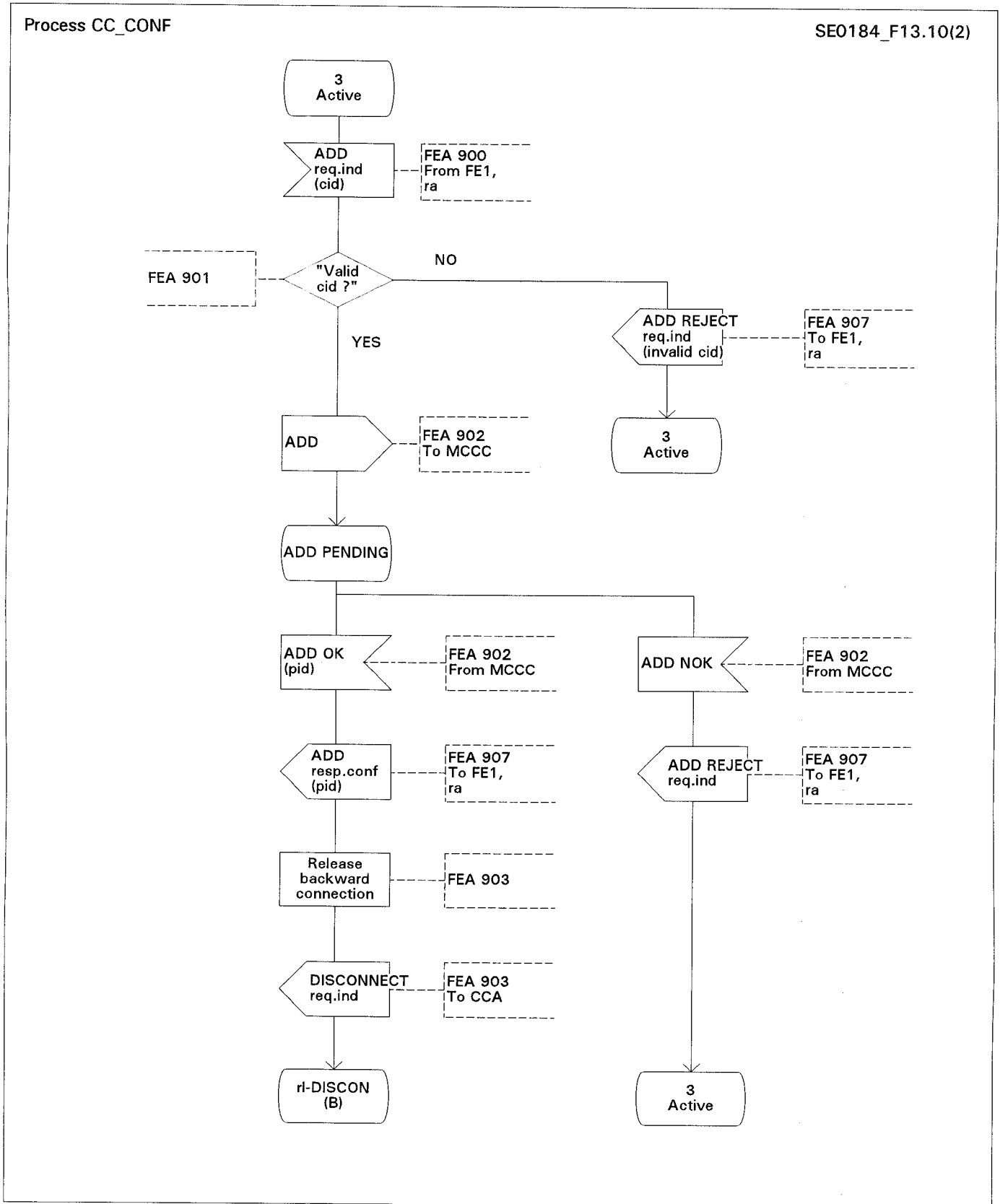


Figure 13 (Sheet 10 of 12)

Process CC_CONF

SEO184_F13.11(2)

