3GPP TSG_CN#6 **NP-99463**
ETSI SMG3 Plenary Meeting #6,
Nice, France
13th – 15th December 1999

Agenda item: **5.4.3**

Source: **TSG_N SS ad hoc**

Title: **CRs Work Item MSP phase 2**

Introduction:

This document contains **7** CRs agreed by **TSG_N SS ad hoc** and forwarded to **TSG_N Plenary** meeting #6 for approval.

Tdoc	Spec	CR	Rev	CAT	Rel.	Old Ver	New Ver	Subject
NSS-99127	23.072	002	1	B		3.0.0	3.1.0	Inclusion of the handling of the Service Interaction Indicators Two parameter
NSS-99128	23.083	001	1	B		3.0.0	3.1.0	Inclusion of the handling of the Service Interaction Indicators Two parameter
NSS-99129	23.084	001		B		3.0.0	3.1.0	Inclusion of the handling of the Service Interaction Indicators Two parameter
NSS-99130	23.091	001		B		3.0.0	3.1.0	Inclusion of the handling of the Service Interaction Indicators Two parameter
NSS-99155	23.093	001	3	B		3.0.0	3.1.0	Inclusion of the handling of the Service Interaction Indicators Two parameter
NSS-99126	23.097	002		B		3.0.1	3.1.0	Inclusion of MSP Phase 2 functionality
NSS-99167	23.093	002	3	B		3.0.0	3.1.0	Addition of CCBS to the SS Invocation Notification Indicators Two parameter

3GPP TSG-N SS ad hoc meeting #4
Henley-on-Thames
30th November – 2nd December 1999

Tdoc 3GPP N_SS-99 127
(rev N_SS-99 086)

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.072	CR	002 r1

Current Version: 3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG CN#6 *list TSG meeting no. here ↑*

for approval [X]
for information [ ]

(only one box should be marked with an X)

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: *(at least one should be marked with an X)*

USIM [ ] ME [ ] UTRAN [ ] Core Network [X]

Source: SS ad hoc **Date:** 25/11/1999

Subject: Inclusion of the handling of the Service Interaction Indicators Two parameter

3G Work item: MSP Phase 2

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	X
C	Functional modification of feature	
D	Editorial modification	

Reason for change: The Service Interaction Indicators Two parameter is included in CAMEL Phase 3 to meet the service requirements for MSP Phase 2. The Service Interaction Indicators Two parameter specifies if invocation of CD is allowed.

Clauses affected: 6

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.018-005; 23.078-xxx; 23.083-001; 23.084-001; 23.091-001; 23.093-001
Other 2G core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

6.7 Procedure Check_CD_SII2

This procedure is called after the CD request is received in the serving MSC.

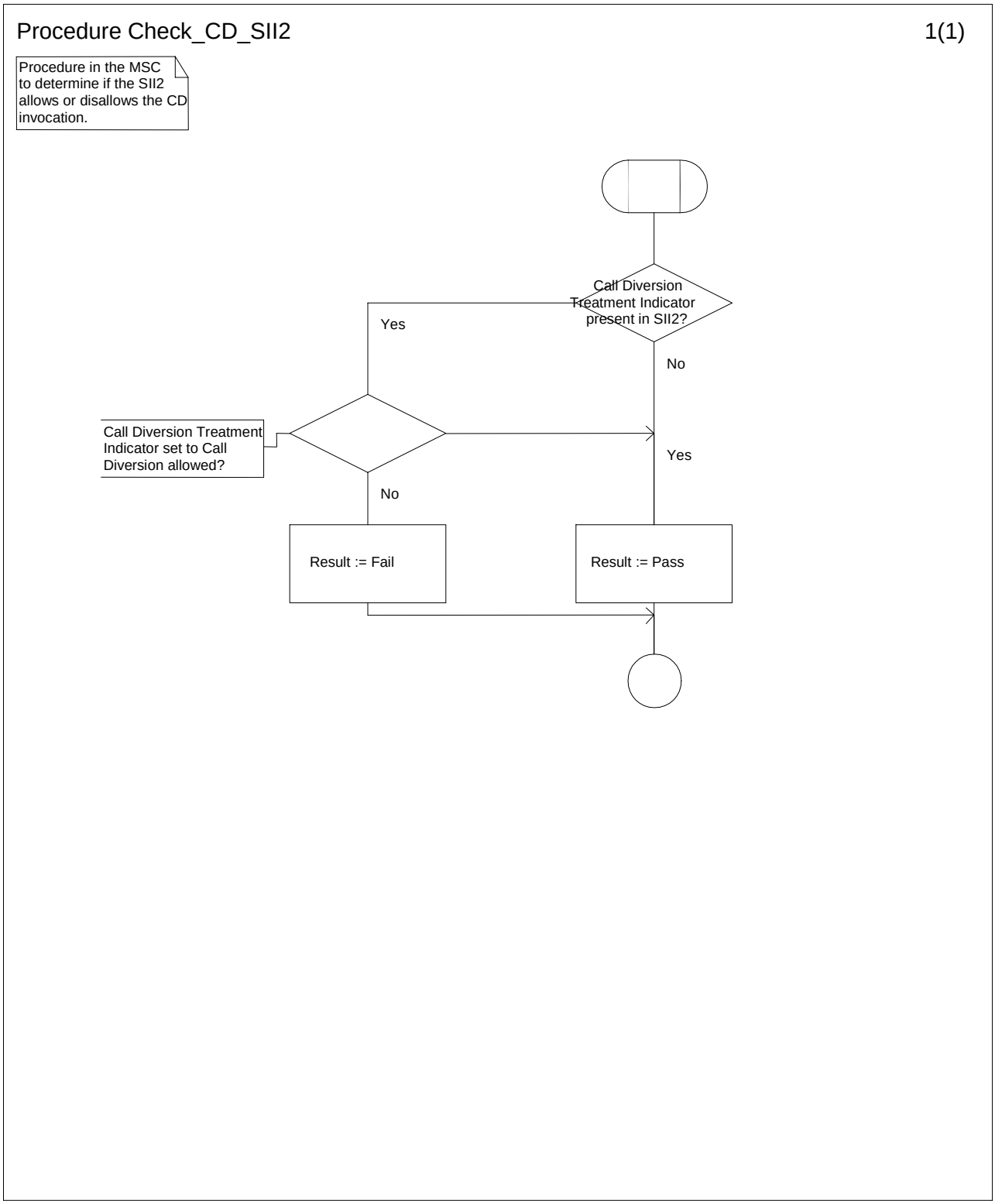


Figure 6.7: Procedure Check_CD_SII2

3GPP TSG-N SS ad hoc meeting #4 *Tdoc 3GPP N_SS-99 128*
Henley-on-Thames, UK
30th November – 2nd December 1999

3GPP TSG-N SS ad hoc meeting #3 *Tdoc 3GPP N_SS-99 109*
Sophia Antipolis, France, 28-30 Sep 1999 *(Rev Tdoc 3GPP N_SS-99 087)*

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.083	CR	001 r1	Current Version:	3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG CN#6 *list TSG meeting no. here ↑*

for approval	X
for information	

(only one box should be marked with an X)

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: *(at least one should be marked with an X)*

USIM	ME	UTRAN	Core Network
			X

Source: SS ad hoc **Date:** 28/09/1999

Subject: Inclusion of the handling of the Service Interaction Indicators Two parameter

3G Work item: MSP Phase 2

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	X
C	Functional modification of feature	
D	Editorial modification	

Reason for change: The Service Interaction Indicators Two parameter is included in CAMEL Phase 3 to meet the service requirements for MSP Phase 2. The Service Interaction Indicators Two parameter specifies if invocation of HOLD is allowed.

Clauses affected: 2.1

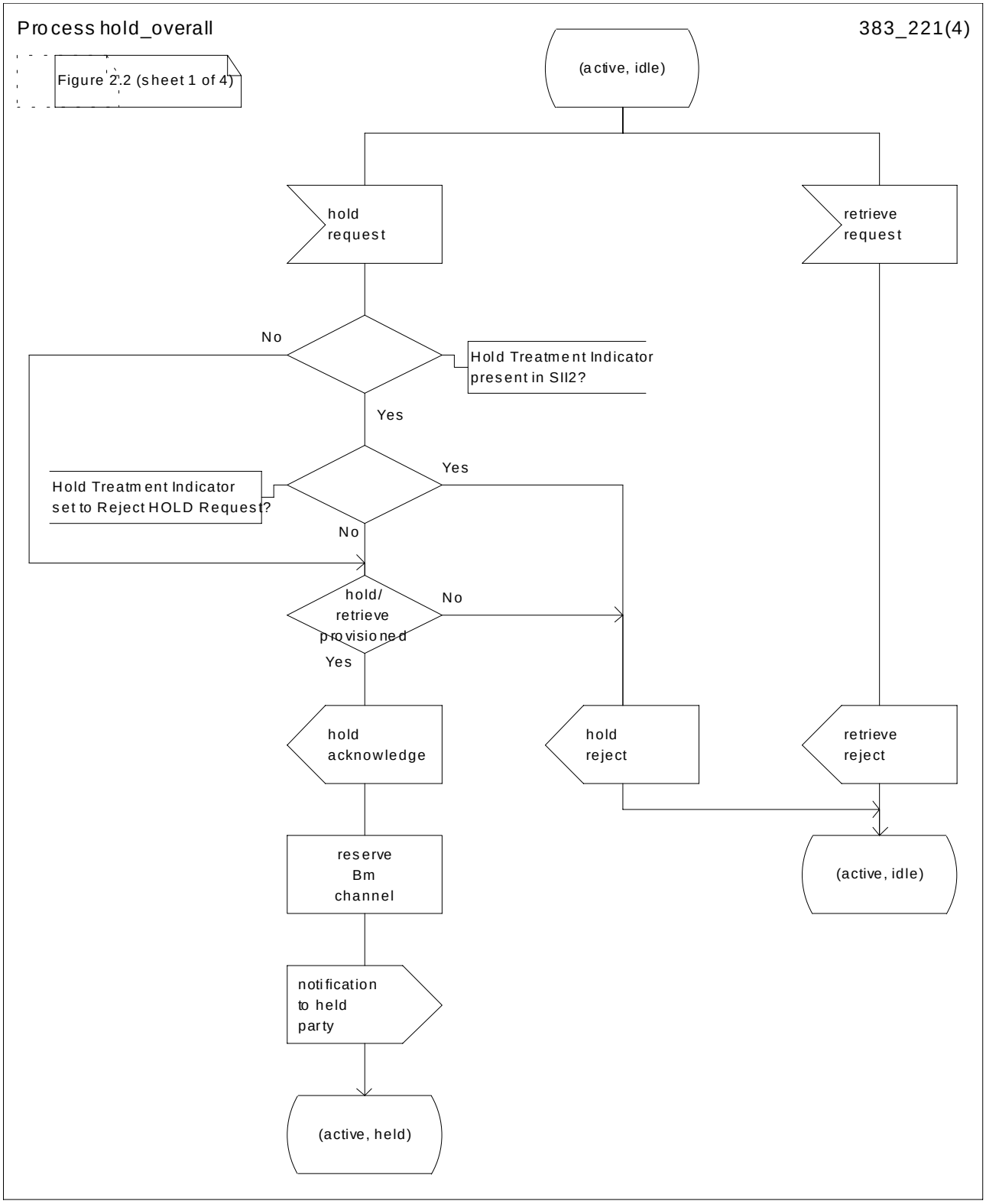
Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.018-005; 23.072-002; 23.078-001; 23.084-001; 23.091-001; 23.093-001
Other 2G core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.


Process hold_overall
383_221(4)
Figure 2.2 (sheet 1 of 4)
(active, idle)
hold request
retrieve request
No
Hold Treatment Indicator present in SII2?
Yes
Yes
Hold Treatment Indicator set to Reject HOLD Request?
No
hold/ retrieve provisioned
No
Yes
hold acknowledge
hold reject
retrieve reject
reserve Bm channel
(active, idle)
notification to held party
(active, held)

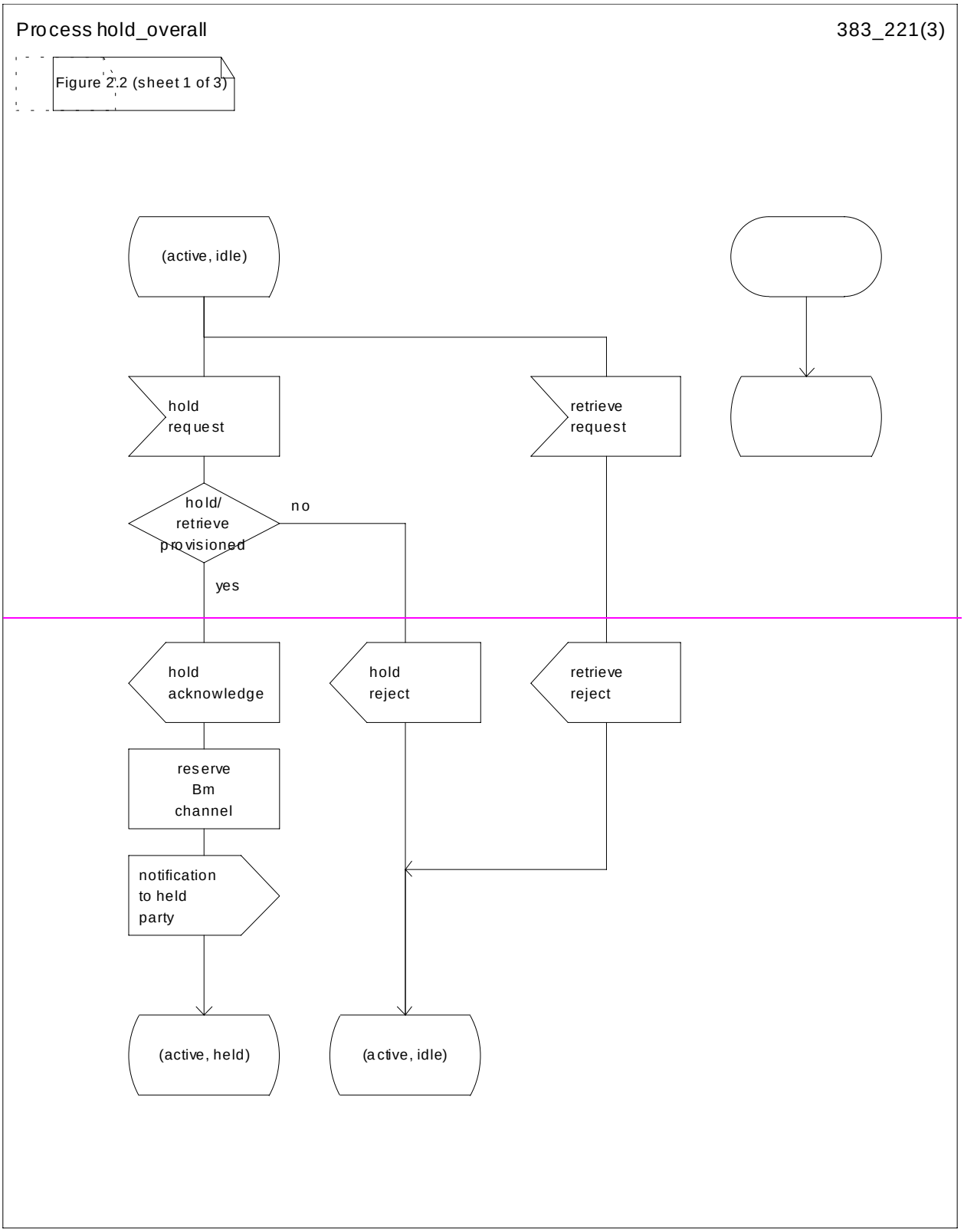
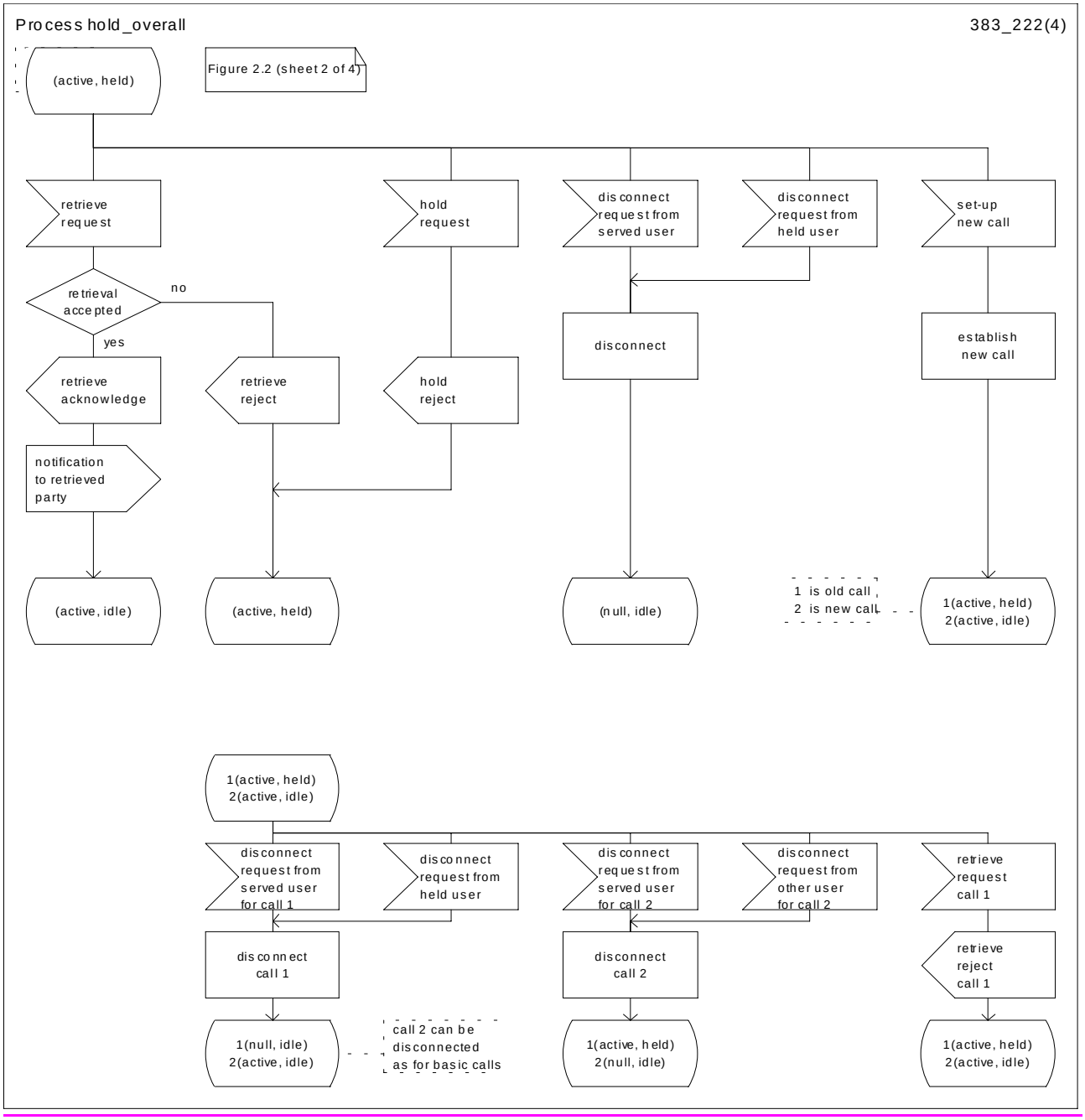


Figure 2.2 (sheet 1 of 43): Overall SDL diagram of call hold


Process hold_overall
383_222(4)
Figure 2.2 (sheet 2 of 4)
(active, held)
retrieve request
hold request
disconnect request from served user
disconnect request from held user
set-up new call
retrieval accepted
no
yes
disconnect
establish new call
retrieve acknowledge
retrieve reject
hold reject
notification to retrieved party
(active, idle)
(active, held)
(null, idle)
1 is old call
2 is new call
1(active, held)
2(active, idle)
1(active, held)
2(active, idle)
disconnect request from served user for call 1
disconnect request from held user
disconnect request from served user for call 2
disconnect request from other user for call 2
retrieve request call 1
disconnect call 1
disconnect call 2
retrieve reject call 1
1(null, idle)
2(active, idle)
call 2 can be disconnected as for basic calls
1(active, held)
2(null, idle)
1(active, held)
2(active, idle)

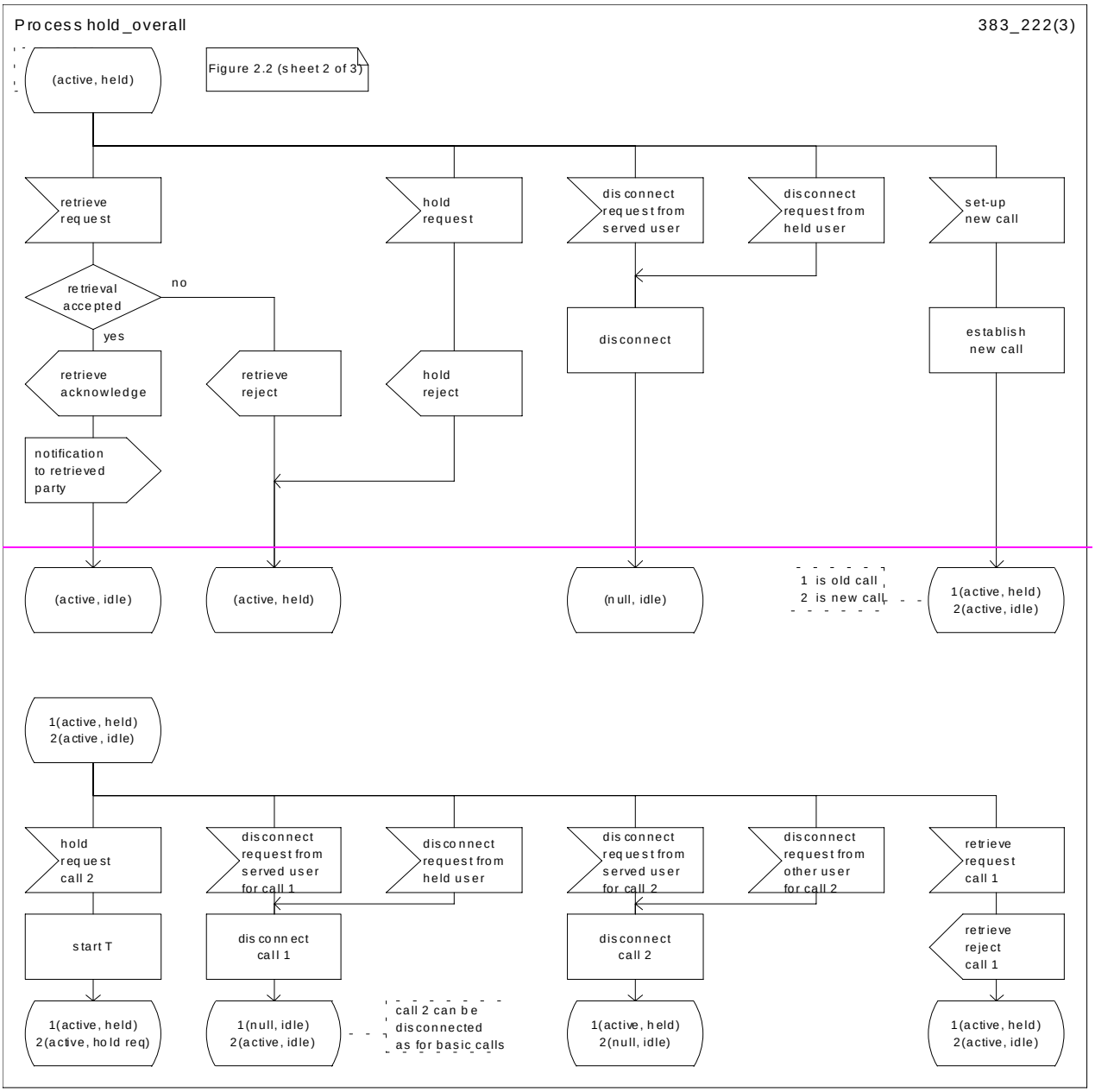
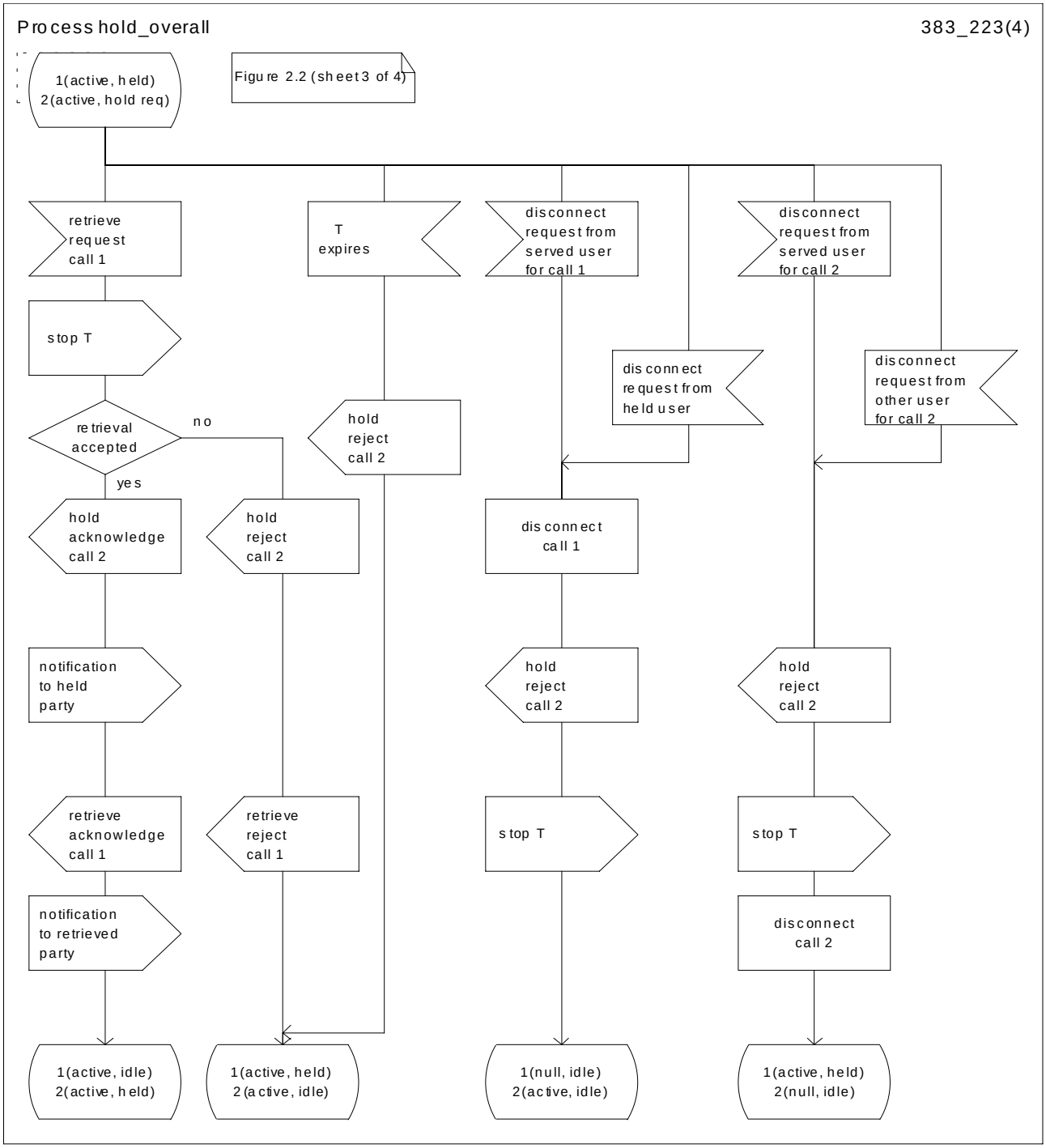


Figure 2.2 (sheet 2 of 43): Overall SDL diagram of call hold


Process hold_overall
383_223(4)
1(active, held)
2(active, hold req)
Figure 2.2 (sheet 3 of 4)
retrieve request call 1
T expires
disconnect request from served user for call 1
disconnect request from served user for call 2
stop T
disconnect request from held user
disconnect request from other user for call 2
retrieval accepted
no
yes
hold reject call 2
hold acknowledge call 2
hold reject call 2
disconnect call 1
notification to held party
hold reject call 2
hold reject call 2
retrieve acknowledge call 1
retrieve reject call 1
stop T
stop T
notification to retrieved party
disconnect call 2
1(active, idle)
2(active, held)
1(active, held)
2(active, idle)
1(null, idle)
2(active, idle)
1(active, held)
2(null, idle)

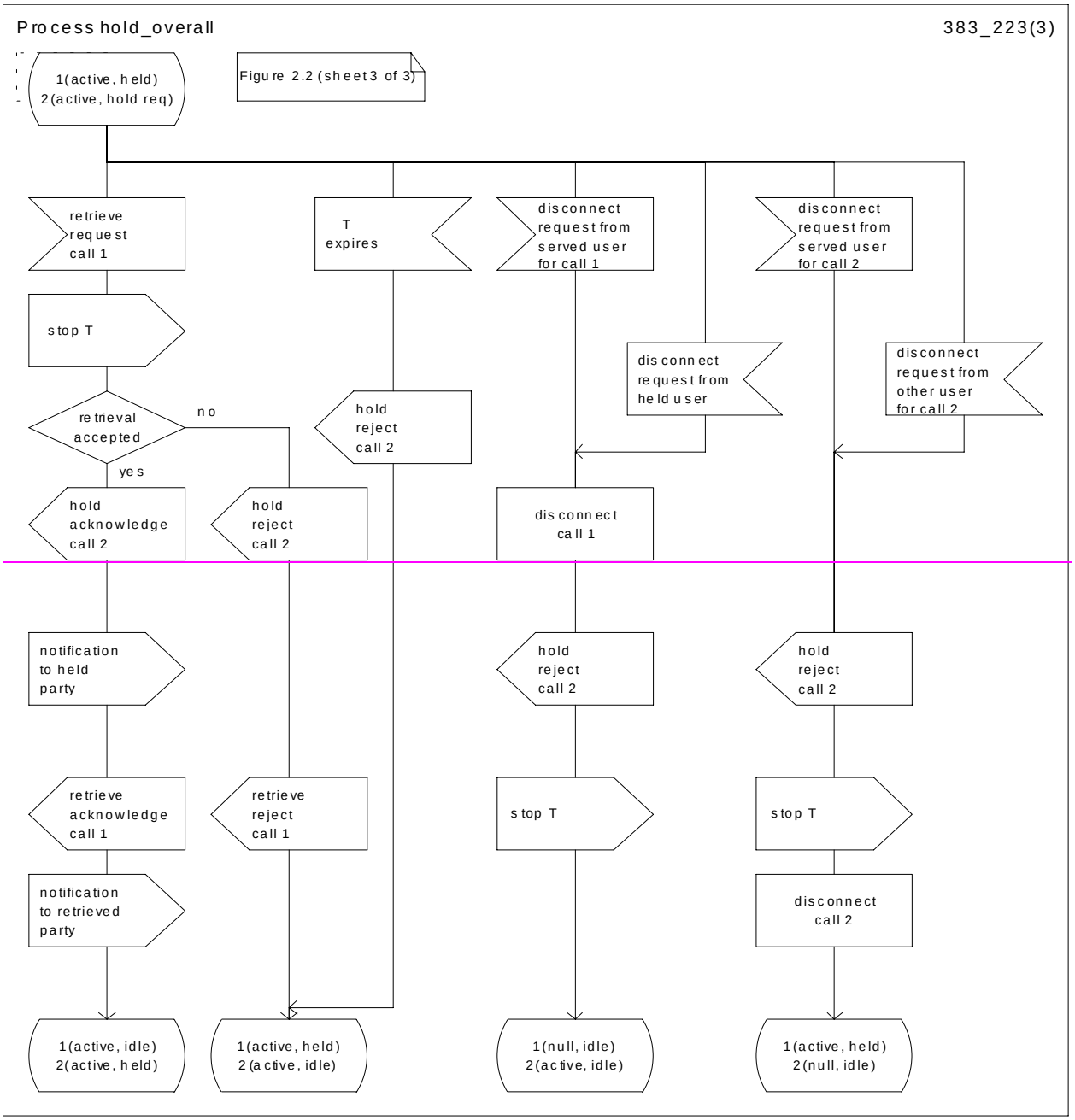


Figure 2.2 (sheet 3 of 43): Overall SDL diagram of call hold

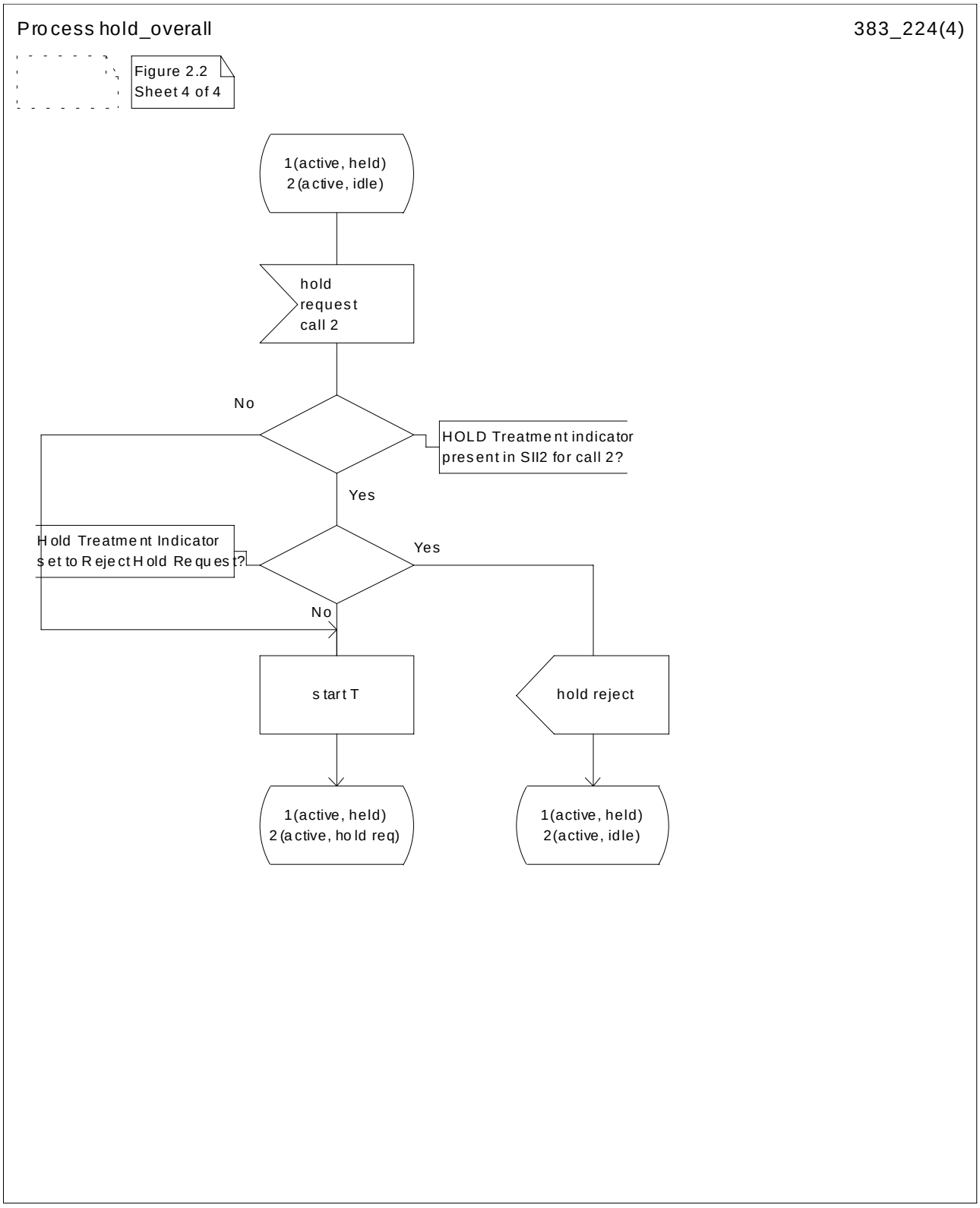


Figure 2.2 (sheet 4 of 4): Overall SDL diagram of call hold

3GPP TSG-N SS ad hoc meeting #4 *Tdoc 3GPP N_SS-99 129*
Henley-on-Thames, UK
30th November – 2nd December 1999

3GPP TSG-N SS ad hoc meeting #3 *Tdoc 3GPP N_SS-99 088*
Sophia Antipolis, France, 28-30 Sep 1999

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.084	CR	001	Current Version:	3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG CN#6 *list TSG meeting no. here ↑*

for approval [X]
for information [ ]

(only one box should be marked with an X)

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: *(at least one should be marked with an X)*

USIM [ ] ME [ ] UTRAN [ ] Core Network [X]

Source: SS ad hoc **Date:** 28/09/1999

Subject: Inclusion of handling of the Service Interaction Indicators Two parameter

3G Work item: MSP Phase 2

Category: *(only one category shall be marked with an X)*

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[X]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Reason for change: The Service Interaction Indicators Two parameter is included in CAMEL Phase 3 to meet the requirements for MSP Phase 2. The Service Interaction Indicators Two parameter specifies if invocation of MPTY is allowed.

Clauses affected: 1.1

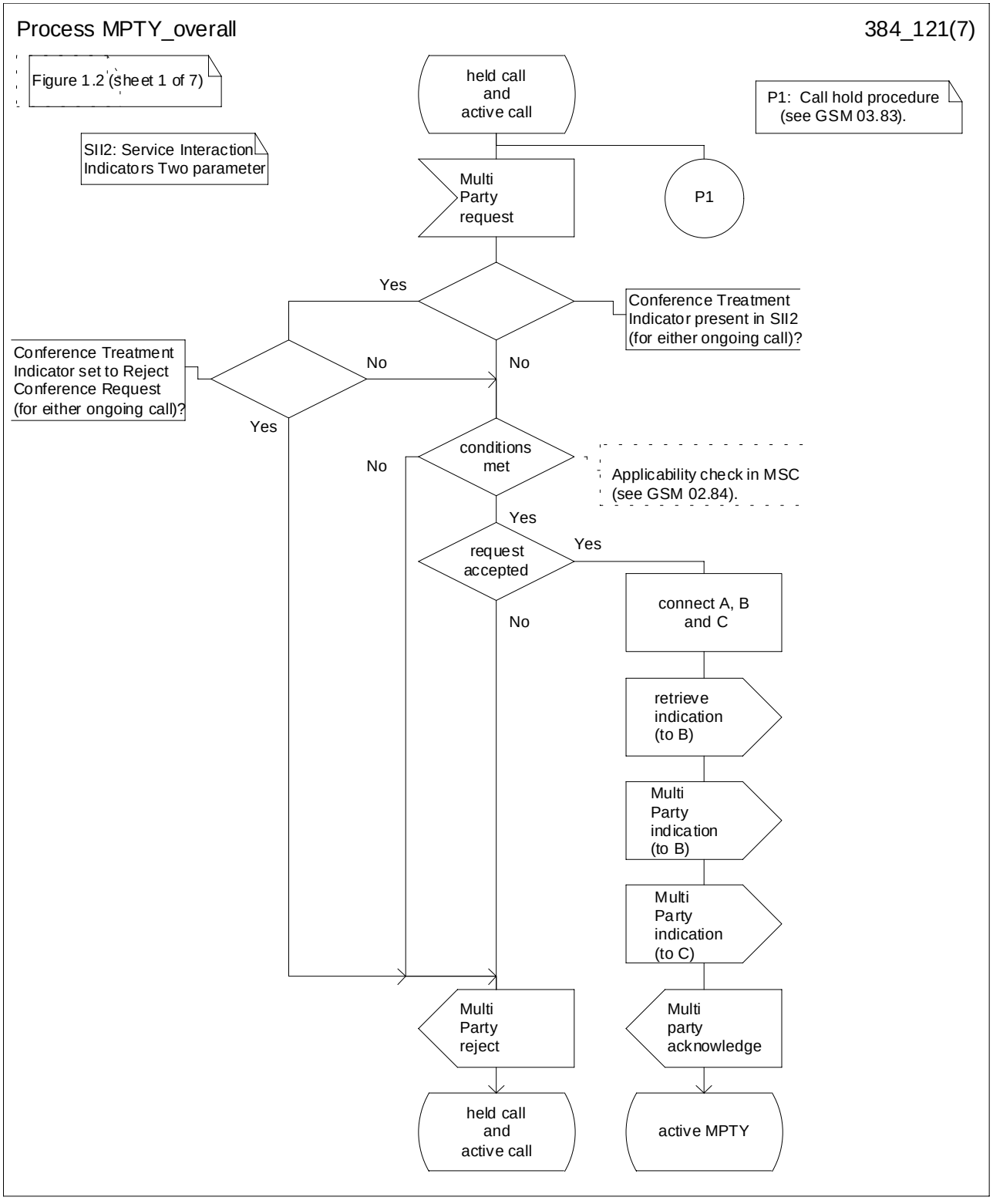
Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	23.018-005; 23.072-002; 23.078-xxx; 23.083-001; 23.091-001; 23.093-001
Other 2G core specifications	[ ]	→ List of CRs:	
MS test specifications	[ ]	→ List of CRs:	
BSS test specifications	[ ]	→ List of CRs:	
O&M specifications	[ ]	→ List of CRs:	

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.


Process MPTY_overall
384_121(7)
Figure 1.2 (sheet 1 of 7)
SII2: Service Interaction Indicators Two parameter
held call and active call
P1: Call hold procedure (see GSM 03.83).
Multi Party request
P1
Yes
Conference Treatment Indicator present in SII2 (for either ongoing call)?
Conference Treatment Indicator set to Reject Conference Request (for either ongoing call)?
No
No
Yes
conditions met
No
Applicability check in MSC (see GSM 02.84).
Yes
request accepted
Yes
connect A, B and C
No
retrieve indication (to B)
Multi Party indication (to B)
Multi Party indication (to C)
Multi Party reject
Multi party acknowledge
held call and active call
active MPTY

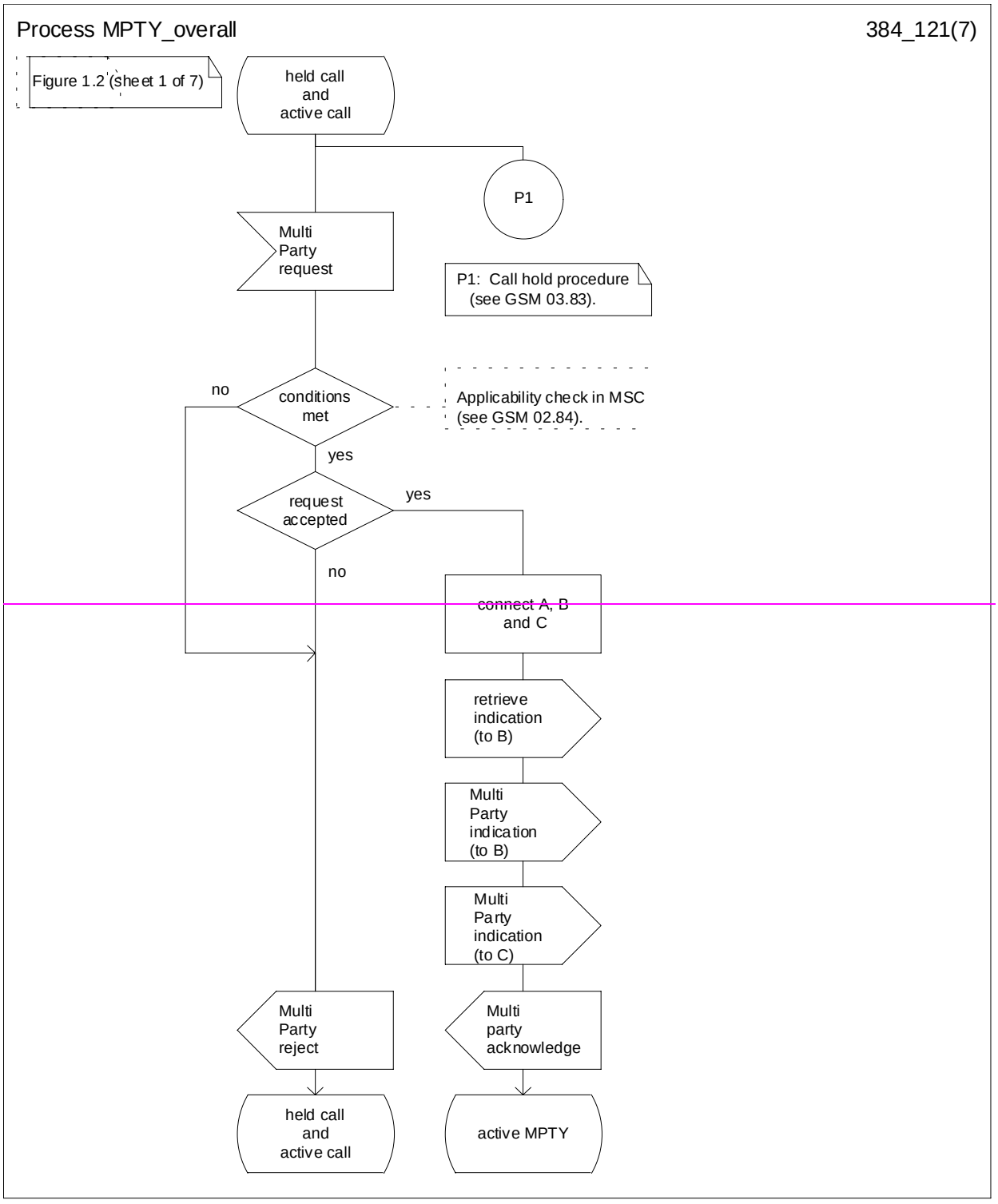


Figure 1.2 (sheet 1 of 7): Overall SDL diagram of Multi Party service

3GPP TSG-N SS ad hoc meeting #4 *Tdoc 3GPP N_SS-99 130*
Henley-on-Thames, UK
30th November – 2nd December 1999

3GPP TSG-N SS ad hoc meeting #3 *Tdoc 3GPP N_SS-99 089*
Sophia Antipolis, France, 28-30 Sep 1999

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.091	CR	001	Current Version: 3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG CN#6 *list TSG meeting no. here ↑*

for approval	X	*(only one box should*
for information		*be marked with an X)*

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: *(at least one should be marked with an X)* USIM [ ] ME [ ] UTRAN [ ] Core Network [X]

Source: SS ad hoc **Date:** 28/09/1999

Subject: Inclusion of the handling of the Service Interaction Indicators Two parameter

3G Work item: MSP Phase 2

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	X
C	Functional modification of feature	
D	Editorial modification	

Reason for change: The Service Interaction Indicators Two parameter is included in CAMEL Phase 3 to meet the service requirements for MSP Phase 2. The Service Interaction Indicators Two parameter specifies if invocation of ECT is allowed.