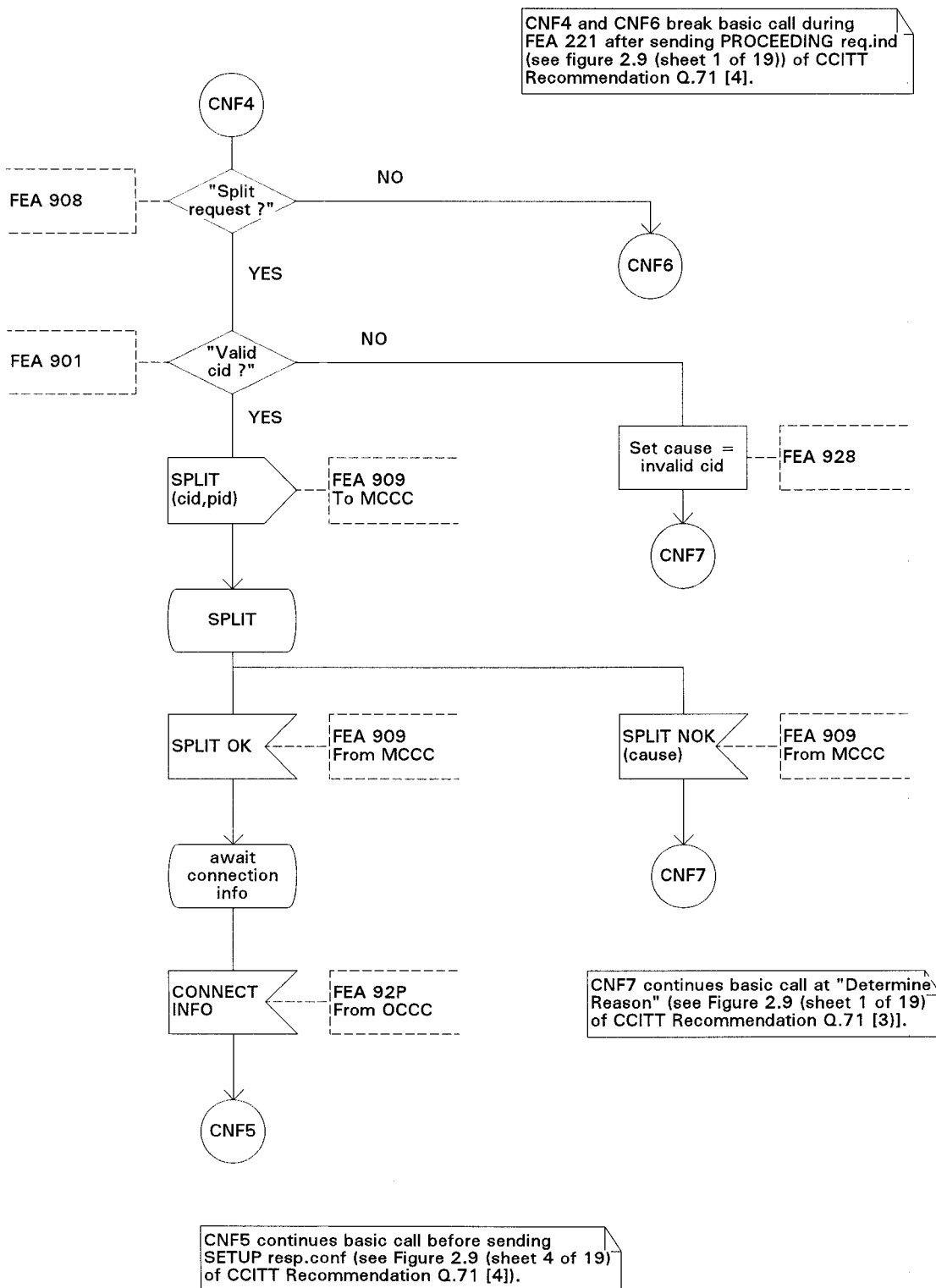


Figure 13 (Sheet 11 of 12)