Clauses affected: 4.2.2; 4.2.3

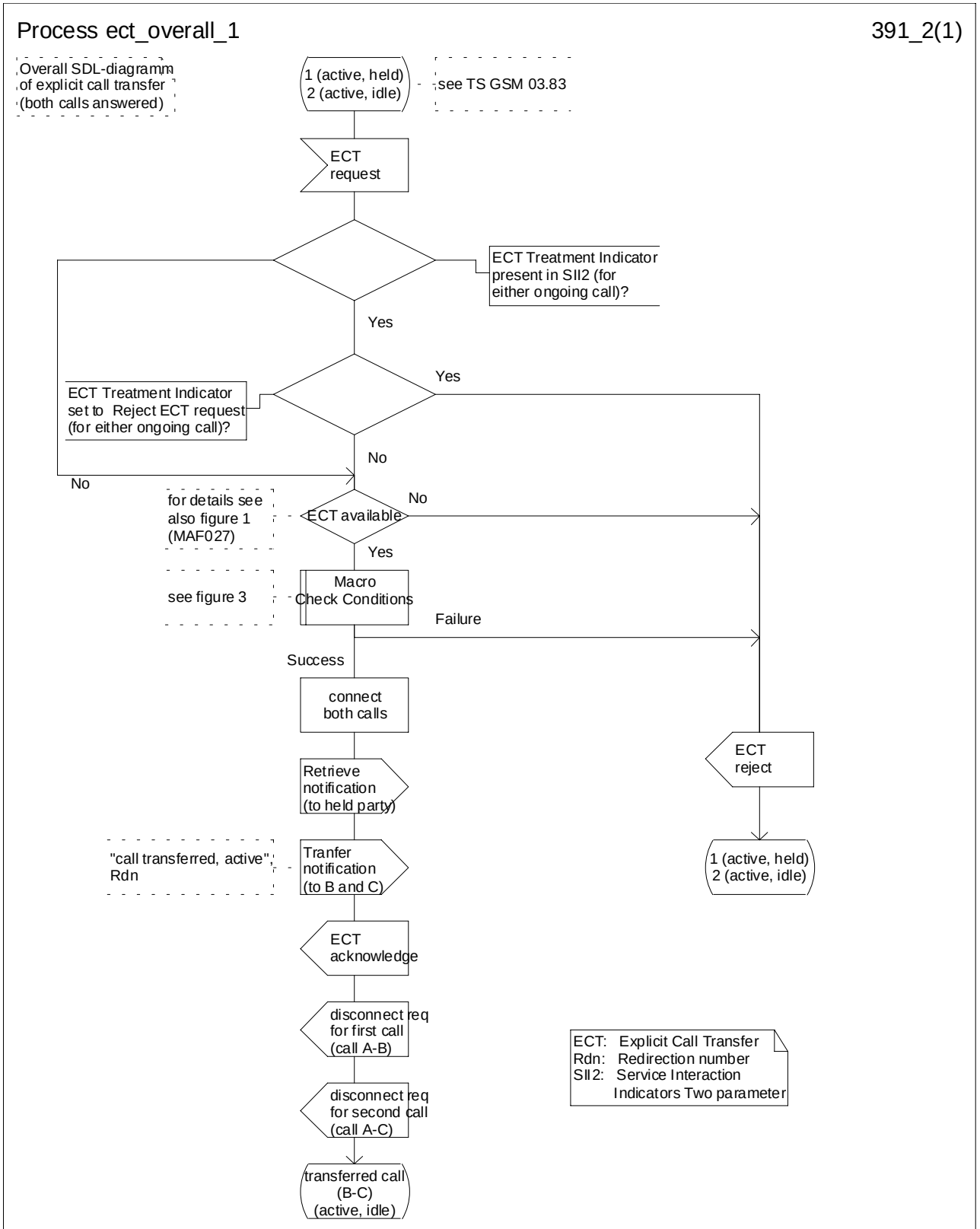
Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.018-005; 23.072-002; 23.078-xxx; 23.083-001; 23.084-001; 23.093-001
Other 2G core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.


Process ect_overall_1
391_2(1)
Overall SDL-diagramm of explicit call transfer (both calls answered)
1 (active, held)
2 (active, idle)
see TS GSM 03.83
ECT request
ECT Treatment Indicator present in SII2 (for either ongoing call)?
Yes
ECT Treatment Indicator set to Reject ECT request (for either ongoing call)?
Yes
No
No
for details see also figure 1 (MAF027)
ECT available
No
Yes
see figure 3
Macro Check Conditions
Failure
Success
connect both calls
ECT reject
Retrieve notification (to held party)
"call transferred, active" Rdn
Tranfer notification (to B and C)
1 (active, held)
2 (active, idle)
ECT acknowledge
disconnect req for first call (call A-B)
disconnect req for second call (call A-C)
transferred call (B-C) (active, idle)
ECT: Explicit Call Transfer
Rdn: Redirection number
SII2: Service Interaction Indicators Two parameter

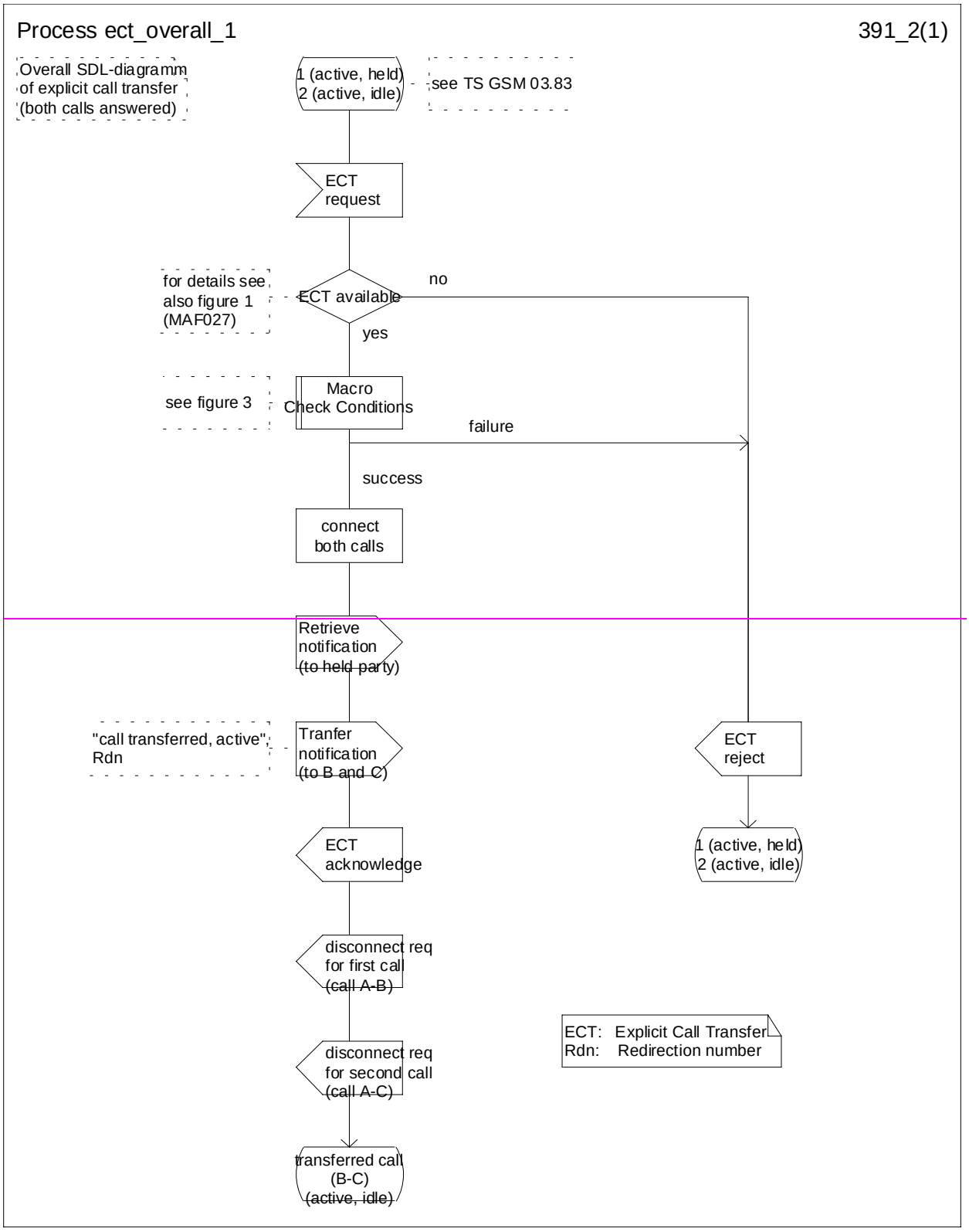
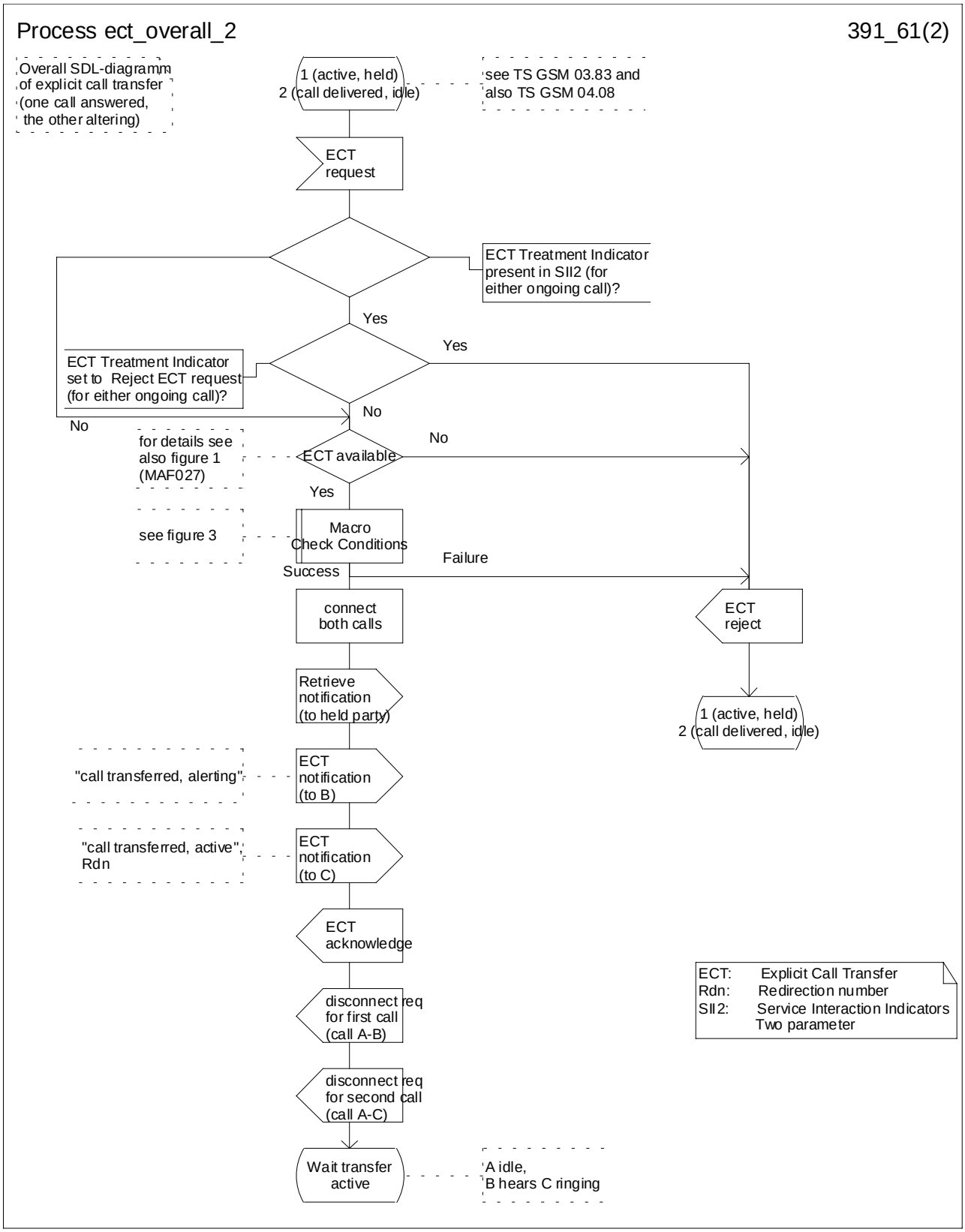


Figure 2: Overall SDL-diagram of Explicit Call Transfer (both calls answered)


Process ect_overall_2
391_61(2)
Overall SDL-diagramm of explicit call transfer (one call answered, the other altering)
1 (active, held)
2 (call delivered, idle)
see TS GSM 03.83 and also TS GSM 04.08
ECT request
ECT Treatment Indicator present in SII2 (for either ongoing call)?
Yes
Yes
ECT Treatment Indicator set to Reject ECT request (for either ongoing call)?
No
No
for details see also figure 1 (MAF027)
ECT available
No
Yes
see figure 3
Macro Check Conditions
Failure
Success
connect both calls
ECT reject
Retrieve notification (to held party)
1 (active, held)
2 (call delivered, idle)
"call transferred, alerting"
ECT notification (to B)
"call transferred, active", Rdn
ECT notification (to C)
ECT acknowledge
ECT: Explicit Call Transfer
Rdn: Redirection number
SII2: Service Interaction Indicators Two parameter
disconnect req for first call (call A-B)
disconnect req for second call (call A-C)
Wait transfer active
A idle, B hears C ringing

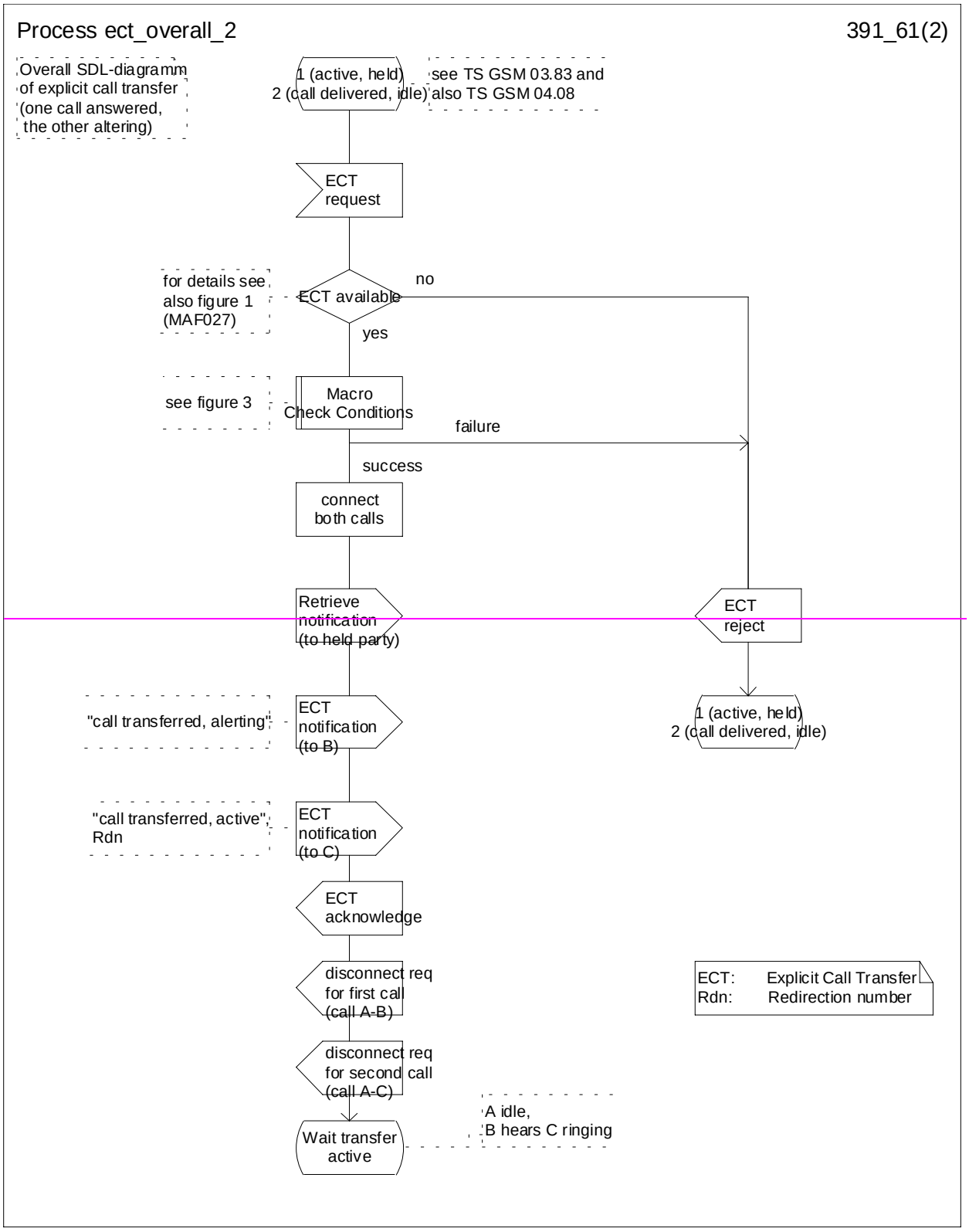


Figure 6: Overall SDL-diagram of explicit call transfer (one call answered, the other alerting) (page 1 of 2)

3GPP TSG-N SS ad hoc meeting #4
Henley-on-Thames, UK
30th November – 2nd December 1999

Tdoc 3GPP N_SS-99 155
(rev N_SS-99 153)

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.093	CR	001 r3	Current Version:	3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG CN#6 *list TSG meeting no. here ↑*

for approval [X]
for information [ ]

(only one box should be marked with an X)

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: *(at least one should be marked with an X)*

USIM [ ] ME [ ] UTRAN [ ] Core Network [X]

Source: SS ad hoc **Date:** 01/12/1999

Subject: Inclusion of the handling of the Service Interaction Indicators Two parameter

3G Work item: MSP Phase 2

Category: *(only one category shall be marked with an X)*

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[X]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Reason for change: The Service Interaction Indicators Two parameter is included in CAMEL Phase 3 to meet the service requirements for MSP Phase 2. The Service Interaction Indicators Two parameter specifies if CCBS is allowed.

Clauses affected: 11.1.1, 11.2.1, 11.2.3

Other specs affected:

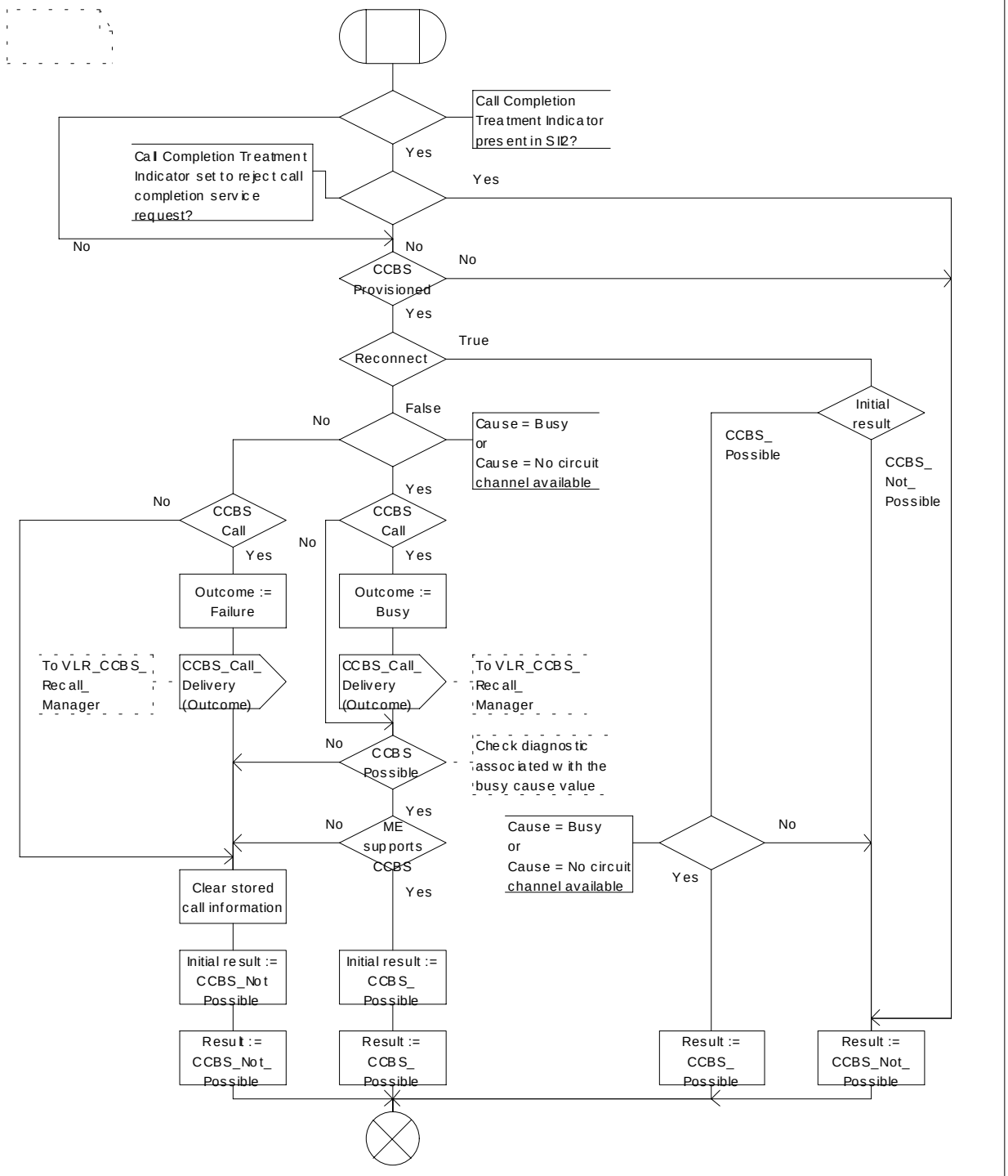
Other 3G core specifications	[X]	→ List of CRs:	23.018-005; 23.072-002; 23.078-xxx; 23.083-001; 23.084-001; 23.091-001
Other 2G core specifications	[ ]	→ List of CRs:	
MS test specifications	[ ]	→ List of CRs:	
BSS test specifications	[ ]	→ List of CRs:	
O&M specifications	[ ]	→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

Procedure CCBS_Check_If_CCBS_Possible 1(1)



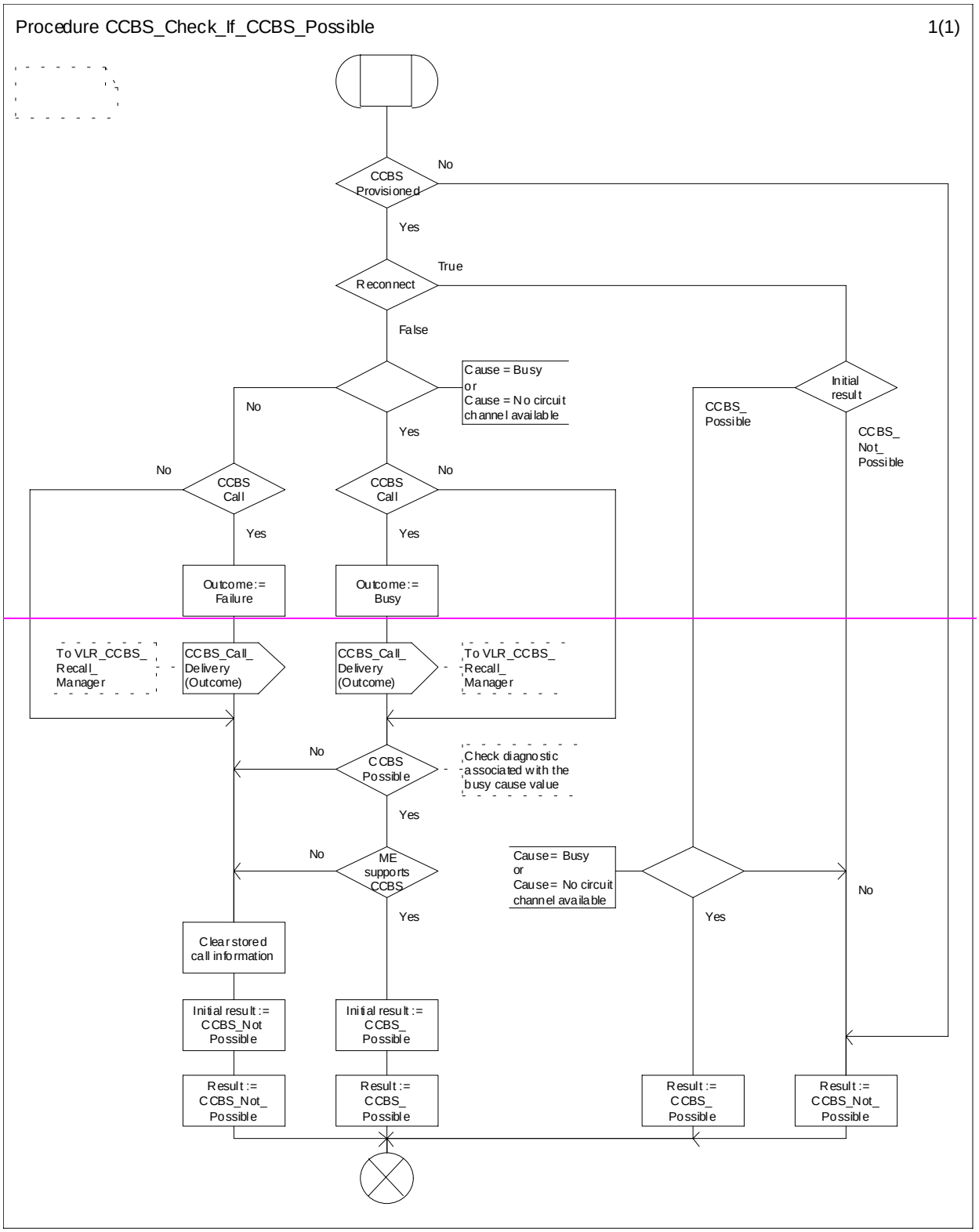
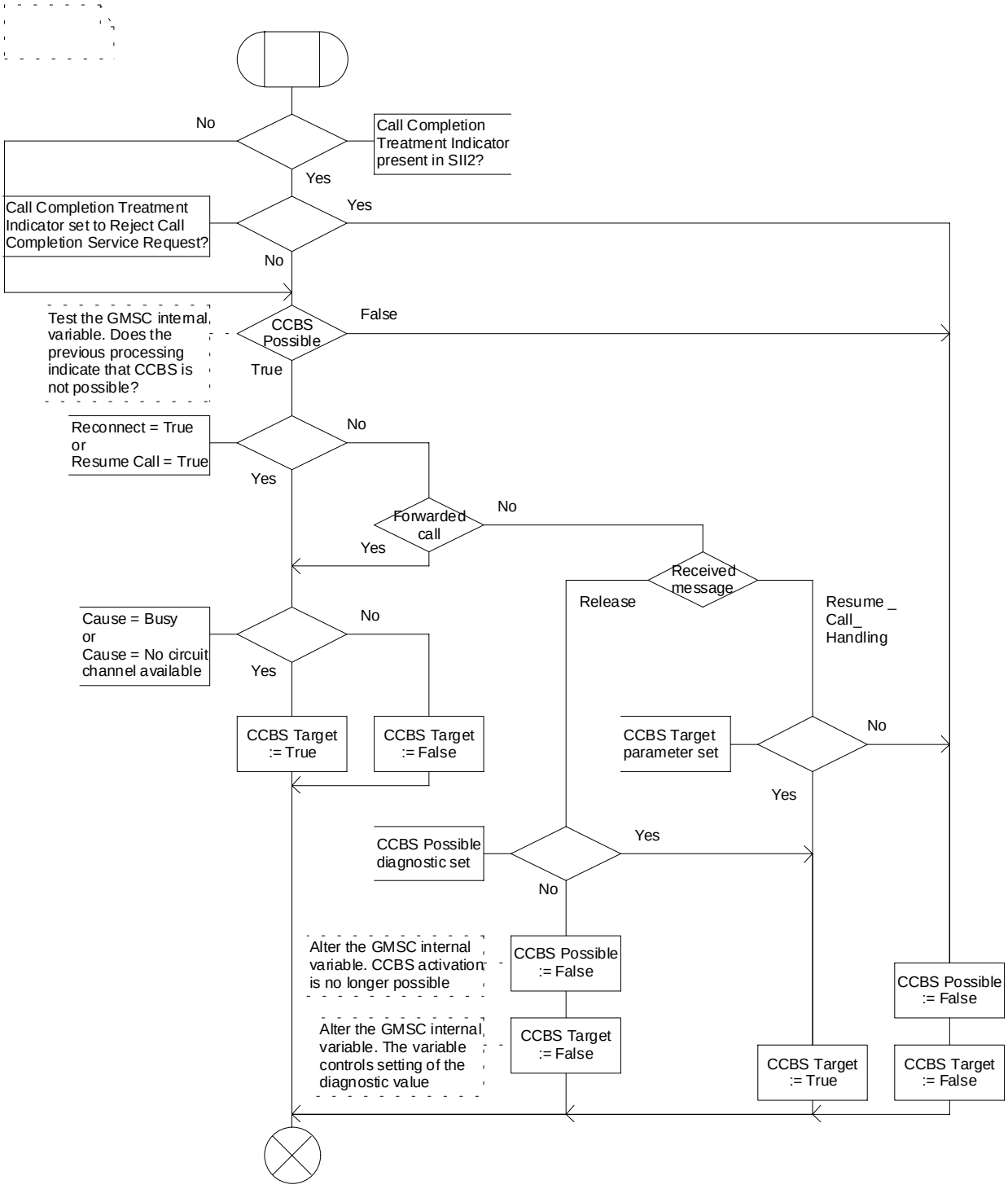


Figure 11.1.1.5: Procedure CCBS_Check_If_CCBS_Possible

Procedure CCBS_MT_GMSC_Check_CCBS_Possible 1(1)



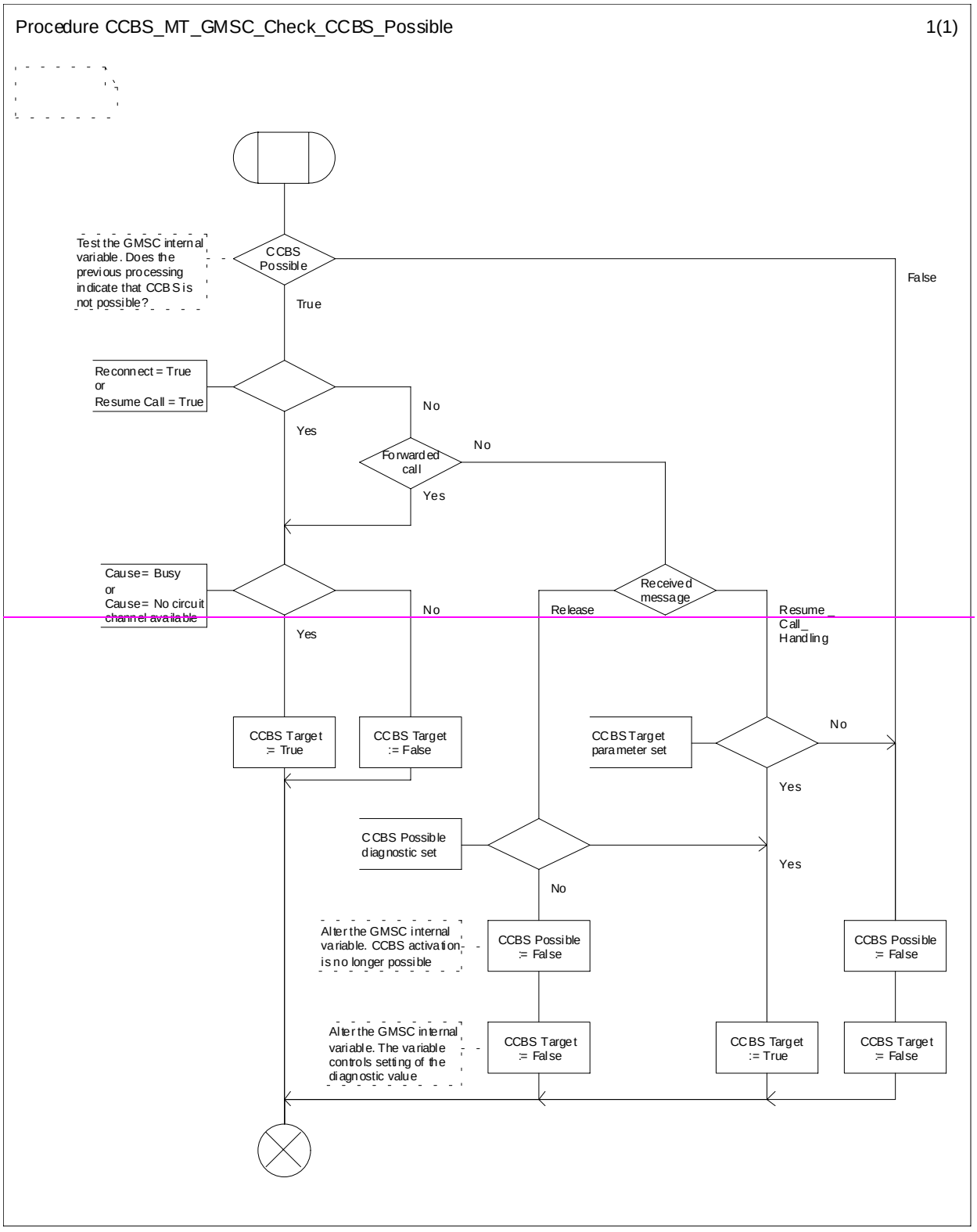
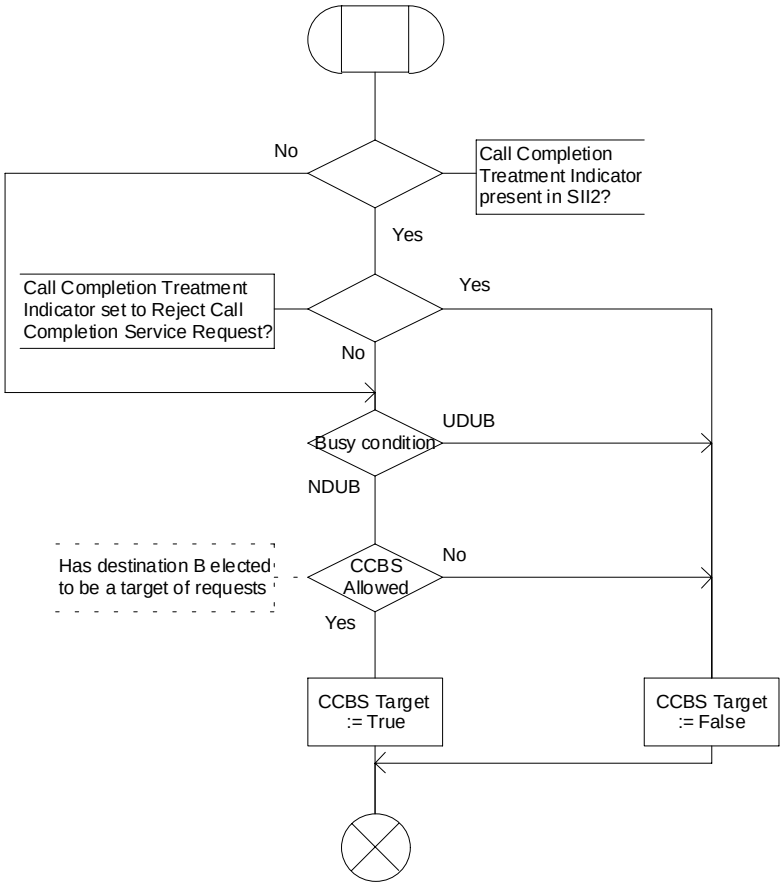


Figure 11.2.1.5: Procedure CCBS_MT_GMSC_Check_CCBS_Possible

Procedure CCBS_ICH_Set_CCBS_Target 1(1)



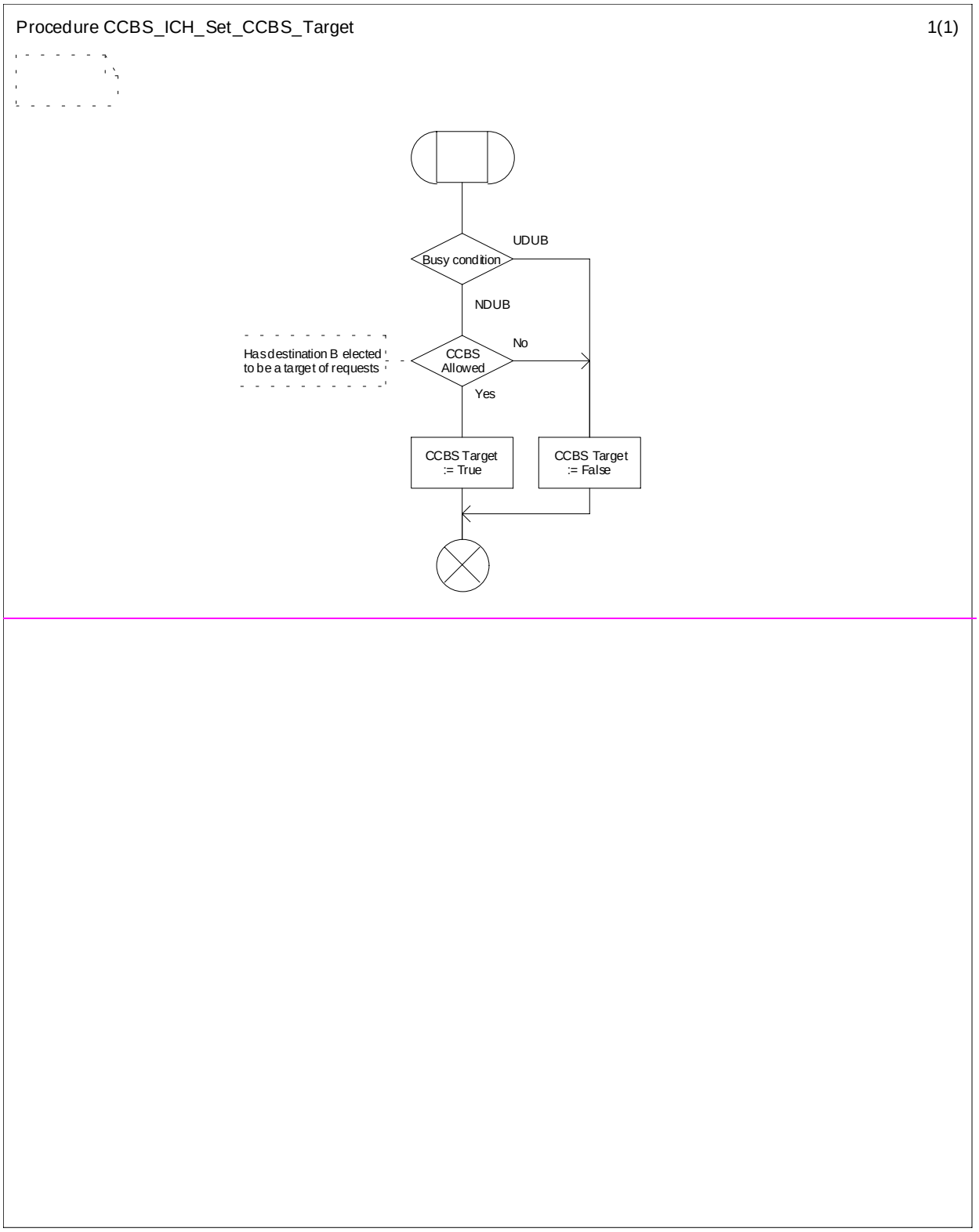


Figure 11.2.3.11: Procedure CCBS_ICH_Set_CCBS_Target

3GPP TSG-N SS ad hoc meeting #4
Henley-on-Thames, UK
30th November –2nd December 1999

Tdoc 3GPP N_SS-99 126
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.097	CR	002	Current Version:	3.0.1

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#6 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: SS ad hoc **Date:** 29/11/1999

Subject: Inclusion of MSP Phase 2 functionality

Work item: MSP Phase 2

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: MSP Phase 1 was based on CAMEL Phase 2. MSP Phase 2 uses the additional functionality in CAMEL Phase 3 to meet almost all of the original service requirements.

Clauses affected: Whole specification

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 23.097 V3.0.1 (1999-10)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Core Network; Multiple Subscriber Profile (MSP) (Phase 2~~1~~) - Stage 2 (3G TS 23.097 version 3.0.1)

Reference
DTS/TSG<name abbv>-0<WG no><spec no> U

Keywords
<keyword[, keyword]>

3GPP

Postal address

3GPP support office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet
http://www.3gpp.org

Contents

Foreword 6
1 Scope 7
2 References 7
3 Definitions and abbreviations 8
3.1 Definitions 8
3.2 Abbreviations 9
4 Features needed to support MSP Phase 2 9
5 Additional Information stored in network entities 9
5.1 Data stored in the HLR 9
5.2 Data stored in the VLR 10
6 Additional procedures in network entities 10
6.1 OCB_flag 10
6.2 ODB flags 10
6.3 HOLD_flag 10
6.4 CW_flag 11
6.5 MPTY_flag 11
6.6 ECT_flag 11
6.7 CCBS_flag 11
7 Description of Multiple Subscriber Profile 12
7.1 Overview 12
7.2 Registration of a Profile 12
7.3 Interrogation 14
7.4 Call Handling for an MSP subscriber 17
7.4.1 Mobile Originating (MO) call handling 17
7.4.2 Mobile Terminating (MT) call handling 17
7.5 Functions and Information Flows 17
7.5.1 MO call handling in the gsmSCF 17
7.5.1.1 Process MO_MSP_Call_gsmSCF 17
7.5.1.2 Procedure Set_Calling_Profile_gsmSCF 18
7.5.1.3 Procedure Send_FCI_gsmSCF 18
7.5.2 MT call handling in the gsmSCF 29
7.5.2.1 Process MT_MSP_Call_gsmSCF 29
7.5.3 SS handling in the gsmSCF 33
7.5.3.1 Procedure Set_Deflected_Profile_gsmSCF ..... **Error! Bookmark not defined.**
7.5.3.2 Procedure Set_CLI_PI_gsmSCF 33
7.5.3.3 Procedure Check_CFU_gsmSCF 34
7.5.3.4 Procedure Check_Early_CF_gsmSCF 34
7.5.3.5 Procedure Check_Late_CF_gsmSCF 34
7.5.3.6 Procedure Check_CFNRy_gsmSCF 34
7.5.3.7 Procedure Check_CFB_gsmSCF 34
7.5.3.8 Procedure Check_CFNRc_gsmSCF 34
7.5.3.9 Procedure Check_CW_gsmSCF 34
7.5.3.10 Procedure Check_HOLD_gsmSCF 34
7.5.3.11 Procedure Check_MPTY_gsmSCF 34
7.5.3.12 Procedure Check_ACM_gsmSCF 34
7.5.3.13 Process AoC_MSP_gsmSCF 34
7.5.3.14 Procedure AoCI_gsmSCF 34
7.5.3.15 Procedure AoCC_gsmSCF 34
7.5.3.16 Procedure Outgoing_Barring_Check_gsmSCF 35
7.5.3.17 Procedure Incoming_Barring_Check_gsmSCF 35
7.5.3.18 Procedure Check_ECT_gsmSCF 35

7.5.3.19 Procedure Check_CCBS_gsmSCF 35
7.5.4 Information flows 55
7.6 SMS handling 59
7.7 Call Independent SS handling 60
7.8 Interaction with Supplementary Services 61
7.8.1 Line Identification services 61
7.8.1.1 CLIP 61
7.8.1.2 CLIR 61
7.8.1.3 COLP 61
7.8.1.4 COLR 61
7.8.2 Call Hold (HOLD) 61
7.8.3 Call Waiting (CW) 62
7.8.4 Call Forwarding 62
7.8.5 Multi Party Service (MPTY) 62
7.8.6 Closed User Group (CUG) 62
7.8.7 Advice of Charge (AoC) 62
7.8.8 Call Barring 63
7.8.9 Explicit Call Transfer (ECT) 63
7.8.10 Completion of Calls to Busy Subscriber (CCBS) 63
7.8.11 enhanced Multi-Level Precedence and Pre-emption (eMLPP) 64
7.8.12 User-to-User Signalling (UUS) 64
7.8.13 Call Deflection (CD) 64
7.9 Interaction with other services 64
7.9.1 The Multi-Numbering Scheme 64
7.9.2 The Short Message Service 64
7.9.3 Interactions with CAMEL 64
7.9.4 Interactions with OR 65
7.9.5 Operator Determined Barring 65
7.9.6 Roaming Restrictions 65
7.10 Data stored in the gsmSCF 65
7.11 Equivalent services implemented by the gsmSCF 66
7.11.1 Call Forwarding 66
7.11.1.1 Call Forward Unconditional 69
7.11.1.2 Call Forward on Busy 70
7.11.1.3 Call Forward on No Reply 71
7.11.1.4 Call Forward on Not Reachable 71
7.11.1.5 Early CFNRc 71
7.11.1.6 Late CFNRc 73
7.11.2 Call Barring 73
7.11.3 Operator Determined Barring (ODB) 74
7.11.4 Advice of Charge (AoC) 74
7.12 Exceptional Procedures 74
7.12.1 Roaming into a network not supporting CAMEL Phase 3 74
7.12.2 Roaming into a network not supporting CAMEL Phase 2 75
7.12.2.1 Actions required on Location Update 75
7.12.2.2 MO call handling 75
7.12.2.3 MT call handling 75
7.12.3 Lack of availability of the Network Indication of Alerting feature 75

Annex A (informative): Provision and Withdrawal of MSP 76

A.1 Provision of MSP 76

A.2 Withdrawal of MSP 76

Annex B (informative): Change history 77

History 78

Foreword

This Technical Specification has been produced by the 3GPP.

This TS gives the stage 2 description of the Multiple Subscriber Profile (MSP) supplementary service within the 3GPP system.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This Technical Specification specifies the stage 2 description of the Multiple Subscriber Profile (MSP) Supplementary Service Phase ~~1~~2. MSP Phase ~~1~~2 is implemented using CAMEL Phase ~~2~~3. ~~MSP Phase 2 will be implemented using CAMEL Phase 3.~~

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] GSM 02.30: "Digital cellular telecommunications system (Phase 2+); Man Machine Interface (MMI) of the Mobile Station (MS)".

[3] GSM 02.97: "Digital cellular telecommunications system (Phase 2+); Multiple Subscriber Profile (MSP) Service Description – Stage 1".

[4] ~~GSM 03.08: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.008: "3rd Generation Partnership Project; Technical Specification Group Core Network; Organisation of subscriber data".

[5] ~~GSM 03.15: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.015: "3rd Generation Partnership Project; Technical Specification Group Core Network; Technical realization of Operator Determined Barring (ODB)".

[6] ~~GSM 03.18: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.018: "3rd Generation Partnership Project; Technical Specification Group Core Network; Basic Call Handling – Technical Realization".

[7] ~~GSM 03.67: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.067: "3rd Generation Partnership Project; Technical Specification Group Core Network; enhanced Multi-Level Precedence and Pre-emption service (eMLPP) – Stage 2".

[8] ~~GSM 03.72: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.072: "3rd Generation Partnership Project; Technical Specification Group Core Network; Call Deflection (CD); Stage 2".

[9] ~~GSM 03.78: "Digital cellular telecommunication system (Phase 2+);~~ 3G TS 23.078: "3rd Generation PartnershipProject; Technical Specification Group Core Network; Customised Applications for Mobile network Enhanced Logic (CAMEL) – Phase 2; Stage 2".

[10] ~~GSM 03.79: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.079: "3rd Generation Partnership Project; Technical Specification Group Core Network; Support of Optimal Routeing (SOR); Technical Realisation".

[11] ~~GSM 03.81: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.081: "3rd Generation Partnership Project; Technical Specification Group Core Network; Line identification supplementary services – Stage 2".

[12] ~~GSM 03.82: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.082: "3rd Generation Partnership Project; Technical Specification Group Core Network; Call Forwarding (CF) supplementary services – Stage 2".

[13] ~~GSM 03.83: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.083: "3rd Generation Partnership Project; Technical Specification Group Core Network; Call Waiting (CW) and Call Hold (HOLD) supplementary services – Stage 2".

[14] ~~GSM 03.84: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.084: "3rd Generation Partnership Project; Technical Specification Group Core Network; Multi Party (MPTY) supplementary services – Stage 2".

[15] ~~GSM 03.85: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.085: "3rd Generation Partnership Project; Technical Specification Group Core Network; Closed User Group (CUG) supplementary services – Stage 2".

[16] ~~GSM 03.86: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.086: "3rd Generation Partnership Project; Technical Specification Group Core Network; Advice of Charge (AoC) supplementary services – Stage 2".

[17] ~~GSM 03.87: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.087: "3rd Generation Partnership Project; Technical Specification Group Core Network; User-to-User (UUS) Supplementary Service; Stage 2".

[18] ~~GSM 03.88: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.088: "3rd Generation Partnership Project; Technical Specification Group Core Network; Call Barring (CB) supplementary services – Stage 2".

[19] ~~GSM 03.90: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.090: "3rd Generation Partnership Project; Technical Specification Group Core Network; Unstructured Supplementary Service Data (USSD) – Stage 2".

[20] ~~GSM 03.91: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.091: "3rd Generation Partnership Project; Technical Specification Group Core Network; Explicit Call Transfer (ECT) supplementary service – Stage 2".

[21] ~~GSM 03.93: "Digital cellular telecommunications system (Phase 2+);~~ 3G TS 23.093: "3rd Generation Partnership Project; Technical Specification Group Core Network; Technical Realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[22] 3G TS 24.086: "3rd Generation Partnership Project; Technical Specification Group Core Network; Advice of Charge (AoC) supplementary services – Stage 3".

3 Definitions and abbreviations

3.1 Definitions

For the purpose of this specification, the following definitions apply:

Default Profile: The profile used when the MSP subscriber roams to a non-supporting network. The MSP subscriber will not be able to change outgoing call barrings for the default profile.

MSP Subscriber: The subscriber provisioned with the MSP service

Profile Identity: The numerical identity (between 1 and 4) of the profile

Profile Status: Specifies if the profile is the registered profile or the default profile

Registered Profile: The profile used for all MO calls if a profile has not been explicitly selected

3.2 Abbreviations

The abbreviations used in this specification are listed in GSM 01.04.

For the purpose of this specification, the following abbreviations apply:

CD	The Call Deflection supplementary service
MSP	The Multiple Subscriber Profile supplementary service
UUS	The User-to-User Signalling supplementary service
SII2	The Service Interaction Indicators Two parameter (see [9])

4 Features needed to support MSP Phase 2

~~1.CAMEL Phase 2 is a pre-requisite for MSP.~~

~~2.The Network Indication of Alerting feature is also required if the subscriber is to be informed of the called profile.~~

CAMEL Phase 3 is a pre-requisite for MSP Phase 2.

The following CAMEL Phase 3 features are used for MSP Phase 2:

- SII2
- MO SMS interaction
- T-BCSM in the VMSC
- SS-CSI Invocation Notification for CCBS
- Any Time Modification
- CUG Handling

The following CAMEL Phase 2 features are used for MSP Phase 2:

- Network Indication of Alerting pattern
- Event detection points
- USSD Interaction
- Control of Call Duration
- SS-CSI Invocation Notification for CD
- Furnish Charging Information

5 Additional Information stored in network entities

5.1 Data stored in the HLR

The HLR contains all the common data (the data valid for all profiles) and some data specific to the default profile.

The data stored in the HLR are defined in ~~GSM 03.08~~ 3G TS 23.008. The elements specifically used for MSP are:

- List of MSISDNs and associated Bearer Capabilities for each profile;;
- Default profile (associated with the Basic MSISDN);

- Capabilities of VLR (support of CAMEL Phase 2 and 3);
- Supplementary services (per BSG) provisioned per subscriber (CW, CH, MPTY, …);
- Call Barring Data (see subclause 7.6.8: Call Barring);
- ODB Data (see subclause 7.7.5: Operator Determined Barring);
- HOLD Data (see subclause 7.8.2: Call Hold)
- ECT Data (see subclause 7.8.9: Explicit Call Transfer)
- MPTY Data (see subclause 7.8.5: Multi Party)
- CCBS Data (see subclause 7.8.10: Completion of Calls to Busy Subscriber)
- CW Data (see subclause 7.8.3: Call Waiting)
- CLIR Data (see subclause 7.8.1.2)
- CAMEL data including the MSP service key, O-CSI, T-CSI, UG-CSI, SS-CSI and Location information / Subscriber state Interrogation.

5.2 Data stored in the VLR

The data stored in a VLR are defined in ~~GSM 03.08~~ 3G TS 23.008. MSP has no impact on the VLR.

6 Additional procedures in network entities

6.1 OCB_flag

The OCB_flag shall be set in the HLR if Call Barrings are provided in the gsmSCF.

If the OCB_flag is set then

- When the subscriber roams to a VLR which supports CAMEL Phase 2 or later, the HLR shall not send any outgoing call barring supplementary services data to the VLR;
- When the subscriber roams to a VLR which does not support CAMEL Phase 2 or later, the HLR shall send to the VLR outgoing call barring supplementary services data as stored in the HLR.
- The subscriber shall not be allowed to alter the Call Barring data in the HLR

6.2 ODB flags

The ODB flag for the relevant category shall be set in the HLR if ODB is provisioned in the gsmSCF for that category.

If the ODB flag is set for that category, then

- When the subscriber roams to a VLR which supports CAMEL Phase 2 or later, the HLR shall not send any ODB data for that category to the VLR;
- When the subscriber roams to a VLR which does not support CAMEL Phase 2 or later, the HLR shall send to the VLR ODB data for that category to the VLR as stored in the HLR.

6.3 HOLD_flag

The HOLD_flag shall be set in the HLR if the subscriber data for the HOLD SS are controlled by the gsmSCF.

If the HOLD_flag is set, then:

- When the subscriber roams to a VLR which supports CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the HOLD SS as Active and Operative;
- When the subscriber roams to a VLR which does not support CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the HOLD SS as stored in the HLR.

6.4 CW_flag

The CW_flag shall be set in the HLR if the subscriber data for the CW SS are controlled by the gsmSCF.

If the CW_flag is set, then:

- When the subscriber roams to a VLR which supports CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the CW SS as Active and Operative;
- When the subscriber roams to a VLR which does not support CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the CW SS as stored in the HLR;
- The subscriber shall not be allowed to alter the CW data in the HLR.

6.5 MPTY_flag

The MPTY_flag shall be set in the HLR if the subscriber data for the MPTY SS are controlled by the gsmSCF.

If the MPTY_flag is set, then:

- When the subscriber roams to a VLR which supports CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the MPTY SS as Active and Operative;
- When the subscriber roams to a VLR which does not support CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the MPTY SS as stored in the HLR.

6.6 ECT_flag

The ECT_flag shall be set in the HLR if the subscriber data for the ECT SS are controlled by the gsmSCF.

If the ECT_flag is set, then:

- When the subscriber roams to a VLR which supports CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the ECT SS as Active and Operative;
- When the subscriber roams to a VLR which does not support CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the ECT SS as stored in the HLR.

6.7 CCBS_flag

The CCBS_flag shall be set in the HLR if the subscriber data for the CCBS SS are controlled by the gsmSCF.

If the CCBS_flag is set, then:

- When the subscriber roams to a VLR which supports CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the CCBS SS as Active and Operative;
- When the subscriber roams to a VLR which does not support CAMEL Phase 3 or later, the HLR shall send to the VLR the activation state of the CCBS SS as stored in the HLR;
- The subscriber shall not be allowed to alter the CCBS data in the HLR.

6.8 CLIR_flag

The CLIR_flag shall be set in the HLR if the subscriber data for the CLIR SS are controlled by the gsmSCF.

If the CLIR_flag is set, then:

- When the subscriber roams to a VLR which supports CAMEL Phase 3 or later, the HLR shall send to the VLR the activateion state of the CLIR SS as Active and Operative, and the presentation mode as “temporary (presentation allowed).
- When the subscriber roams to a VLR which does not support CAMEL Phase 3 or later, the HLRshall send to the VLR the activation state and presentation mode for the CLIR SS as stored in the HLR.
- The subscriber shall not be allowed to alter the CLIR data in the HLR.

7 Description of Multiple Subscriber Profile

7.1 Overview

The MSP service allows the served subscriber to have several profiles, to distinguish between different telecommunication service requirements (e.g. business and home). This is described in GSM 02.97. Subscriber data specific to MSP is stored in the HLR and the gsmSCF.

7.2 Registration of a Profile

Registration of a profile allows the subscriber to register a provisioned profile to be used for mobile originated calls and activities. The request to register a profile shall contain the MSP code and the profile identity and will be sent to the gsmSCF using USSD, see ~~GSM 03.78~~ 3G TS 23.078 and ~~GSM 03.90~~ 3G TS 23.090. The registered profile is stored in the gsmSCF. In response to a successful registration request, the gsmSCF shall return a positive acknowledgement, including the identity of the registered profile, using USSD.

The registration process in the gsmSCF is shown in figure 2. The information flow for successfully registering a profile is shown in figure 1.

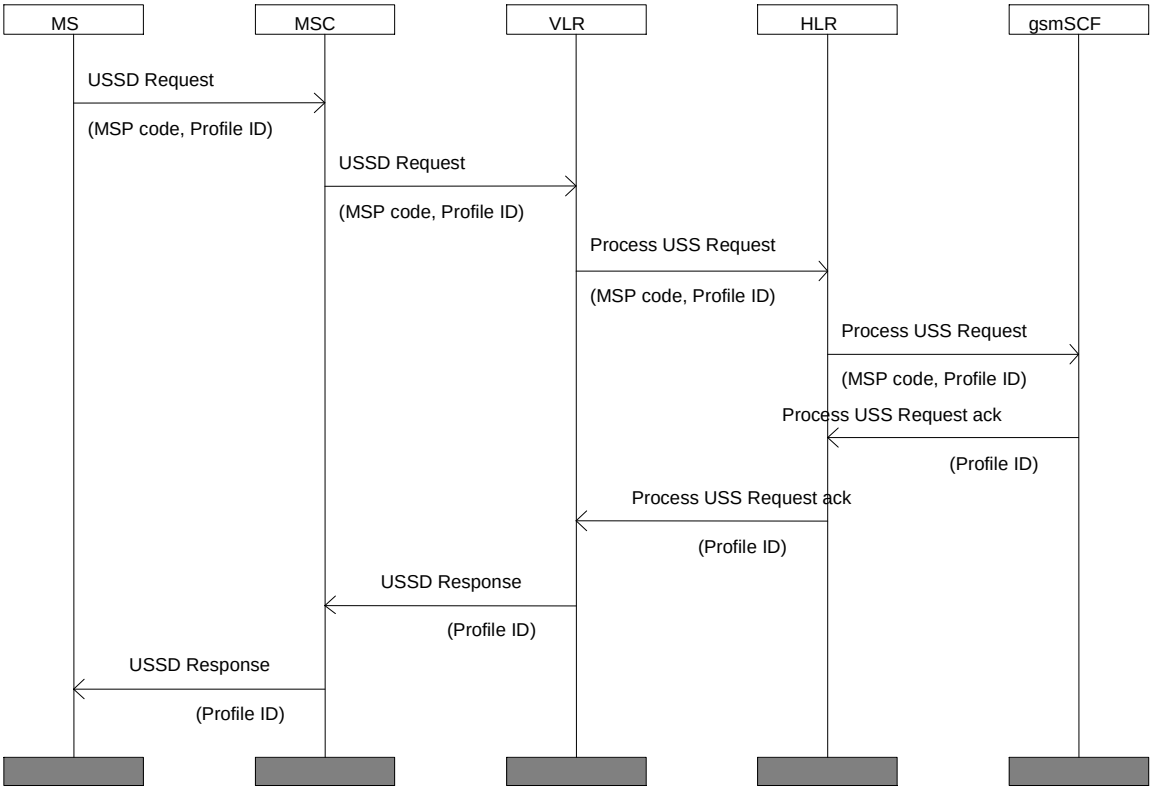


Figure 1: Registration Process: information flow

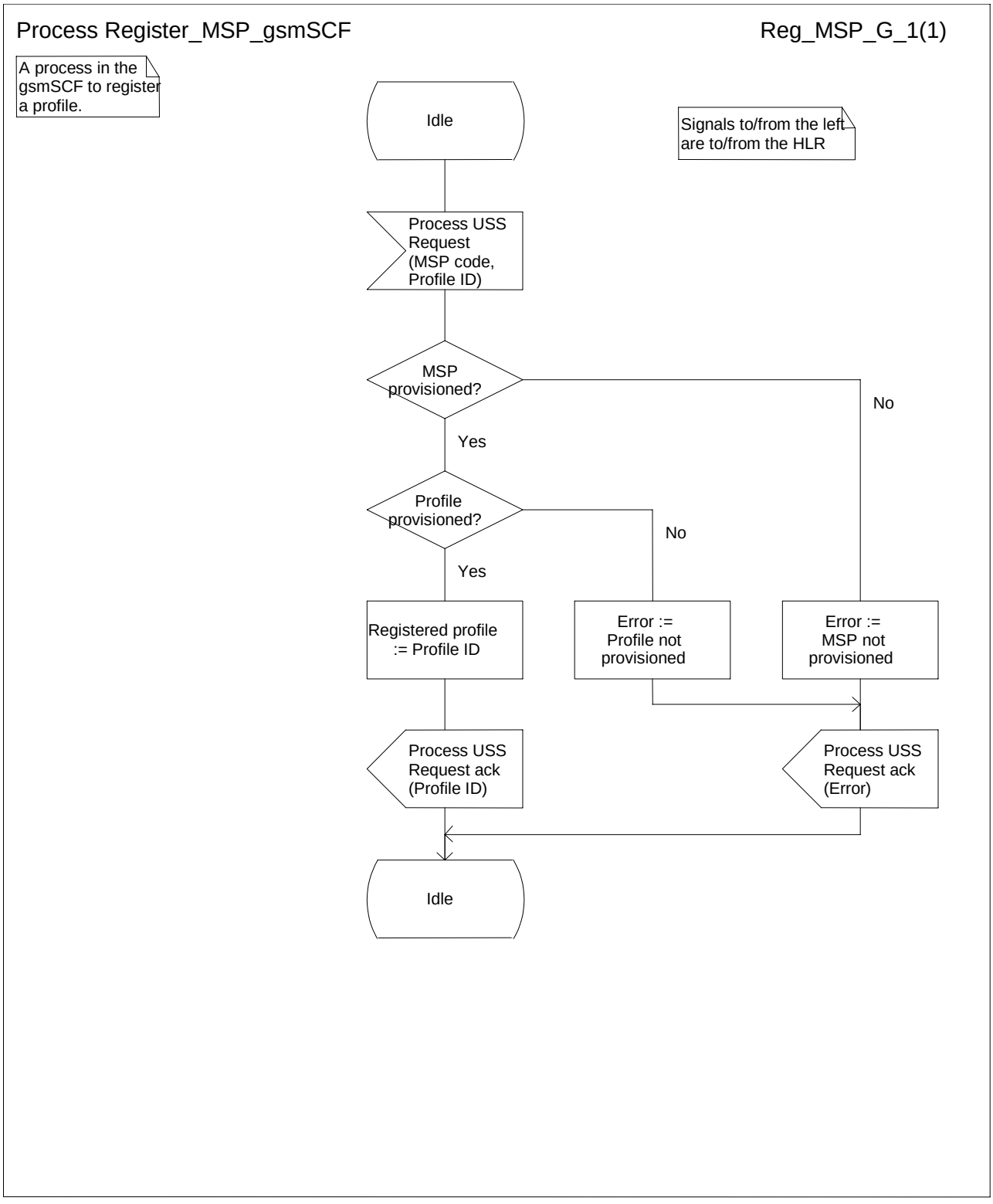


Figure 2: Process Register_MSP_gsmSCF

7.3 Interrogation

The MS can interrogate MSP, using USSD, to identify which profiles are provisioned and which of the provisioned profiles is the currently registered profile. The interrogate MSP operation shall contain the MSP code and will be sent to the gsmSCF using USSD. In response to a successful interrogation request, the gsmSCF shall return the profile identity and profile status for each provisioned profile. If the MSP service is not provisioned then the gsmSCF shall return the service status indicating not provisioned.

The interrogation process is shown in figure 4. The information flow for interrogation of MSP is shown in figure 3.

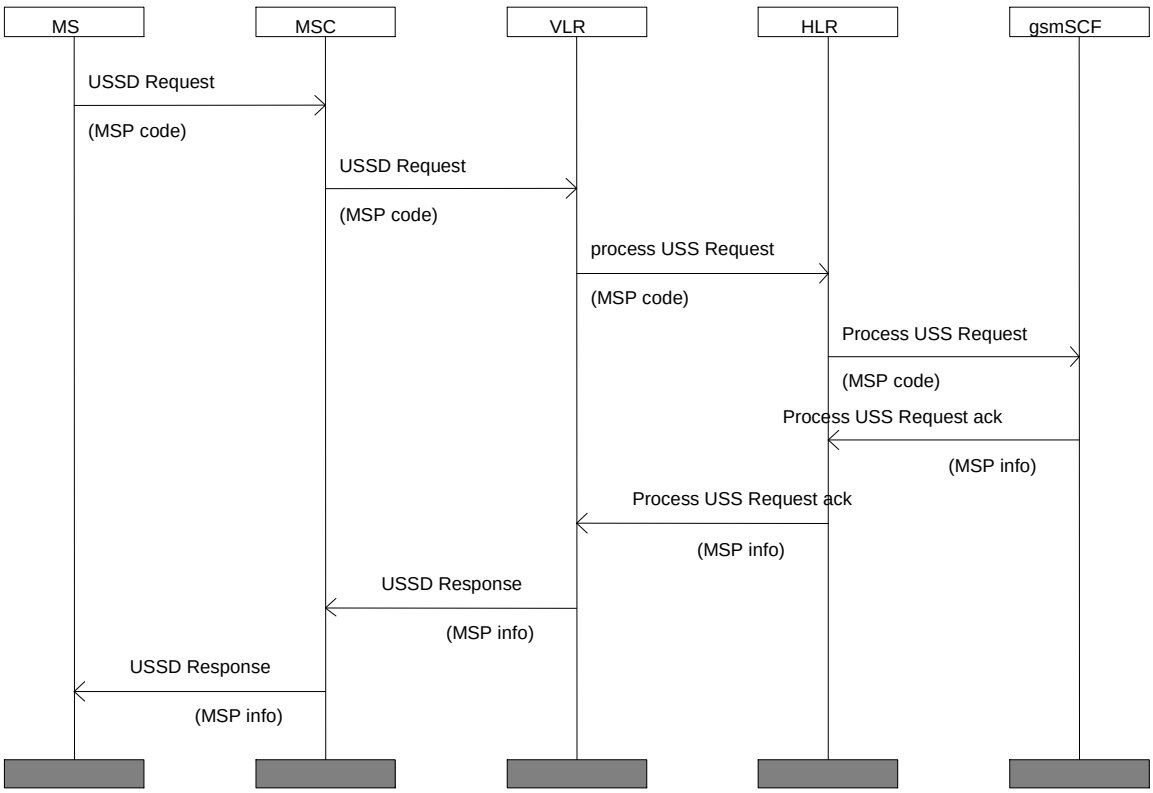


Figure 3: Interrogating MSP: information flow

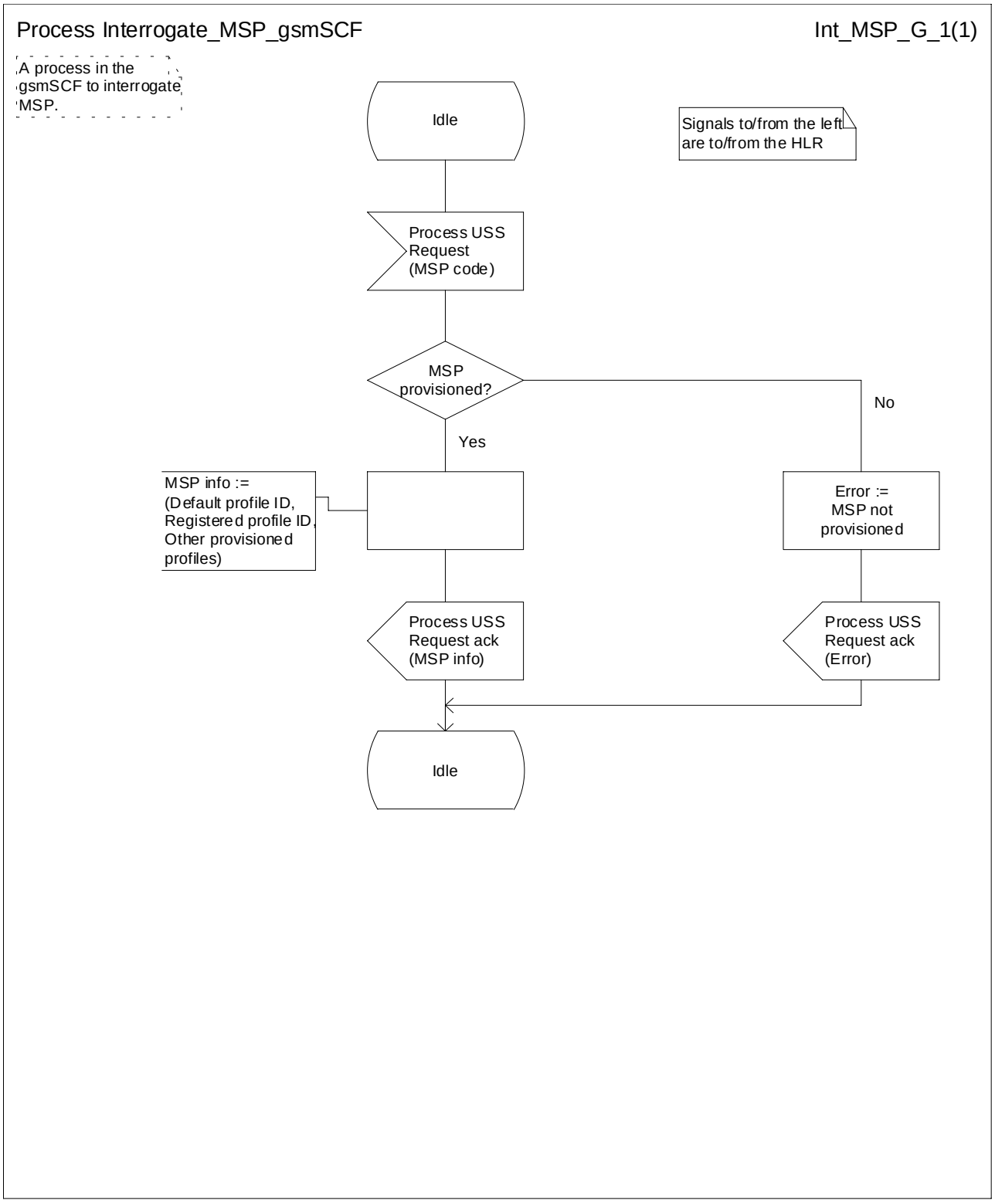


Figure 4: Process Interrogate_MSP_gsmSCF

~~The interrogate MSP operation shall contain the MSP service code.~~

~~In response to a successful interrogation request, the gsmSCF shall return the profile identity and profile status for each provisioned profile.~~

~~If the MSP service is not provisioned then the gsmSCF shall return the service status indicating not provisioned.~~

7.4 Call Handling for an MSP subscriber

The procedure for handling MSP calls can be divided into two areas: mobile originating call handling and mobile terminating call handling.

7.4.1 Mobile Originating (MO) call handling

The served subscriber may use the registered profile or explicitly select a provisioned profile to set up an MO call. If the profile is explicitly selected, the selection information will be included in the called party BCD number and transported to the gsmSCF. If the gsmSCF recognises that a profile has not been explicitly selected (there is no profile selection information in the called party BCD number) then the registered profile is used. The MMI for explicitly selecting a profile is defined in GSM 02.30.

The information flow for an MO call is shown in figure ~~10~~28.

When the gsmSCF receives an Initial_DP message containing MO call parameters from the gsmSSF, the process MO_MSP_Call_gsmSCF will be invoked, see figure~~s~~ 5~~6~~. All other call handling is described in ~~GSM 03.18~~ 3G TS 23.018 and ~~GSM 03.78~~ 3G TS 23.078.

7.4.2 Mobile Terminating (MT) call handling

The profile used for an MT call to the served subscriber is determined by the called MSISDN.

The information flow for an MT call is shown in figure ~~11~~ 29.

When the gsmSCF receives an Initial_DP message containing MT call parameters from the gsmSSF, the process MT_MSP_Call_gsmSCF will be invoked, see figures ~~7 9~~ 8. All other call handling is described in ~~GSM 03.18~~ 3G TS 23.018 and ~~GSM 03.78~~ 3G TS 23.078.

~~NOTE: If the call is to be forwarded, the gsmSCF does not include the "O-CSI applicable" parameter in the Connect message so that the second contact with the gsmSSF., is suppressed.~~

7.5 Functions and Information Flows

7.5.1 ~~Functions~~MO call handling in the gsmSCF

~~The following functions have been added for MSP:~~

~~MO_MSP_Call_gsmSCF~~

~~Sets the parameters for an MO call~~

~~See figures 5 6.~~

~~Location: gsmSCF~~

~~MT_MSP_Call_gsmSCF~~

~~Sets the parameters for an MT call and forwards the call if appropriate~~

~~See figure 7.~~

~~Location: gsmSCF~~

7.5.1.1 Process MO_MSP_Call_gsmSCF

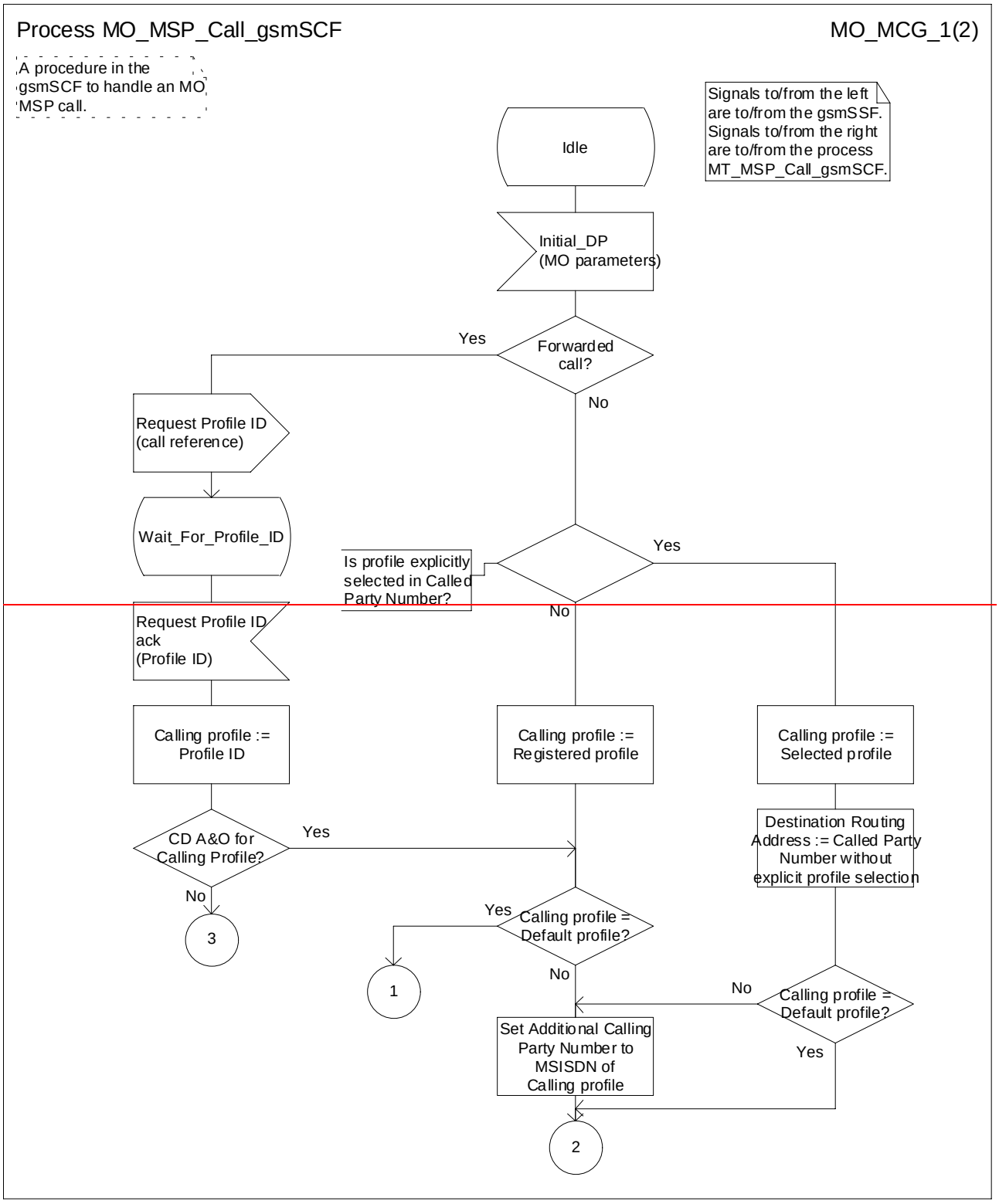
Handles an MO call for an MSP subscriber. See figure 5.

7.5.1.2 Procedure Set_Calling_Profile_gsmSCF

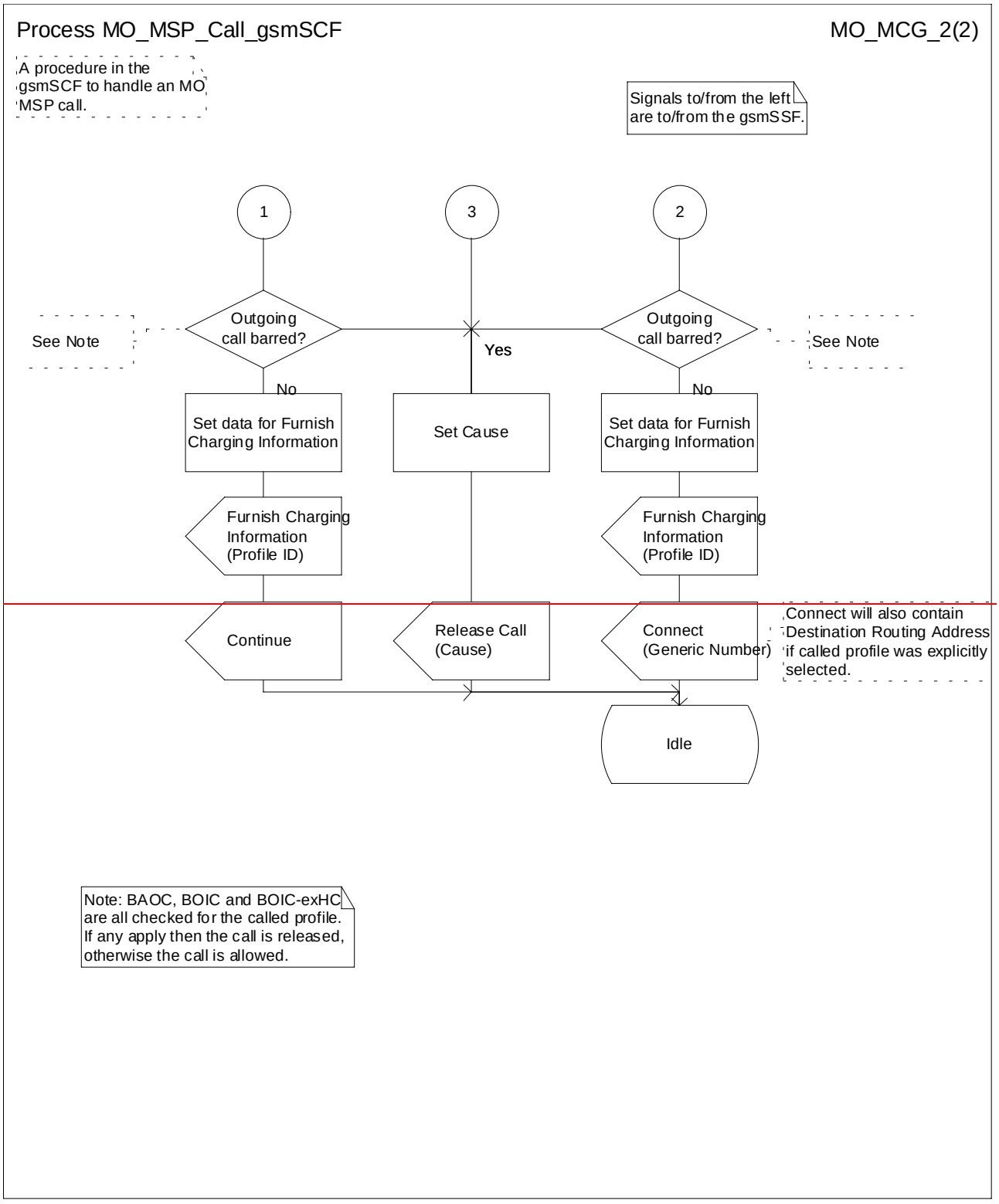
Sets the correct parameters for the calling profile. See figure 6.

7.5.1.3 Procedure Send_FCI_gsmSCF

Sends a Furnish Charging Information message to the gsmSSF. See figure 7.



~~Figure 5: Process MO_MSP_Call_gsmSCF (sheet 1)~~



~~Figure 6: Process MO_MSP_Call_gsmSCF (sheet 2)~~

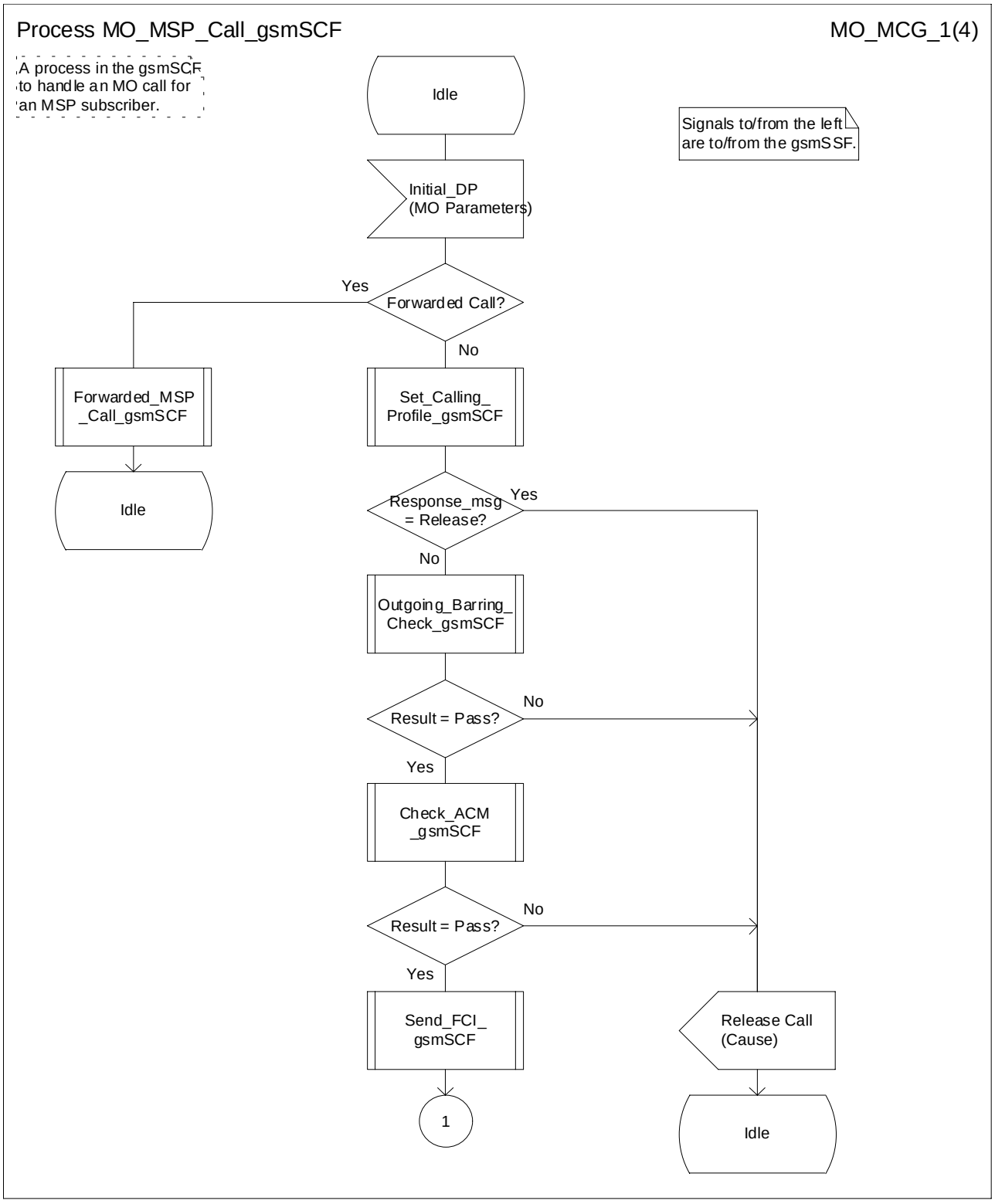


Figure 5a: Process MO_MSP_Call_gsmSCF (sheet 1 of 4)

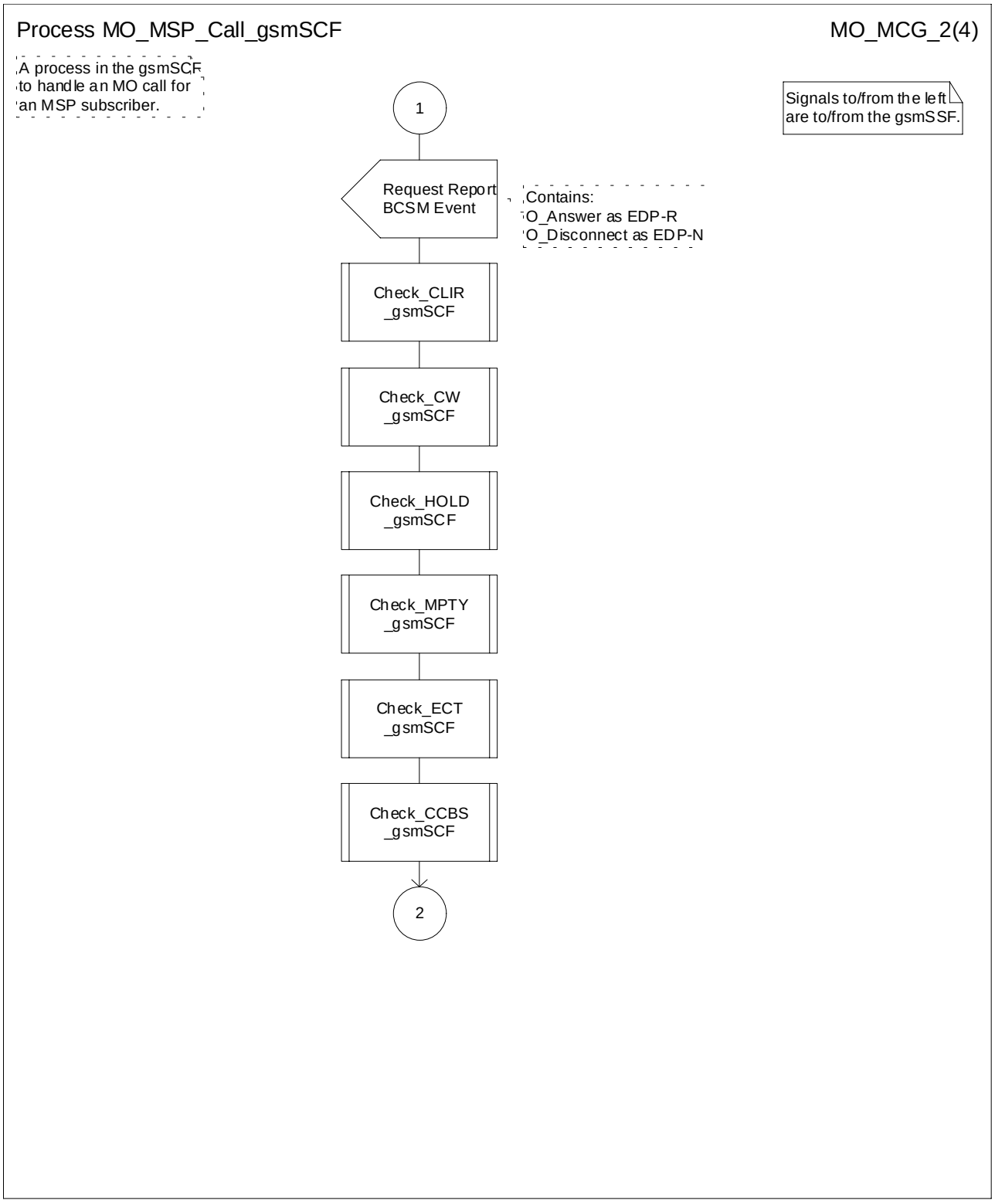


Figure 5b: Process MO_MSP_Call_gsmSCF (sheet 2 of 4)

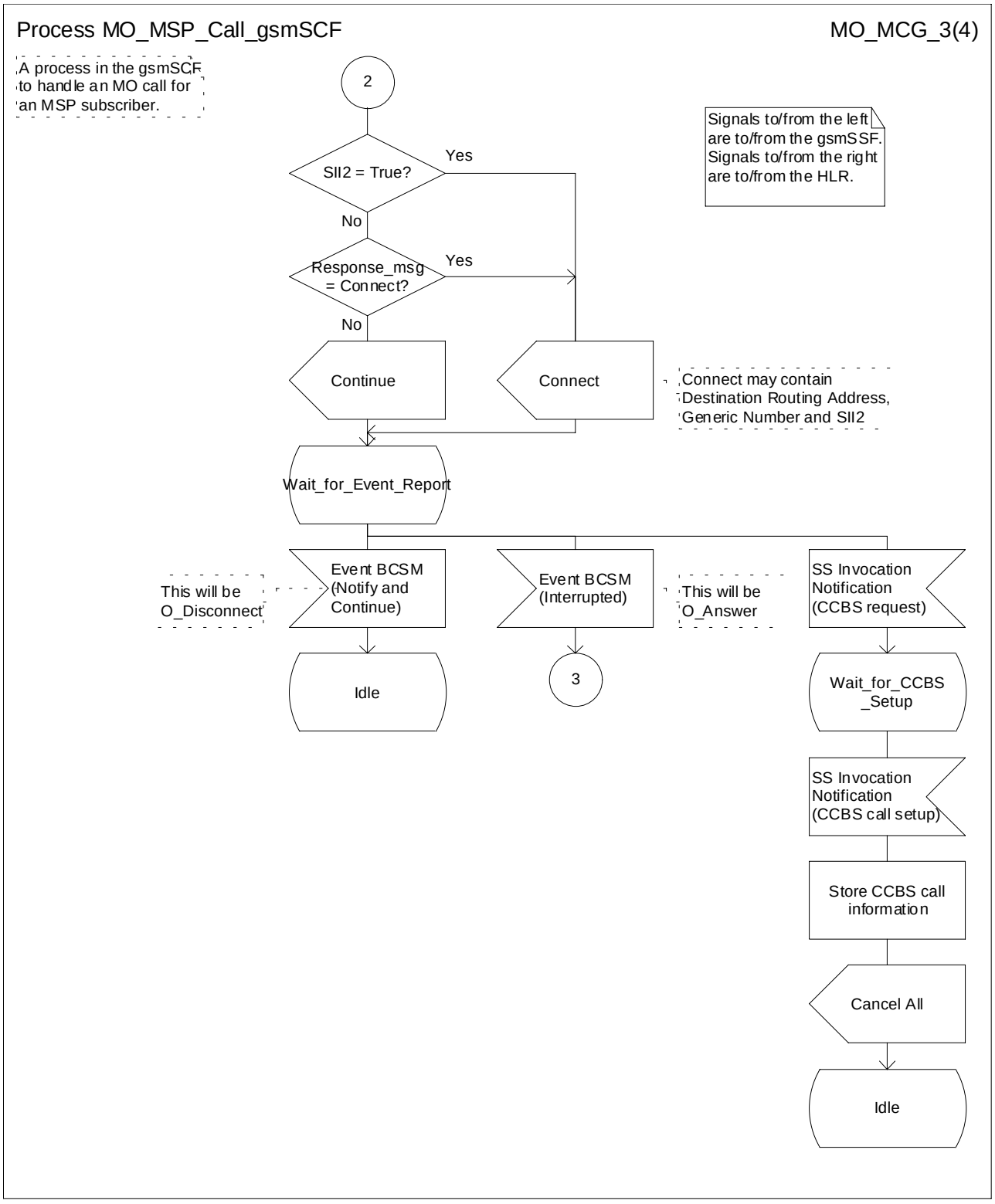


Figure 5c: Process MO_MSP_Call_gsmSCF (sheet 3 of 4)