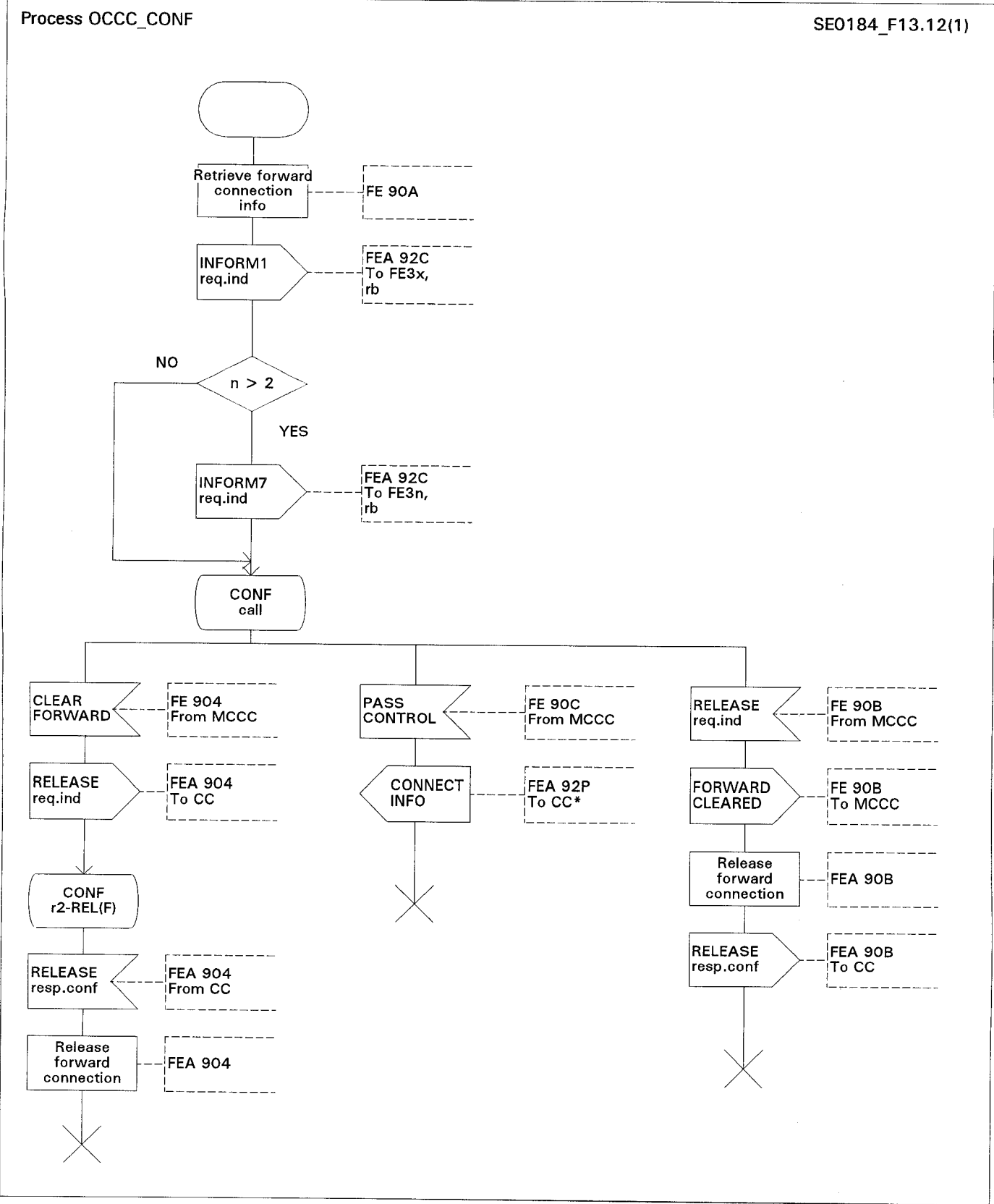


Figure 13 (Sheet 12 of 12)

8.3 SDL diagrams for FE3

The SDL for FE3 is shown in figure 14.