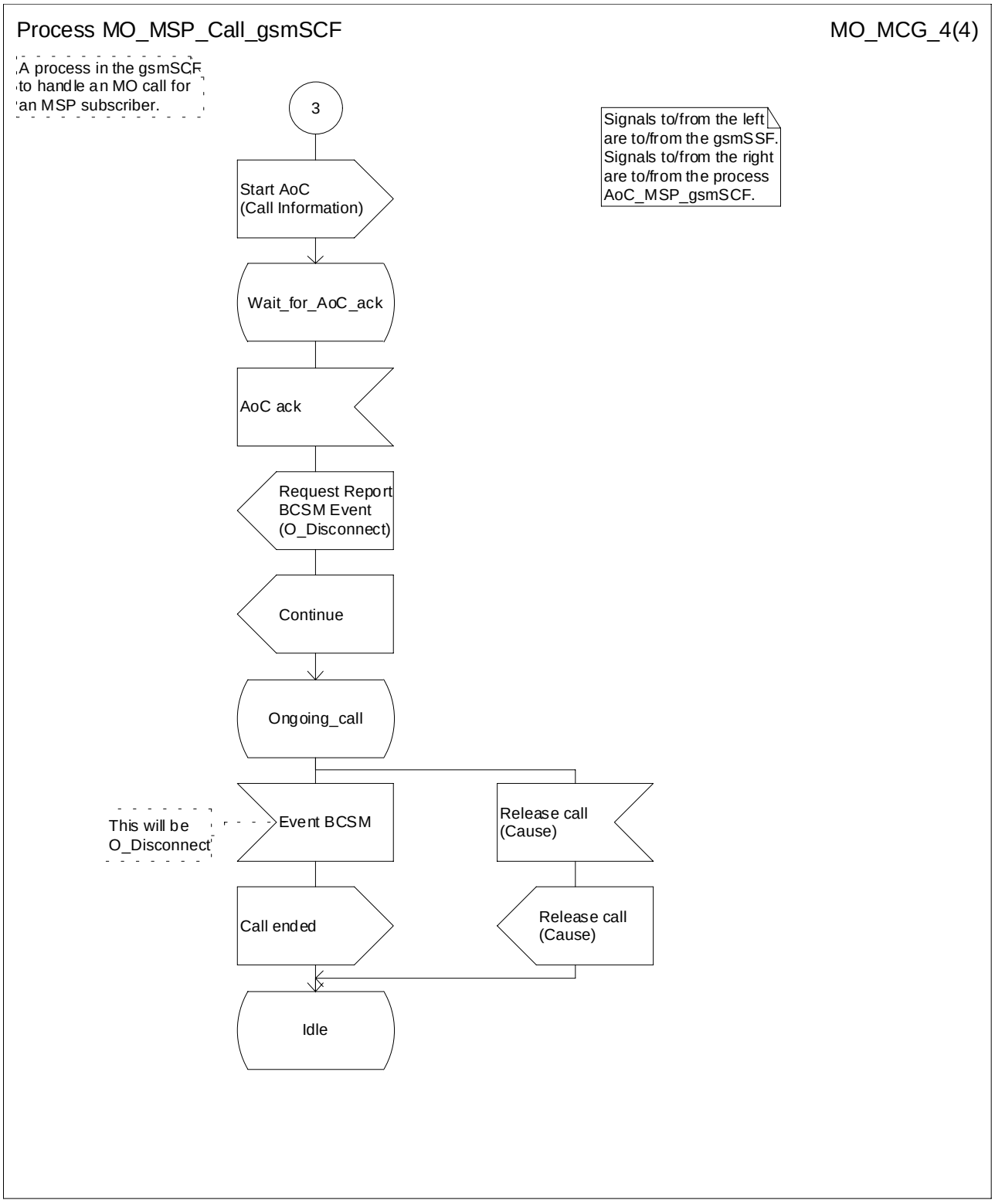


Figure 5d: Process MO_MSP_Call_gsmSCF (sheet 4 of 4)

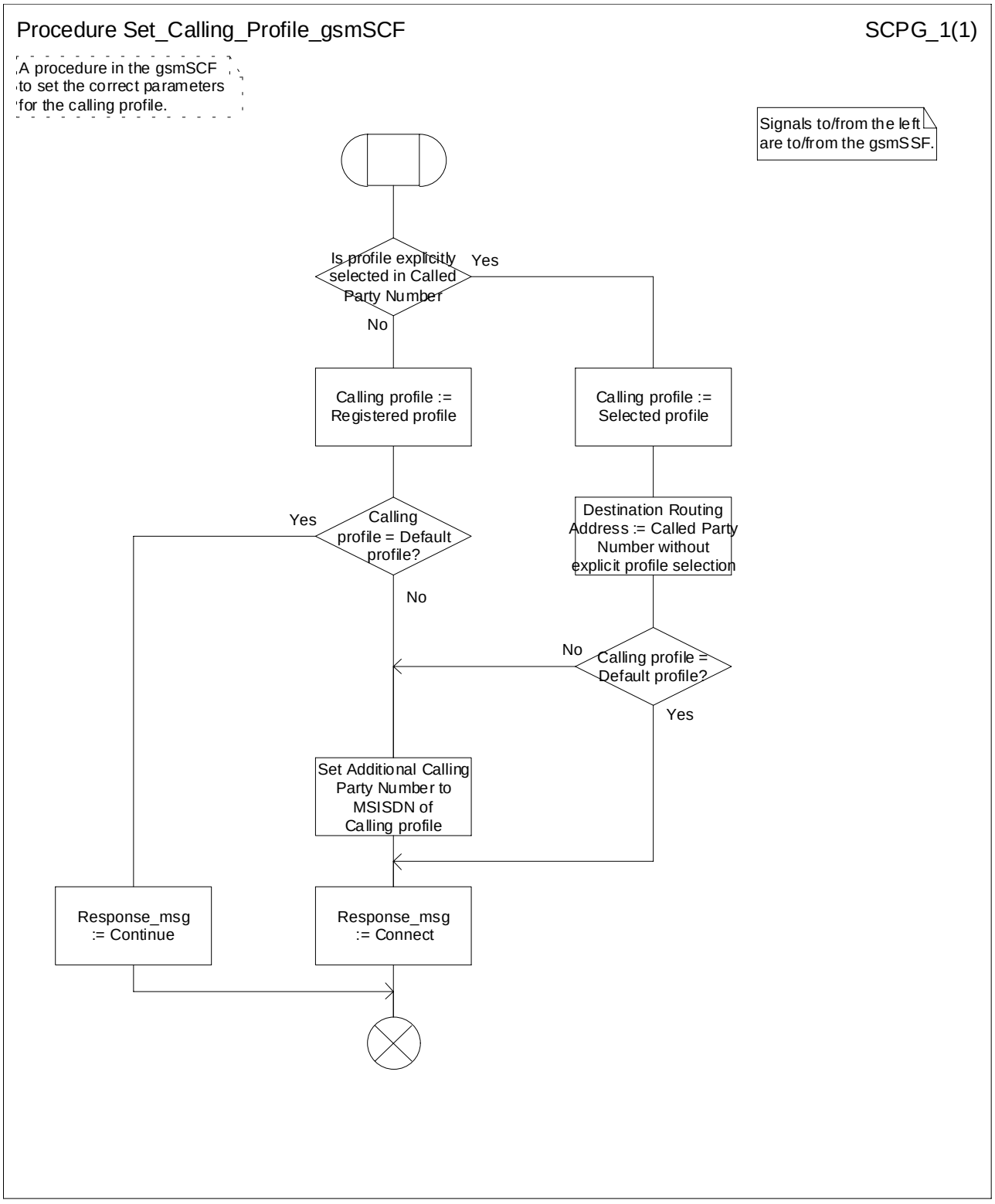


Figure 6: Procedure Set_Calling_Profile_gsmSCF

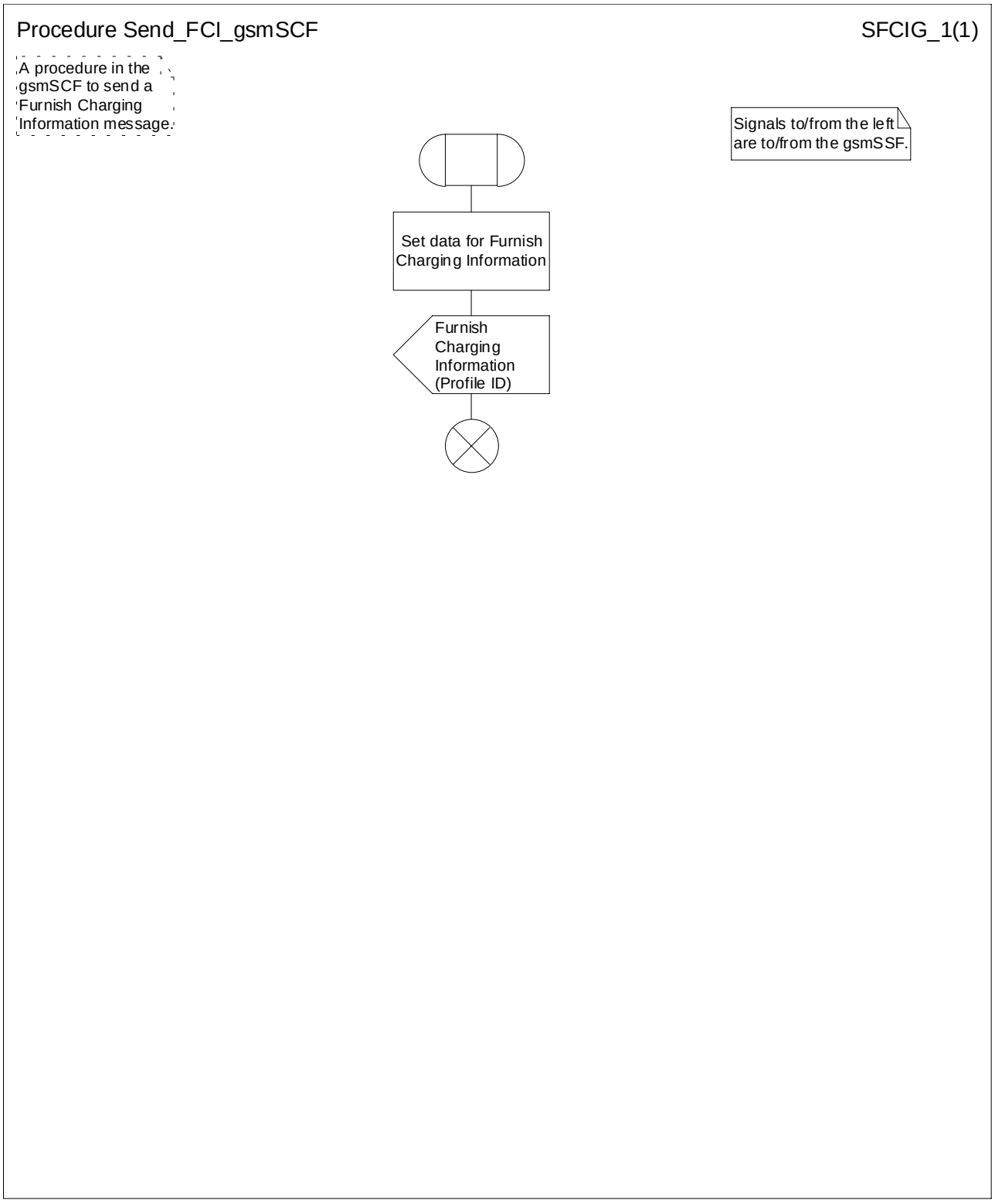
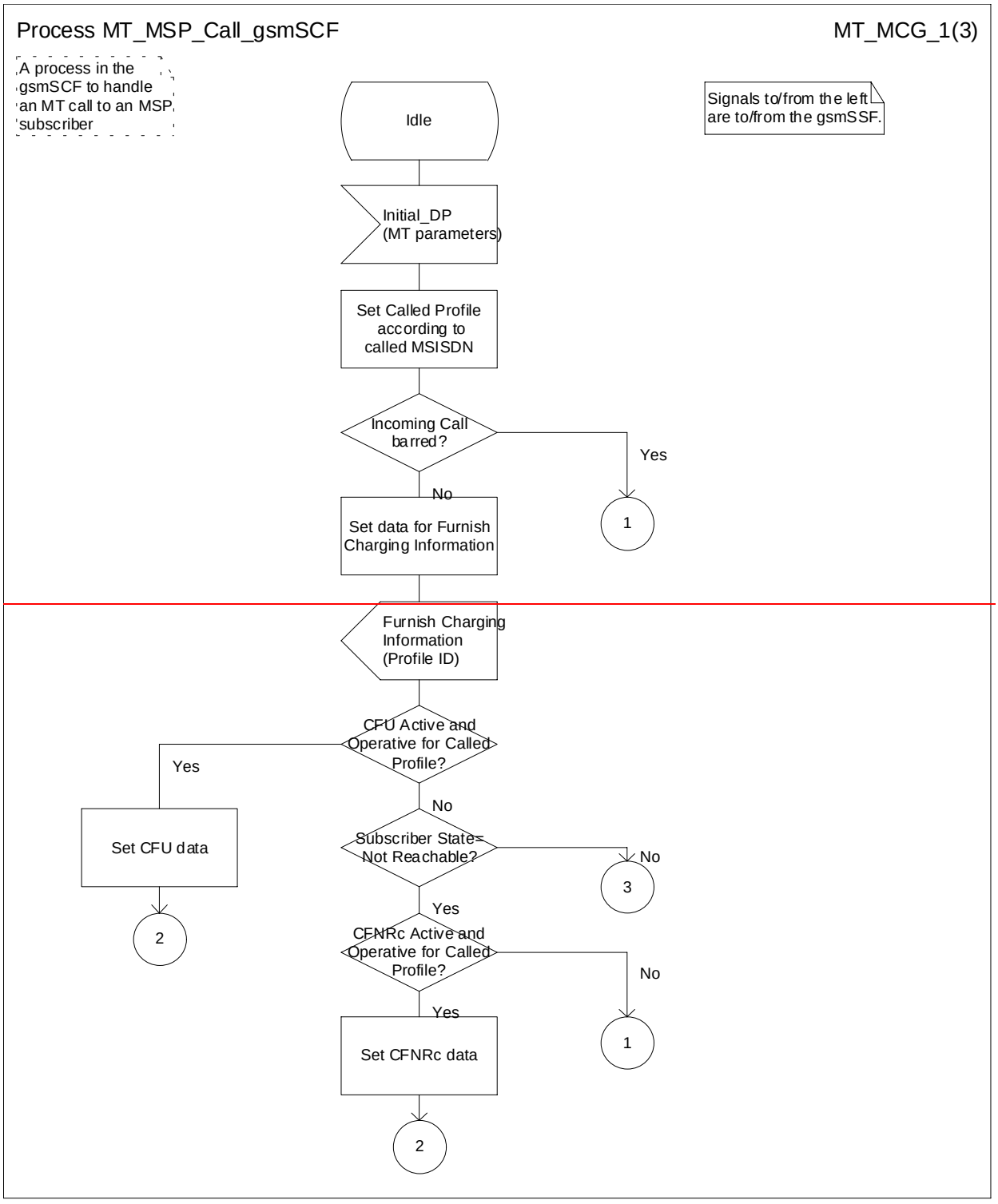
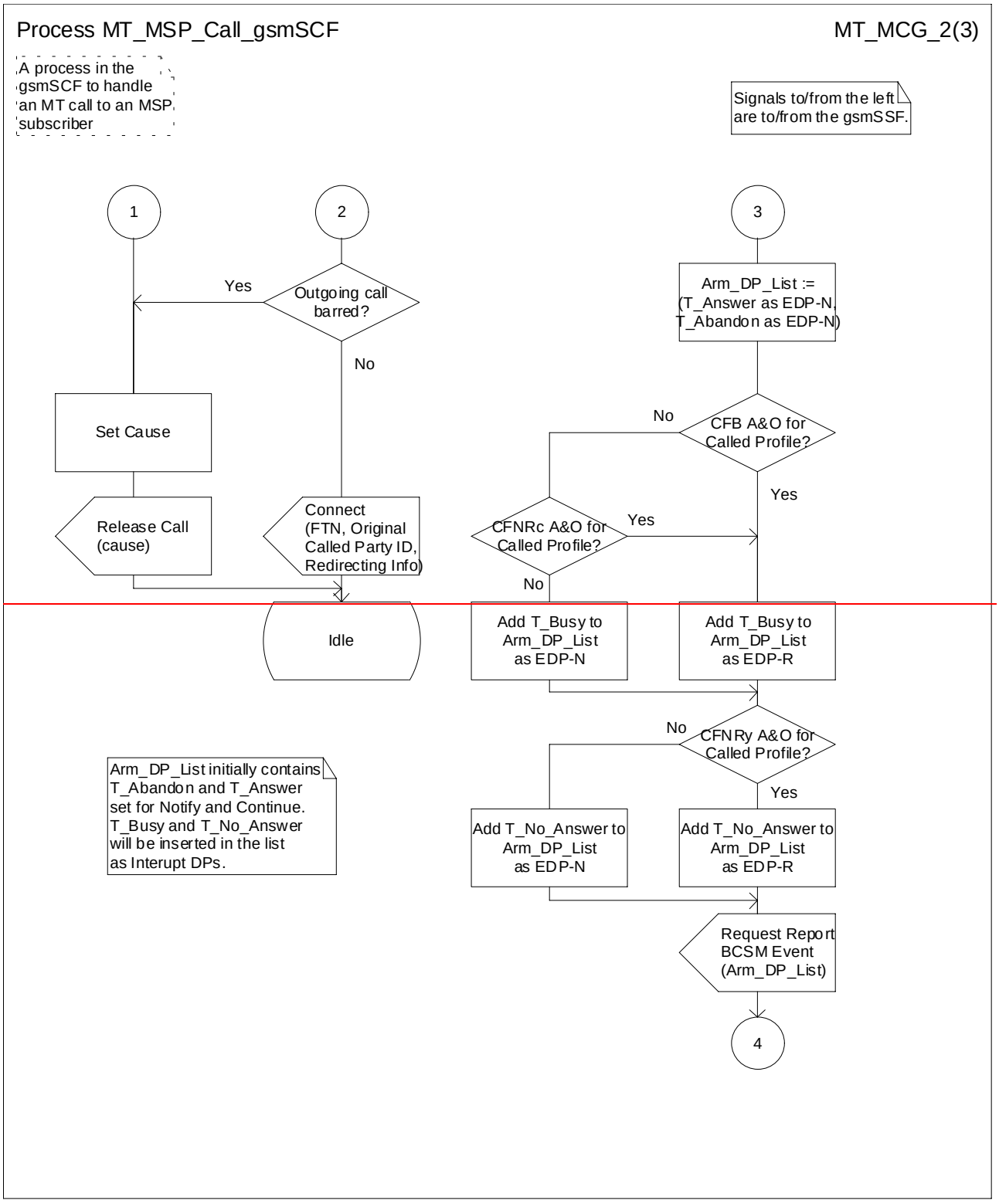


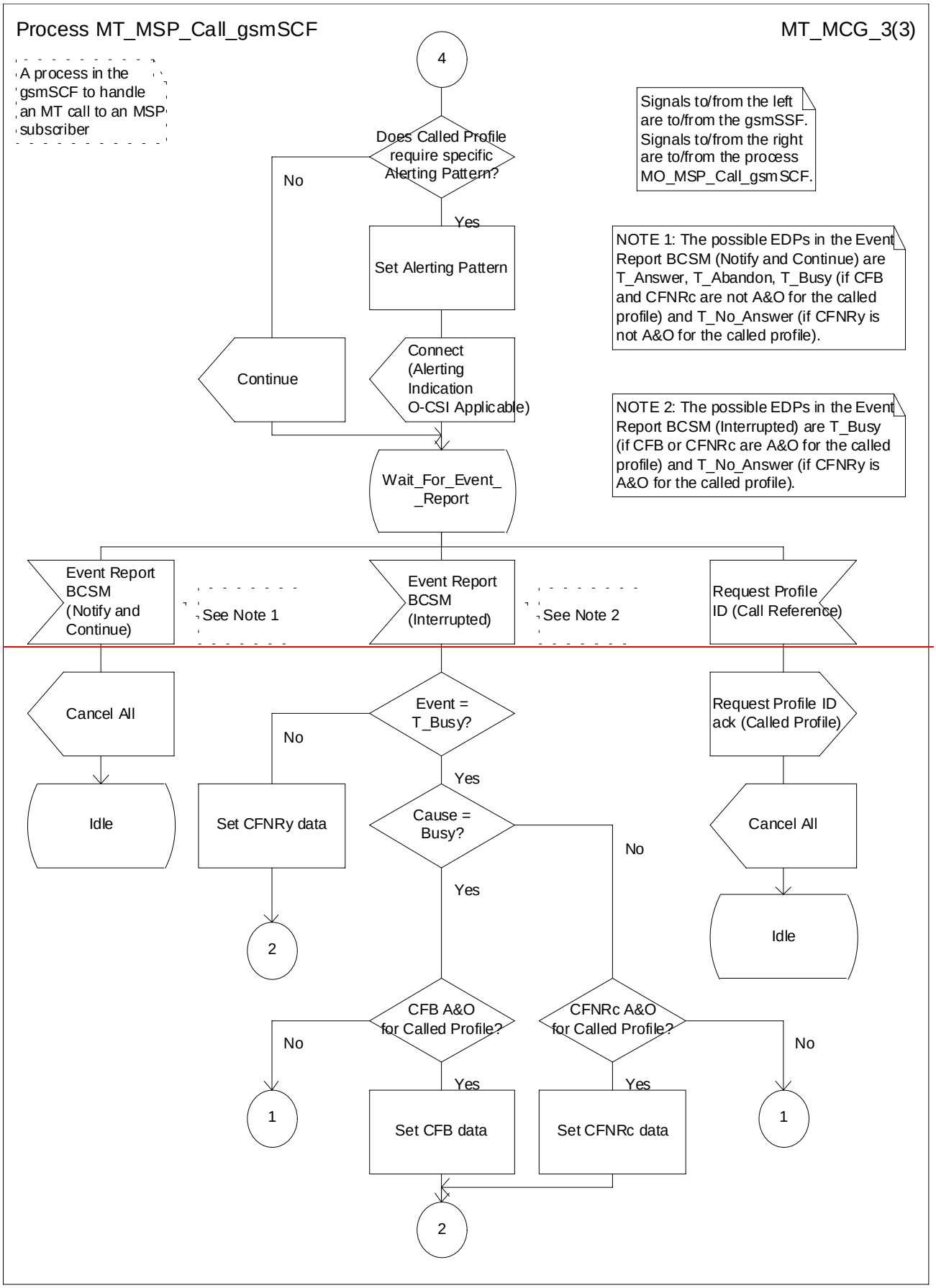
Figure 7: Procedure Send_FCI_gsmSCF



~~Figure 7: Process MT_MSP_Call_gsmSCF (sheet 1)~~



~~Figure 8: Process MT_MSP_Call_gsmSCF (sheet 2)~~



~~Figure 9: Process MT_MSP_Call_gsmSCF (sheet 3)~~

7.5.2 ~~Information flows~~MT call handling in the gsmSCF

7.5.2.1 Process MT_MSP_Call_gsmSCF

Handles an MT call for an MSP subscriber. See figure 8.

~~The information flow for a successful MO call by an MSP subscriber is shown in figure 10.~~

~~The information flow for a successful MT call to an MSP subscriber is shown in figure 11.~~

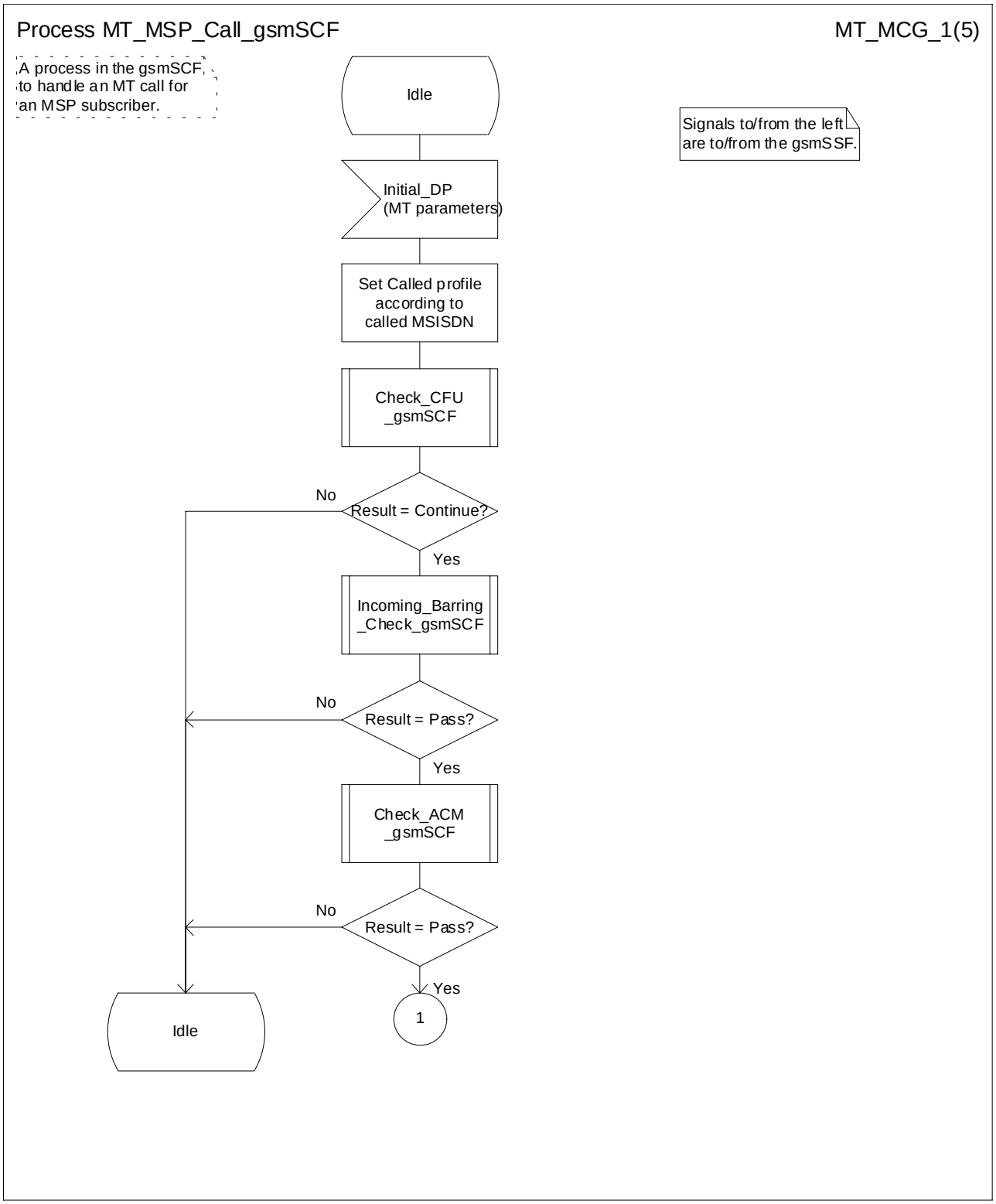


Figure 8a: Process MT_MSP_Call_gsmSCF (sheet 1 of 5)

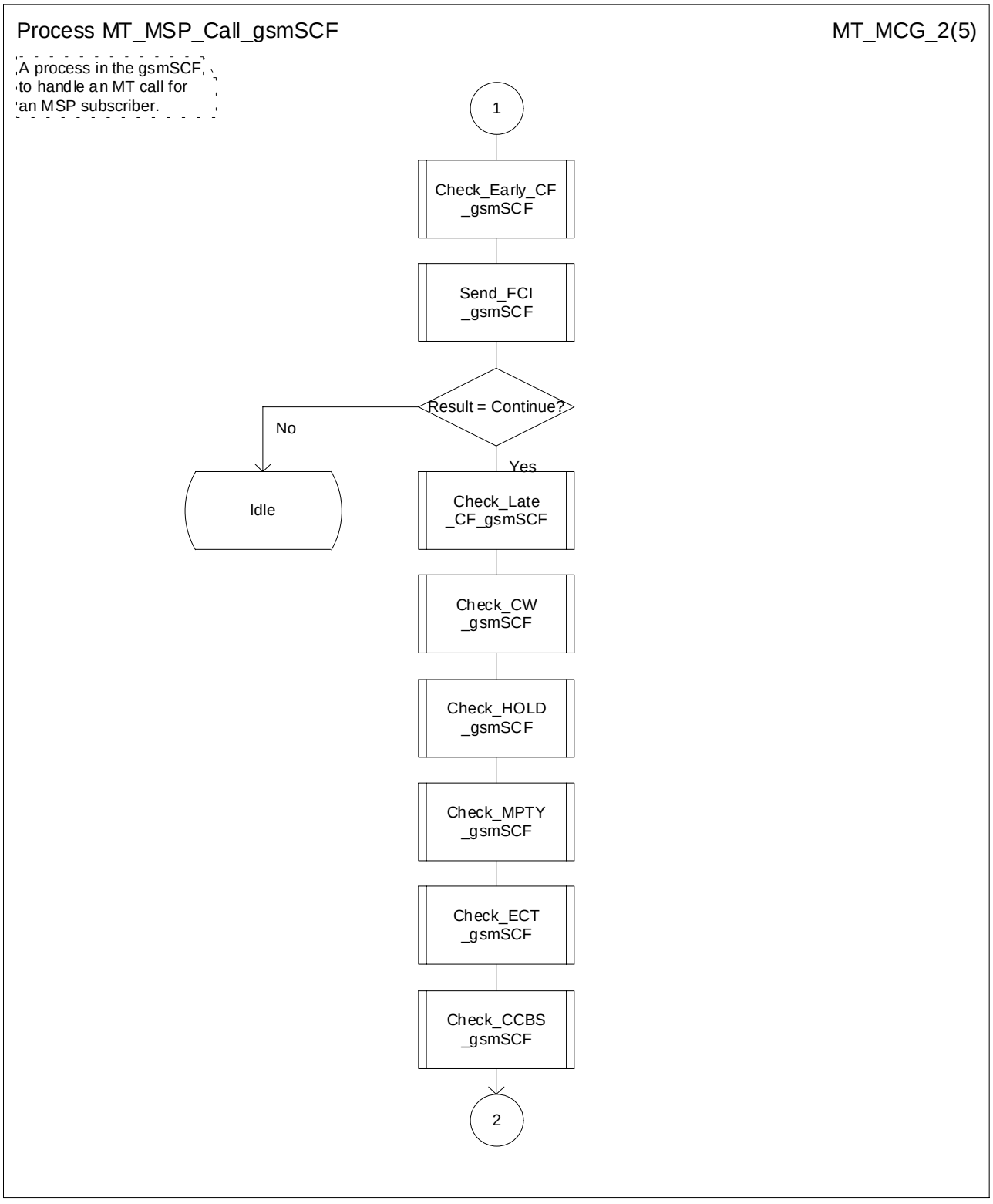


Figure 8b: Process MT_MSP_Call_gsmSCF (sheet 2 of 5)

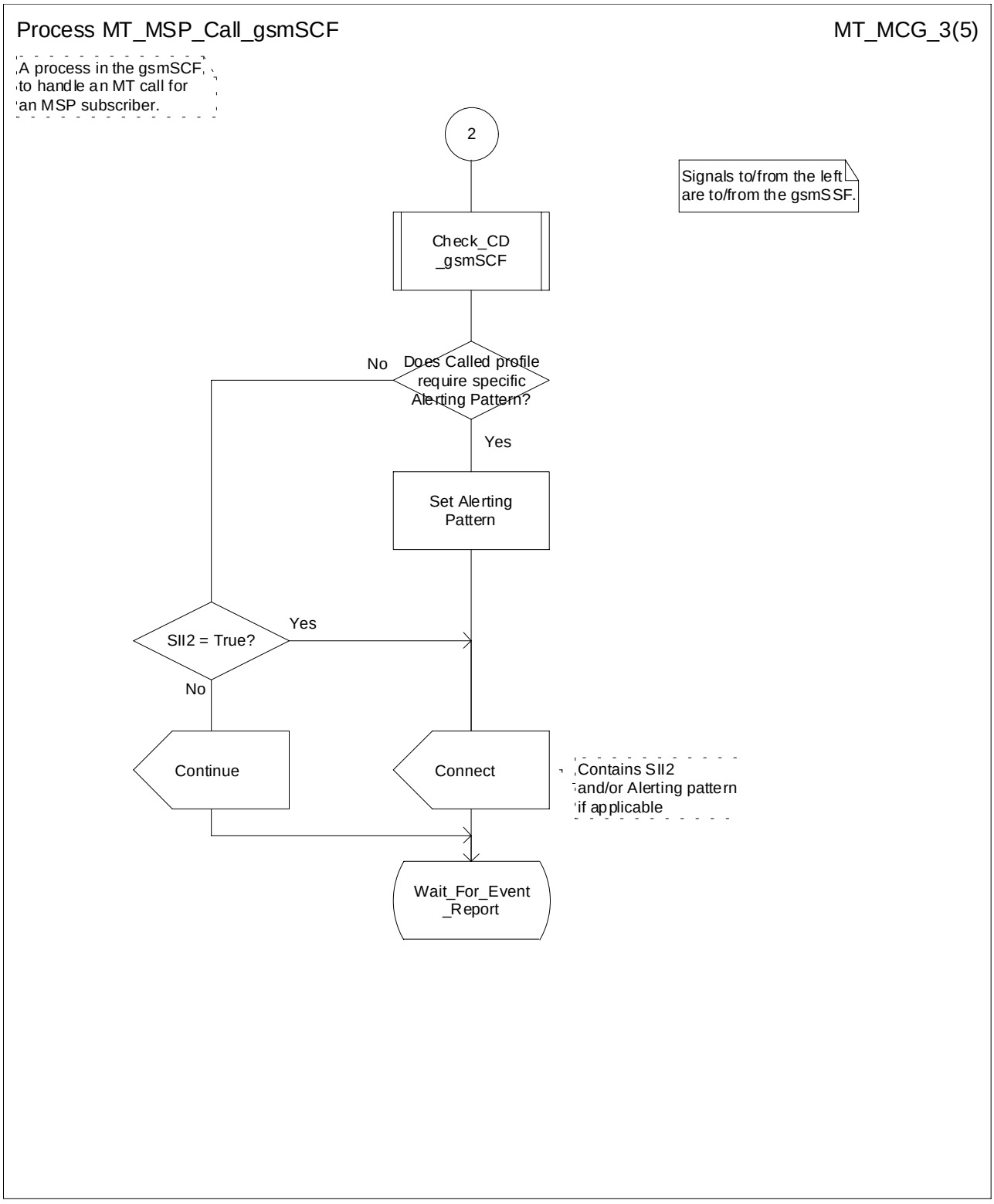


Figure 8c: Process MT_MSP_Call_gsmSCF (sheet 3 of 5)

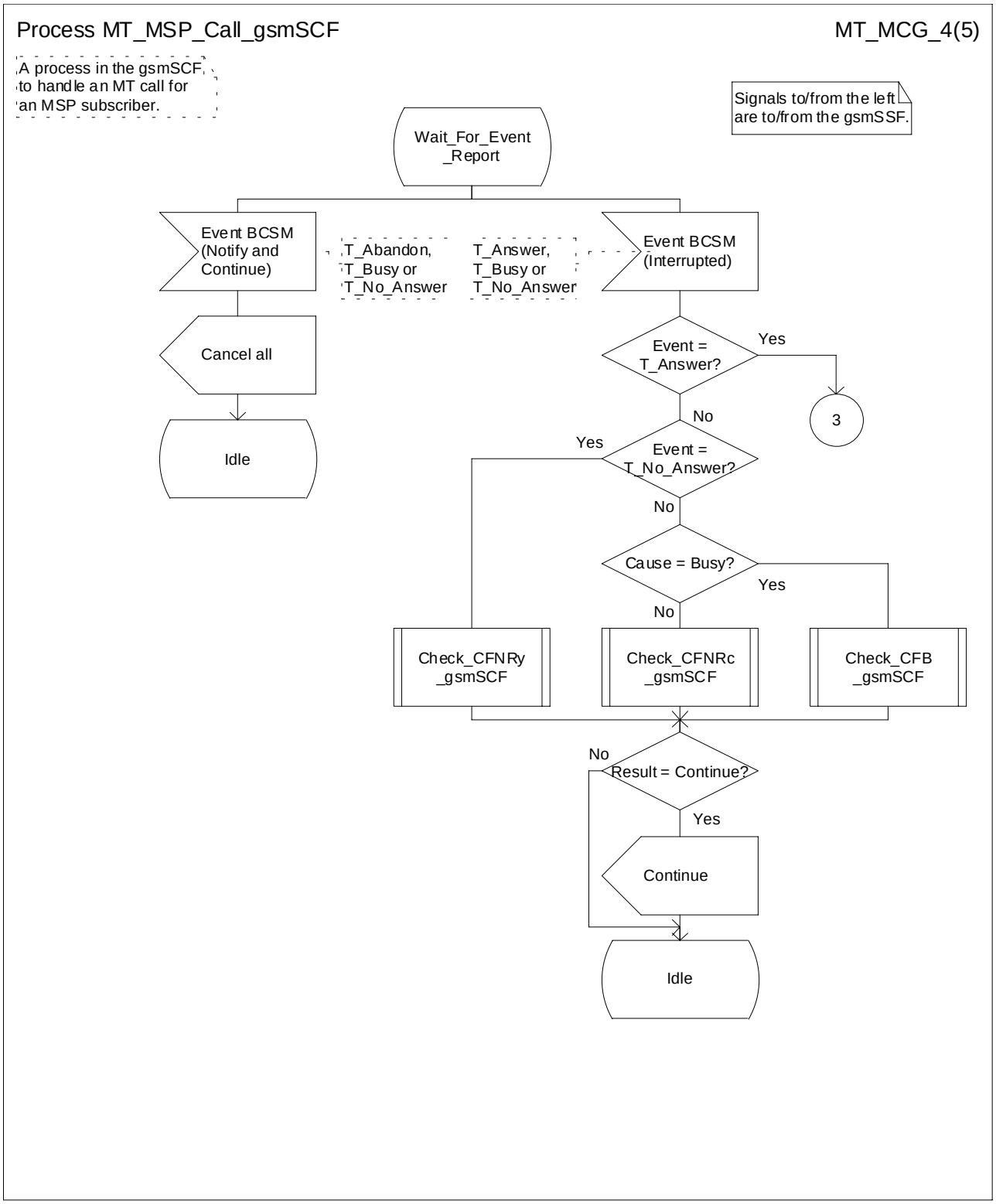


Figure 8d: Process MT_MSP_Call_gsmSCF (sheet 4 of 5)

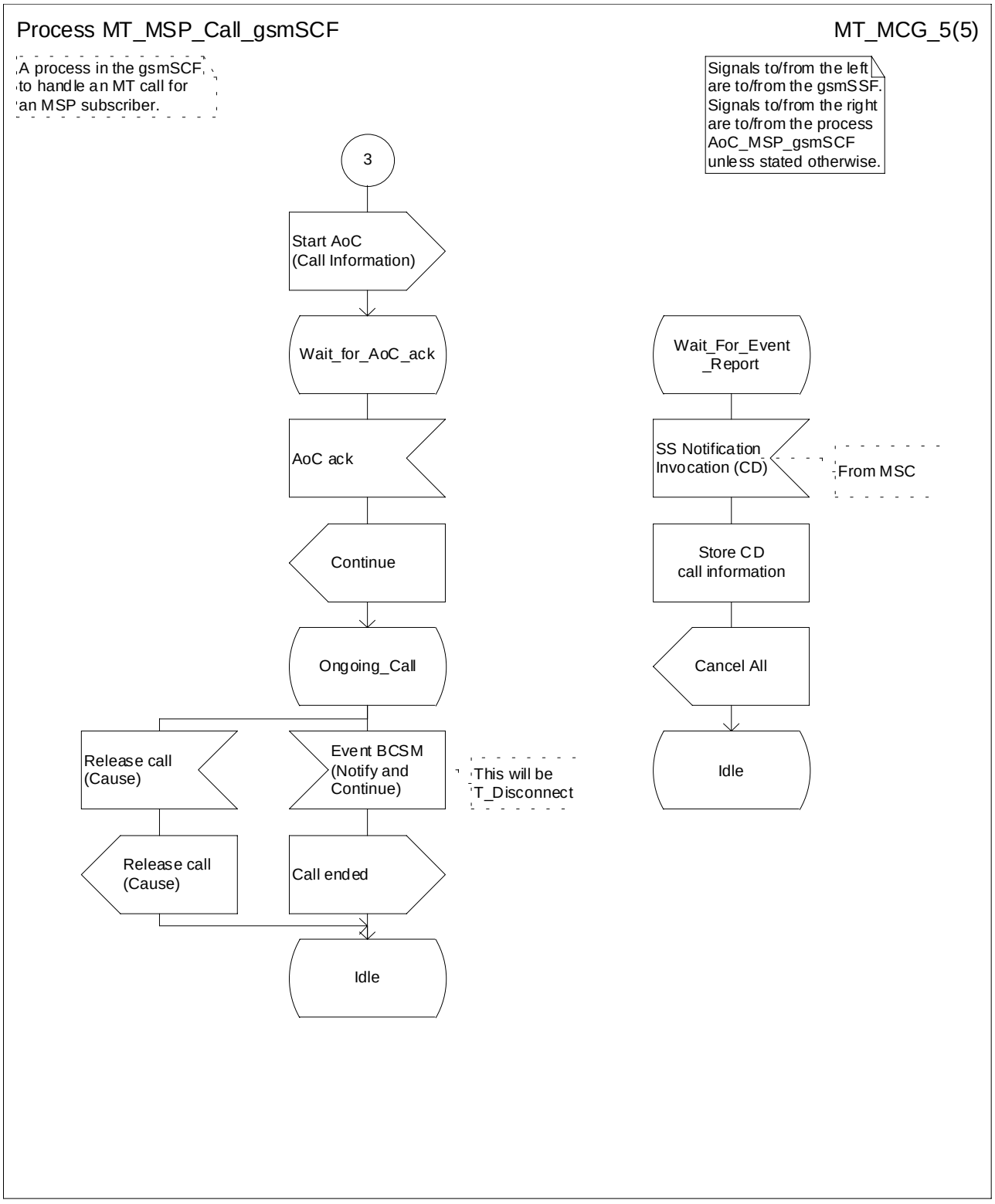


Figure 8e: Process MT_MSP_Call_gsmSCF (sheet 5 of 5)

7.5.3 SS handling in the gsmSCF

7.5.3.1 Procedure Check_CLIR_gsmSCF

Checks whether the CLI Presentation Indiactor shall be set to Presentation Restricted. See figure 9.

7.5.3.2 Procedure Forwarded_MSP_Call_gsmSCF

Sets the parameters for a forwarded or deflected call. See figure 10.

7.5.3.3 Procedure Check_CFU_gsmSCF

Applies CFU to the MT Call if Active and Operative for the Called profile. See figure 11.

7.5.3.4 Procedure Check_Early_CF_gsmSCF

Checks whether any early Call Forwarding apply to the Called profile. See figure 12

7.5.3.5 Procedure Check_Late_CF_gsmSCF

Arms the detection points required for the provisioned late Call Forwardings on the Called profile. See figure 13.

7.5.3.6 Procedure Check_CFNRy_gsmSCF

Applies CFNRy to the MT call if Active and Operative for the Called profile. See figure 14.

7.5.3.7 Procedure Check_CFB_gsmSCF

Applies CFB to the MT call if Active and Operative for the Called profile. See figure 15.

7.5.3.8 Procedure Check_CFNRc_gsmSCF

Applies CFNRc to the MT call if Active and Operative for the Called profile. See figure 16.

7.5.3.9 Procedure Check_CW_gsmSCF

Checks whether CW is allowed during the current call. See figure 17.

7.5.3.10 Procedure Check_HOLD_gsmSCF

Checks whether a HOLD request should be accepted or rejected during the ongoing call. See figure 18.

7.5.3.11 Procedure Check_MPTY_gsmSCF

Checks whether an MPTY request should be accepted or rejected during the ongoing call. See figure 19.

7.5.3.12 Procedure Check_ACM_gsmSCF

Ensures that ACMmax is not exceeded for the profile in use. See figure 20.

7.5.3.13 Process AoC_MSP_gsmSCF

Applies AoC per profile. See figure 21.

7.5.3.14 Procedure AoCI_gsmSCF

Applies AoCI per profile. See figure 22.

7.5.3.15 Procedure AoCC_gsmSCF

Applies AoCC per profile. See figure 23.

7.5.3.16 Procedure Outgoing_Barring_Check_gsmSCF

Checks the outgoing call barrings for an MSP subscriber. See figure 24.

7.5.3.17 Procedure Incoming_Barring_Check_gsmSCF

Checks the incoming barrings for the Called profile. See figure 25.

7.5.3.18 Procedure Check_ECT_gsmSCF

Checks whether an ECT request should be accepted or rejected during the ongoing call. See figure 26.

7.5.3.19 Procedure Check_CCBS_gsmSCF

Checks whether a CCBS request can be planted by/against the MSP subscriber. See figure 27.

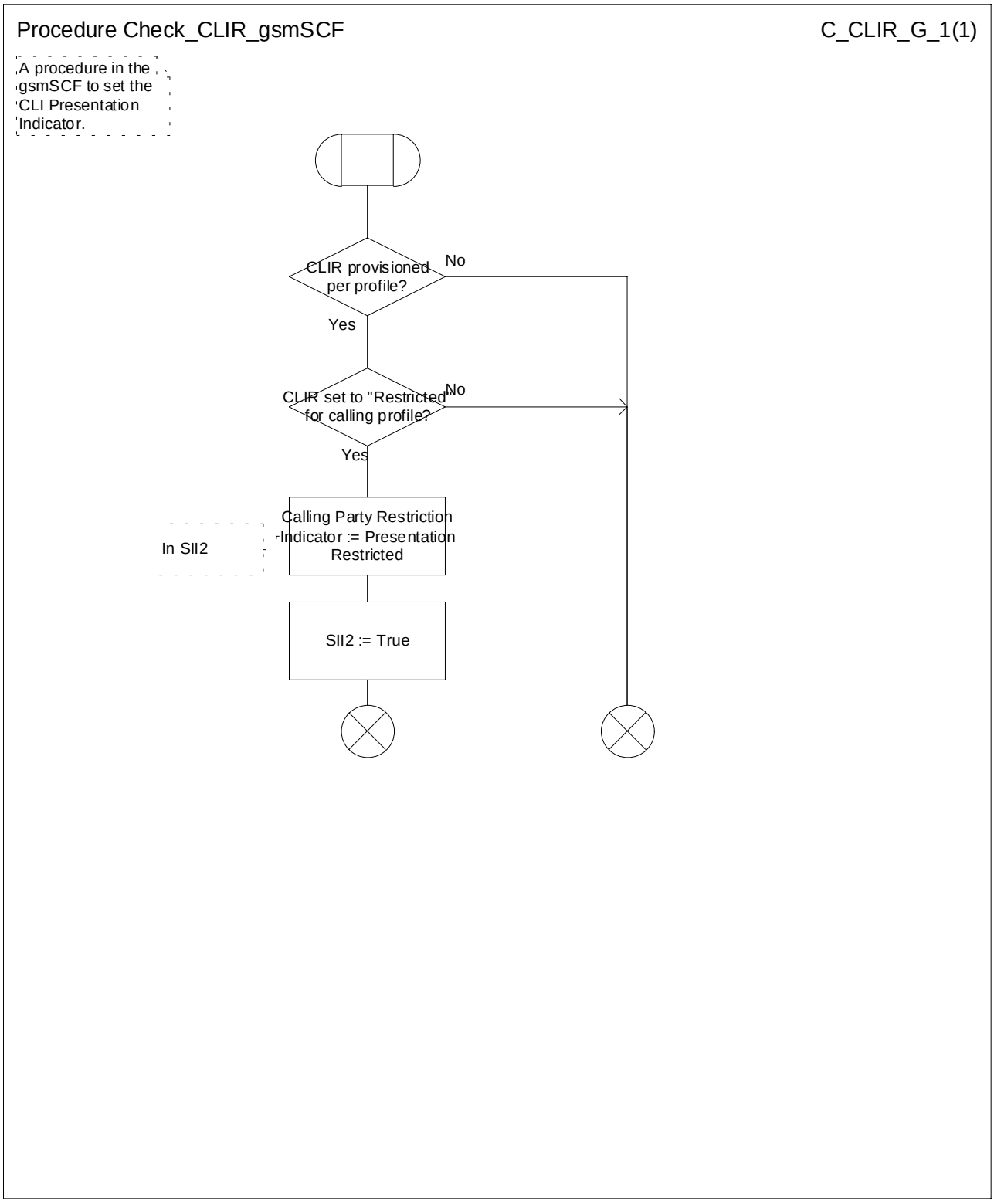


Figure 9: Procedure Check_CLIR_gsmSCF

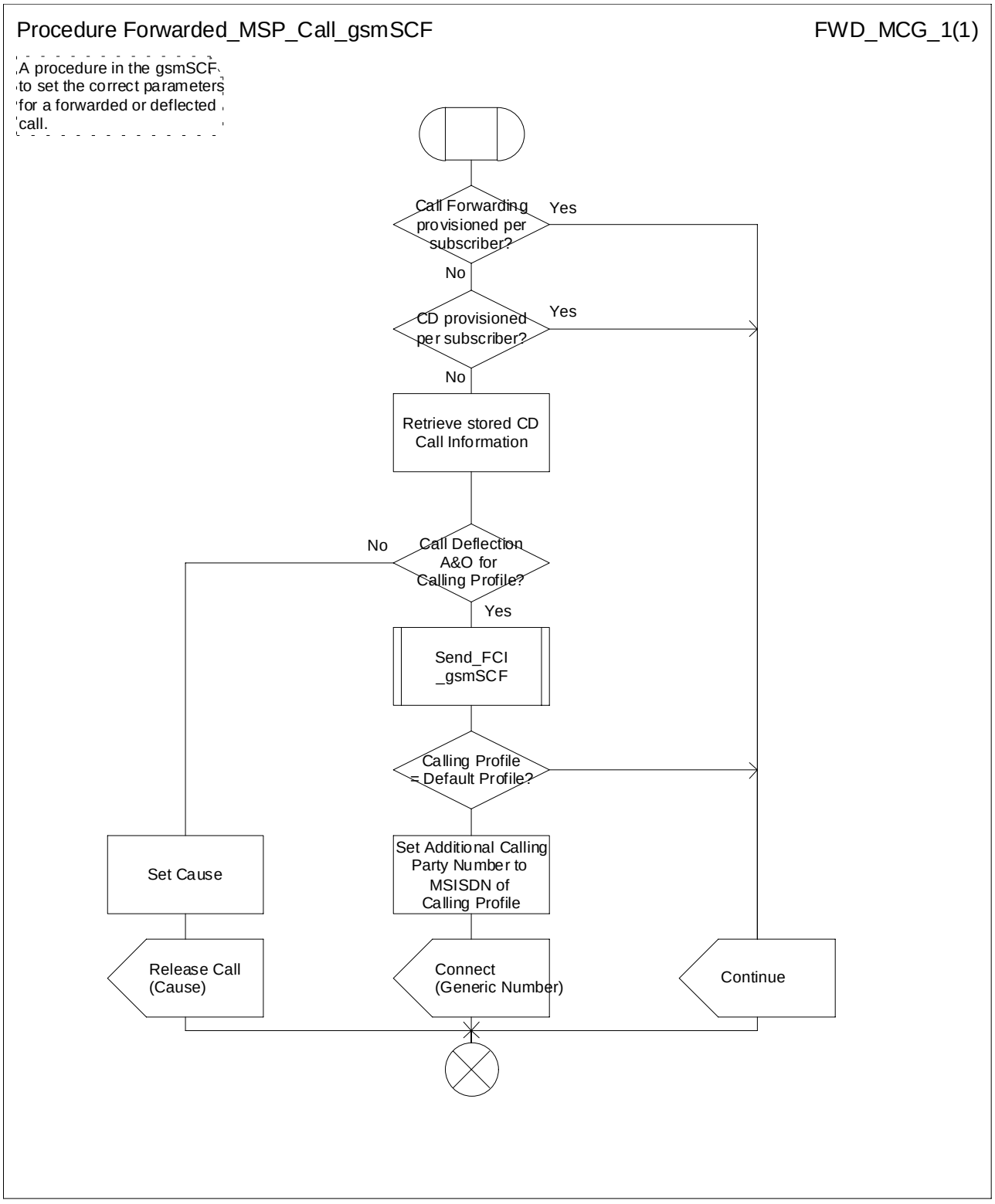


Figure 10: Procedure Forwarded_MSP_Call_gsmSCF

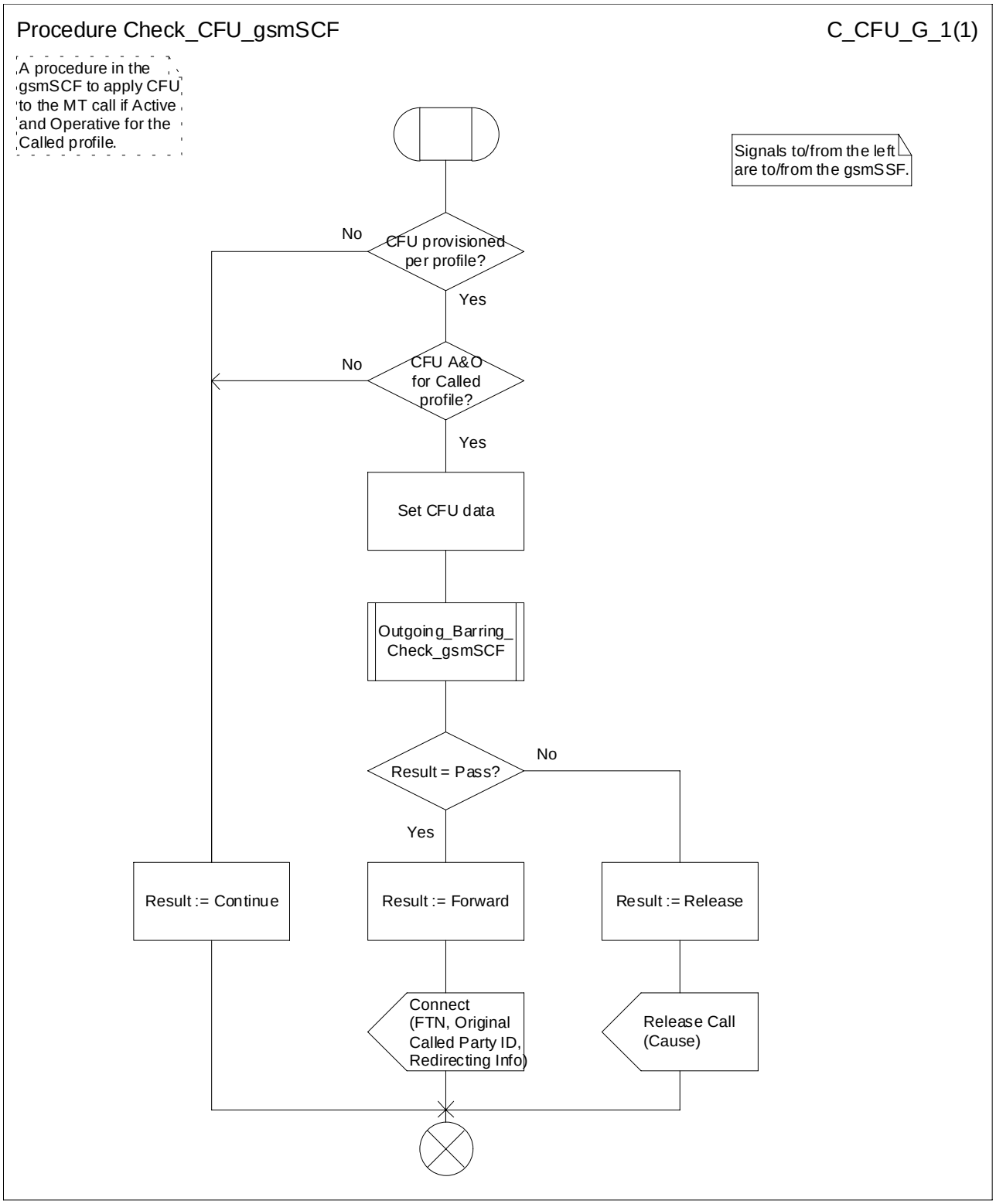


Figure 11: Procedure Check_CFU_gsmSCF

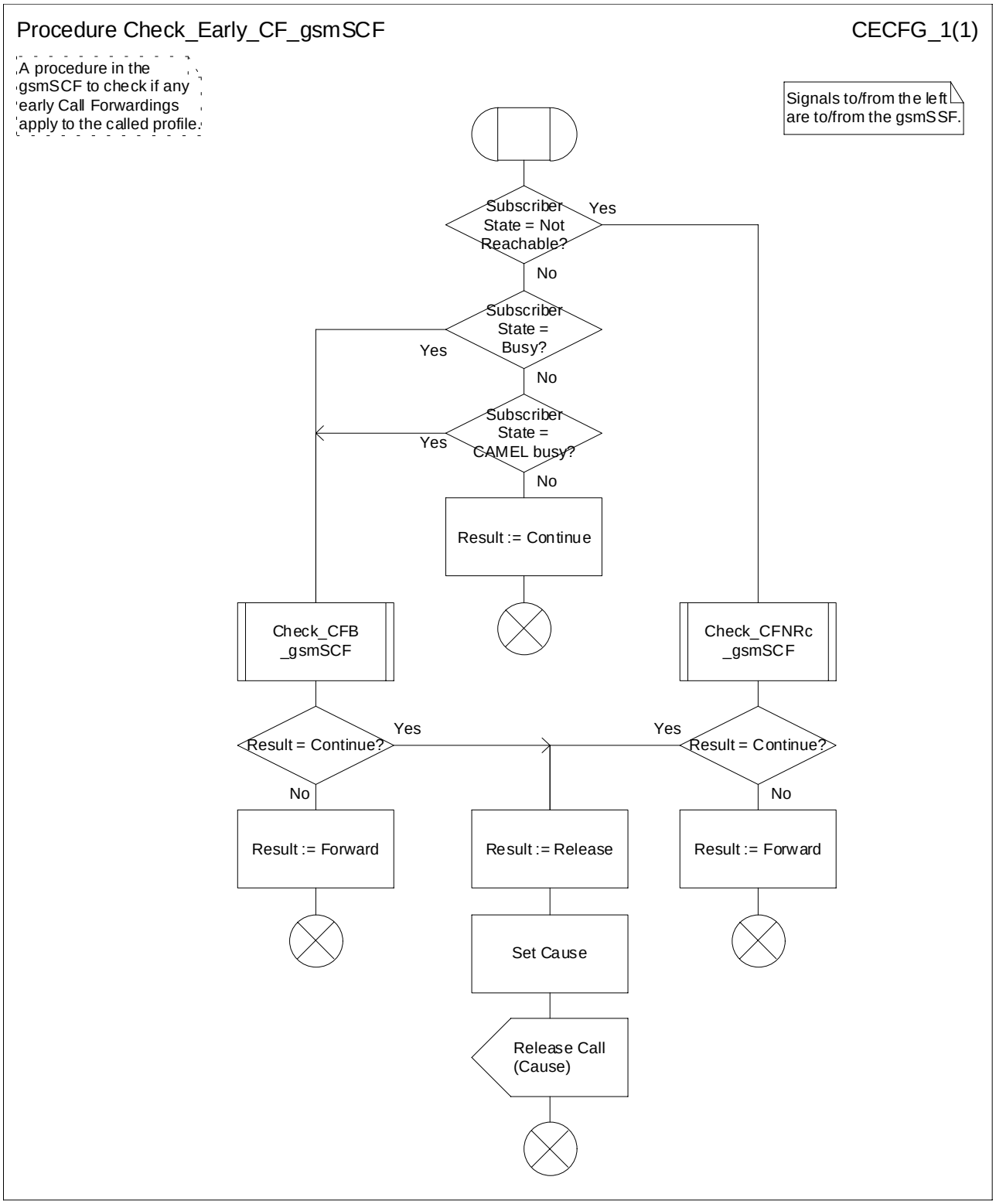


Figure 12: Procedure Check_Early_CF_gsmSCF

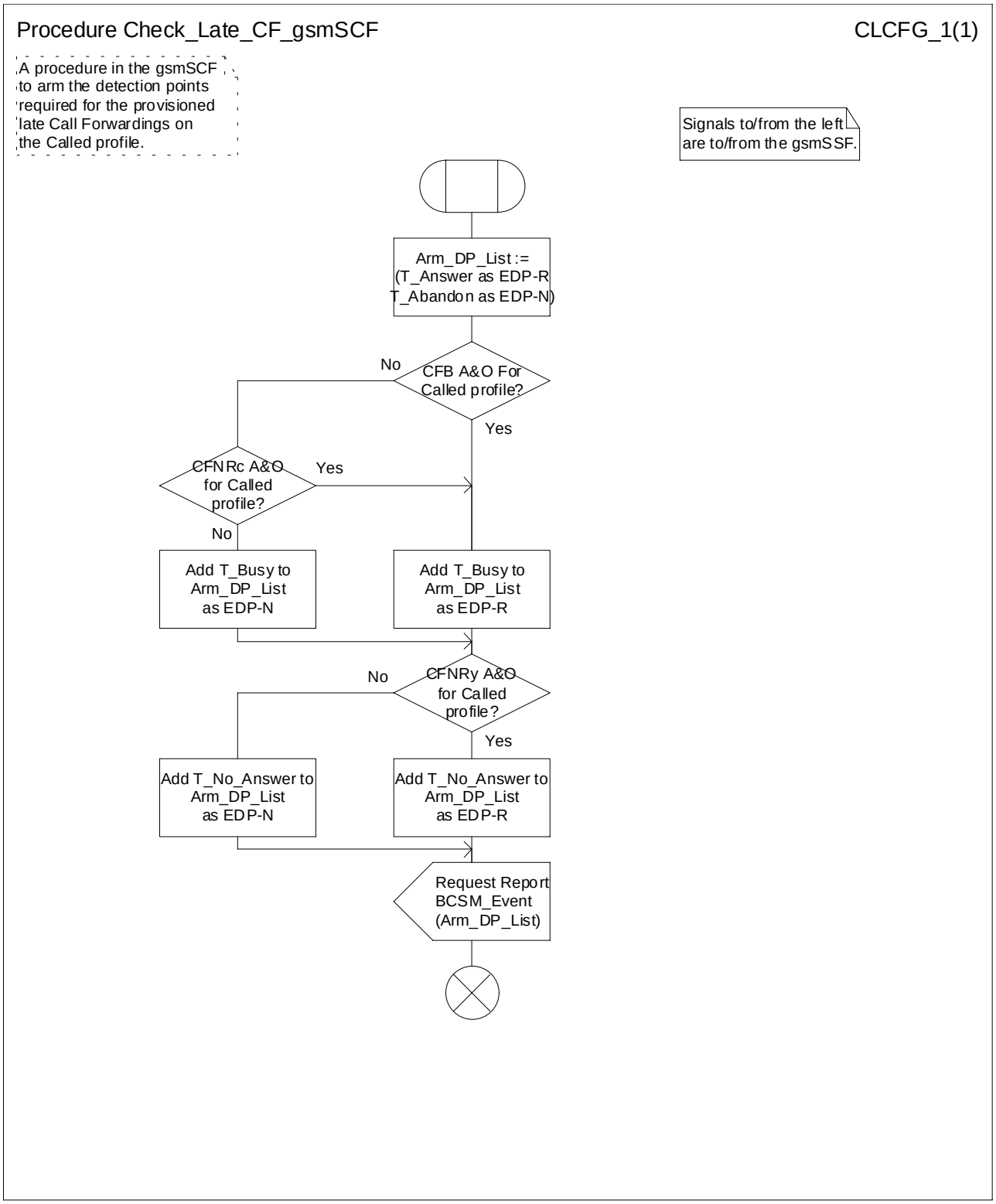


Figure 13: Procedure Check_Late_CF_gsmSCF

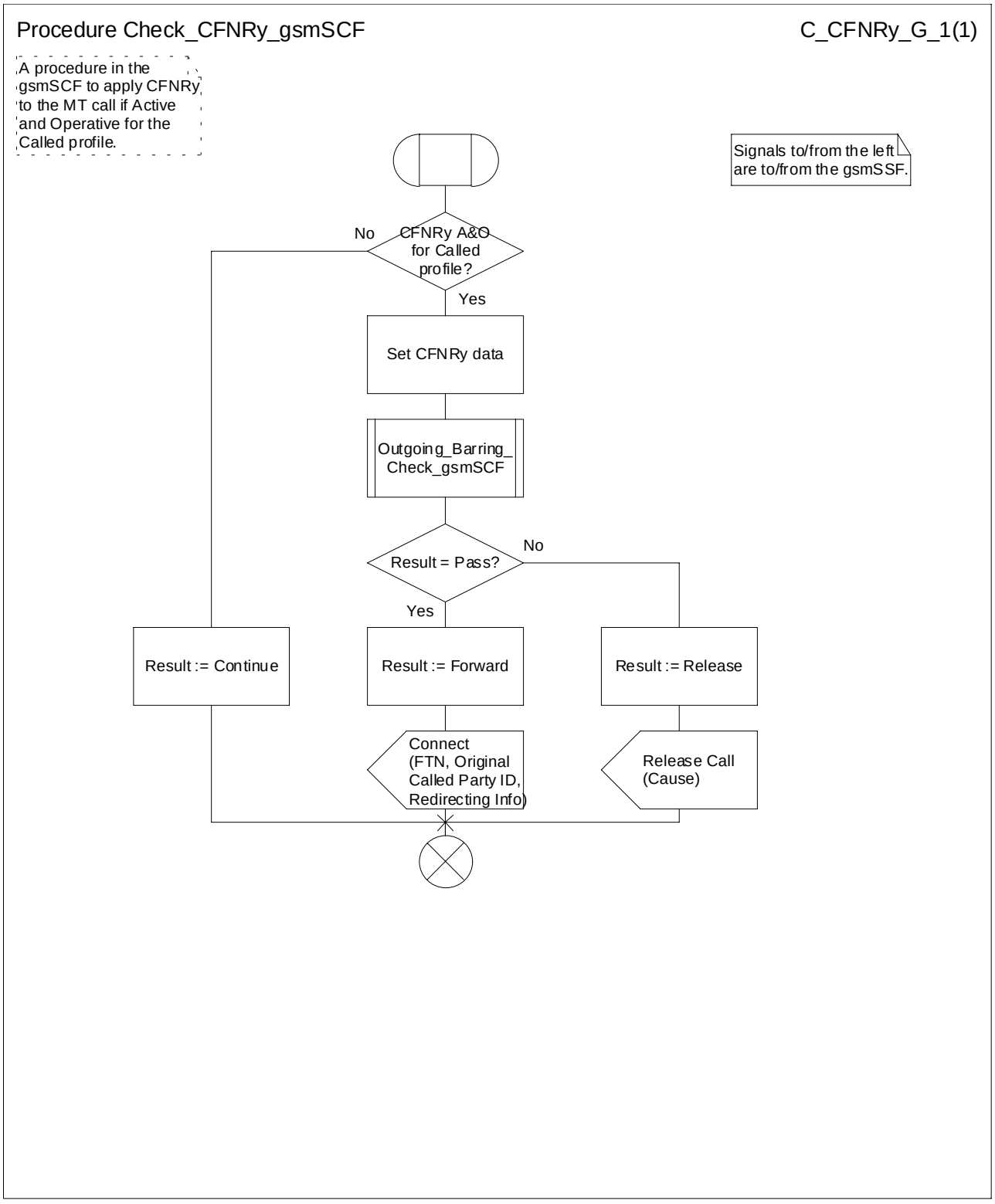


Figure 14: Procedure Check_CFNRy_gsmSCF

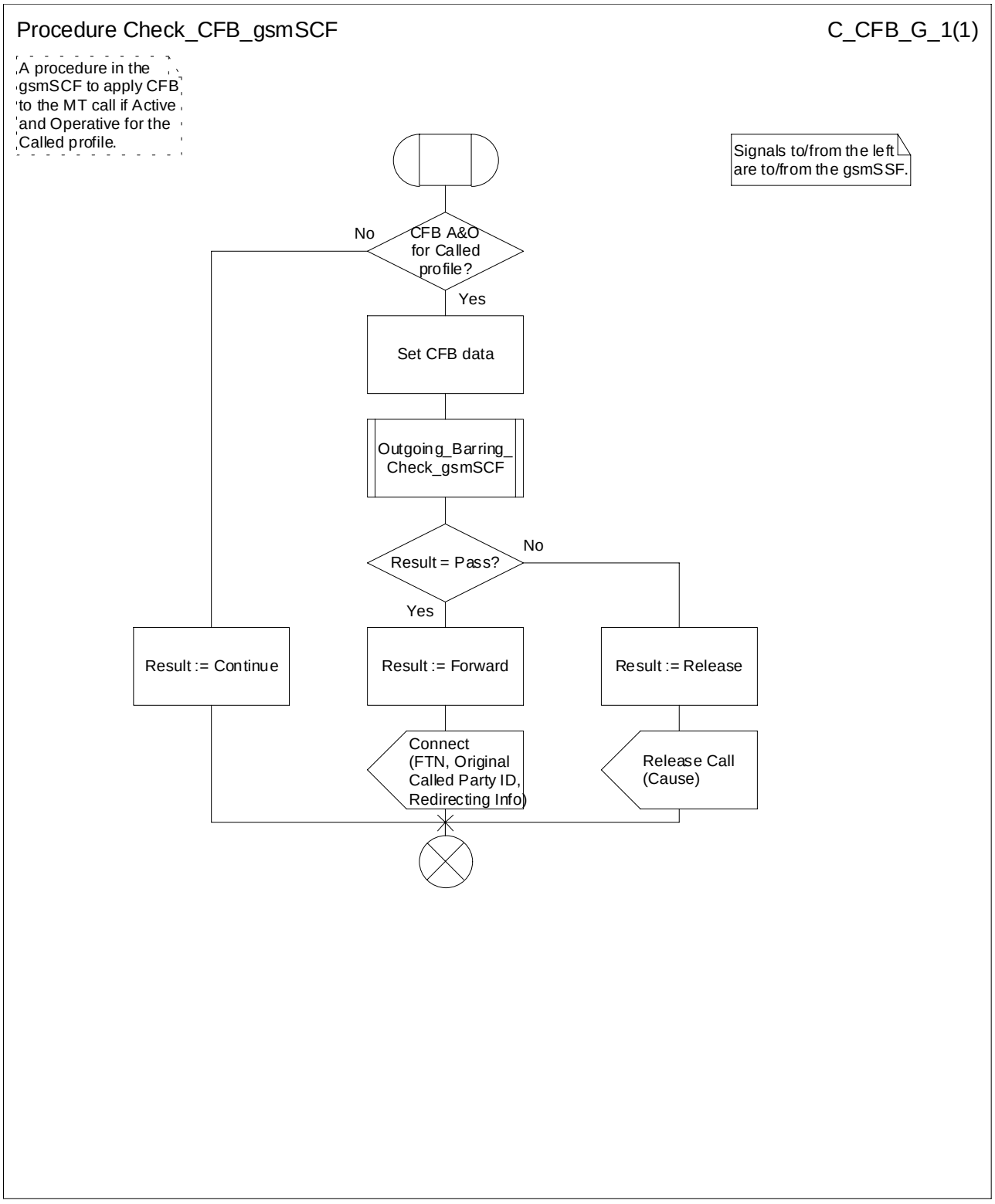


Figure 15: Procedure Check_CFB_gsmSCF

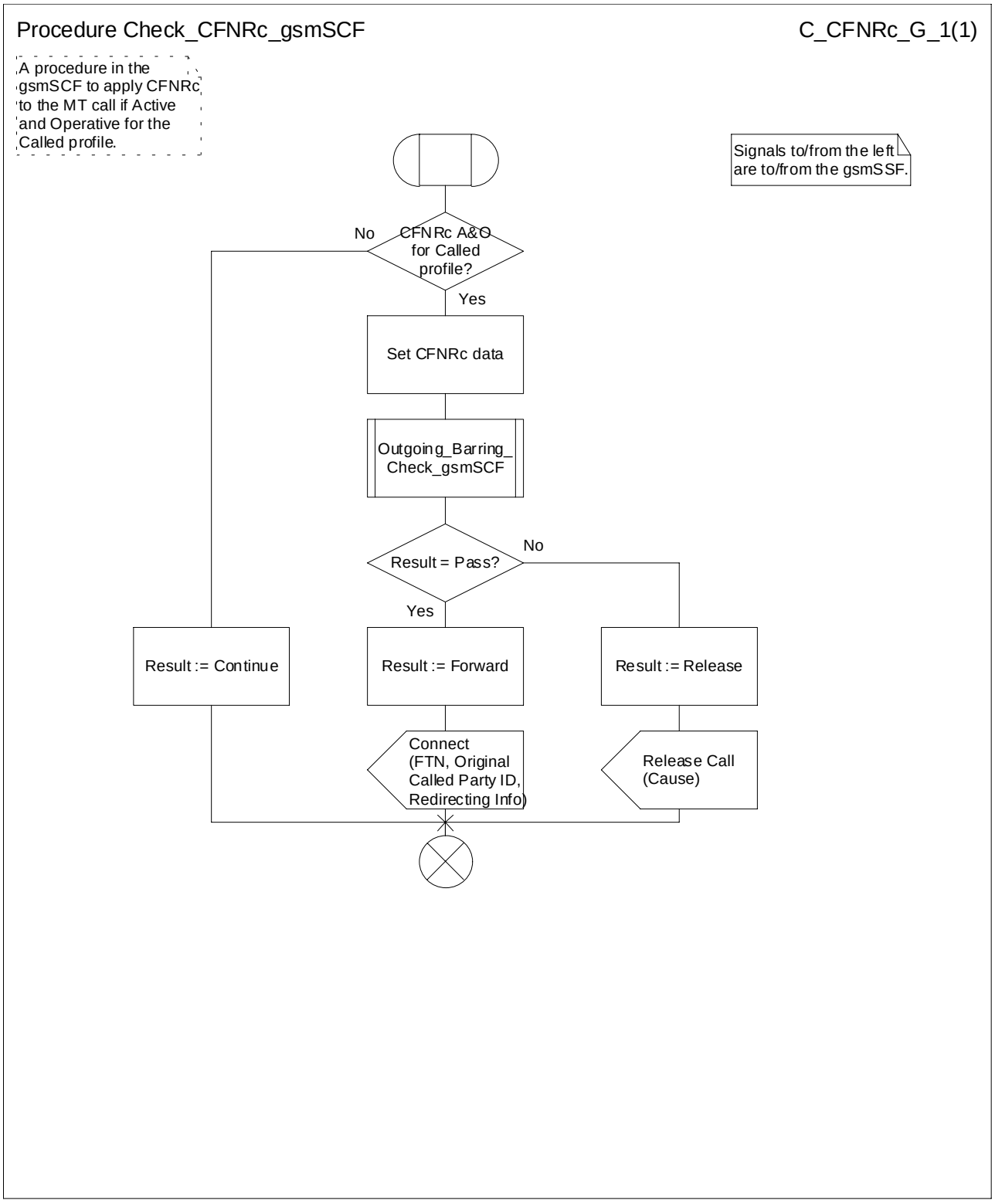


Figure 16: Procedure Check_CFNRc_gsmSCF

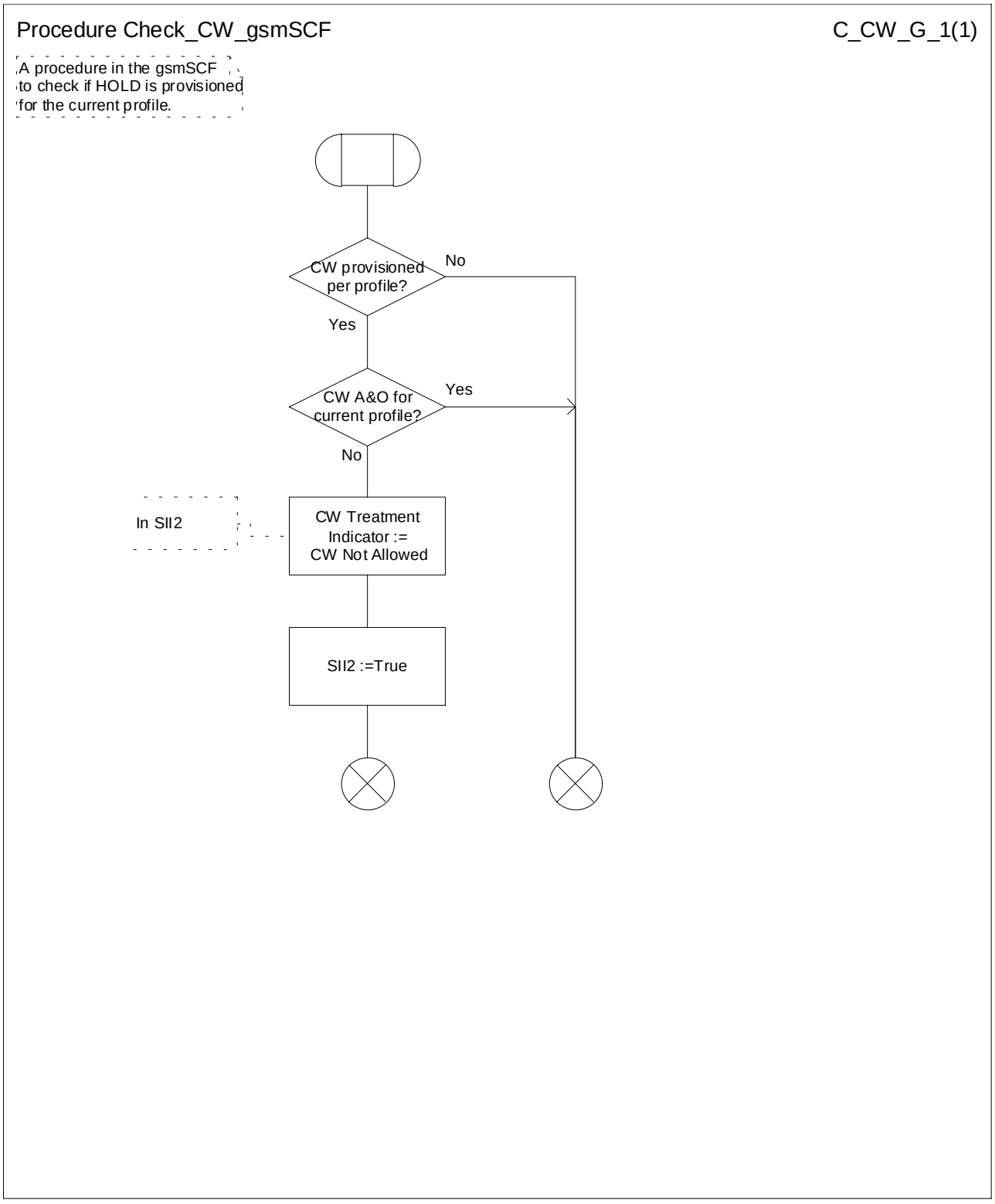


Figure 17: Procedure Check_CW_gsmSCF

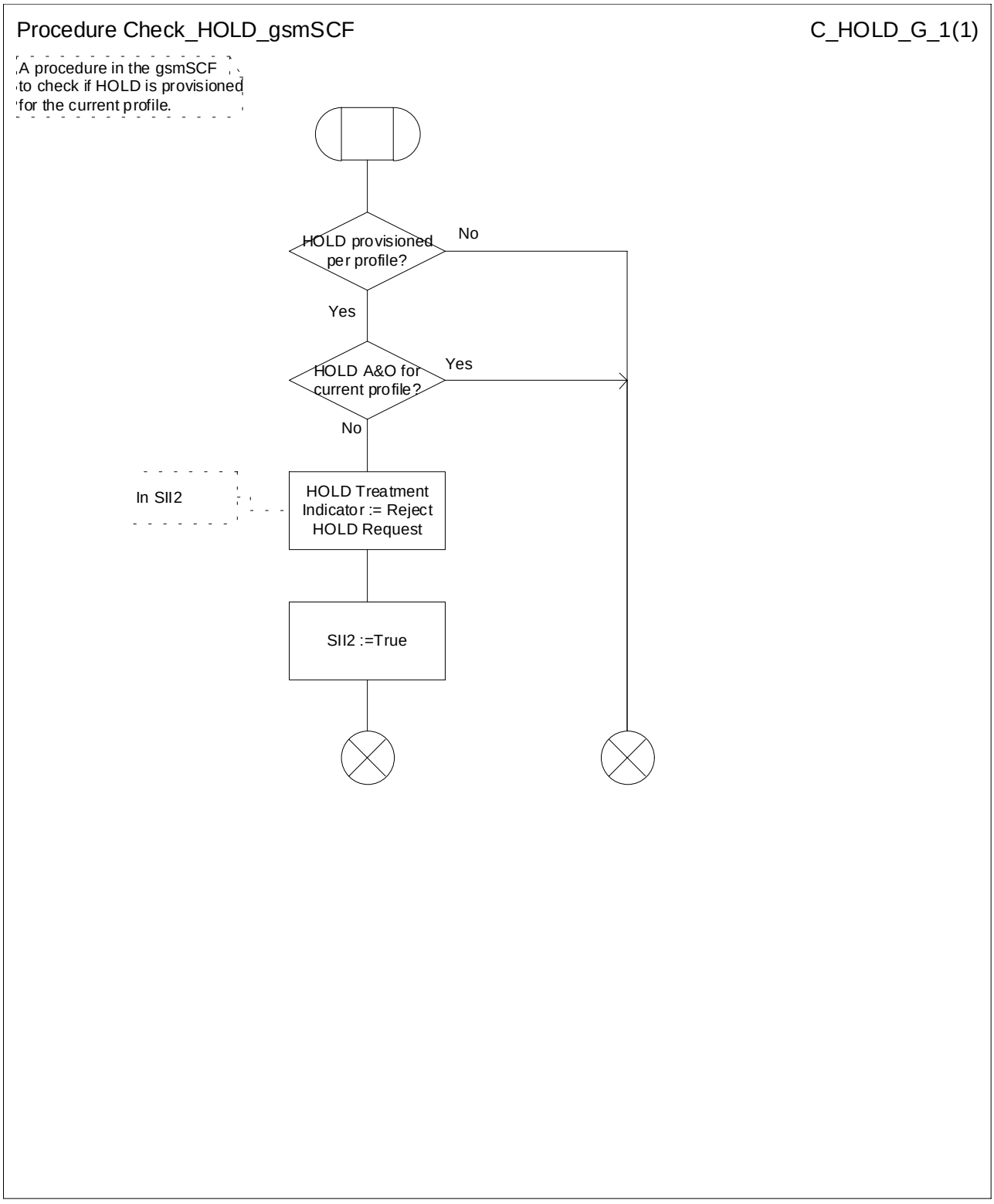


Figure 18: Procedure Check_HOLD_gsmSCF

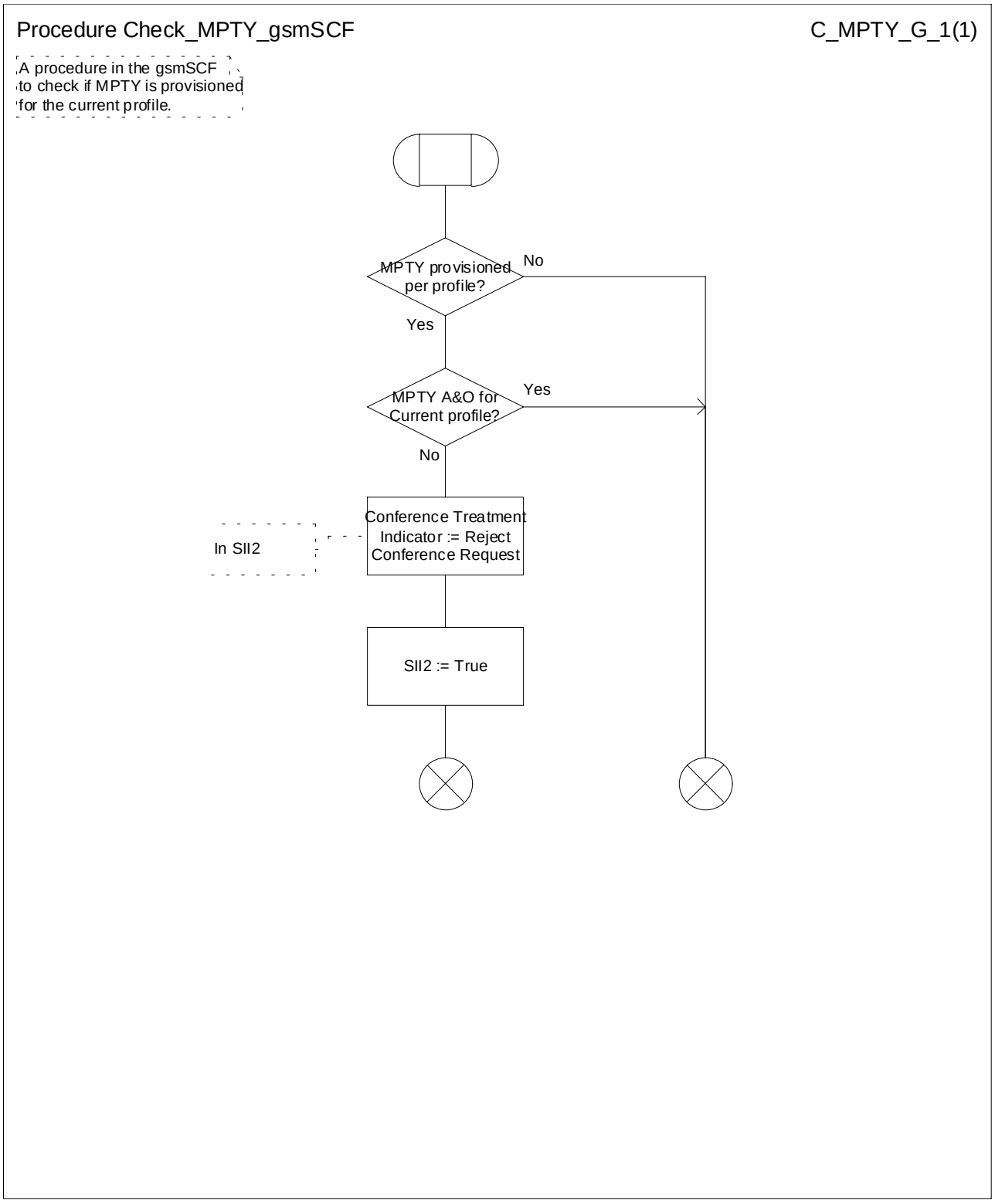


Figure 19: Procedure Check_MPTY_gsmSCF

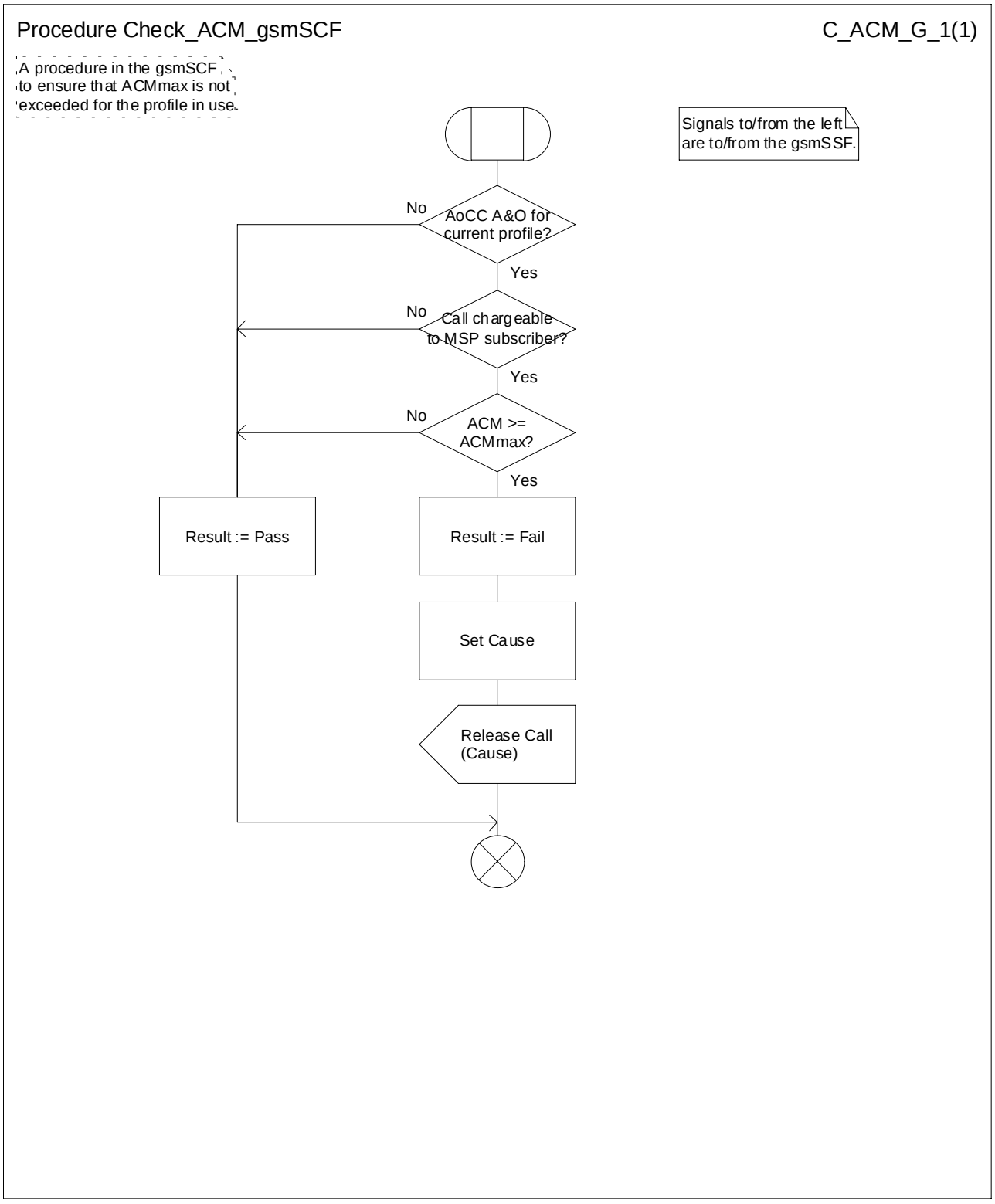


Figure 20: Procedure Check_ACM_gsmSCF

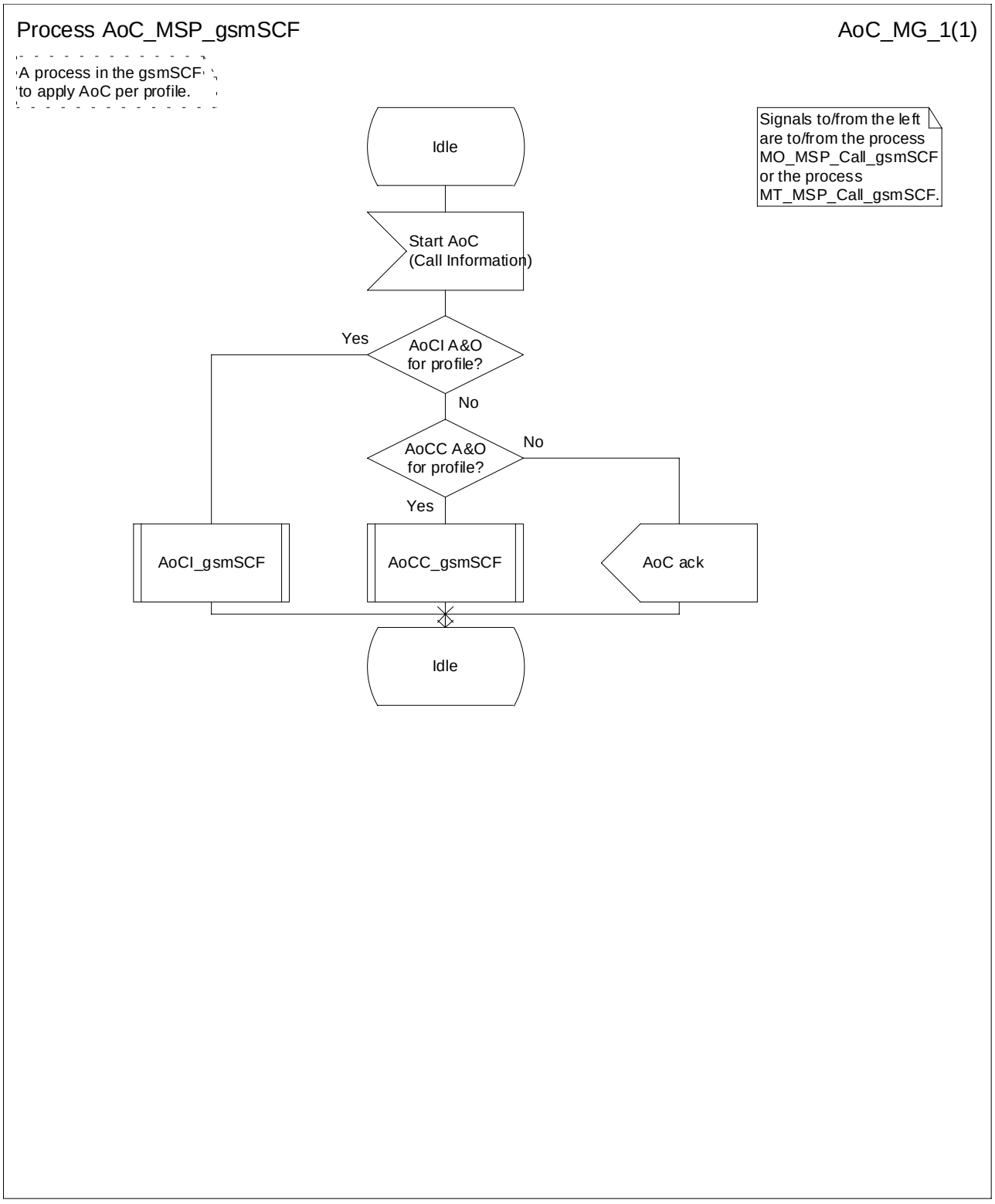


Figure 21: Process AoC_MSP_gsmSCF

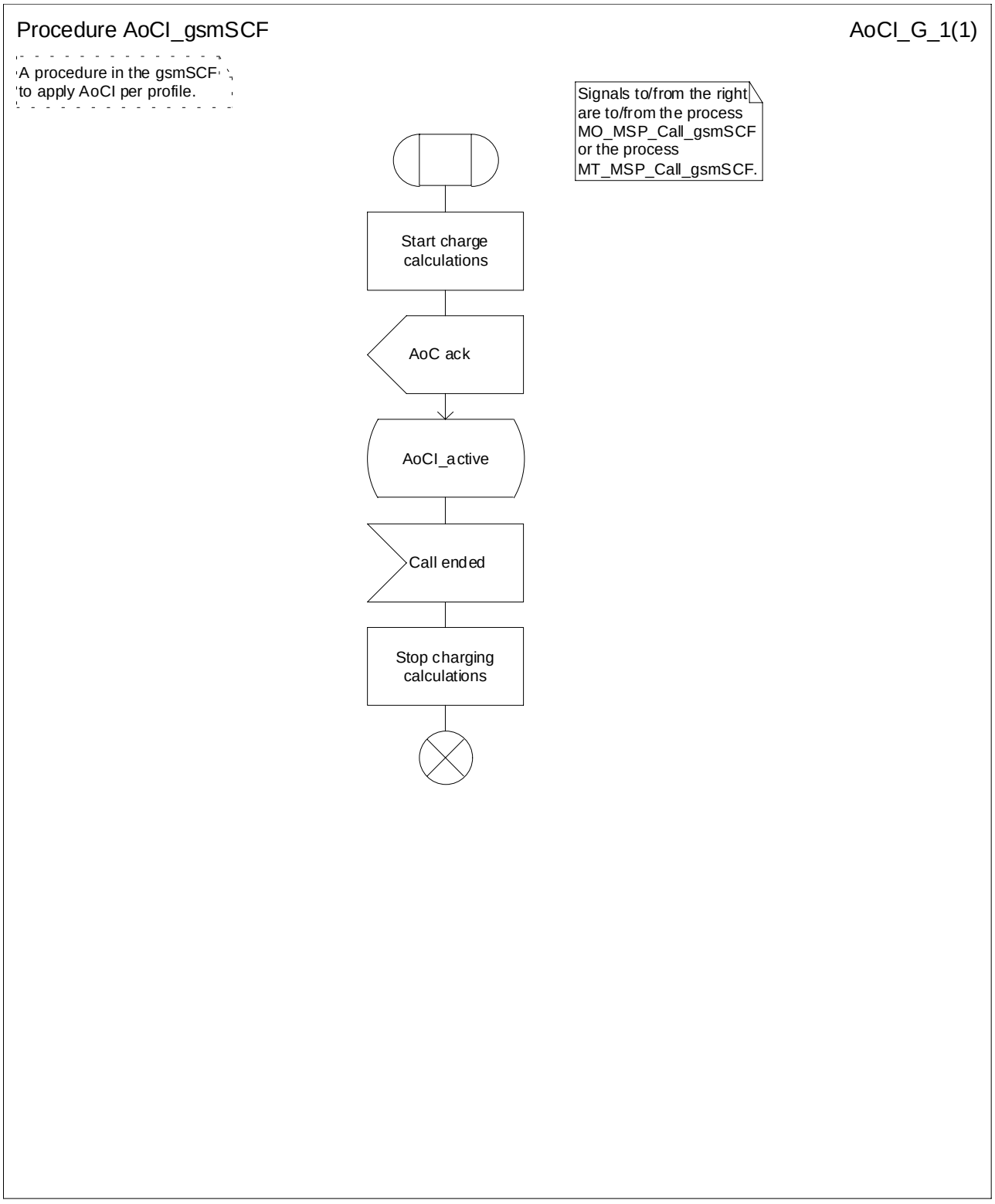


Figure 22: Procedure AoCI_gsmSCF

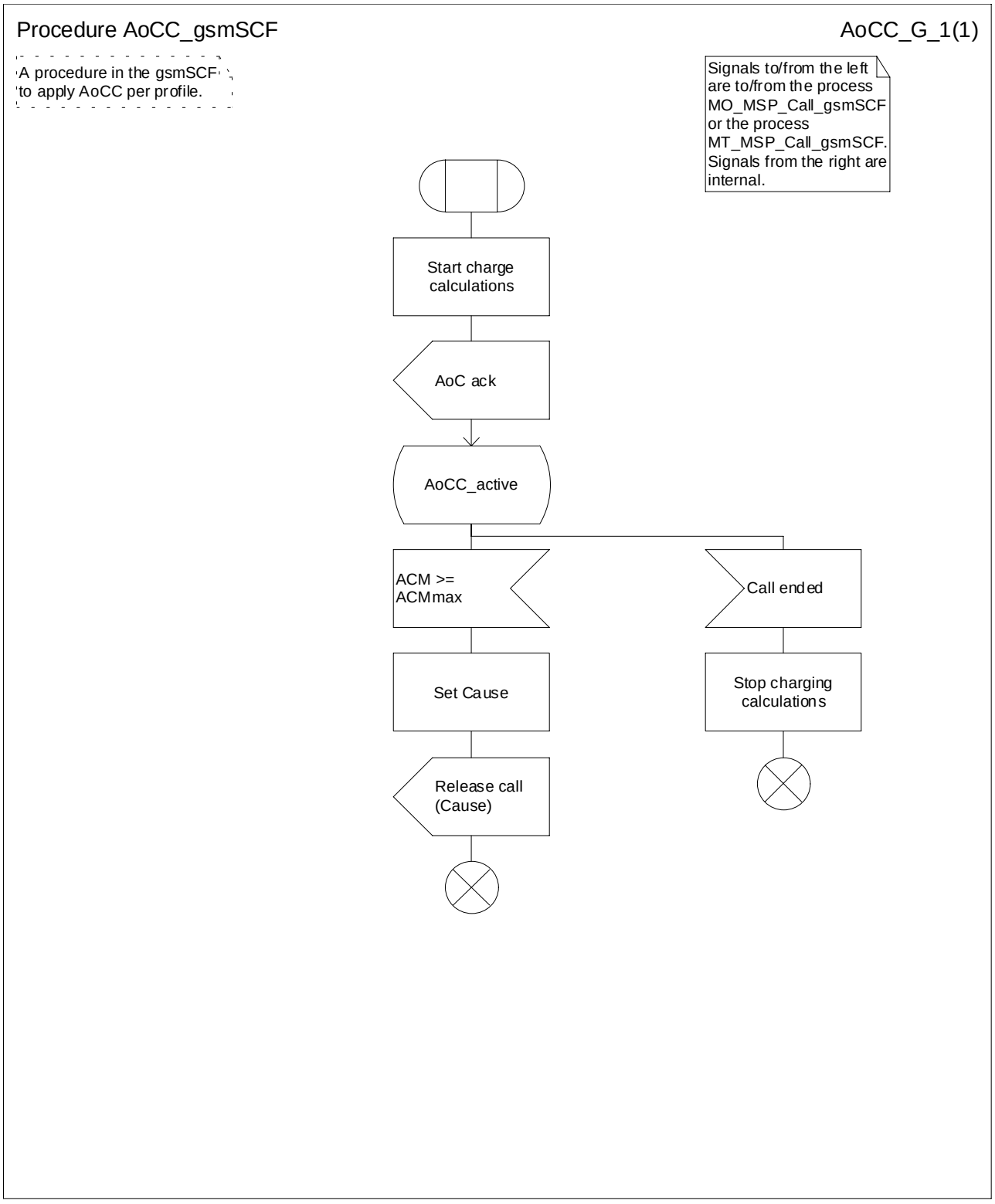


Figure 23: Procedure AoCC_gsmSCF

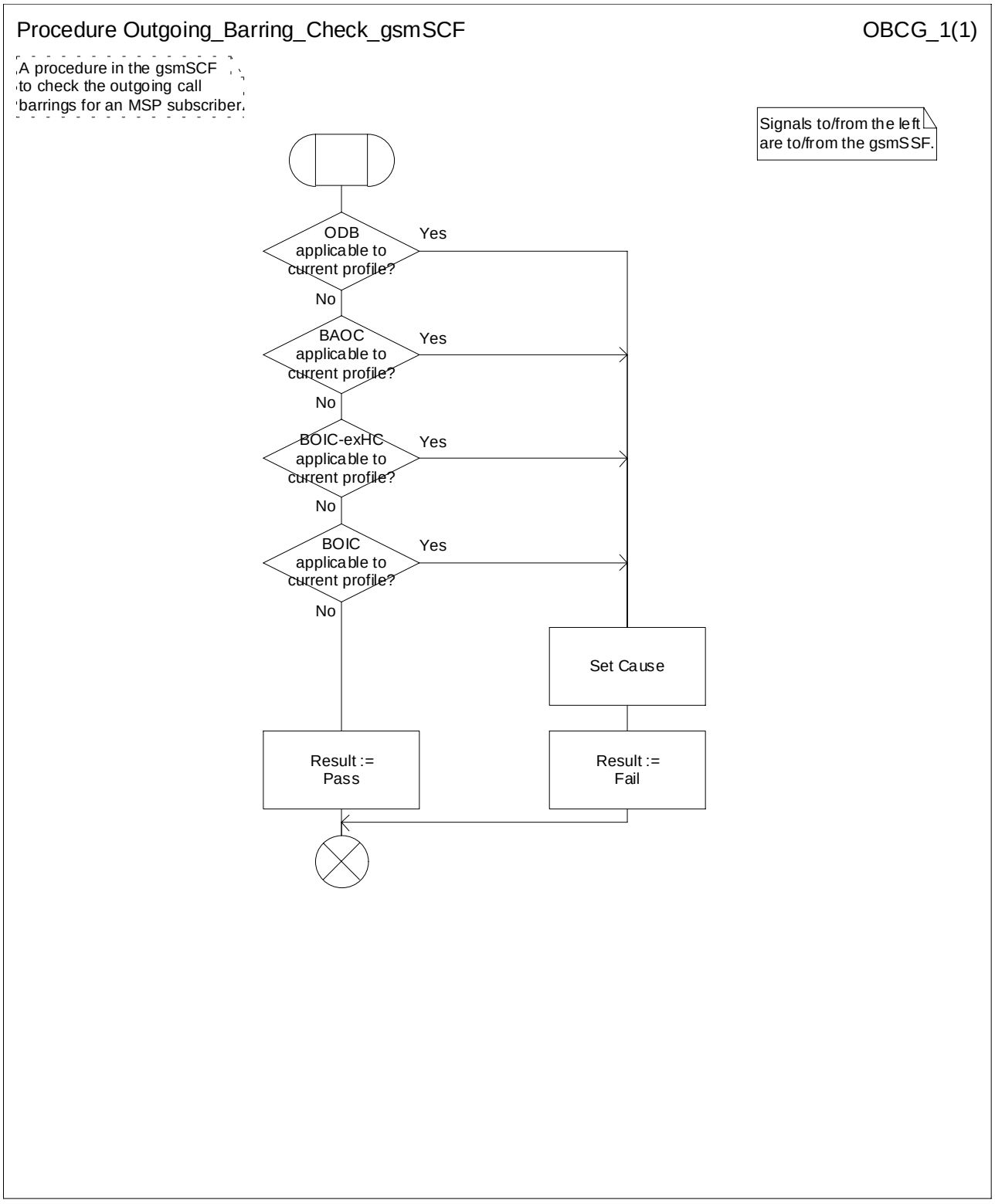


Figure 24: Procedure Outgoing_Barring_Check_gsmSCF

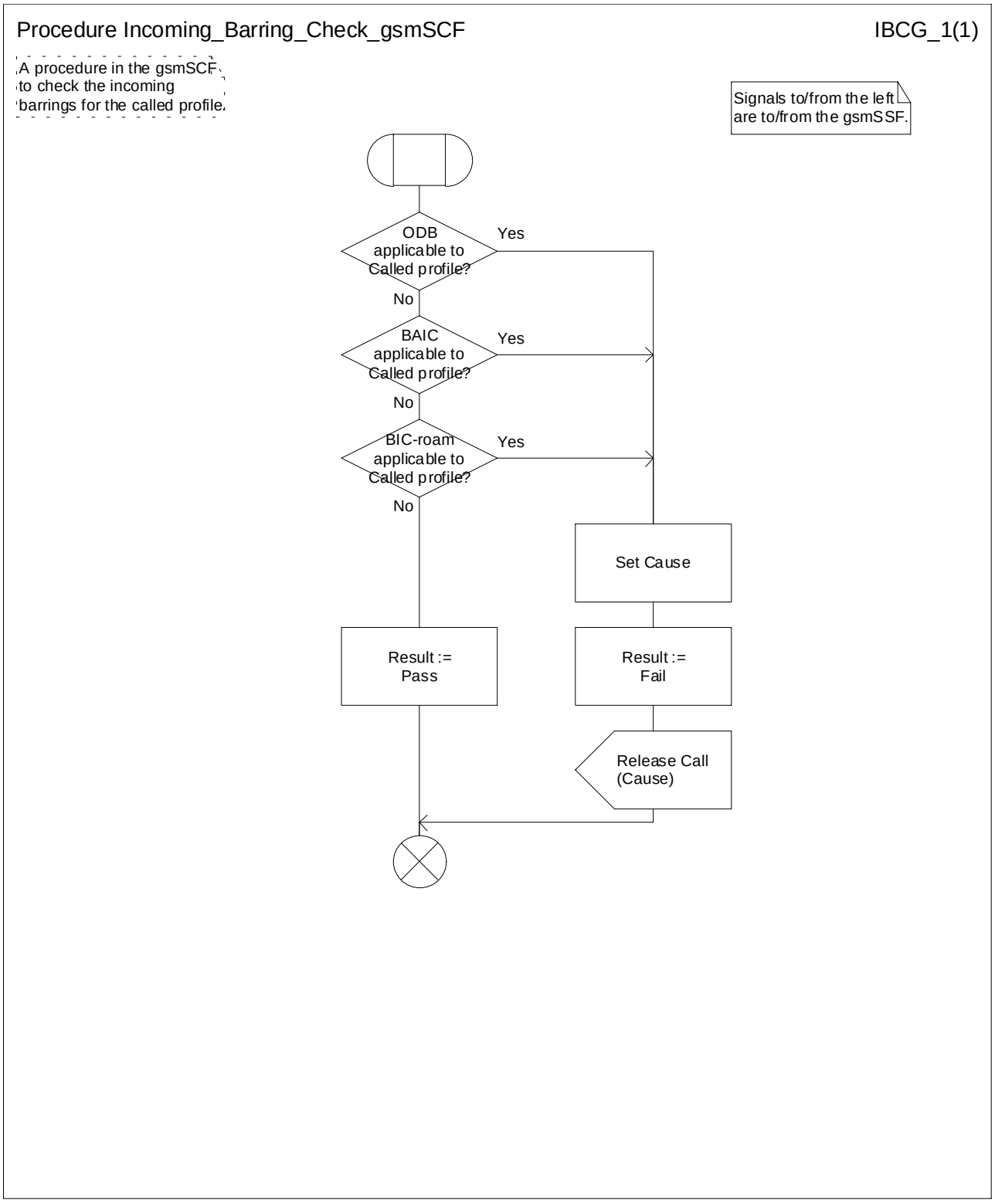


Figure 25: Procedure Incoming_Barring_Check_gsmSCF

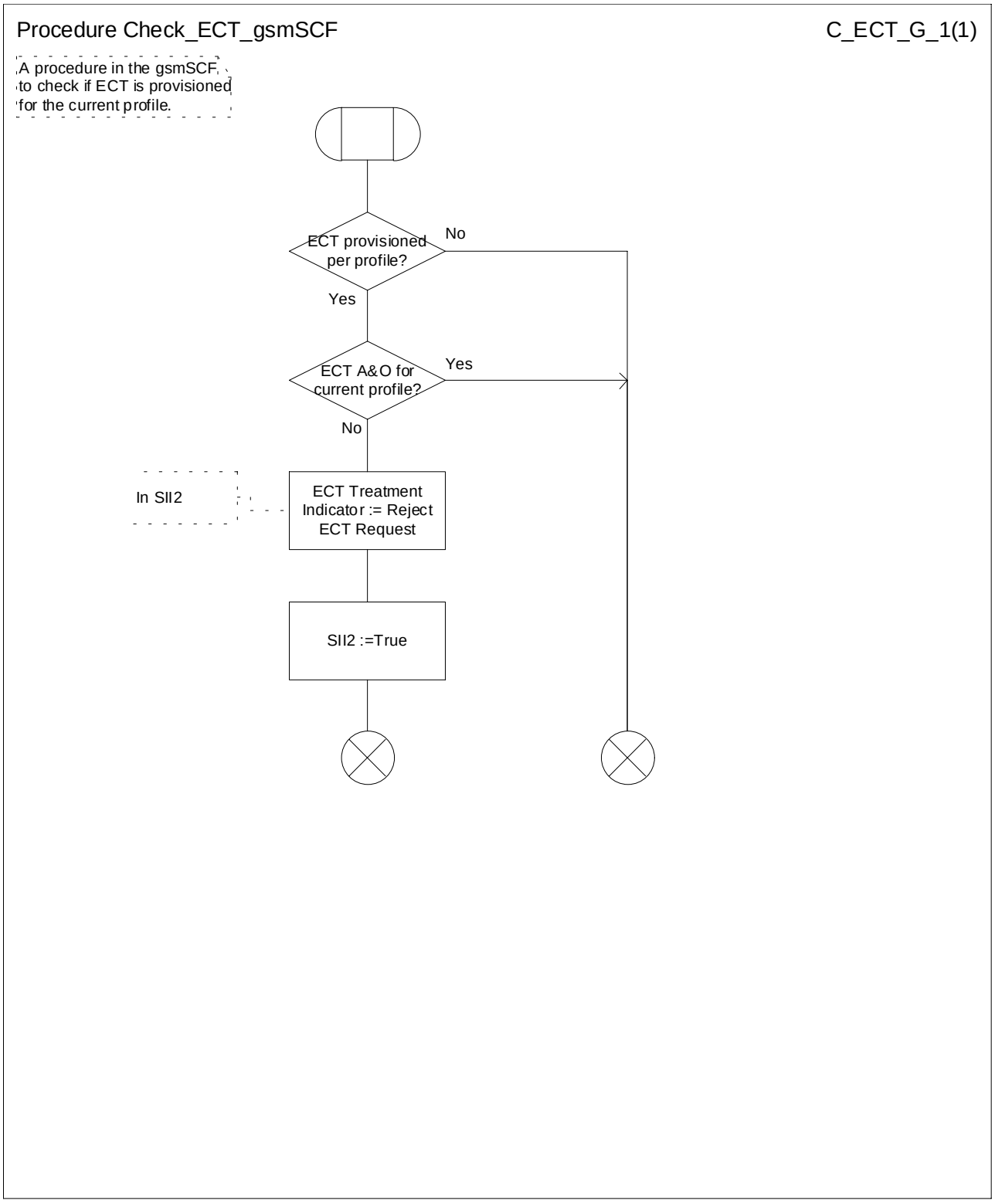


Figure 26: Procedure Check_ECT_gsmSCF

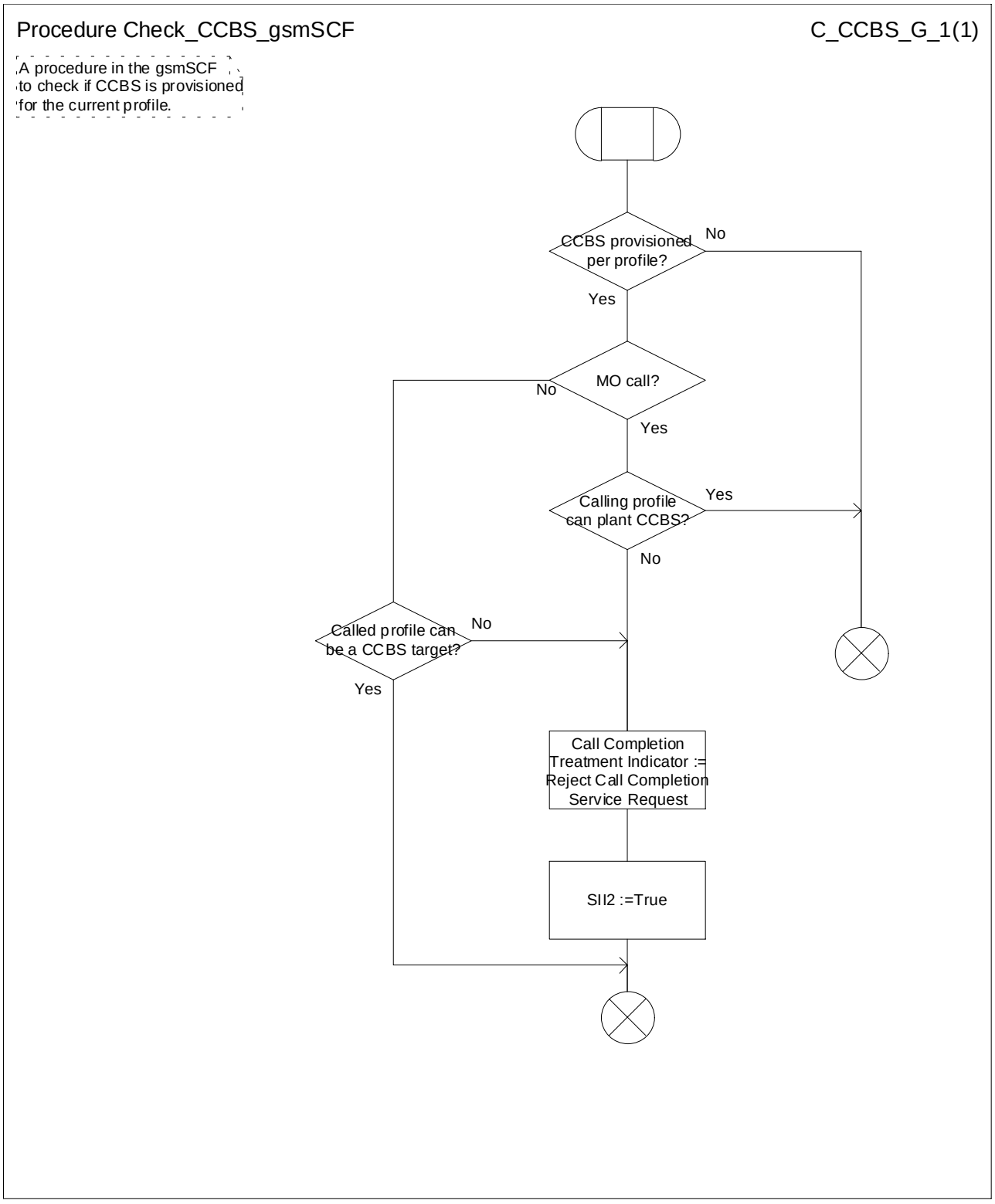
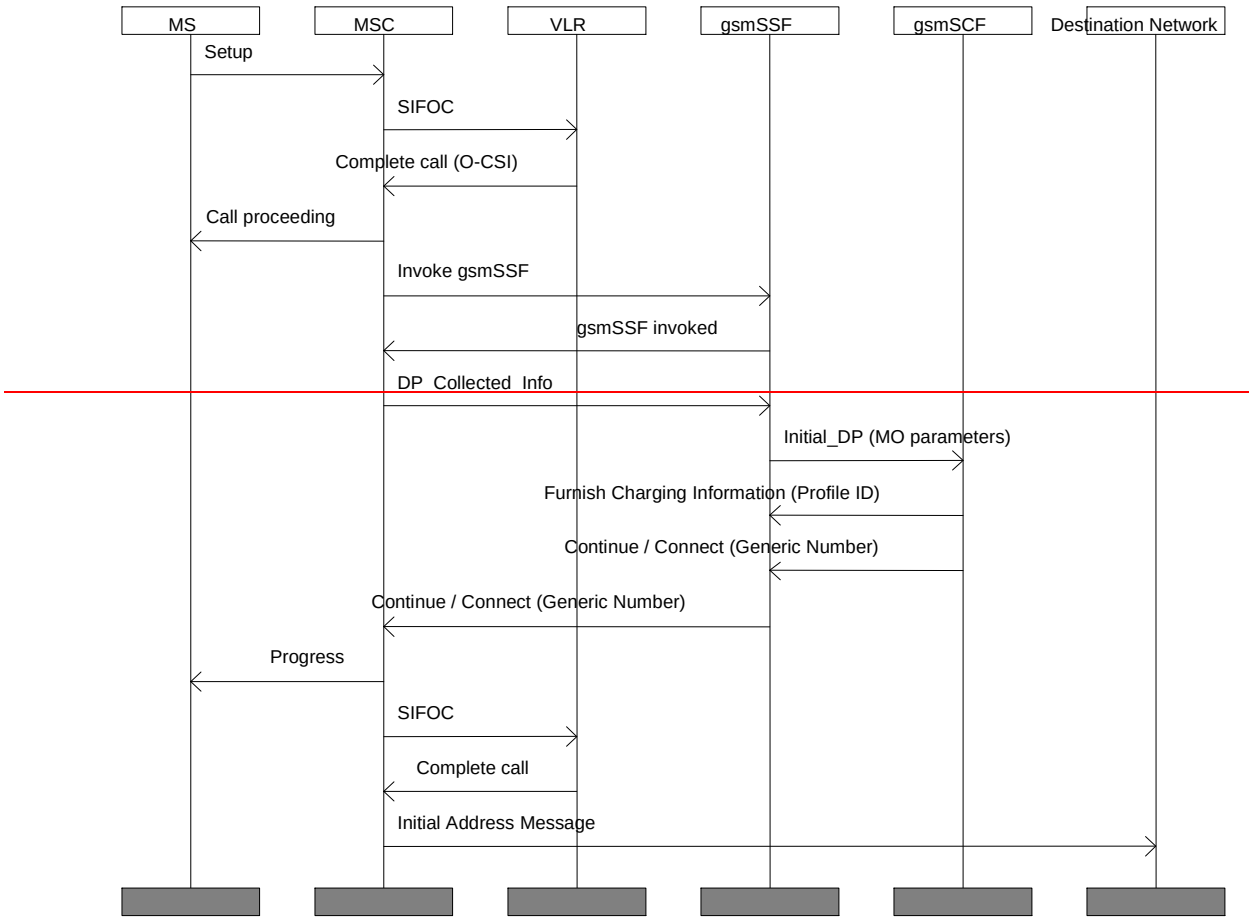


Figure 27: Procedure Check_CCBS_gsmSCF

7.5.4 Information flows

The information flow for a successful MO call by an MSP subscriber is shown in figure 28.

The information flow for a successful MT call to an MSP subscriber is shown in figure 29.