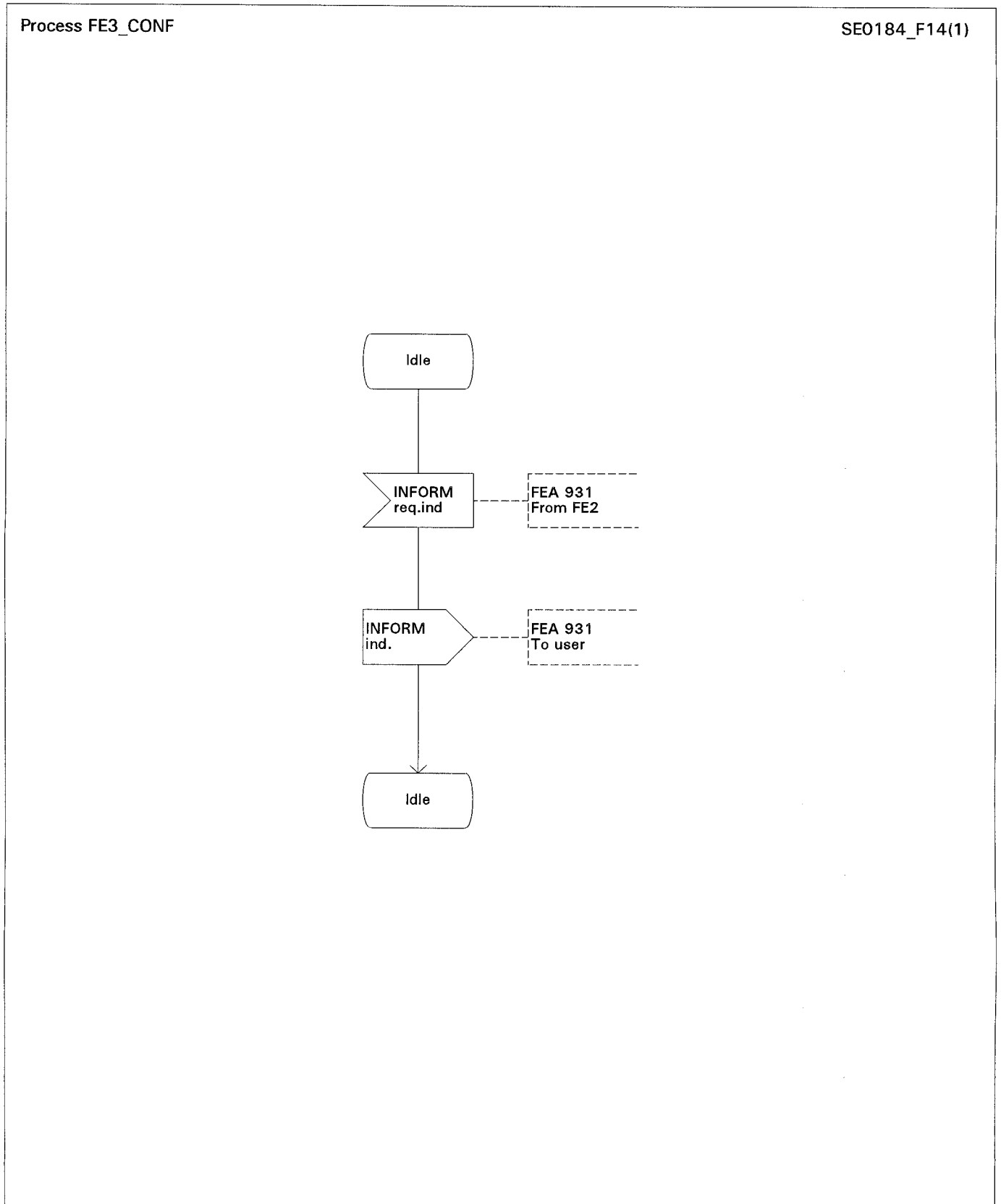


Figure 14 (Sheet 1 of 1)

9 Functional Entity Actions (FEAs)

9.1 FEAs of FE1

FE1 provides functional extension to the related CCA.

- 910: The functional entity shall receive SPLIT req. from the user, generate SETUP including an indication that a conferee is to be split and forward this to FE2.
- 911: The functional entity shall receive CONF req. from the user in an active call and forward this to FE2.
- 912: The functional entity shall receive a response to CONF req.ind from FE2 and forward this to the user.
- 913: The functional entity shall receive CONF req. from the user in an idle call, generate SETUP including information that a conference call is being requested and forward this to FE2.
- 914: The functional entity shall receive user requests DROP req., ISOLATE req., ADD req. and REATTACH req. and forward these to FE2.
- 915: The functional entity shall receive responses to DROP req.ind, ISOLATE req.ind, ADD req.ind and REATTACH req.ind and forward these to the user.
- 916: The functional entity shall receive INFORM6 req.ind and present an appropriate indication to the user.
- 917: The functional entity shall forward a CONF conf. to the user when SETUP resp.conf is received in the basic service.