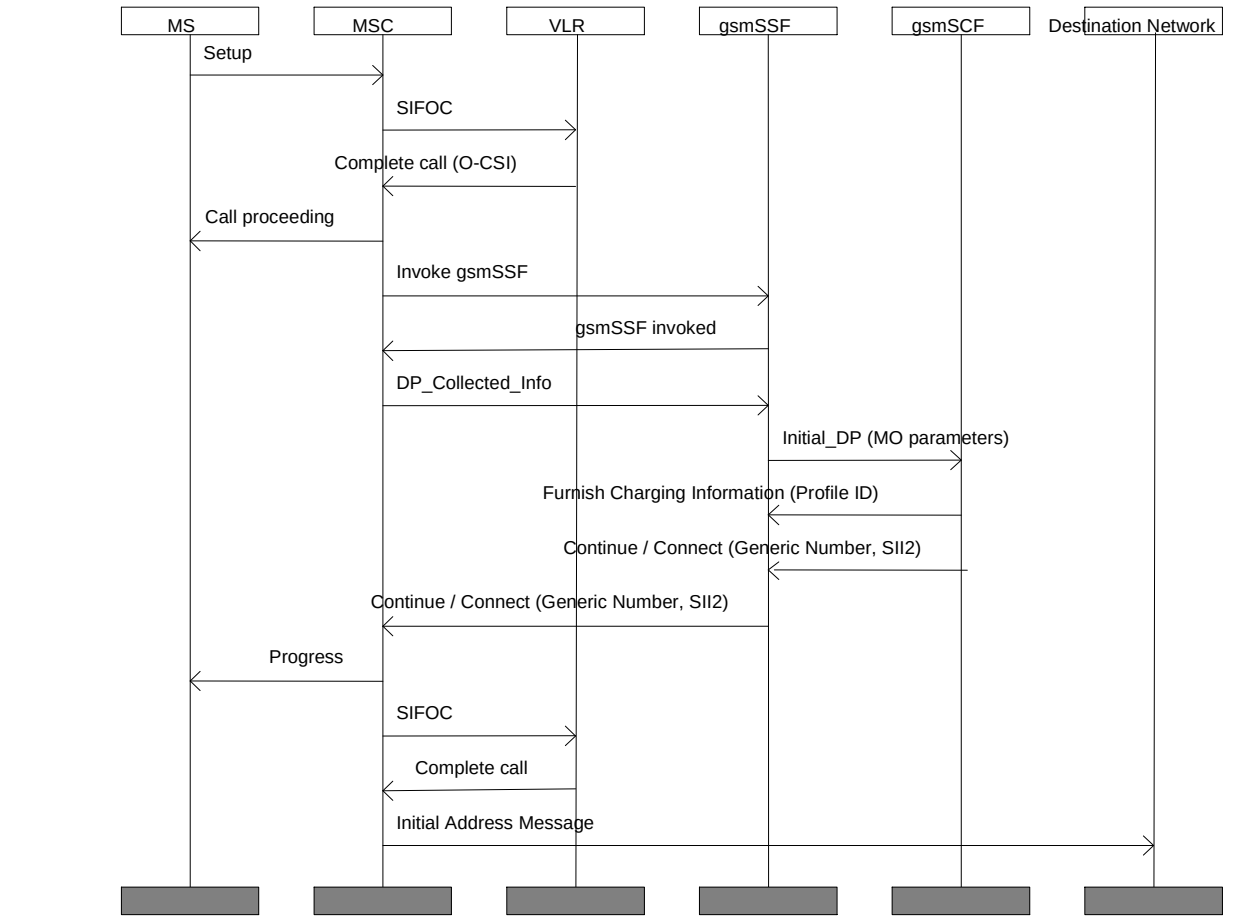
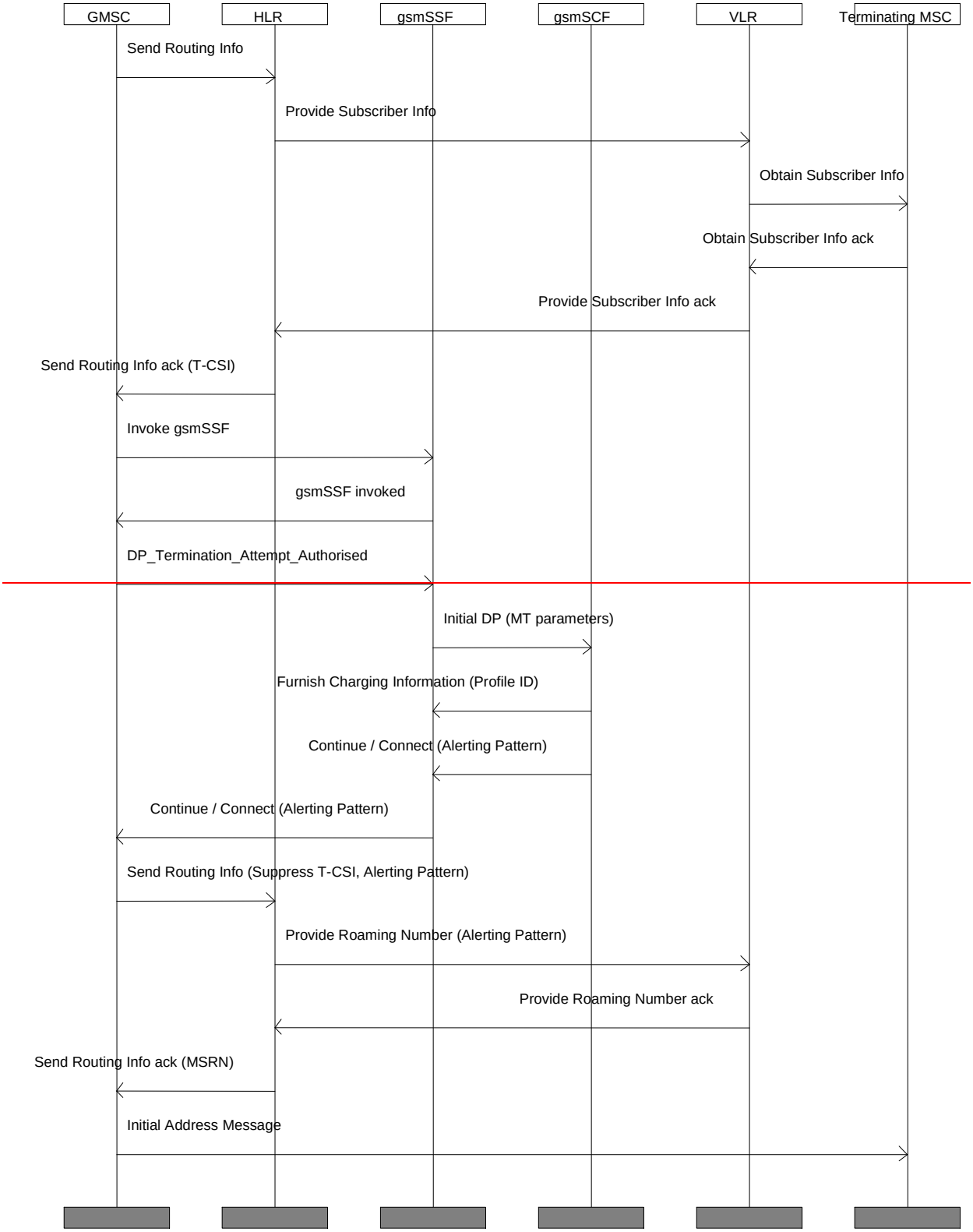


Figure ~~10~~28: Information flow for a successful MO call


GMSC
HLR
gsmSSF
gsmSCF
VLR
Terminating MSC
Send Routing Info
Provide Subscriber Info
Obtain Subscriber Info
Obtain Subscriber Info ack
Provide Subscriber Info ack
Send Routing Info ack (T-CSI)
Invoke gsmSSF
gsmSSF invoked
DP_Termination_Attempt_Authorised
Initial DP (MT parameters)
Furnish Charging Information (Profile ID)
Continue / Connect (Alerting Pattern)
Continue / Connect (Alerting Pattern)
Send Routing Info (Suppress T-CSI, Alerting Pattern)
Provide Roaming Number (Alerting Pattern)
Provide Roaming Number ack
Send Routing Info ack (MSRN)
Initial Address Message

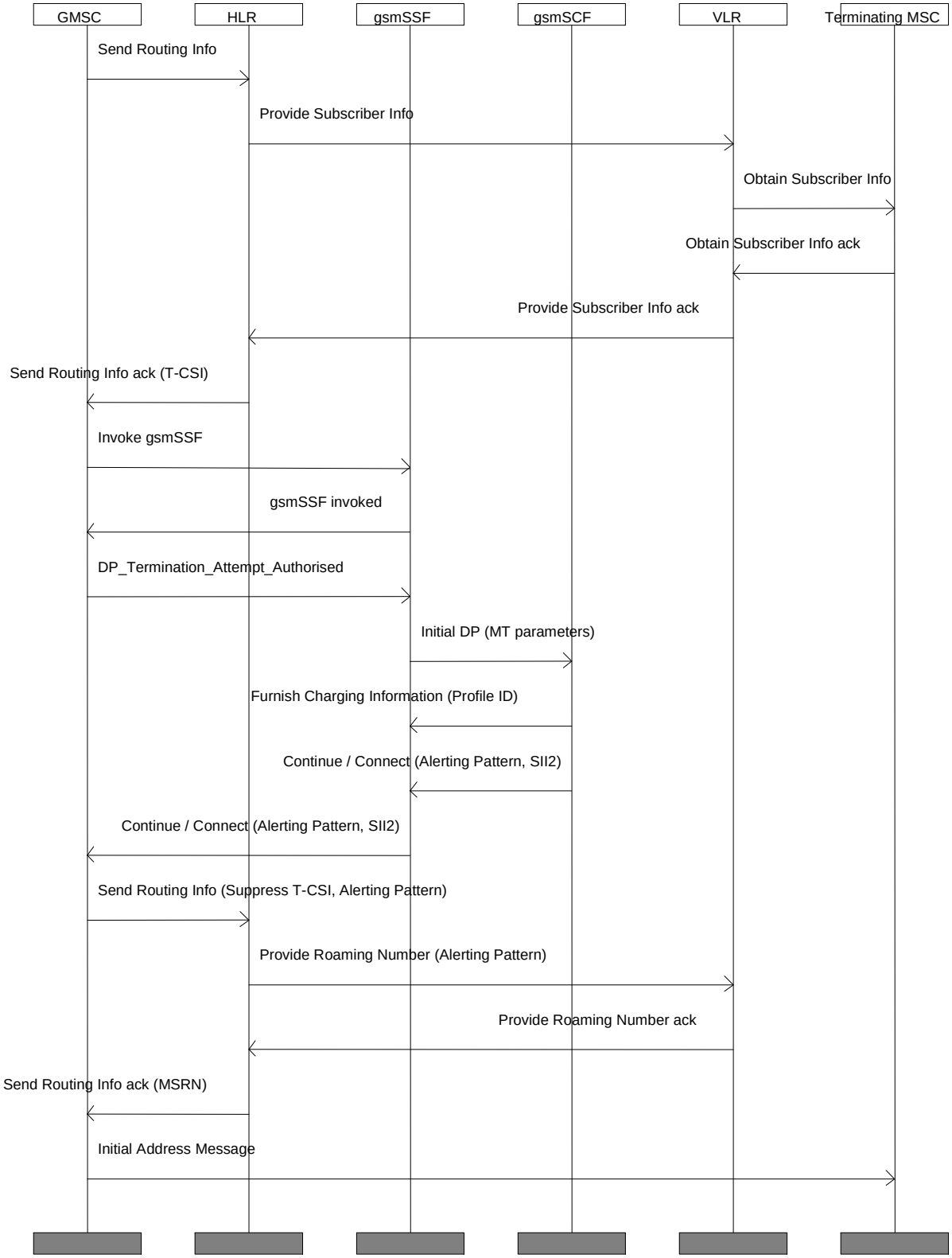


Figure ~~11~~29: Information flow for a successful MT call to a profile that has no Call Forwardings Active and Operative in the gsmSCF

NOTE: For information flows to a profile that has Call Forwarding services Active and Operative in the gsmSCF, see subclause ~~7.9.1~~7.11.1: Call Forwarding.

7.6 SMS handling

MSP Phase 2 does not apply to MT short messages. MT short messages will be received by the MSP subscriber but no profile indication will be given.

When the gsmSCF receives an Initial SMS Event message from the gsmSSF, the process MO_MSP_SMS_gsmSCF will be invoked, see figure 30.

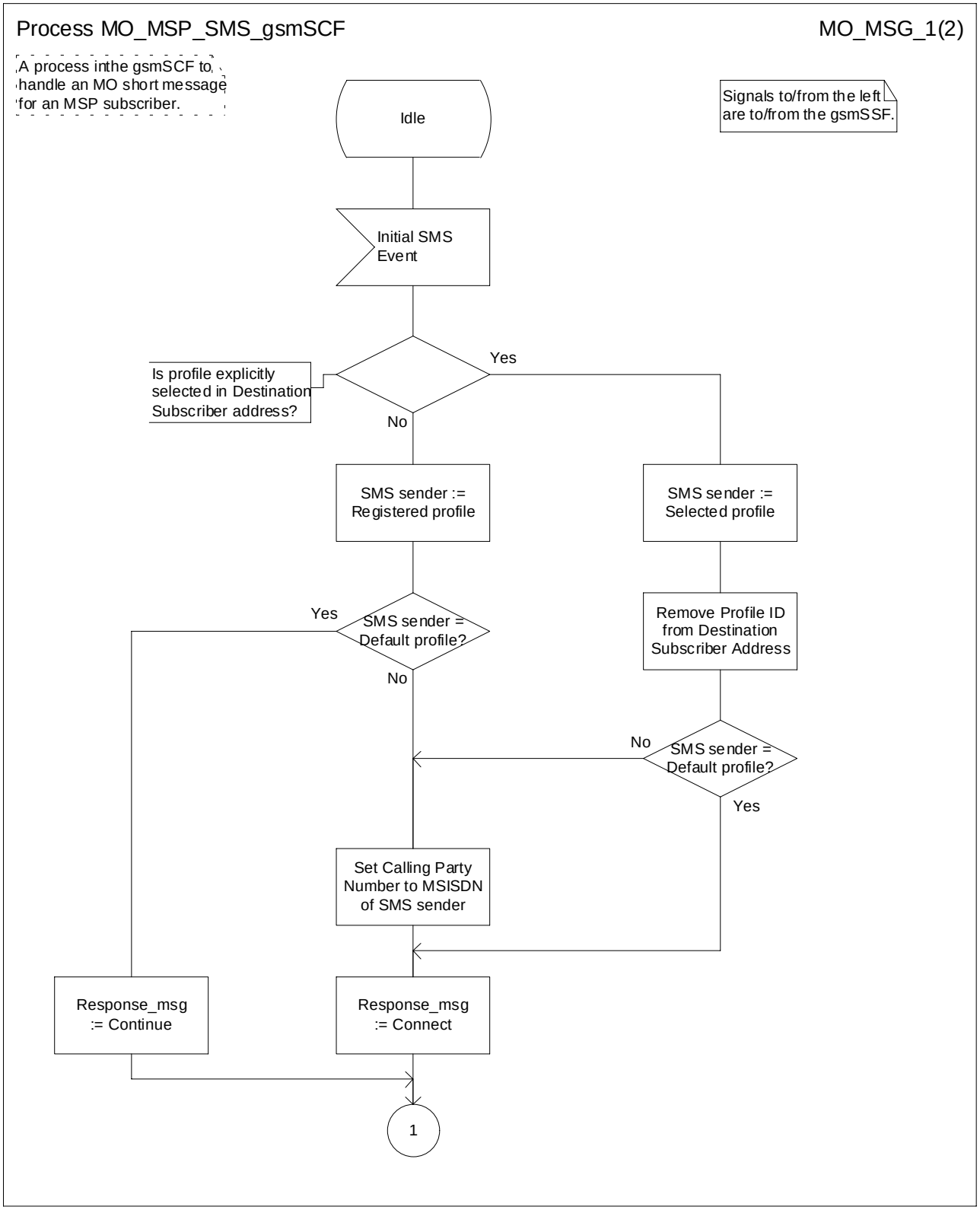


Figure 30a: Process MO_MSP_SMS_gsmSCF (sheet 1 of 2)

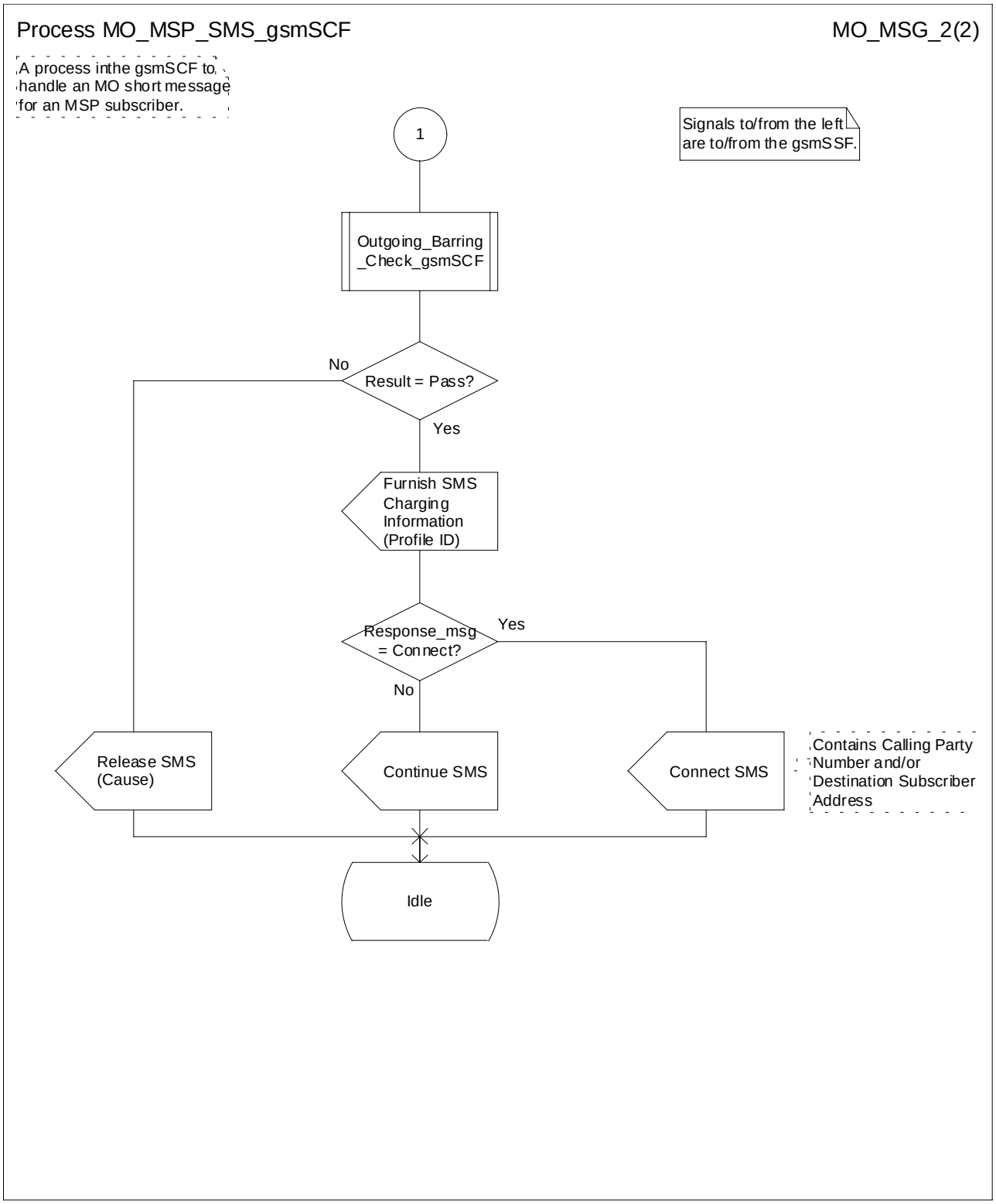


Figure 30b: Process MO_MSP_SMS_gsmSCF (sheet 2 of 2)

7.7 Call Independent SS handling

Supplementary Services provisioned per subscriber will be handled in the usual way.

Supplementary Services provisioned per profile will be controlled using USSD, sent via the VLR and HLR to the gsmSCF.

If Call Barring is provisioned per profile, if the outgoing call barring data for the default profile is changed, the HLR shall be informed using Any Time Modification. On receipt of an Any Time Modification message from the gsmSCF for a subscriber with the OCB_flag set, the HLR will modify the stored Call Barring information for the default profile in accordance with the information in the Any Time Modification message.

7.8~~6~~ Interaction with Supplementary Services

7.6~~8~~.1 Line Identification services

7.6~~8~~.1.1 CLIP

~~CLIP will be provisioned per subscriber. If CLIP is active, it will be active for all profiles. Data for the CLIP Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. CLIP will function as specified in GSM 03.81 and will not distinguish between MSP and non-MSP subscribers.~~

No interaction.

7.6~~8~~.1.2 CLIR

CLIR will be provisioned per subscriber or per profile.

If CLIR is provisioned per subscriber and CLIR is active, it will be active for all profiles. Data for the CLIR Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. CLIR will function as specified in ~~GSM 03.81~~ 3G TS 23.081 and will not distinguish between MSP and non-MSP subscribers.

If CLIR is provisioned per profile then the CLIR subscription information for the default profile shall be stored in the HLR in the usual manner. For an MO call, if the CLIR subscription information for the Calling profile indicates that the CLI shall be restricted, the gsmSCF shall set the Calling Party Presentation Indicator to Presentation Restricted in the SII2 parameter.

7.8~~6~~.1.3 COLP

~~COLP will be provisioned per subscriber. If COLP is active, it will be active for all profiles. Data for the COLP Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. COLP will function as specified in GSM 03.81 and will not distinguish between MSP and non-MSP subscribers.~~

No interaction.

7.6~~8~~.1.4 COLR

~~COLR will be provisioned per subscriber. If COLR is active, it will be active for all profiles. Data for the COLR Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. COLR will function as specified in GSM 03.81 and will not distinguish between MSP and non-MSP subscribers.~~

No interaction.

7.6~~8~~.2 Call Hold (HOLD)

Call Hold ~~will~~ can be provisioned per subscriber or per profile.

If Call Hold is provisioned per subscriber and Call Hold is active, it will be active for all profiles. Data for the Call Hold Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. Call Hold will function as specified in ~~GSM 03.83~~ 3G TS 23.083 and will not distinguish between MSP and non-MSP subscribers.

If Call Hold is provisioned per profile then the HOLD_flag shall be set in the HLR (see subclause 6.3: HOLD_flag). On receipt of an Initial_DP message for an MO or MT call, the gsmSCF will check the subscription information for the profile in use for that call. If HOLD is not active and operative, then the SII2 will be included in the Connect message with the HOLD Treatment Indicator set to_Reject HOLD Request.

7.~~6~~8.3 Call Waiting (CW)

Call Waiting will be provisioned per subscriber or per profile.

If Call Waiting is provisioned per subscriber and Call Waiting is active, it will be active for all profiles. Data for the Call Waiting Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. Call Waiting will function as specified in ~~GSM 03.83~~ 3G TS 23.083 and will not distinguish between MSP and non-MSP subscribers.

If Call Waiting is provisioned per profile then the CW_flag shall be set in the HLR (see subclause 6.4: CW_flag). On receipt of an Initial_DP message for an MO or MT call, the gsmSCF will check the subscription information for the profile in use for that call. If Call Waiting is not active and operative, then the SII2 will be included in the Connect message with the CW Treatment Indicator set to CW Not Allowed. The subscriber shall be able to modify CW information per profile by making contact with the gsmSCF using USSD. However, the subscriber shall not be able to modify CW data for the default profile.

7.~~6~~8.4 Call Forwarding

The Call Forwarding Supplementary Services, described in 3G TS 23.082, can only be provisioned per subscriber. However, services equivalent to the Call Forwarding Supplementary Services, implemented in the gsmSCF, will be available to the MSP subscriber per profile. This is described in subclause ~~7.9.1~~7.11.1: Call Forwarding.

If the Call Forwarding Supplementary Services are provisioned per subscriber, then Call Forwarding will function as specified in GSM 03.82 and will not distinguish between MSP and non-MSP subscribers.

NOTE 1: If Call Forwarding is provisioned per subscriber in the HLR then Call Forwarding should not be provisioned per profile in the gsmSCF, as this may cause unpredictable behaviour.

NOTE 2: If Call Forwarding is provisioned per subscriber in the HLR then Call Deflection should not be provisioned per profile in the gsmSCF, as this may cause unpredictable behaviour.

7.~~6~~8.5 Multi Party Service (MPTY)

The Multi Party Supplementary Service ~~will~~ can be provisioned per subscriber or per profile.

If MPTY is provisioned per subscriber and MPTY is active, it will be active for all profiles. Data for the MPTY Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. MPTY will function as specified in ~~GSM 03.84~~ 3G TS 23.084 and will not distinguish between MSP and non-MSP subscribers.

If MPTY is provisioned per profile then the MPTY_flag shall be set in the HLR (see subclause 6.5: MPTY_flag). On receipt of an Initial_DP message for an MO or MT call, the gsmSCF will check the subscription information for the profile in use for that call. If MPTY is not active and operative, then the SII2 will be included in the Connect message with the Conference Treatment Indicator set to Reject Conference Request.

7.~~6~~8.6 Closed User Group (CUG)

The Closed User Group Supplementary Service ~~will~~ caan be provisioned per subscriber or per profile.

If CUG is provisioned per subscriber and CUG is active, it will be active for all profiles. Data for the CUG Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. CUG will function as specified in ~~GSM 03.85~~ 3G TS 23.085 and will not distinguish between MSP and non-MSP subscribers. The interaction between CAMEL and CUG (in the case of forwarding CUG calls) is defined in ~~GSM 03.78~~ 3G TS 23.078.

CUG provisioning per profile is supported by CAMEL Phase 3 and is FFS.

7.~~6~~8.7 Advice of Charge (AoC)

The Advice of Charge Supplementary Service will be provisioned per subscriber. However, services equivalent to the Advice of Charge supplementary services, implemented in the gsmSCF, will be available to the MSP subscriber per profile. This is described in subclause 7.11.4: Advice of Charge (AoC). Signalling on the access interface will be as specified in 3G TS 24.086.

If AoC is active, it will be active for all profiles. Data for the AoC Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. AoC will function as specified in ~~GSM 03.86~~ 3G TS 23.086 and will not distinguish between MSP and non-MSP subscribers.

7.~~6~~8.8 Call Barring

The Call Barring Supplementary Services, described in 3G TS 23.088, can only be provisioned per subscriber. However, services equivalent to the Call Barring Supplementary Services, implemented in the gsmSCF, can be provided to the MSP subscriber per profile. This is described in subclause ~~7.9.2~~7.11.2: Call Barring. This requires the OCB_flag mechanism described in section subclause 6.1: OCB_flag.

~~If the Call Barring Supplementary Services are provisioned per subscriber, then Call Barring will function as specified in GSM 03.88 and will not distinguish between MSP and non-MSP subscriber.~~

7.~~6~~8.9 Explicit Call Transfer (ECT)

Explicit Call Transfer supplementary service ~~will~~ can be provisioned per subscriber or per profile.

If ECT is provisioned per subscriber and ECT ~~Explicit Call Transfer~~ is active, it will be active for all profiles. Data for the ~~Explicit Call Transfer~~ ECT Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. ECT will function as specified in ~~GSM 03.91~~ 3G TS 23.091 and will not distinguish between MSP and non-MSP subscribers.

If ECT is provisioned per profile then the ECT_flag shall be set in the HLR (see subclause 6.6: ECT_flag). On receipt of an Initial_DP message for an MO or MT call, the gsmSCF will check the subscription information for the profile in use for that call leg. If ECT is not active and operative, then the SII2 will be included in the Connect message with the ECT Treatment Indicator set to Reject ECT Request.

7.~~6~~8.10 Completion of Calls to Busy Subscriber (CCBS)

CCBS ~~will~~ can be provisioned per subscriber or per profile.

If CCBS is provisioned per subscriber and CCBS is active, it will be active over all profiles. Data for the CCBS Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner.

If CCBS is provisioned per profile then the CCBS_flag shall be set in the HLR (see subclause 6.7: CCBS_flag).

On receipt of an Initial_DP message for an MO call, the gsmSCF will check the subscription information for the calling profile. If CCBS is not active and operative, then the SII2 will be included in the Connect message with the Call Completion Treatment Indicator set to Call Completion Not Allowed.

On receipt of an Initial_DP message for an MT call, the gsmSCF will check the subscription information for the called profile. If CCBS is not active and operative, then the SII2 will be included in the Connect message with the Call Completion Treatment Indicator sent to Call Completion not allowed.

The subscriber shall be able to modify CCBS information per profile by making contact with the gsmSCF using USSD. However, the subscriber shall not be able to modify CCBS data for the default profile.

If a CFU-equivalent service is activated while there are queue entries in MS-B's target queue, HLR-B will not know about this activation and will process these queue entries as normal. As a consequence, the CCBS calls related to these queue entries will be forwarded to the new destination. CCBS activation is not possible if this forwarded call meets NDUB. This results in expiry of recall timer T9 and deletion of the queue entry from MS-B's target queue. For further details on the interaction between CCBS and CAMEL, refer to ~~GSM 03.93~~ 3G TS 23.093.

The same applies to Incoming Call Barring-equivalent services which are activated while there are queue entries in MS-B's target queue.

An MSP subscriber will have CCBS set in the SS-CSI. The gsmSCF will be informed of CCBS Request and CCBS Setup messages for the MSP subscriber.This allows the service logic in the gsmSCF to assign the correct profile to the CCBS call.

7.~~6~~8.11 enhanced Multi-Level Precedence and Pre-emption (eMLPP)

eMLPP will be provisioned per subscriber. If eMLPP is active, it will be active for all profiles. Data for the eMLPP Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. eMLPP will function as specified in ~~GSM 03.67~~ 3G TS 23.067 and will not distinguish between MSP and non-MSP subscribers.

7.~~6~~8.12 User-to-User Signalling (UUS)

The User-to-User Supplementary Service will be provisioned per subscriber. If UUS is active, it will be active for all profiles. Data for the UUS Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. UUS will function as specified in ~~GSM 03.87~~ 3G TS 23.087 and will not distinguish between MSP and non-MSP subscribers.

7.~~6~~8.13 Call Deflection (CD)

The Call Deflection Supplementary Service will be provisioned per subscriber. If CD is active, it will be active for all profiles. Data for the CD Supplementary Service will be stored in the HLR, and if appropriate in the VLR, in the usual manner. CD will function as specified in ~~GSM 03.72~~ 3G TS 23.072 and will not distinguish between MSP and non-MSP subscribers.

When the MSP subscriber deflects an MT call, it triggers an interrogation of the gsmSCF for an MO Call. Using the call reference number, the gsmSCF can recognise that there is an ongoing dialogue for the MT call, and can then retrieve the profile to apply for the deflected call~~, see figure 5 and figure 9~~.

This gives the gsmSCF the opportunity to reject the call deflection per profile, providing the MSP subscriber is in a supporting network.

NOTE: Call Deflection should not be provisioned per profile if Call Forwardings are provisioned per subscriber in the HLR as unpredictable behaviour may occur.

7.~~9~~7 Interaction with other services

7.~~7~~9.1 The Multi-Numbering Scheme

If the MSP subscriber has different MSISDNs allocated for different Basic Services, all MSISDNs and associated Basic Services will be stored in the HLR. Each MSISDN and associated Basic Services will also be stored in the gsmSCF with associated profile ID.

7.~~7~~9.2 The Short Message Service

Mobile terminated short messages can be received on any profile although the profile will not be ~~specified~~ indicated to the user.

~~It is not possible to select a profile for mobile originated short messages since there are no CAMEL interactions. All MO SMS will be sent by and charged to the default profile.~~

It shall be possible to select a profile for mobile originated short messages. If a profile is explicitly selected, the MO short message will be sent by and charged to the selected profile. If a profile is not explicitly selected, the MO short message will be sent by and charged to the registered profile.

7.~~7~~9.3 Interactions with CAMEL

An MSP subscriber will, by definition, have a CAMEL subscription.

If other CAMEL services are designed in such a way that an MSP subscriber can use them, they will be available to the MSP subscriber. It is a network option to design CAMEL services that interact with MSP.

7.~~7~~9.4 Interactions with OR

The GMSC in the Interrogating PLMN (IPLMN) needs to support CAMEL Phase 2 capability if the called subscriber is an MSP subscriber.

If an interrogation request is received for an MSP subscriber from a GMSC in the IPLMN that does not support the CAMEL Phase 2 capability, the HLR shall return an OR not allowed negative response (see ~~GSM 03.79~~ 3G TS 23.079) to the GMSC. This will force the call to be routed to a GMSC supporting CAMEL Phase 2 capability in the HPLMN.

7.~~7~~9.5 Operator Determined Barring

ODB, as described in 3G TS 23.015, ~~will~~ can only be provisioned per subscriber.

A service, implemented in the gsmSCF equivalent to some elements of the ODB service will be available ~~to~~ for an MSP subscriber per profile. This is described in subclause ~~7.9.7~~ 7.11.3: Operator Determined Barring (ODB); it requires the ~~ODB flags~~ mechanism described in subclause 6.2: ODB flags. ~~The category "Barring of invocation of call transfer" will only be available per subscriber~~.

Outgoing ODB for the default profile will be stored in the HLR for use when the subscriber roams into a non-supporting network, see subclause ~~7.10.1~~ 7.11.3: Roaming into a network not supporting CAMEL Phase 2 for further details.

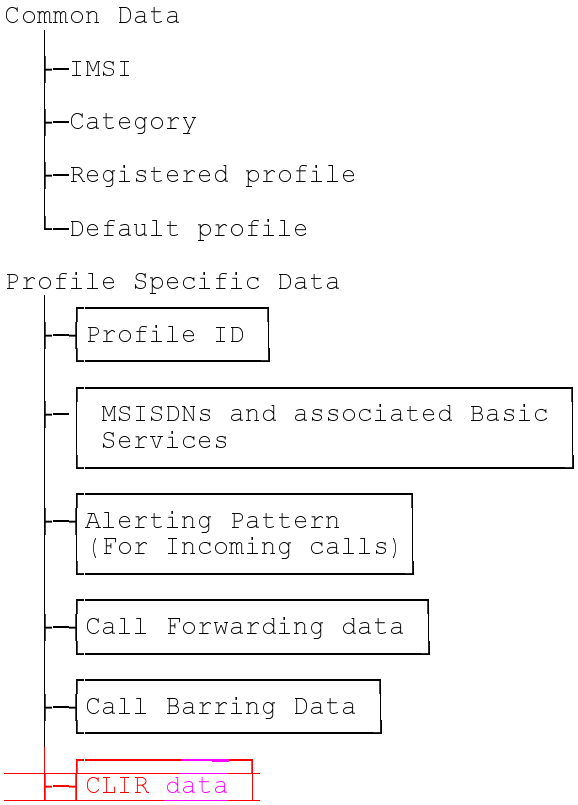
~~If the Operator Determined Barrings are provisioned per subscriber, then barrings for that category will function as specified in GSM 03.15 and will not distinguish between MSP and non-MSP subscribers.~~

7.~~7~~9.6 Roaming Restrictions

Roaming Restrictions will apply per subscriber. Data for the Roaming Restrictions will be stored in the HLR in the usual manner.

7.~~8~~10 Data stored in the gsmSCF

The gsmSCF contains all the data needed to control the MSP service. These data can be divided into the common data (the data valid for all profiles) and the profile specific data.

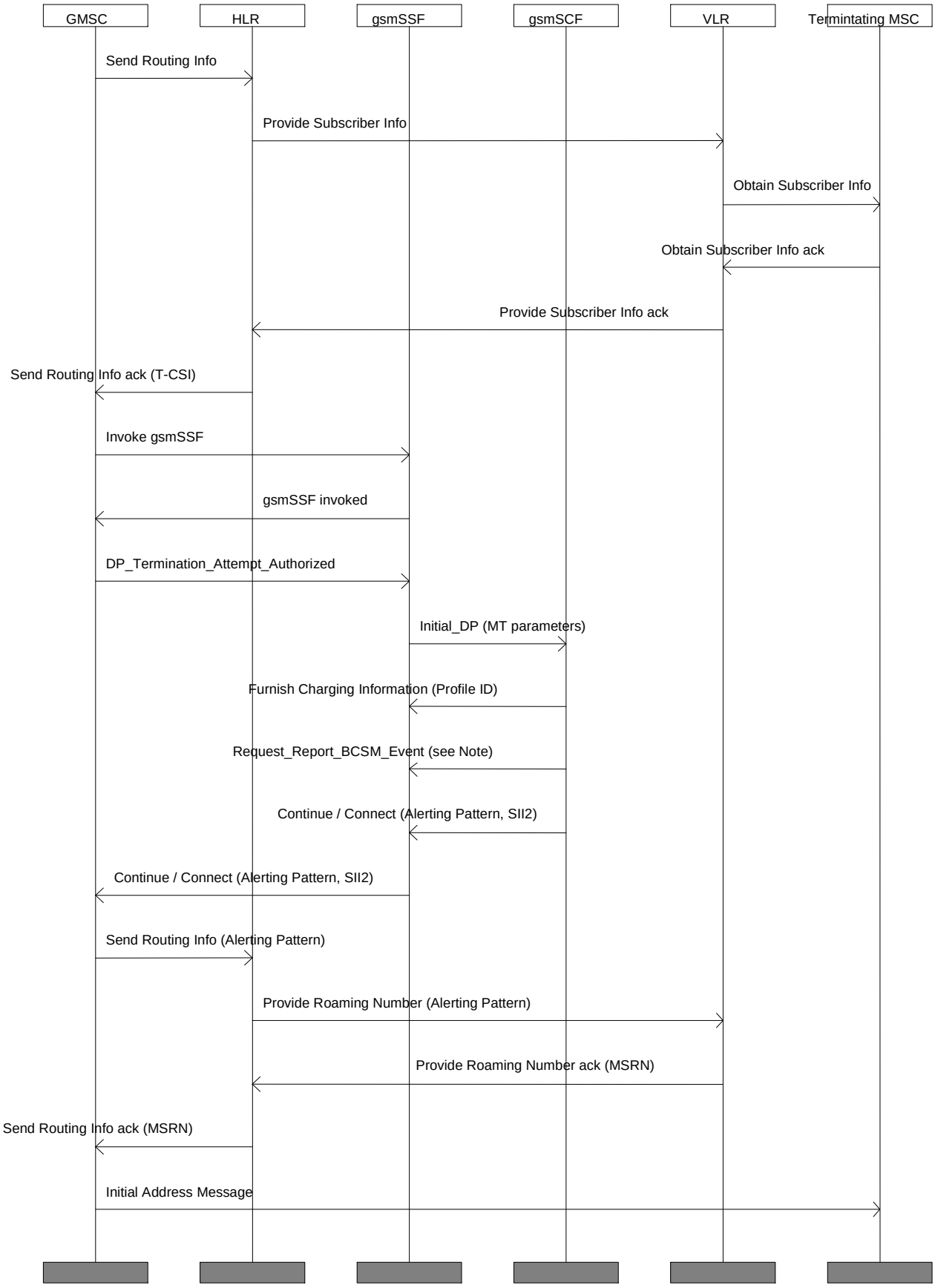


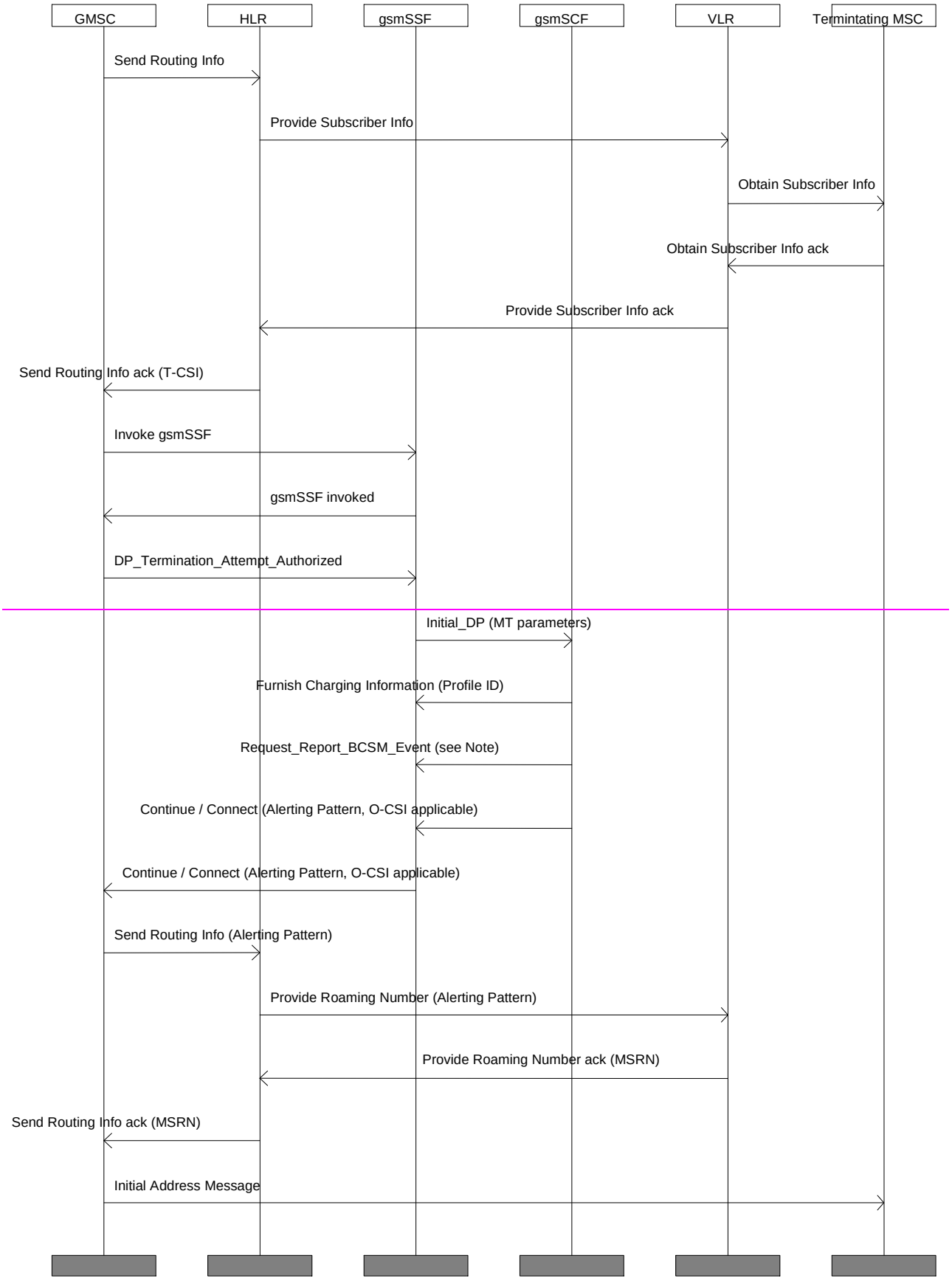
7.~~9~~11 Equivalent services implemented by the gsmSCF

7.~~9~~11.1 Call Forwarding

Call Forwarding services will be provided in the gsmSCF per profile. An MT call to an MSP subscriber will be subject to the provided call forwardings for the called profile.

The Call Forwarding services, implemented by the gsmSCF, should operate in the same way as the ~~GSM~~ Call Forwarding Supplementary Services. The MSP subscriber should have control over the call forwarding data (Registration, Erasure, Activation, Deactivation, Interrogation). The method for controlling this data is a network option.


GMSC
HLR
gsmSSF
gsmSCF
VLR
Terminating MSC
Send Routing Info
Provide Subscriber Info
Obtain Subscriber Info
Obtain Subscriber Info ack
Provide Subscriber Info ack
Send Routing Info ack (T-CSI)
Invoke gsmSSF
gsmSSF invoked
DP_Termination_Attempt_Authorized
Initial_DP (MT parameters)
Furnish Charging Information (Profile ID)
Request_Report_BCSM_Event (see Note)
Continue / Connect (Alerting Pattern, SII2)
Continue / Connect (Alerting Pattern, SII2)
Send Routing Info (Alerting Pattern)
Provide Roaming Number (Alerting Pattern)
Provide Roaming Number ack (MSRN)
Send Routing Info ack (MSRN)
Initial Address Message


GMSC
HLR
gsmSSF
gsmSCF
VLR
Terminating MSC
Send Routing Info
Provide Subscriber Info
Obtain Subscriber Info
Obtain Subscriber Info ack
Provide Subscriber Info ack
Send Routing Info ack (T-CSI)
Invoke gsmSSF
gsmSSF invoked
DP_Termination_Attempt_Authorized
Initial_DP (MT parameters)
Furnish Charging Information (Profile ID)
Request_Report_BCSM_Event (see Note)
Continue / Connect (Alerting Pattern, O-CSI applicable)
Continue / Connect (Alerting Pattern, O-CSI applicable)
Send Routing Info (Alerting Pattern)
Provide Roaming Number (Alerting Pattern)
Provide Roaming Number ack (MSRN)
Send Routing Info ack (MSRN)
Initial Address Message

NOTE: Request_Report_BCSM_Event will contain the list Arm_DP_List (see figure 1). This list will contain the following elements:

T_Answer	EDP-N
T_Abandon	EDP-N
T_Busy	EDP-N (Unless CFB and/or CFNRc are A&O for the called profile, in which case EDP-R)
T_No_Answer	EDP-N (Unless CFNRy is A&O for the called profile, in which case EDP-R)

Figure ~~12~~31: Information flow for a successful MT call to a profile with some Call Forwardings Active and Operative

7.~~9~~11.1.1 Call Forward Unconditional

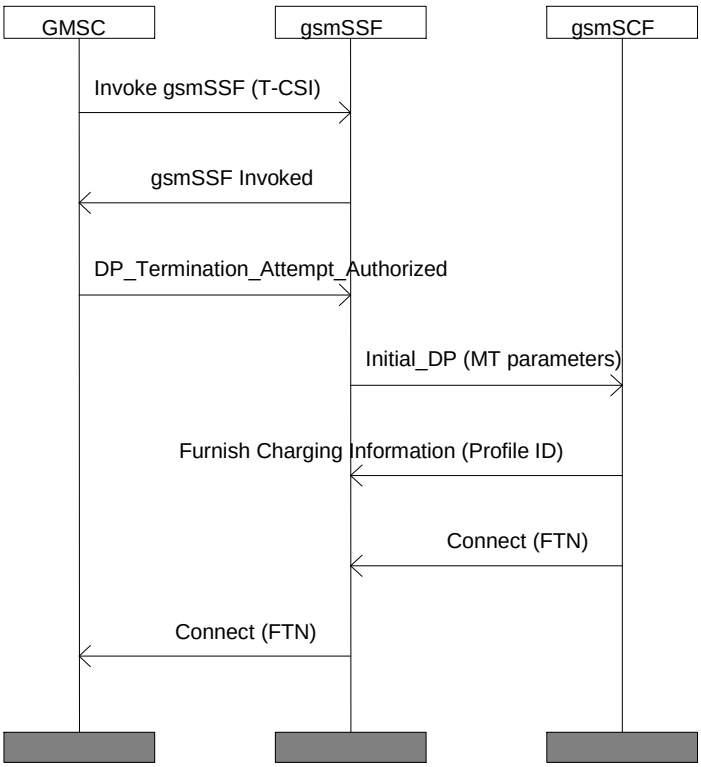


Figure 32~~13~~: Information flow for an MT call to a profile with CFU active and operative in the gsmSCF

7.~~9~~11.1.2 Call Forward on Busy

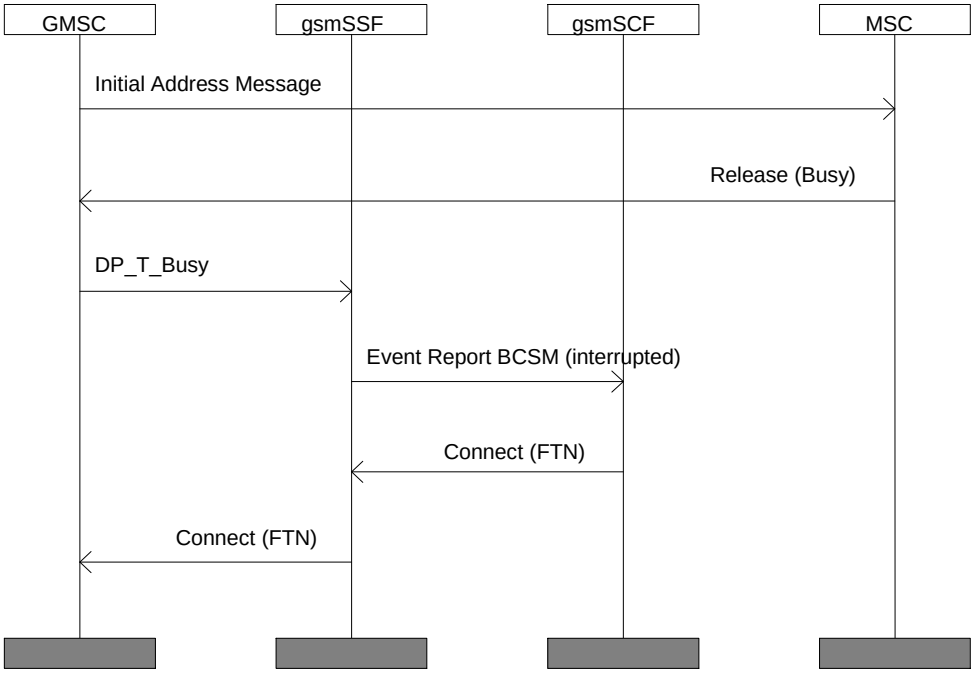
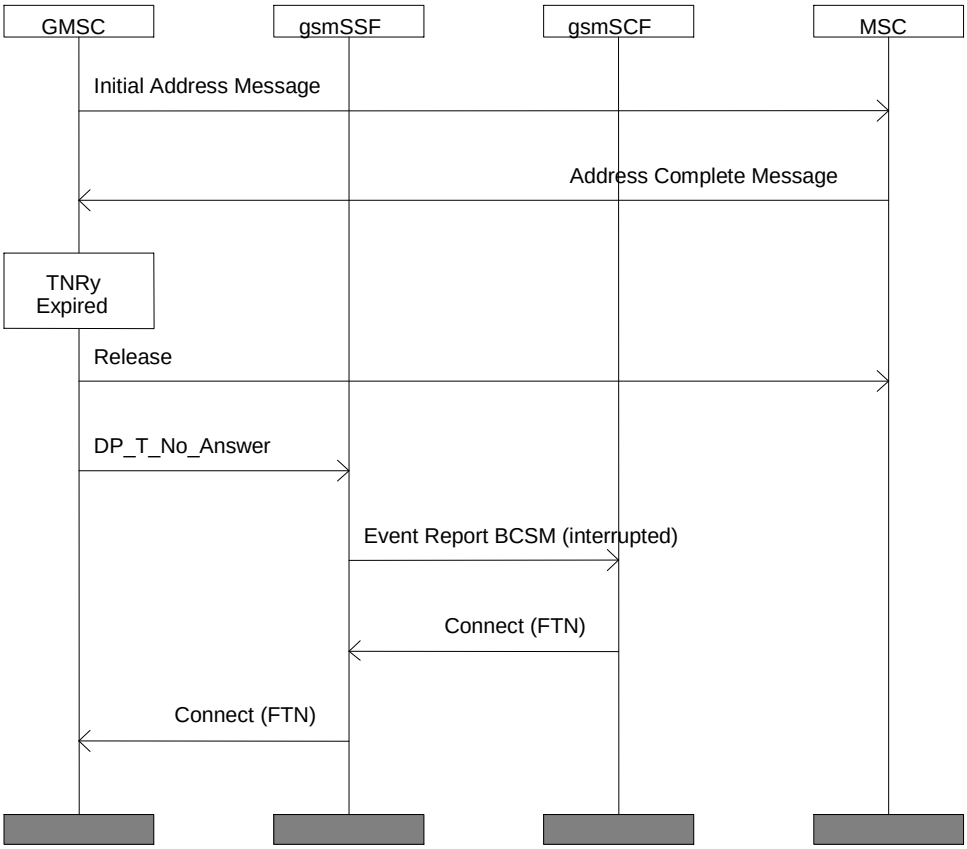


Figure ~~33~~14: Information flow for an MT call to a profile with CFB active and operative in the gsmSCF, where the called subscriber is NDUB or UDUB

7.~~9~~11.1.3 Call Forward on No Reply



NOTE: The timer TNRy is started in the GMSC after the Address Complete Message has been received from the destination exchange. If this timer expires before an Answer message is received from the destination exchange, a release message is sent to the destination exchange and the detection point T_No_Answer is reached. This is specified in ~~GSM 03.18~~ 3G TS 23.018 and ~~GSM 03.78~~ 3G TS 23.078.

Figure ~~34~~15: Information flow for an MT call to a profile with CFNRy active and operative in the gsmSCF, where the called party does not answer

7.~~9~~11.1.4 Call Forward on Not Reachable

7.~~9~~11.1.~~5~~4.1 Early CFNRc

Early Call Forwarding on Not Reachable will apply if the gsmSCF receives the parameter "subscriber state" set as Not Reachable. Due to the presence of the Location information / Subscriber state Interrogation parameter in the CAMEL data, stored in the HLR, the HLR sends a Provide Subscriber Information message to the VLR. This determines if the subscriber state is Not Reachable.

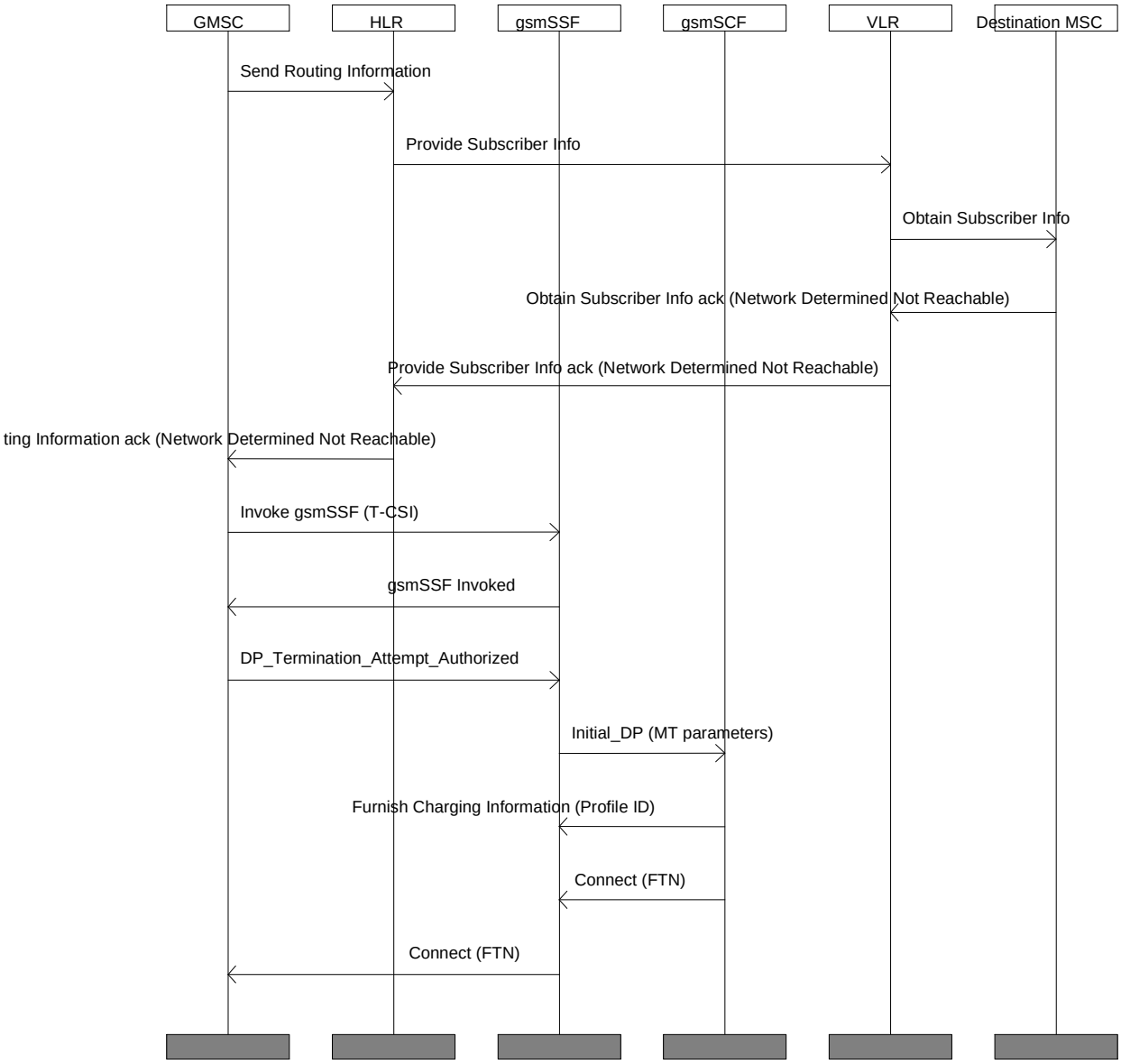


Figure ~~16~~35: Information flow for an MT call to a profile with CFNRc active and operative in the gsmSCF, where early CFNRc is invoked

7.~~9~~11.1.~~6~~4.~~2~~ Late CFNRc

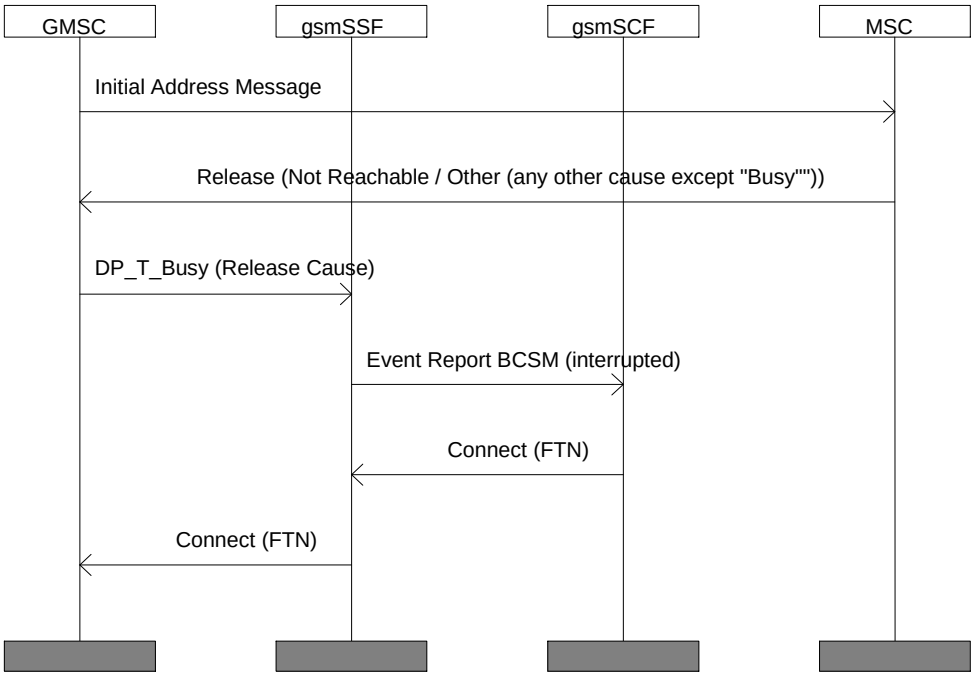


Figure ~~36~~17~~:~~: Information flow for an MT call to a profile with CFNRc active and operative in the gsmSCF, where late CFNRc is invoked

7.~~9~~11.2 Call Barring

Call Barring services will be provided by the gsmSCF per profile. An MO call made by an MSP subscriber will be subject to the outgoing call barrings provided for the ~~e~~Calling profile. An MT call to an MSP subscriber will be subject to the incoming call barrings provided for the ~~e~~Called profile. If an MT call to an MSP subscriber is forwarded, the forwarded call will be subject to the outgoing call barrings provided for the ~~e~~Called profile.

The Call Barring services available per profile are:

- Barring of all outgoing calls (BAOC);
- Barring of outgoing international calls (BOIC);
- Barring of outgoing international calls except those directed to the home PLMN country (BOIC-exHC);
- Barring of all incoming calls (BAIC);
- Barring of incoming calls when roaming outside the home PLMN country (BIC-roam).

The Call Barring services, implemented by the gsmSCF, should operate in the same way as the ~~GSM~~ Call Barring Supplementary Services. The MSP subscriber should have control over the call barring data (Registration, Erasure, Activation, Deactivation, Interrogation). The method for controlling this data is a network option.

~~The MSP subscriber will not be able to change Outgoing Call Barrings for the default profile.~~ If the MSP subscriber changes the Outgoing Call Barrings for the default profile by contacting the gsmSCF, the gsmSCF will change the barrings stored in the gsmSCF and inform the HLR using ATM to change the barrings stored in the HLR.

The ~~GSM~~ Call Barring Supplementary Services may require a password before Call Barring data can be changed. For the Call Barring Services implemented in the gsmSCF, use of a password is a network option.

The operator should ensure that if the equivalent call barring service is provided then:

- The OCB_flag is set in the HLR (See subclause 6.1:OCB_flag).
- If an equivalent outgoing call barring service is in a "Provisioned and Active" state in the gsmSCF for the default profile, that outgoing call barring supplementary service will be in a "Provisioned and Active" state in the HLR.
- If an equivalent outgoing call barring service is in a "Not Active" state in the gsmSCF for the default profile, that outgoing call barring supplementary service will be in a "Not Provisioned" state in the HLR.
- Incoming Call Barrings shall not be provisioned in the HLR.

NOTE: Barrings will not apply to MT short messages.

7.~~9~~11.3 Operator Determined Barring (ODB)

Operator Determined Barring will be available per profile in the gsmSCF for the following categories:

- Barring of outgoing calls;
- Barring of incoming calls;
- Barring of roaming;
- Barring of outgoing Premium Rate Calls;
- Barring specific to the home PLMN;
- Barring of registration of call forwarding.
- Barring of invocation of call transfer.

However, if zone related barring is implemented in the gsmSCF, the appropriate data will be needed in the gsmSCF as well as the HLR. For barring of incoming calls when roaming outside the zone of the home country, the gsmSCF will need to use Any Time Interrogation to establish the location of the called party.

Management of ODB data is operator specific.

The operator should ensure that if the equivalent ODB service for an ODB category is provided then:

- The ODB flag for the correct category is set in the HLR (See subclause 6.2: ODB flags).
- The ODB data for that category for the default profile is duplicated in the HLR

NOTE 1: Barring of outgoing calls and barring of incoming calls in the gsmSCF will not disallow MO or MT short messages.

7.11.4 Advice of Charge (AoC)

Advice of Charge is available per profile in the gsmSCF. This is detailed in the SDL diagrams in Section 7.5: Functions and Information flows.

7.~~10~~12 Exceptional Procedures

7.12.1 Roaming into a network not supporting CAMEL Phase 3

When roaming into a network not supporting CAMEL Phase 3, only the functionality of MSP Phase 1 will be available to an MSP subscriber.

The default profile subscription information shall apply to all supplementary services, excluding Call Forwarding and Call Barring, provisioned per profile.

7.1~~0~~2.~~1~~2 Roaming into a network not supporting CAMEL Phase 2

This subclause details MSP specific handling for roaming into a network not supporting CAMEL Phase 2. Other handling for this scenario is described in ~~GSM 03.78~~ 3G TS 23.078.

7.1~~0~~2.~~1~~2.1 Actions required on Location Update

The HLR will send the outgoing call barring data and outgoing ODB data, specific to the default profile, to the VLR.

7.1~~0~~2.~~1~~2.2 MO call handling

When an MSP subscriber roams into a network not supporting CAMEL Phase 2, the default profile will be used for all outgoing traffic.

7.1~~0~~2.~~1~~2.3 MT call handling

MT calls to any profile will be received by the subscriber (subject to call forwardings and call barrings provided in the gsmSCF on the called profile), although no indication of the called profile will be received.

The HLR will not allow OR, this means that for MT calls, the GMSC will always support CAMEL Phase 2, allowing the gsmSCF to invoke appropriate Call Forwardings and Call Barrings.

7.12.2.3 MO short message handling

MO short messages will be sent from and charged to the default profile.

7.1~~0~~2.~~2~~3 Lack of availability of the Network Indication of Alerting feature

If an MSP subscriber roams into a network not supporting the Network Indication of Alerting feature, or is using an MS that does not support the Network indication of Alerting feature, then the subscriber will still receive all MT calls, but no indication of the called profile will be given.

Annex A (informative): Provision and Withdrawal of MSP

A.1 Provision of MSP

MSP will be provisioned by prior arrangement with the service provider.

For an existing subscriber converting to an MSP subscriber, all profile specific data will be stored in the gsmSCF and removed from the HLR, and MSP will be provisioned in the HLR.

For a new subscriber provisioned with the MSP service, all profile specific data will be stored in the gsmSCF and MSP will be provisioned in the HLR.

Data specific to the Default Profile will be stored in both the HLR and the gsmSCF.

A.2 Withdrawal of MSP

MSP will be withdrawn when there is only one profile remaining. In this event, the subscriber data will be stored in the HLR and removed from the gsmSCF, and the HLR will remove all MSP markings. The subscriber will then be treated as a normal subscriber.

Annex B (informative): Change history

Change history						
TSG SA#	**Spec**	**Version**	**CR**	**<Phase>**	**New Version**	**Subject/Comment**
Jun 1999	GSM 03.97	7.1.0				Transferred to 3GPP CN
CN#04	23.097				3.0.0	
CN#5	23.097	3.0.0	001		3.0.1	Various editorial corrections

History

Document history		
V3.0.0	August 1999	Transferred to TSG CN at ETSI SMG#29. Under TSG TSG CN Change Control.
V3.0.1	October 1999	Approved for TSG CN#5

3GPP TSG-N SS ad hoc meeting #4
Henley-on-Thames
30th November – 2nd December 1999

Tdoc 3GPP N_SS-99 167
(rev N_SS-99 154)

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.093	CR	002 r3

Current Version: 3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG CN#6 *list TSG meeting no. here ↑*

for approval [X]
for information [ ]

(only one box should be marked with an X)

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: *(at least one should be marked with an X)*

USIM [ ] ME [ ] UTRAN [ ] Core Network [X]

Source: SS ad hoc **Date:** 07/12/1999

Subject: Addition of CCBS to the SS Invocation Notification

3G Work item: MSP Phase 2

Category: *(only one category shall be marked with an X)*

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[X]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Reason for change: MSP Phase 2 requires CCBS recalls to be charged to the correct profile, hence notification of CCBS invocation is required.

Clauses affected: 11.1.2

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	23.078-xxx; 29.002-041
Other 2G core specifications	[ ]	→ List of CRs:	
MS test specifications	[ ]	→ List of CRs:	
BSS test specifications	[ ]	→ List of CRs:	
O&M specifications	[ ]	→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

11.1.2 Processes and procedures in HLR

.

.

.