9.2 FEAs of FE2

- 920: The functional entity shall check for a valid party identity.
- 921: The functional entity shall receive CONF req.ind.
- 922: The functional entity shall test for the availability of a conference bridge and assign a conference identity (cid) if available.
- 923: The functional entity shall connect a forward connection to the conference bridge and return rejection to FE1.
- 924: The functional entity shall connect a backward connection to the conference bridge.
- 925: The functional entity shall create an OCCC process and assign a party identity (pid).
- 926: The functional entity shall respond to CONF req.ind as appropriate.
- 927: The functional entity shall detect a conference call request in SETUP req.ind.
- 928: The functional entity shall determine the reason for failure.
- 929: The functional entity shall receive ISOLATE req.ind.
- 92A: The functional entity shall respond to ISOLATE req.ind as appropriate.

- 92B: The functional entity shall isolate a party.
- 92C: The functional entity shall inform FE3.
- 92D: The functional entity shall receive REATTACH req.ind.
- 92E: The functional entity shall reattach a party.
- 92F: The functional entity shall respond to REATTACH req.ind as appropriate.
- 92G: The functional entity shall receive DROP req.ind.
- 92H: The functional entity shall remove the forward connection from the conference bridge.
- 92J: The functional entity shall set, increment or decrement the conferee counter as appropriate.
- 92K: The functional entity shall stimulate clearing in the required OCCC process.
- 92M: The functional entity shall respond to DROP req.ind as appropriate.
- 92N: The MCCC process shall receive a SPLIT signal from a local CC* process.
- NOTE: CC* is the CC functional entity of a potential conferee. CC* contains additional functions to allow the call being controlled by a CC* to be added to a conference, or to be split from a conference.
- 92P: The functional entity shall transfer forward connection control from an OCCC process to a CC process.
- 92R: The functional entity shall respond to a SPLIT signal as appropriate.
- 92U: The MCCC process shall receive a FORWARD CLEARED signal from an OCCC process.
- 92V: The functional entity shall formulate INFORM6 req.ind and send to FE1.
- 92W: The functional entity shall receive DISCONNECT req.ind, send a CLEAR FORWARD signal to all OCCC processes, release the conference bridge, respond with RELEASE req.ind.
- 92X: The MCCC process shall receive an ADD signal from a CC* process.
- 92Y: The functional entity shall set conference maximum and check whether the maximum number of conferees has been reached.
- 92Z: The MCCC process shall respond to an ADD signal dependent on FEA 92Y to the appropriate CC* process.
- 900: The functional entity shall receive ADD req.ind from FE1.
- 901: The functional entity shall check for a valid conference identity.
- 902: The CC* process shall send an ADD signal to the appropriate MCCC process and receive a response.
- 903: The functional entity shall release the backward connection, send DISCONNECT req.ind to the CCA and enter the basic call r1-DISC (B) state.

- 904: The OCCC process shall receive a CLEAR FORWARD signal from the MCCC process, send RELEASE req.ind, await RELEASE resp.conf and release the forward connection.
- 905: The functional entity shall send the conference identity (cid) in SETUP resp.conf.
- 907: The functional entity shall send an appropriate response to ADD req.ind to FE1.
- 908: The CC* process shall detect a split request in SETUP req.ind.
- 909: The CC* process shall send a SPLIT signal to a MCCC process and await and receive a response.
- 90A: The functional entity shall retrieve the information of a forward connection.
- 90B: The OCCC process shall receive RELEASE req.ind from a conferee, send a FORWARD CLEARED signal to the MCCC process, release the forward connection and respond with RELEASE resp.conf.
- 90C: The OCCC process shall receive a PASS CONTROL signal from a MCCC process.

9.3 FEAs of FE3

- 931: The functional entity shall receive INFORM1, INFORM2, INFORM3, INFORM4, INFORM5, INFORM7, INFORM8, INFORM9 or INFORM10 and present an appropriate indication to the user.

10 Allocation of functional entities to physical locations

The possible locations of functional entities FE1, FE2 and FE3 are shown in table 13.

Table 13

Scenario	FE1	FE2	FE3
I	TE	LE	TE
II	TE	PTNX	TE
NOTE: All basic calls to be included in the conference shall have a CC at the same location as FE2. The procedures to control this routing requirement are outside the scope of this standard.			

History

Document history	
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