Figure 11.1.2.3: Process HLRA_Request

This process is created during the activation of service and contains all related data. The process has five different states, "Wait_For_Answer", "Active", "Recall", "Suspended" and "Frozen". During its creation the process sends CCBS_Request via SSAP interface to destination network B containing all call related data as well originating networks retention capabilities.

In the "Wait_For_Answer" state process receives response from destination network which is further relayed to the HLRA_Request_Manager. In case of positive acknowledgement destination network returns info whether the retention is supported in both networks.

In "Active" state process waits recall from destination network, however process can vanish if operation timer T3 expires or explicit deletion is received from the user or destination network. In case of deletion the process informs the queue. When the recall arrives the process transits to the "Recall" state.

In the "Recall" state process waits the recall outcome, either positive or negative. Depending of the recall outcome the request can be deleted, retained or suspended. If the request is to be retained the process transits back to the "Active" state. If the request is suspended due to the T10 expiry, CCBS_Busy condition or the MS is not reachable the process transits to the suspended state.

If the request is deleted during "Recall" due SSAP_Cancel, T3 expiry or explicit deletion the queue is updated immediately and the request changes it’s state to "Recall Deleted" where it waits the recall to end.

In the "Suspended" state actions the request can be resumed if the MS is known to be CCBS_Idle or the request can be deleted due to the explicit deletion or timer T3 expiry.

The request is placed in “Frozen” state whenever it receives Remote User Free indication from the destination network and the request can’t be fulfilled due service interaction or lack of support in MSCVLR. The request shall indicate suspended back to the destination network and stay in the queue. If the service becomes later possible, the request will revert back “Active” state and indicate resumed to the destination network.

Whenever the state of the process is changed, the new state is stored and the procedure CCBS_Notify_SS_Invocation is called.

Figure 11.1.2.4: Process HLRA_Recall_Manager

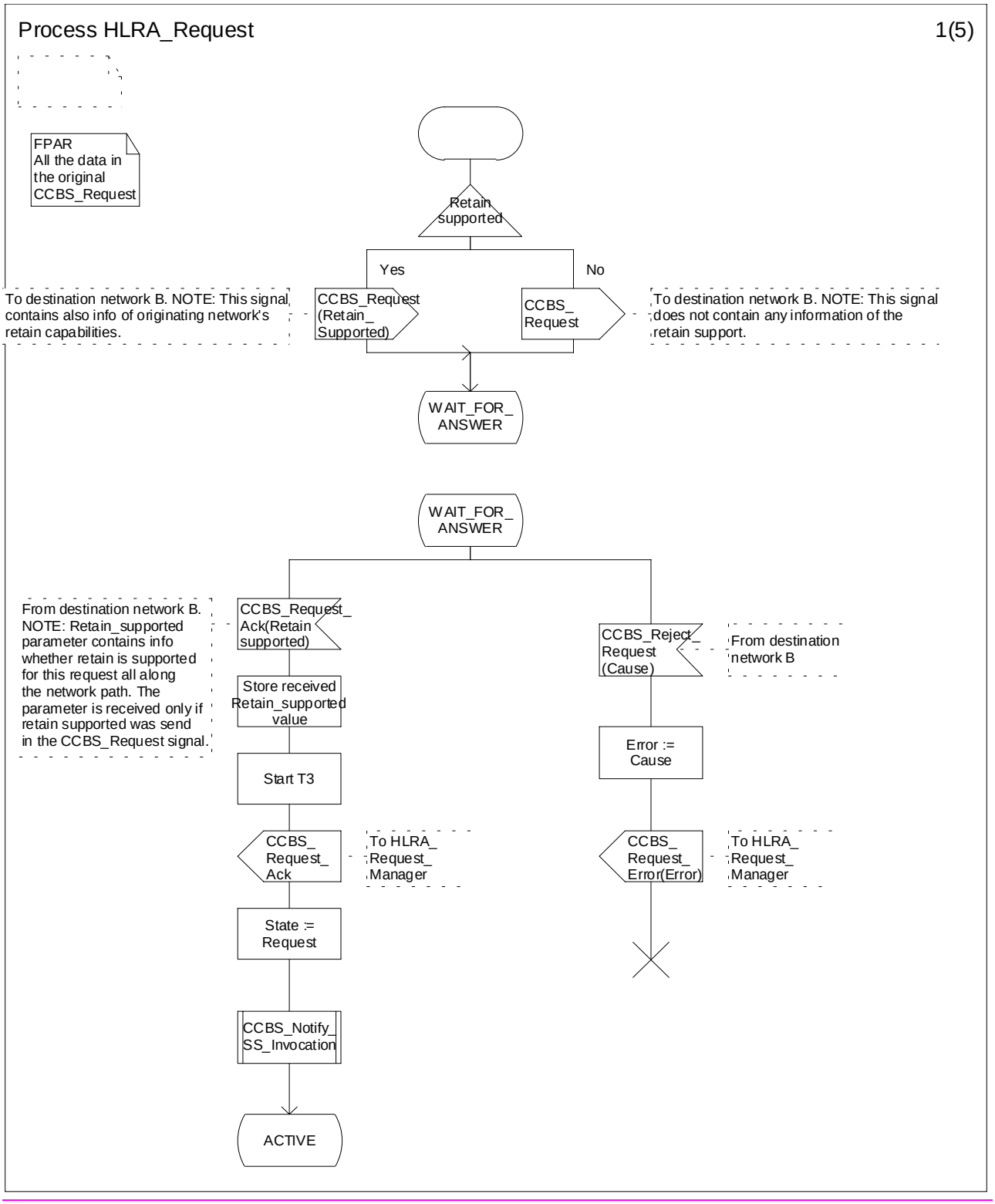
.

.

.

Figure 11.1.2.8: Procedure CCBS_Notify_SS_Invocation

This procedure is called by the process HLRA_Request whenever there is a change of state. The procedure informs the gsmSCF of the state change if the SS-CSI applicable to CCBS is stored in the HLR.


Process HLRA_Request
1(5)
FPAR
All the data in the original CCBS_Request
Retain supported
Yes
No
To destination network B. NOTE: This signal contains also info of originating network's retain capabilities.
CCBS_Request (Retain_ Supported)
CCBS_ Request
To destination network B. NOTE: This signal does not contain any information of the retain support.
WAIT_FOR_ ANSWER
WAIT_FOR_ ANSWER
From destination network B. NOTE: Retain_supported parameter contains info whether retain is supported for this request all along the network path. The parameter is received only if retain supported was send in the CCBS_Request signal.
CCBS_Request_ Ack(Retain supported)
Store received Retain_supported value
Start T3
CCBS_ Request_ Ack
To HLRA_ Request_ Manager
State := Request
CCBS_Notify_ SS_Invocation
ACTIVE
CCBS_Reject_ Request (Cause)
From destination network B
Error := Cause
CCBS_ Request_ Error(Error)
To HLRA_ Request_ Manager

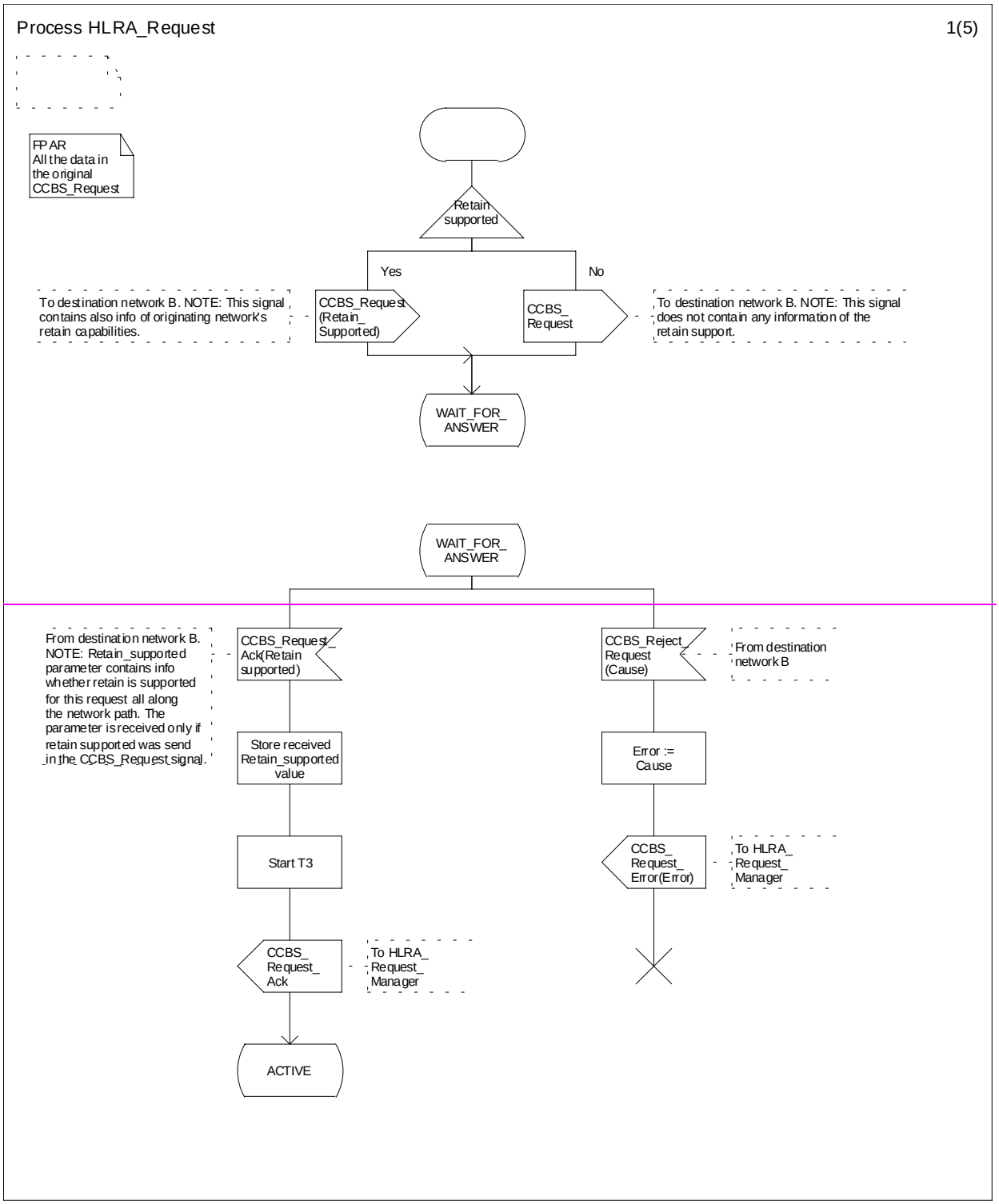
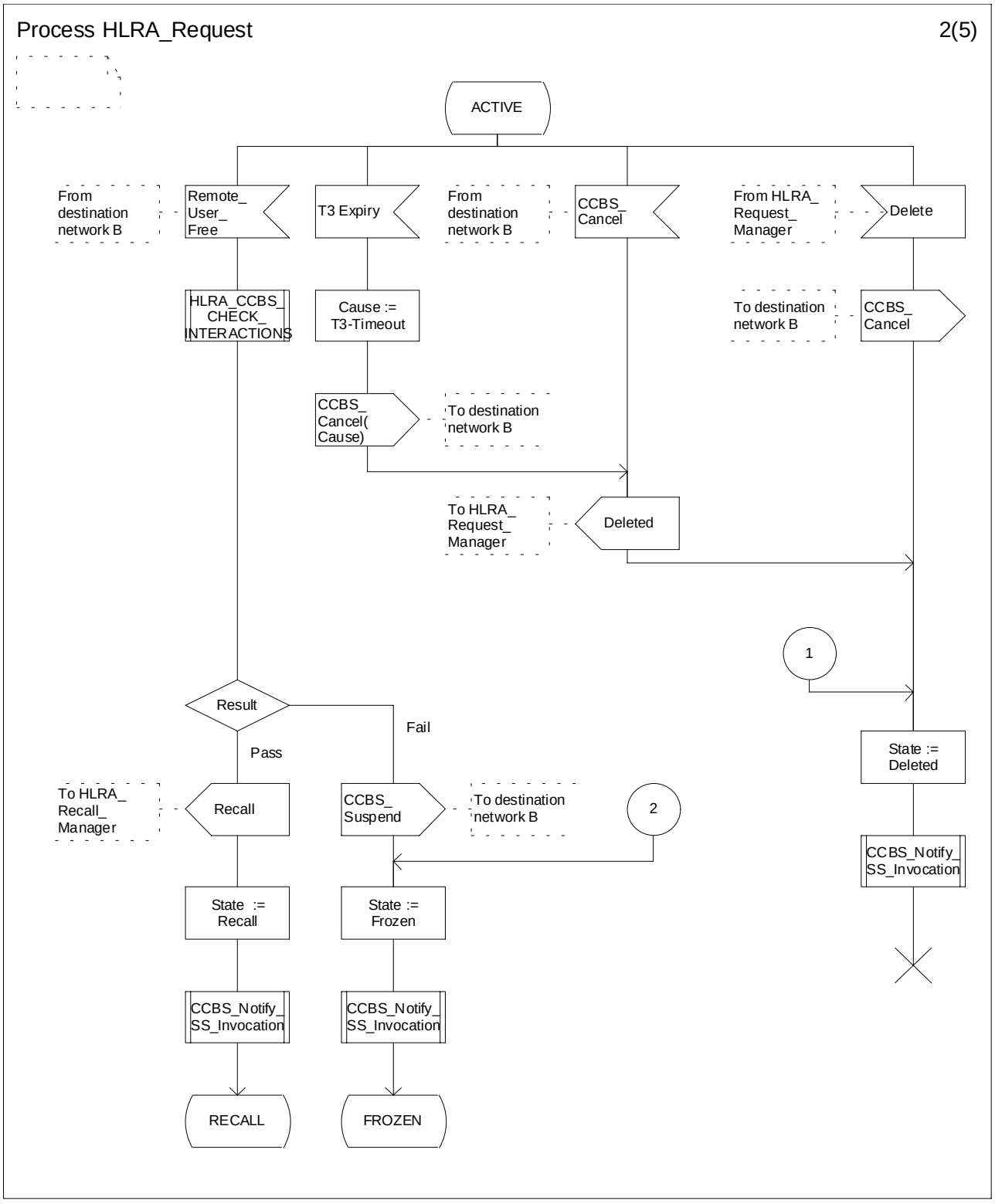


Figure 11.1.2.3: Process HLRA_Request (sheet 1 of 5)


Process HLRA_Request
2(5)
ACTIVE
From destination network B
Remote_ User_ Free
T3 Expiry
From destination network B
CCBS_ Cancel
From HLRA_ Request_ Manager
Delete
HLRA_CCBS_ CHECK_ INTERACTIONS
Cause := T3-Timeout
To destination network B
CCBS_ Cancel
CCBS_ Cancel(Cause)
To destination network B
To HLRA_ Request_ Manager
Deleted
1
Result
Fail
Pass
State := Deleted
To HLRA_ Recall_ Manager
Recall
CCBS_ Suspend
To destination network B
2
CCBS_Notify_ SS_Invocation
State := Recall
State := Frozen
CCBS_Notify_ SS_Invocation
CCBS_Notify_ SS_Invocation
RECALL
FROZEN

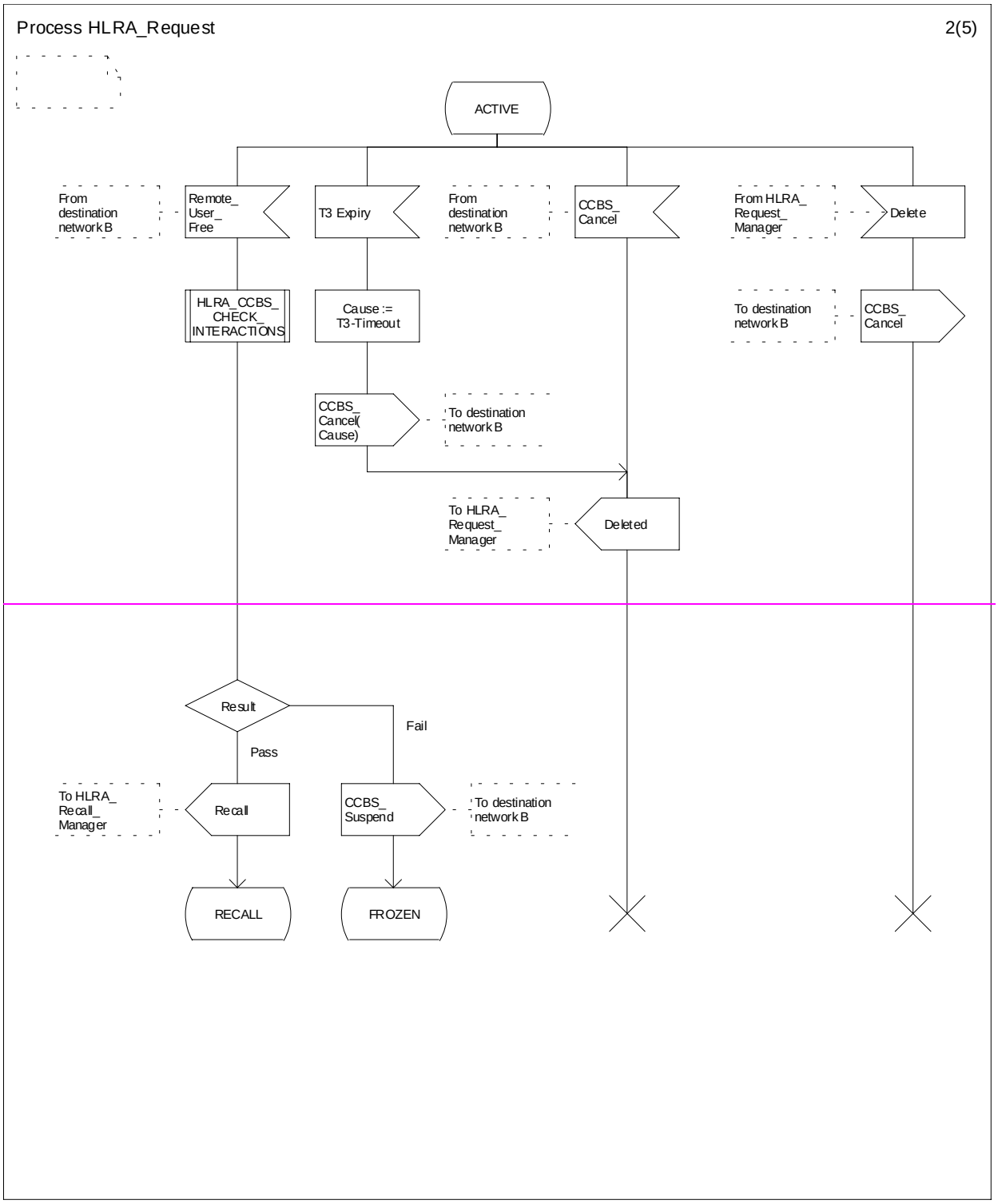
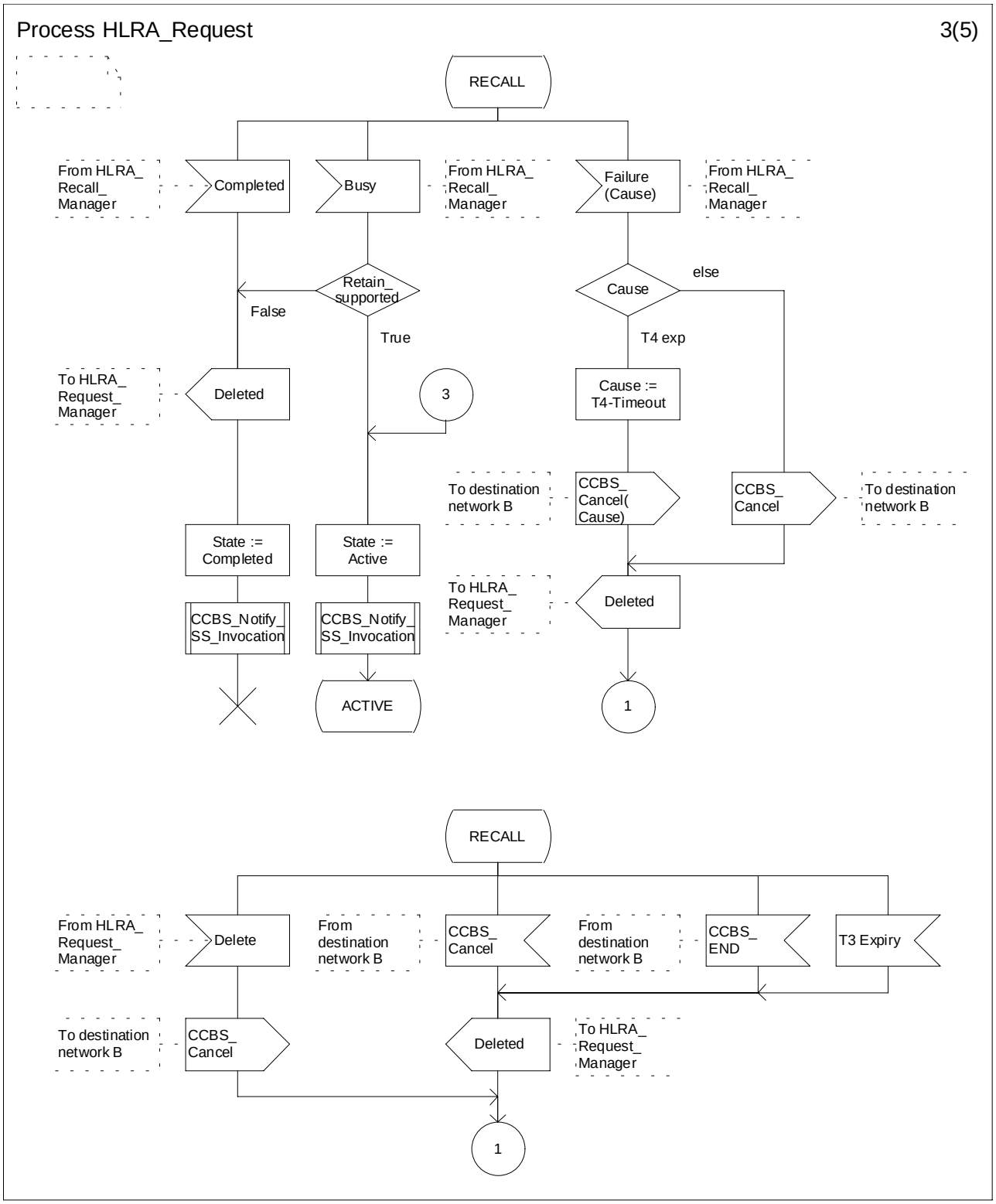


Figure 11.1.2.3: Process HLRA_Request (sheet 2 of 5)


Process HLRA_Request
3(5)
RECALL
From HLRA_ Recall_ Manager
Completed
Busy
From HLRA_ Recall_ Manager
Failure (Cause)
From HLRA_ Recall_ Manager
Retain_ supported
False
True
Cause
else
T4 exp
To HLRA_ Request_ Manager
Deleted
3
Cause := T4-Timeout
To destination network B
CCBS_ Cancel(Cause)
CCBS_ Cancel
To destination network B
State := Completed
State := Active
To HLRA_ Request_ Manager
Deleted
CCBS_Notify_ SS_Invocation
CCBS_Notify_ SS_Invocation
ACTIVE
1
RECALL
From HLRA_ Request_ Manager
Delete
From destination network B
CCBS_ Cancel
From destination network B
CCBS_ END
T3 Expiry
To destination network B
CCBS_ Cancel
Deleted
To HLRA_ Request_ Manager
1

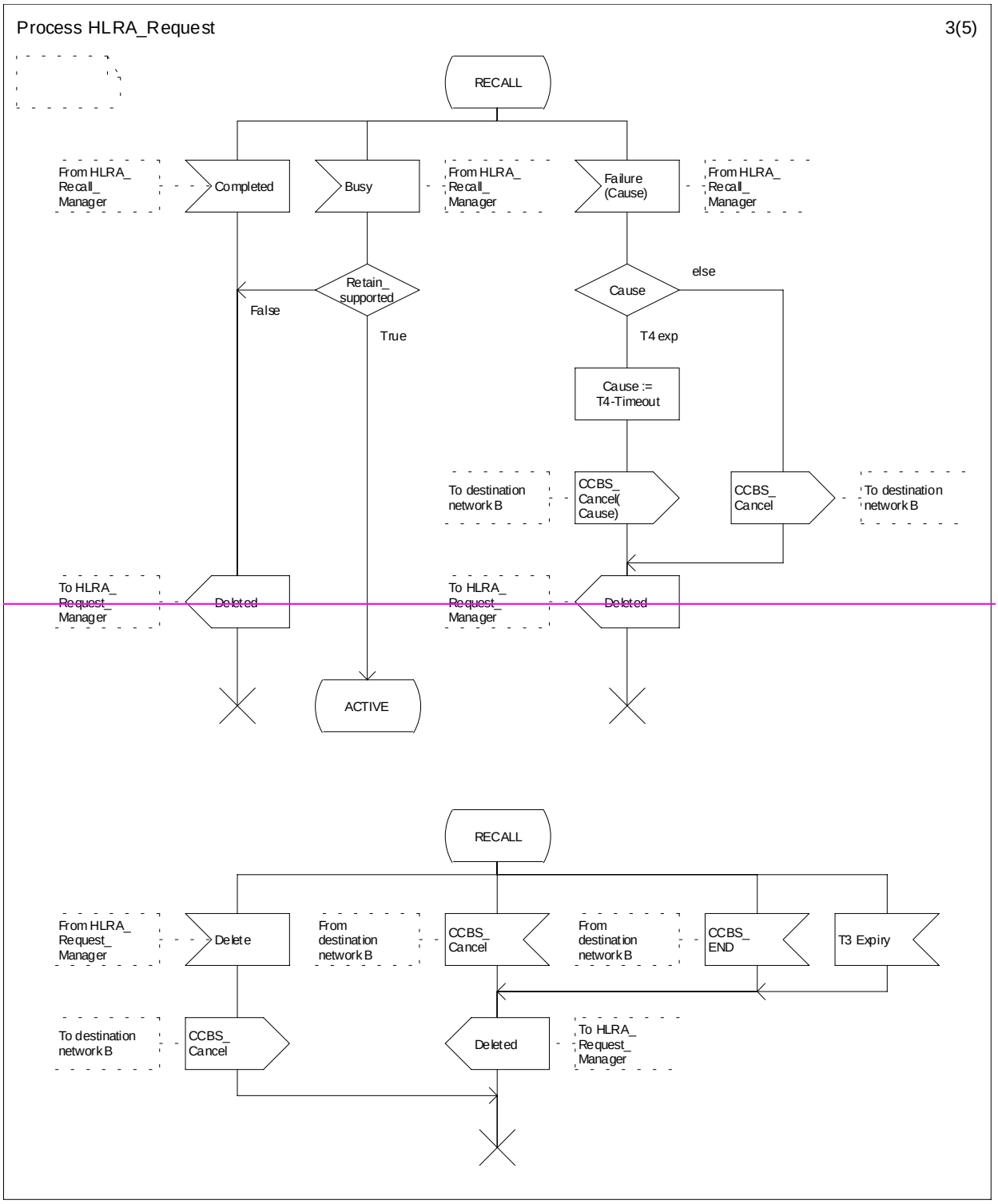
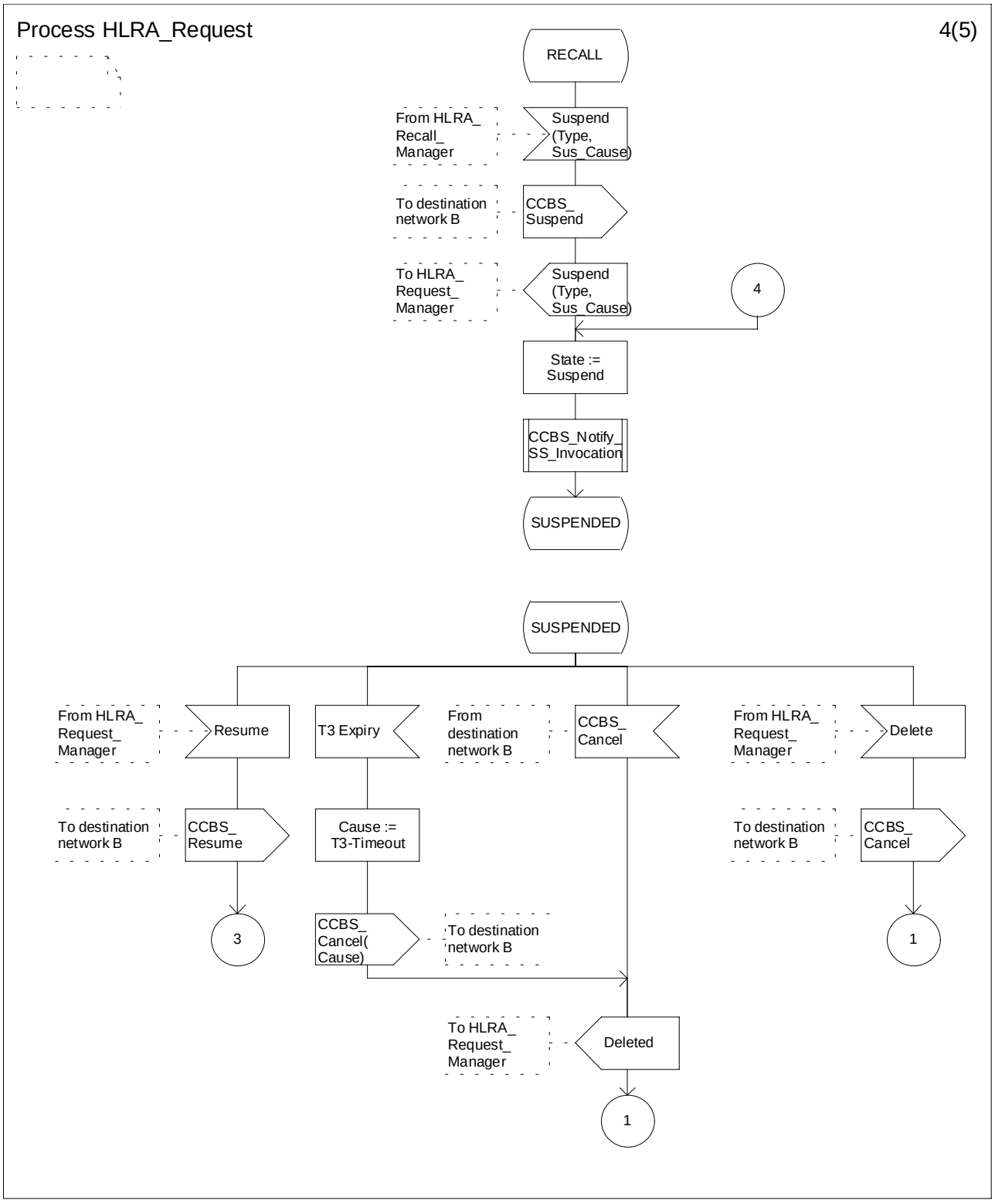


Figure 11.1.2.3: Process HLRA_Request (sheet 3 of 5)


Process HLRA_Request
4(5)
RECALL
From HLRA_ Recall_ Manager
Suspend (Type, Sus_Cause)
To destination network B
CCBS_ Suspend
To HLRA_ Request_ Manager
Suspend (Type, Sus_Cause)
4
State := Suspend
CCBS_Notify_ SS_Invocation
SUSPENDED
SUSPENDED
From HLRA_ Request_ Manager
Resume
T3 Expiry
From destination network B
CCBS_ Cancel
From HLRA_ Request_ Manager
Delete
To destination network B
CCBS_ Resume
Cause := T3-Timeout
To destination network B
CCBS_ Cancel
3
CCBS_ Cancel(Cause)
To destination network B
1
To HLRA_ Request_ Manager
Deleted
1

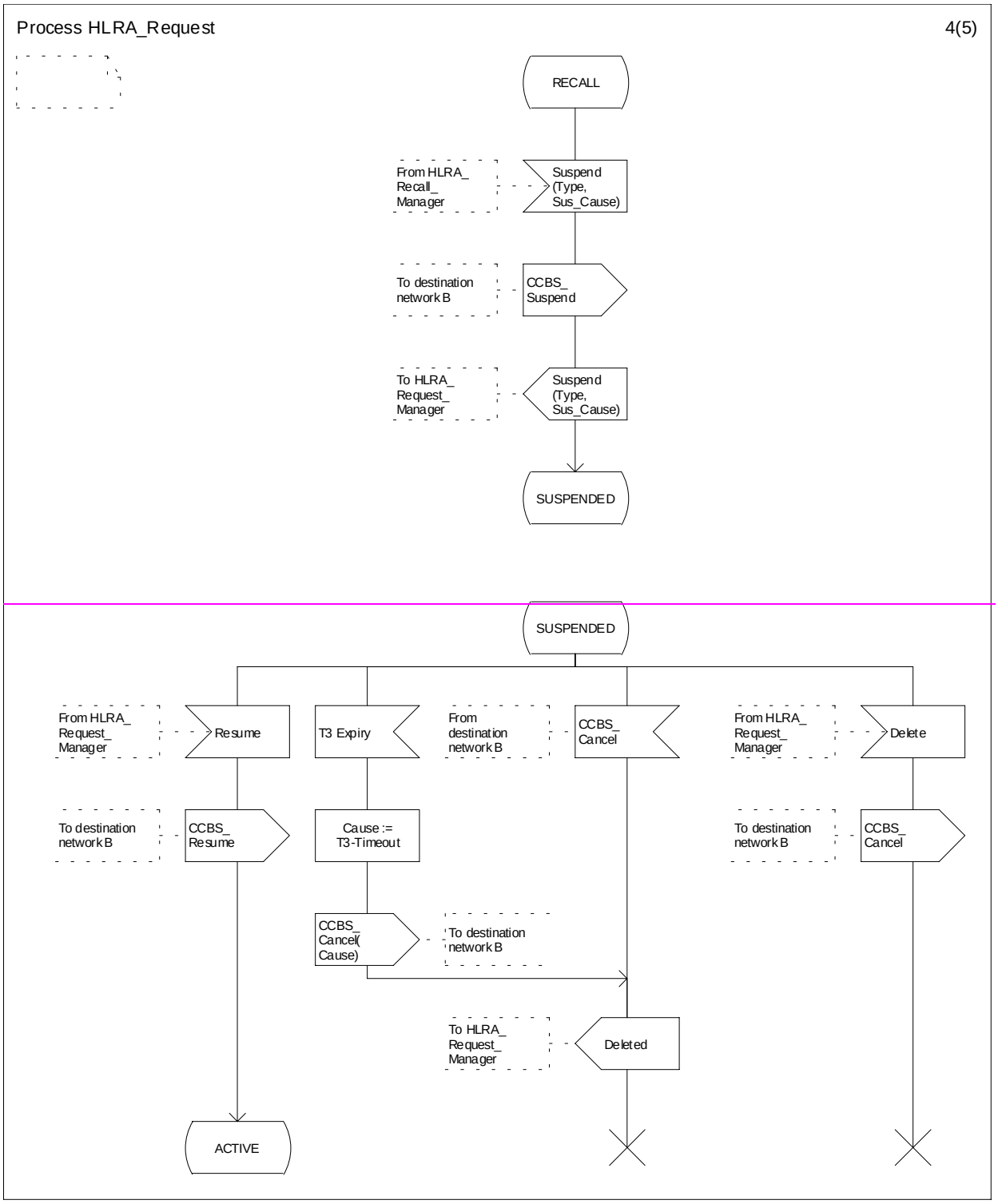
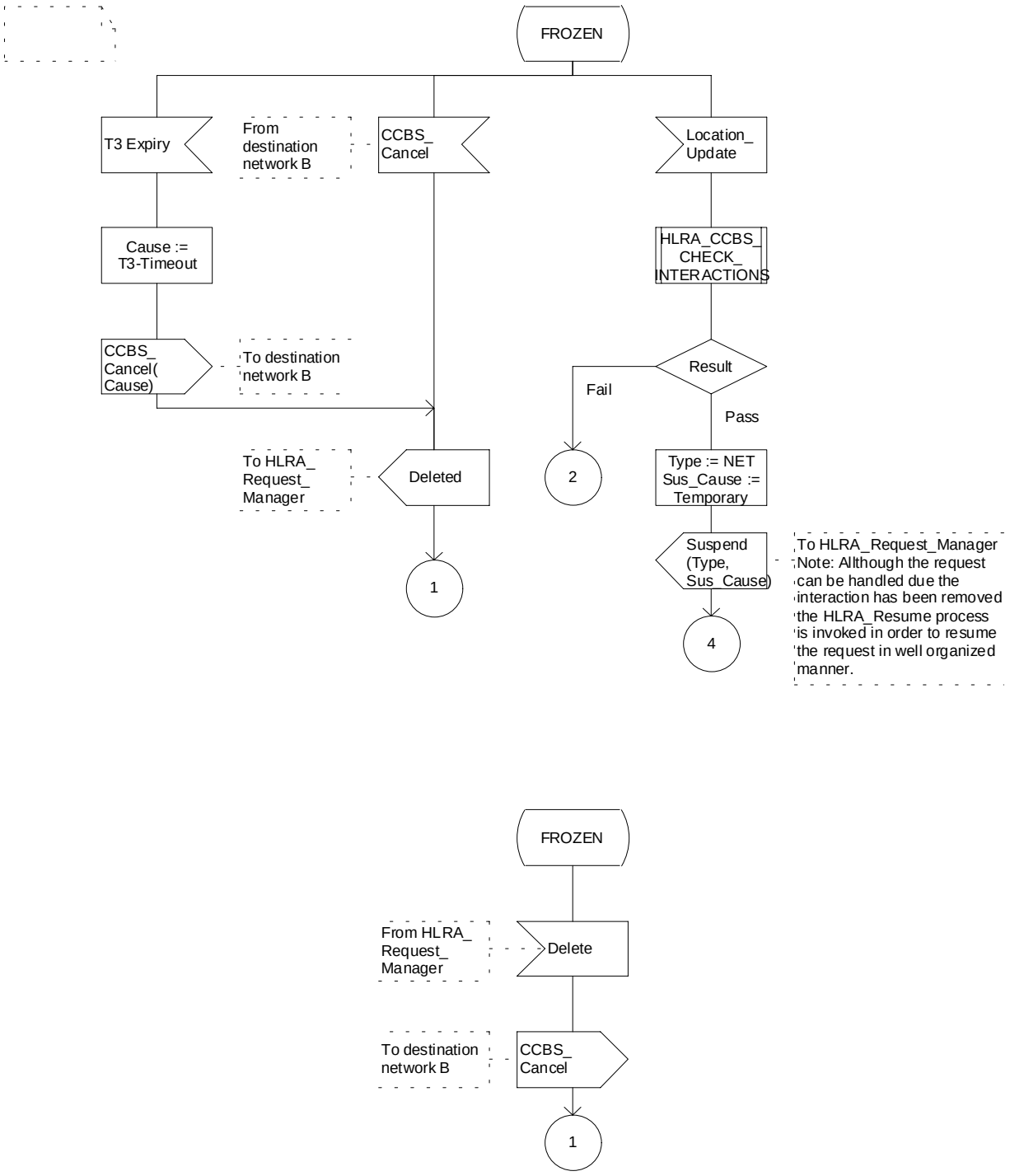


Figure 11.1.2.3: Process HLRA_Request (sheet 4 of 5)

Process HLRA_Request 5(5)



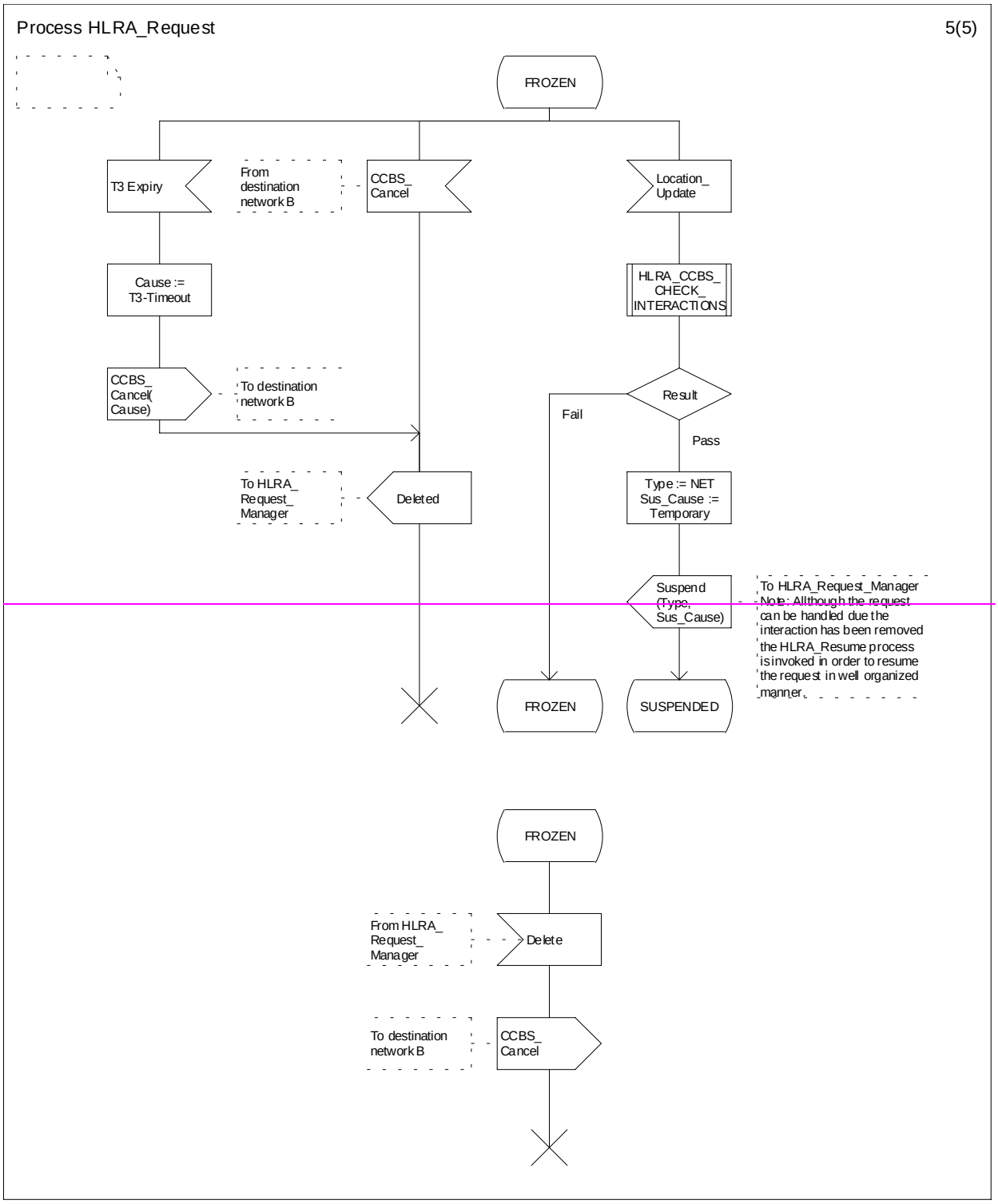


Figure 11.1.2.3: Process HLRA_Request (sheet 5 of 5)

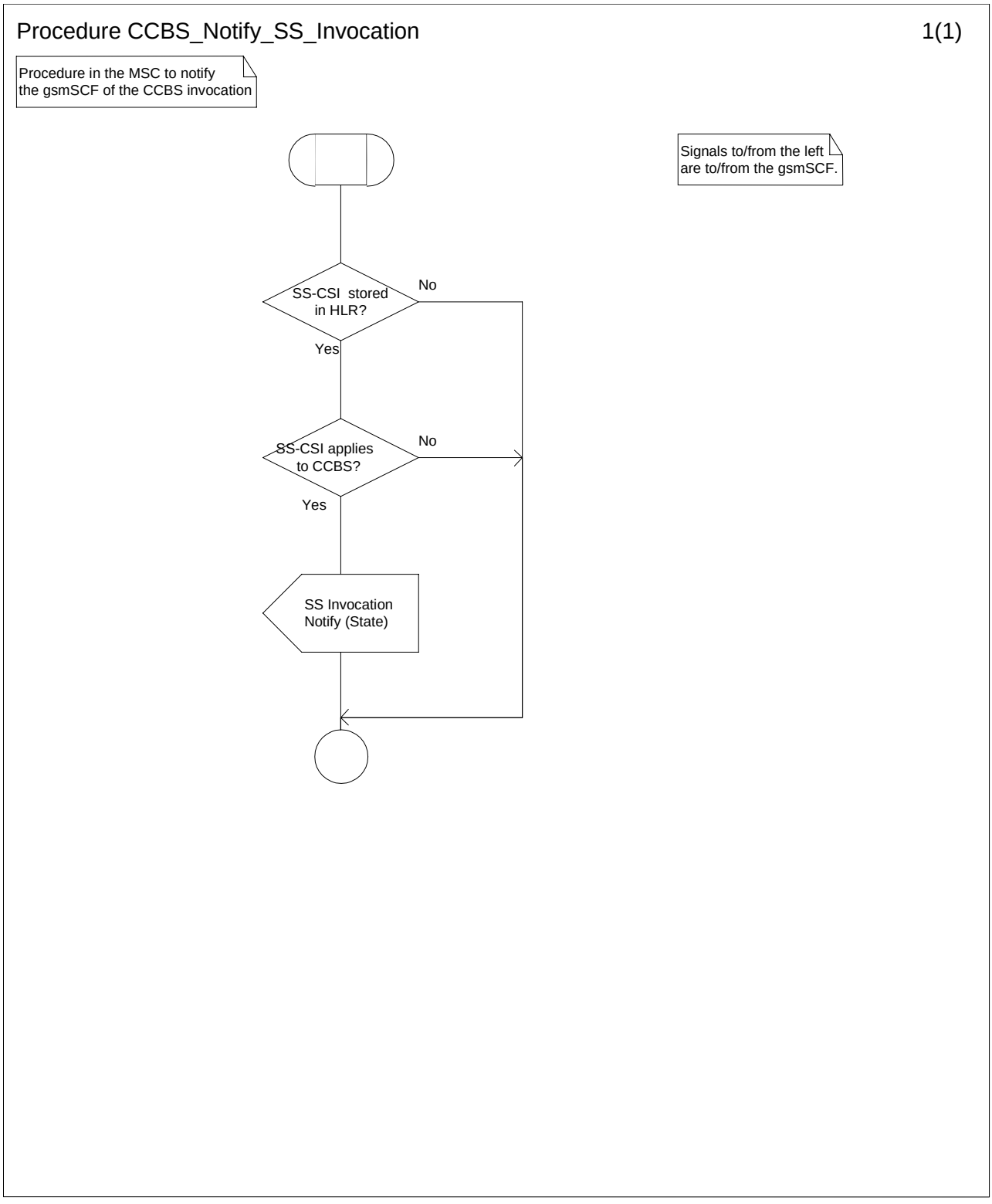


Figure 11.1.2.8: Procedure CCBS_Notify_SS_Invocation